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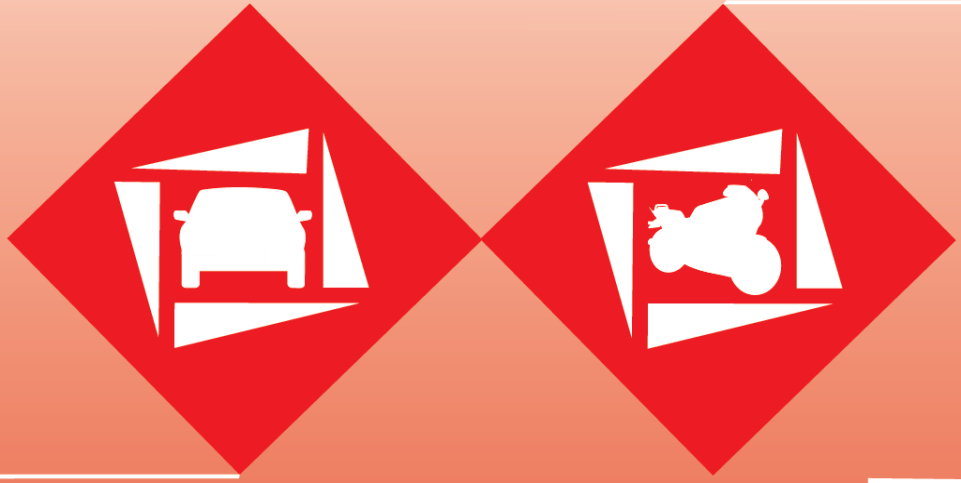

3rd edition

2

Guideline Series
Environmental Management

Air Pollution Control Program by Motor Vehicles

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Brasília
2011

Printed in Brazil

Ministry of Environment
Brazilian Institute of Environment and Renewable Natural Resources
Environmental Quality Board
General Coordination of Environmental Quality
Waste and Emission Control Coordination

Air Pollution Control Program by Motor Vehicles

Environment Collection.
Guideline Series – Environmental Management
No. 3

Brasília, 2011

Brazilian institute of environment and renewable natural resources - Ibama
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Classification at source
Brazilian Institute of Environment and Renewable Natural Resources

159p Brazilian Institute of Environment and Renewable Natural Resources.
Air Pollution Control Program by Motor Vehicles – Proconve/
Promot/Ibama 3rd ed. – Brasília: Ibama/Diqua, 2011.
584 p. (Environmental Collection . Guideline Series - Environmental Management; No.3)

ISBN 978-85-7399-358-1

ISSN 1415-1901

1.Motor vehicle. 2 Atmospheric pollution. 3. Pollution control.4. Environmental Law. 5. Import. 6. Proconve/Promot. I. Brazilian Institute of Environment and Renewable Natural Resources. II. Environmental Quality Board. III.Title. IV.Serie.

CDU (2nd.ed) 504.064(203)

* This publication printing was sponsored by both VOLVO do Brasil Veículos Ltda. and Renault do Brasil Veículos SA.

Introduction

Ibama, National Environmental Policy executor at the federal level, has consolidated throughout its existence a great importance in the preservation, conservation and sustainable use of environmental resources, working in the environmental licensing, environmental quality control, natural resources use authorization and in the environmental oversight, monitoring and control.

Permanent modernization and leadership challenges are designated to Ibama in order to achieve the reduction of environmental impacts such as those currently generated by the high population concentration in urban areas of the country, representing over 80% of the total population. From the automotive fleet growth, especially in large urban concentrations, it must be said that the Public Authority and society may not postpone the search for urban mobility solutions as the key point in life quality of the Brazilian large cities.

Throughout its existence, the Air Pollution Control Program by Motor Vehicles (PROCONVE/PROMOT) celebrates the program recognition resulting from the objectives' scope and updating, first traced in 1986 by the National Environment Council – CONAMA (Conselho Nacional de Meio Ambiente).

The 1st National Inventory of Road Motor Vehicle Emissions, published by Ibama and by industry partners in 2011, allowed the information updating and the diagnosis of atmospheric emissions reduction in the country, and the identification of PROCONVE/PROMOT achievements and new challenges. Besides the atmospheric pollutants control expansion perspective for the fleet in circulation in each region of this country and the provision of consumer information to a responsible choice concerning the climate change challenge, PROCONVE/PROMOT stands permanently as major player in encouraging technological development of the automotive manufacturers in the fitness for cleaner fuels.

Through this edition, IBAMA provides PROCONVE/PROMOT current legislation and shares with society the satisfaction of publishing measurable and recognized results which were obtained throughout the existence years of this program.

Curt Trennepohl

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I. PROCONVE/PROMOT

The increase in individual motorization, due to chronic deficiency of appropriate public transportation systems, has intensified the traffic in large urban centers. Besides causing constant traffic jams, with consequent environmental degradation due to air and noise pollution caused by motor vehicles, the growing number of vehicles increases the socioeconomic costs and causes serious harm to human health, and effective measures to control vehicular pollution, directly or indirectly, should be adopted.

Air Pollution Control Program by Motor Vehicles (PROCONVE) and Air Pollution Control Program for motorcycles and the like (PROMOT) were created by the NATIONAL ENVIRONMENT COUNCIL – CONAMA (CONSELHO NACIONAL DO MEIO AMBIENTE) through Resolutions which establish guidelines, deadlines and legal standards for allowable emissions for the different categories of national and imported motor vehicles.

PROCONVE/PROMOT was based on the international experience to suit the rates to the Brazilian reality and has as its main goal the reduction of air pollution from the mobile sources, such as motor vehicles, by setting the maximum emission limits, inducing the manufacturers' technological development and establishing technological requirements for vehicles, the proof of which is made from standardized tests. The certification of prototype/project and the statistical monitoring in production vehicles are also part of the control strategy.

II. Strategy

1. Prototype Approval

It is the proof that manufacturers/importers apply design concepts to ensure a low pollution potential to new vehicles and a low deterioration rate of emissions over its lifetime. Such proof is through technical analysis of engineering specifications and of the test results.

2. Production/Import Control

It is the statistical monitoring of production lines/import, with the purpose of ensuring a low dispersion of vehicle air emission rates.

3. Manufacturer/Importer Liability

The manufacturer/importer is responsible for the manufacture/import and marketing of vehicles in strict compliance with the specifications submitted by it and approved by IBAMA, re-approving the modified projects.

4. Maintenance Requirements

The manufacturer/importer should recommend to both the user and the technical service all required maintenance and adjustment actions and procedures to comply and maintain the maximum atmospheric emission limits of pollutants set by PROCONVE/PROMOT, and should provide the supply of spare parts.

5. After Sale Control

It is a mechanism that allows environmental agency intervention in the marketing and use of vehicles in order to pressure the manufacturers and users to strictly follow the required measures to vehicle pollution control.

PROCONVE/PROMOT is based on the approval data to then and in a decentralized manner, monitor the maintenance status of the vehicles in use. CONAMA established the general guidelines after completion of the 1st National Inventory of Atmospheric Emissions by Road Motor Vehicles in 2011, to the State and Federal District environmental agencies prepare, approve and publish the Vehicular Pollution Control Plans (PCPV). The plans will define the need, if applicable, of implementing the Inspection and Maintenance Program for Vehicles in Use – I/M, which identifies the noncompliance of vehicles in use, with reference to their manufacturers original specifications, the regulation requirements of the Pollution Control Plan for Motor Vehicles (PROCONVE) and the maintenance deficiencies and changes to the original projects that cause increased pollutants emission. The annual vehicle licensing in DETRANs is conditioned by the Brazilian Traffic Code to the approval of these I/M Programs.

6. Inspection and Maintenance Programs – I/M

Since CONAMA Resolution 18/86, PROCONVE provides for the development of annual vehicle inspection Programs to ensure that people keep them in line with their original specifications and prevent the system design modifications and changes that interfere with emissions of pollutants. These programs also aim to check that the characteristics approved by the manufacturers remain throughout the lifetime of the vehicles through the

preventive maintenance plan recommended by them, as well as to gather statistics information of the circulating fleet to give feedback to IBAMA on PROCONVE efficiency and possible improvements.

III. Characterization

The control is performed using the following motor vehicle classification:

1. Light Passenger Vehicle (Automobile)

It is the motor vehicle with a maximum total weight of 3,856 kg and vehicle in running weight of up to 2,720 kg, designed to the transportation of up to 12 passengers or their derivatives for goods transportation. The emission control of these vehicles was scaled in the following phases:

» **Phase L-1:** gradually, from 1988 to 1991, with the improvement of the model designs already in production and with reduction of production tolerances, upon establishment of PROCONVE. It also began the control of evaporative emission (fulfilled);

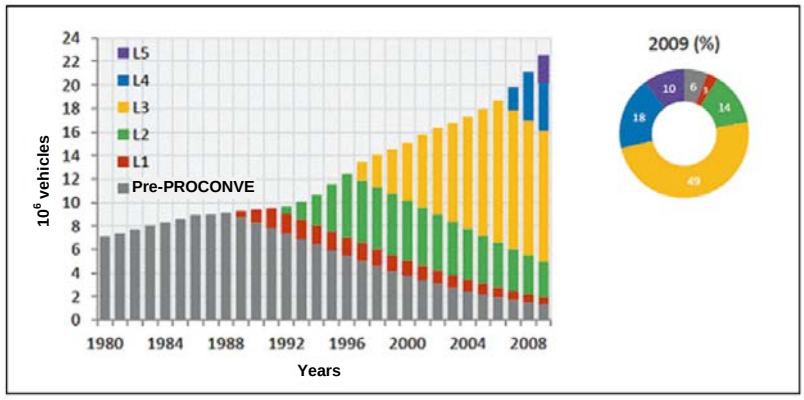
» **Phase L-2:** from the limits for 1992, the application of new technologies is verified, such as electronic fuel injection and the catalytic converters to reduce emissions that, when used separately, met the requirements phase (fulfilled). In 1994, the noise control began;

» **Phase L-3:** by meeting the limits established from January 1st, 1997, the manufacturer/importer employed, jointly, the best available technologies for the formation of mix and electronic engine control (fulfilled);

» **Phases L-4 and L-5:** the priority in these phases is the reduction of HC and NOx emissions for being the precursors of Ozone. Analogously to the phase, the technological innovations happened on the optimization of the combustion chamber geometry and of the nozzles, the injection pump pressure increase and the electronic fuel injection. It was not possible to start the marketing of vehicles powered by diesel of the Phase in January, 2009 due to unavailability of appropriate diesel in time for the development and fuel and urea distribution logistics. Phase L-5 was then replaced by Phase L-6;

» **Phase L-6:** to compensate this delay, CONAMA understood that it should adopt a more severe phase than the previous ones and promulgated Phase L-7, which will take effect from January 1st, 2013.

Chart 1 — Evolution of the estimated automobile fleet by Proconve phase



2. Light Commercial Vehicle (Utilities)

It is the motor vehicle not derived from light passenger vehicle with maximum total weight of 3,856 kg and vehicle in running weight of up to 2,720 kg, designed to goods transportation, or mixed or their derivatives, or designed to the transportation of more than 12 passengers, or yet with special characteristics for off road use.

The emission control of pollutant gases emitted by these vehicles' exhaust began in 1995, and continues with the phases. In 1994, the noise control began.

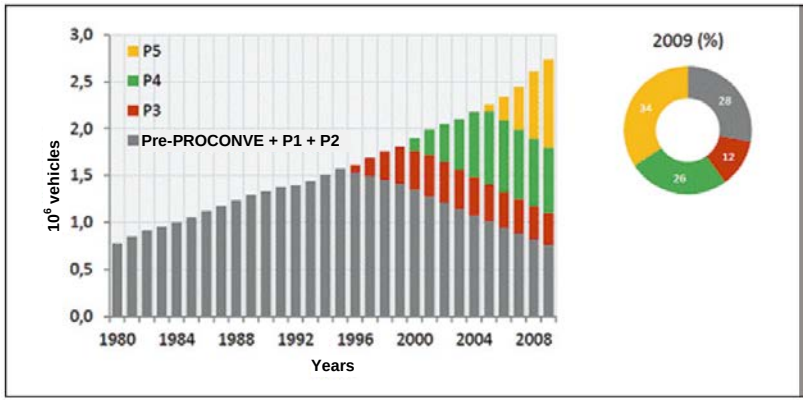
3. Heavy Duty Vehicles (Bus and Truck)

It is the motor vehicle for the transportation of passengers and/orgoods, with maximum total weight higher than 3,856 kg or vehicle in running weight higher than 2,720 kg, designed for the transportation of passengers and/or goods.

The smoke control or, indirectly particulate matter control, began in 1987 with the establishment of opacity limit “k > 2.5” throughout the curve of maximum torque of diesel engines.

The control of gaseous emissions through heavy duty vehicles exhaust began in 1993, with the gradual limit introduction of Phase P-3, in 1994, Phase P-4 in 1998, Phase P-5 in 2004, Phase P-6 postponed to Phase P-7, foreseen in 2012. In 1994, the noise control began.

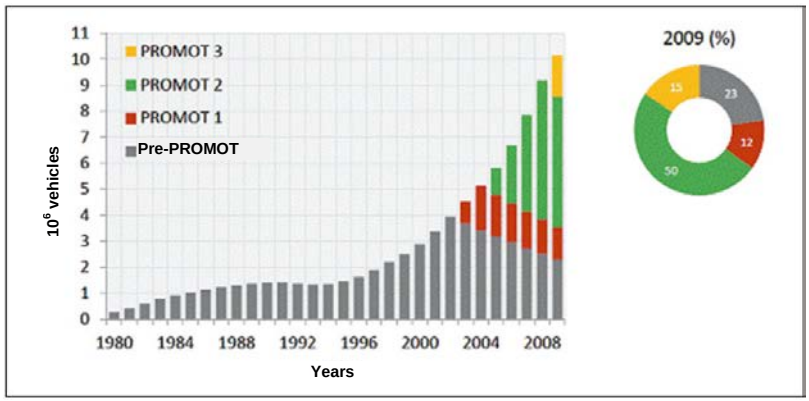
Chart 2 – Evolution of the estimated vehicle fleet of Diesel cycle by PROCONVE phase



4. Two-wheel Vehicle and the Like (Motorcycles and Mopeds)

For these vehicles, the environmental control was initiated by the noise emission levels, which began in 1994, being that in 2003 the pollutant gas emission control by exhaust began, with the implementation of Phase M-1, Phase M-2 in 2005, Phase M-3 in 2009, and Phase M-4 in 2011.

Chart 3 — Evolution of the estimated motorcycle fleet by PROMOT phase



5. New Agricultural and Road Machines

For farm machinery, the environmental control began with MAR1 phase whose maximum limits of noise emission were established in 2001.

IV. Results

Since its establishment, the results achieved so far show that the strategy of implementing a pollutant emission control program for motor vehicle in Brazil was set correctly. The program' success is due to a well prepared schedule, with increasingly restrictive phases, and always in tune with the Brazilian reality.

Some of the most significant results achieved by PROCONVE/PROMOT are:

1. modernization of the Brazilian automotive industry;
2. adoption, updating and development of new technologies;
3. improvement of automotive fuel quality;
   - » highly specialized manpower training;
   - » performance of new investments in Brazil, new plants, emission laboratories;

4. employment generation;
5. diversification of the industrial park; and the greatest of all its achievements
6. reduction, at source, of up to 97% of emissions.

Before the program, the average emission of carbon monoxide of a vehicle was 54 g/km, today this emission is 0.375 g/km. Even with the significant increase of the Brazilian fleet of motor vehicles, these results provide conditions to exercise a better control over atmospheric pollution, ensuring air quality in large Brazilian cities.

Record that all involved are committed and take their responsibilities in the implementation of PROCONVE/PROMOT. We highlight the valuable contribution of CETESB, ANFAVEA and ABRACICLO, through all their associates, SEMA, STI, CNP, DNC, INMETRO, PETROBRAS, FEEMA, DENATRAN, AEA, SINDIPEÇAS and IBAMA.

Assessing the development of PROCONVE since its foundation to its current stage, the results are extremely favorable, namely:

» Its schedule is being accomplished;

» Its goals are being satisfactorily met;

» In 1993, all its standardization was transformed into Law (Law No. 723 of October 28th, 1993);

» All controls provided for in PROCONVE have been subjected to a rigorous monitoring by IBAMA, INMETRO and CETESB;

» Vehicle manufacturers are structured and have invested to meet the set goals and to produce motor vehicles which meet the set emission limits;

» The fuel specifications for which these vehicles were designed have improved in quality;

» We were able to significantly reduce pollutant emissions by motor vehicle;

» An agreement has been made in Mercosur.

At the present stage, it has been noticed the improvement of the national industrial park focused to the vehicular emission control, with the installation of production lines of fuel injection systems, catalytic converters and fuel vapor absorb systems, as well as measuring equipment.

The positive results achieved so far can be seen in charts 4 to 8 below, which show significant reductions in carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NOx), aldehydes (CHO), and vehicle particulate matter emission factors, as the classification below:

Chart 4 – Estimated CO emissions by vehicle category

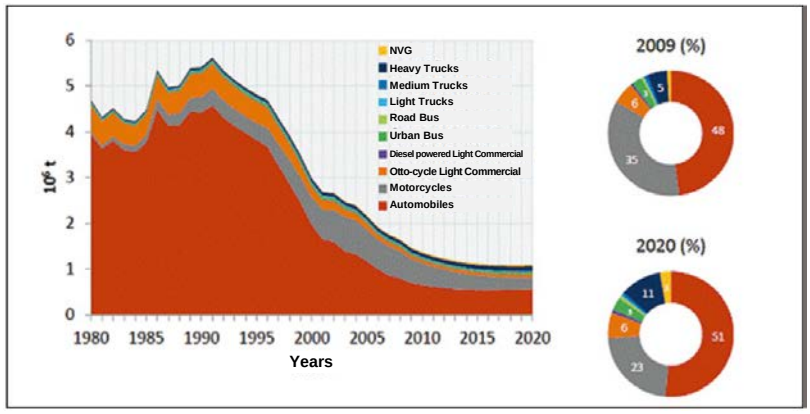


Chart 5 – Estimated Non-Methane Hydrocarbons emissions -NMHC – by vehicle category

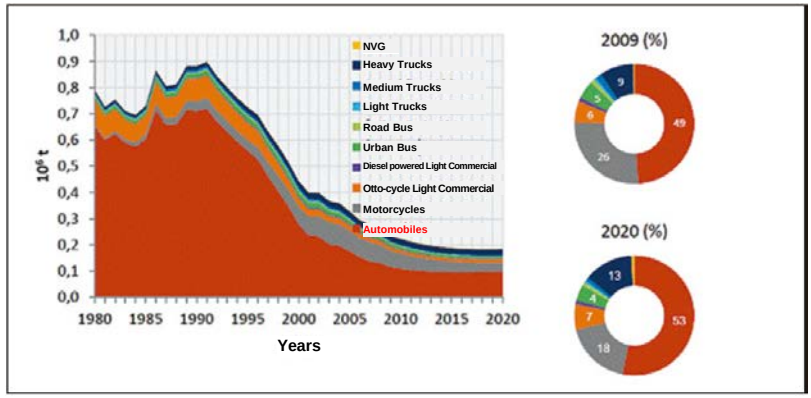


Chart 6 – Estimated NOx emissions by vehicle category

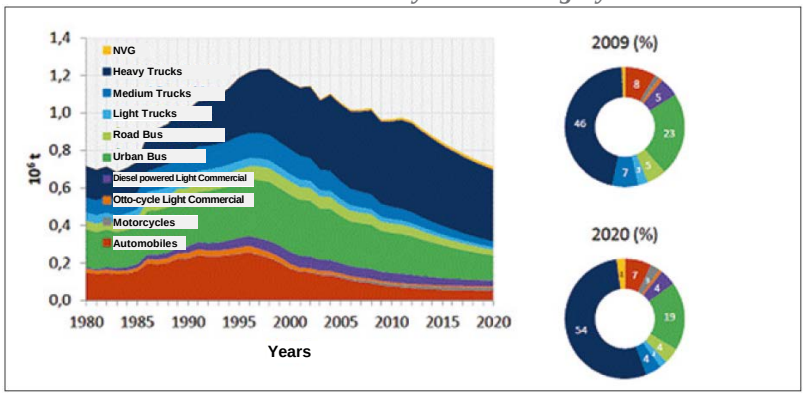


Chart 7 – Estimated Particulate Matter – PM – emission by vehicle category

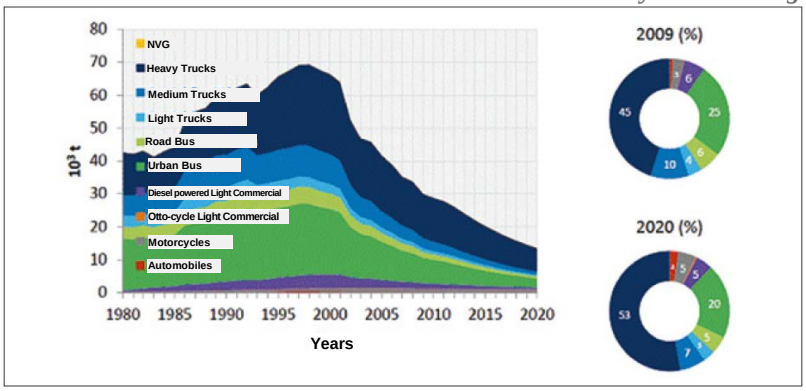
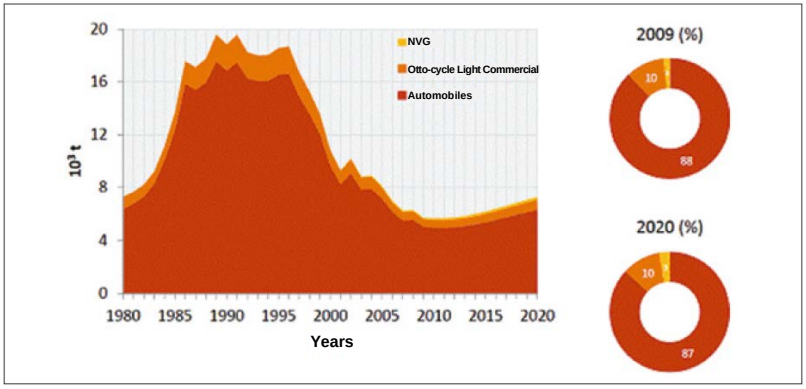


Chart 8 – Estimated aldehydes (RCHO) emissions by vehicle category



Another point of great importance within PROCONVE objectives is the issue of direct owners' contribution in the proper maintenance of their vehicles that, no doubt, is of great relevance to the forecast goals. Accordingly, IBAMA proposed and CONAMA defined, by means of Resolutions, the general guidelines and the deadlines for implementation, under the responsibility of the States, the Federal District, and the cities with a fleet of more than 3 million vehicles, PCPV and, when checked the relevance of the Inspection and Maintenance Programs for Vehicles in Use – I/M. The Brazilian Traffic Code condition the annual vehicle licensing to prior inspections by such programs.

Since PROCONVE/PROMOT implementation, every motor vehicle model to be marketed in Brazil must have, on behalf of its manufacturer or importer, the License for Use of the Vehicle or Engine Configuration (LCVM) or a License for Use of Motorcycle or the Like (LCM) and, currently, IBAMA provides everyone with the optimization of our work results through INFOSERV, in online services.

V. Vehicle Import

Law No. 8.723/93 determines that all imported vehicles meet the same requirements as domestic vehicles. This type of requirement also exists in countries with liberality tradition in the import sector. It concerns a measure that aims to meet the environmental legislation, ensuring the adjustments/changes of products required to the Brazilian requirements/conditions.

VI. Considerations

PROCONVE needs continuous updating due to the need of evolution because of the technology updating, and its integration into the world scenario.

The partnership with new institutions is also a necessity, because the production and import of motor vehicles have increased significantly due to the economic growth experienced by the country.

Finally, the results achieved with PROCONVE are part of a larger context, which is the maintenance and recovery of air quality in the country, especially in large urban centers.

Table 1 – Emissions Limits for Light Vehicles

POLLUTANTS	LIMITS	
	Phase L-5	**Phase L-6(1)**
	Since 1/1/2009	**From 1/1/2014**
carbon monoxide (CO in g/km)	2,0	1,30
hydrocarbons (THC in g/km)	0,30(2)	0,30(2)
non-methane hydrocarbons (NMHC in g/km)	0,05	0,05
nitrogen oxides (NOx in g/km)	0,12(3) or 0,25(4)	0,08
particulate matter (MP in g/km)	0,05	0,025
aldehydes(3) (CHO in g/km)	0,02	0,02
evaporative emission(3) (g/test)	2,0	1,5(6) or 2,0(5)(6)(
gas emission in the crank case	null	null

(1) In 2014 -> for all new releases
From 2015 on -> for all vehicles sold
(2) Applicable only to NVG powered vehicles;
(3) Applicable only to gasoline or ethanol powered vehicles;
(4) Applicable only to diesel oil powered vehicles;
(5) Applicable to tests performed in sealed chamber with variable volume
(6) Applicable to all vehicles from 1/1/2012

Table 2 – Emissions Limits for Light Commercial Vehicles – Mass Reference for Test Smaller than 1700 Kg

POLLUTANTS	LIMITS		
	Phase L-4[1]	**Phase L-5**	**Phase L-6[2]**
	Since 1/1/2005	**Since 1/1/2009**	**From 1/1/2012**
carbon monoxide (CO in g/km)	2.0	2.0	1.30
(CO in g/km)	0.30[3]	0.30[3]	0.30[3]
non-methane hydrocarbons (NMHC in g/km)	0.16	0.05	0.05
nitrogen oxides (NOx in g/km)	0.25[4] or 0.60[5]	0.12[4] or 0.25[5]	0.08
particulate material[5] (MP in g/km)	0.08	0.05	0.030
aldehydes[4] (CHO in g/km)	0.03	0.02	0.02
evaporative emission[4] (g/test)	2.0	2.0	1.5[7] or 2.0[6][7]
gas emission in the crank case	null	null	null

(1) Remains in effect in the years of 2009, 2010, 2011 and 2012, only for Diesel vehicles, under the Conduct Adjustment Term – TAC approved by the Federal Court in the State of São Paulo

(2) In 2012 -> Starts for the Diesel cycle vehicles approved in the chassis dynamometer, for the TAC signatories;

From 2013-> for all the Diesel cycle vehicles

From 2014-> for all new launches of the Otto-cycle engine vehicles;

From 2015 -> for all vehicles commercialized.

(3) Applicable only to NVG powered vehicles;

(4) Applicable only to gasoline or ethanol powered vehicles;

(5) Applicable only to diesel oil powered vehicles;

(6) Applicable to tests performed in sealed chamber with variable volume

(7) Applicable to all vehicles from 1/1/2012

Table 3 – Emissions Limits for Light Commercial Vehicles – Mass Reference for Test Larger than 1700 Kg

POLLUTANTS	LIMITS		
	Phase L-4[(1)]	**Phase L-5**	**Phase L-6[(2)]**
	since 1/1/2005	**since 1/1/2009**	**since 1/1/2012**
carbon monoxide (CO in g/km)	2.7	2.7	2.00
hydrocarbons (THC in g/km)	0.50[(3)]	0.50[(3)]	0.50[(3)]
non-methane hydrocarbons (NMHC in g/km)	0.20	0.06	0.06
nitrogen oxides (NOx in g/km)	0.43[(4)] or 1.00[(5)]	0.25[(4)] or 0.43[(5)]	0.25[(4)] or 0.35[(5)]
particulate material[(5)] (MP in g/km)	0.10	0.06	0.040
aldehydes[(4)] (CHO in g/km)	0.06	0.04	0.03
evaporative emission[(4)] (g/test)	2.0	2.0	1.5[(7)] or 2.0[(6)(7)]
gas emission in the crank case	null	null	null

(1) Remains in effect in the years of 2009, 2010, 2011 and 2012, only for Diesel vehicles, under the Conduct Adjustment Term – TAC approved by the Federal Court in the State of São Paulo

(2) In 2012 -> Starts for the Diesel cycle vehicles approved in the chassis dynamometer, for the TAC signatories;

From 2013-> for all the Diesel cycle vehicles

From 2014-> for all new launches of the Otto-cycle engine vehicles;

From 2015 -> for all vehicles commercialized.

(3) Applicable only to NVG powered vehicles;

(4) Applicable only to gasoline or ethanol powered vehicles;

(5) Applicable only to diesel oil powered vehicles;

(6) Applicable to tests performed in sealed chamber with variable volume

(7) Applicable to all vehicles from 1/1/2012

Table 4 – Emissions Limits for Heavy Duty Vehicles – Diesel cycle with Post-Treatment (ESC/ELR Tests Cycle)

POLLUTANTS	LIMITS		
	Phase P-5(1)	**Phase P-6**	**Phase P-7**
	Since 1/1/2004	**From 1/1/2009**	**From 1/1/2012**
carbon monoxide (CO in g/kWh)	2.1	1.5	1.5
hydrocarbons (THC in g/kWh)	0.66	0.46	0.46
nitrogen oxides (NOx in g/kWh)	5.0	3.5	2.00
particulate material (MP in g/kWh)	0.10 or 0.13(2)	0.02	0.02
opacity ELR (m^{-1})	0.8	0.5	0.50

(1) Remains in effect in the years of 2009, 2010, 2011 and 2012, only for Diesel vehicles, under the Conduct Adjustment Term – TAC approved by the Federal Court in the State of São Paulo

(2) Applicable only to unit piston displacement engines under 0.75 dm^3 and rotation at nominal power above 3000 min^{-1};

Table 5 – Emissions Limits for Heavy Duty Vehicles – Conventional and Post-Treatment Diesel Cycle (ETC Tests Cycle)

POLLUTANTS	LIMITS		
	Phase P-5(1)	**Phase P-6**	**Phase P-7**
	since 1/1/2004(2)	**since 1/1/2009**	**since 1/1/2012**
carbon monoxide (CO in g/kWh)	5.45	4.0	4.0
non-methane hydrocarbons (NMHC in g/kWh)	0.78	0.55	0.55
methane (CH_4 in g/kWh)	NE	NE	NE
nitrogen oxides (NOx in g/kWh)	5.0	3.5	2.00
particulate material (MP in g/kWh)	0.16 or 0.21(3)	0.03	0.03

(1) Remains in effect in the years of 2009, 2010, 2011 and 2012, only for Diesel vehicles, under the Conduct Adjustment Term – TAC approved by the Federal Court in the State of São Paulo

(2) Applicable only for vehicles with post-treatment

(3) Applicable only to unit piston displacement engines under 0.75 dm^3 and rotation at nominal power above 3000 min^{-1};

(NE) not required.

Table 6 – Emissions Limits for Heavy Duty Vehicles Powered by NGV (ETC Tests Cycle)

POLLUTANTS	LIMITS	
	Phase P-6	Phase P-7
	Since 1/1/2009	From 1/1/2012
carbon monoxide (CO in g/kWh)	4.0	4.0
non-methane hydrocarbons (NMHC in g/kWh)	0.55	0.55
methane (CH_4 in g/kWh)	1.10	1.10
nitrogen oxides (NOx in g/kWh)	3.5	2.00
particulate material (MP in g/kWh)	NE	NE
(NE) not required.		

Table 7 – Mopeds Emissions Limits

POLLUTANTS	LIMITS
	Since 1/1/2005
carbon monoxide (CO in g/kWh)	1.0
non-methane hydrocarbons + nitrogen oxides (NMHC – NOx in g/km)	1.2
(1) the production or import of up to 50 units of a model per year, in a maximum total of 100 units of different models per importer or manufacturer, may be exempt from the presentation of the observance to the limits	
(2) - on 1/1/2005 -> started for all the news models launching.	
- on 1/1/2006 -> required for all the models.	

Table 8 – Motorcycles Emissions Limits

POLLUTANTS		LIMITS	
		Since 1/1/2009(1)	
		Motorization	
		<150 cm³	**≥ 150 cm³**
carbon monoxide (CO in g/km)		2.0	2.0
hydrocarbons (THC in g/km)		0.8	0.3
nitrogen oxides (NOx in g/km)		0.15	0.15
carbon monoxides in idle speed (COIdle Speed)	≤ 250 **cm³**	6.0%	
	> 250 **cm³**	4.5%	

(1) the production or import of up to 50 units of a model per year, in a maximum total of 100 units of different models per importer or manufacturer, may be exempt from the presentation of the observance to the limits

Table 9 – Maximum Noise Emission Limits in Acceleration for Automotive Vehicles

CATEGORY	DESCRIPTION		NOISE LEVEL dB(A)		
			OTTO	DIESEL	
				Injection	
				Direct	Indirect
a	Passenger vehicle up to nine seats		74	75	74
b	Passengers vehicle with more than nine seats; goods or traction vehicle and mixed use vehicle	PBT up to 2,000 kg	76	77	76
		PBT between 2,000 kg and 3,500 kg	77	78	77
c	Passenger vehicle or mixed use with PBT higher than 3,500 kg	Maximum power under 150 kW (204 HP)	78	78	78
		Maximum power equal or above 150 kW (204 HP)	80	80	80
d	Goods or traction vehicle with PBT above 3,500 kg	Maximum power under 75 kW (102 HP)	77	77	77
		Maximum power between – 75 kW (102 HP) and 150 kW (204 HP)	78	78	78
		Maximum power above 150 kW (204 HP)	80	80	80

Table 10 – Maximum Noise Emission Limits in Acceleration for Motorcycles and similar

Category	Effective Date	Level limits according to ABNT NBR 15145 per volume of the engine	
For all vehicles	1/1/2001	Up to 80cm^3	75
		81 cm3 to 125 cm^3	77
		126 cm3 to 175 cm^3	77
		176 cm3 to 350 cm^3	80
		above 350 cm^3	80

VII. Federal Laws: Principles Regulations

LAW No. 8.723/1993

Provides for the reduction on the pollutants emissions by automotive vehicles and gives other measures. Official Gazette (D.O.U.) of 10.29.1993.

The President of the Republic

I hereby inform that the National Congress determines and I sanction the following Law:
Art. 1 As an integral part of the National Environmental Policy, the engines and vehicles manufacturers and the fuels manufacturers are obligated to take the necessary measures to reduce the emission levels of carbon monoxide, nitrogen oxides, hydrocarbons, alcohols and aldehydes, soot, particulate material and other pollutant compounds in the vehicles commercialized in the country, matching them to the limits set forth in this Law and observing, also, the timeframes set forth therein.

Art. 2 The limits and timeframes referred to in the previous article are:

I – (void)

II – for the light vehicles manufactured from January 1st, 1997, the limits for exhaust gases emission levels are:

a) 2.0 g/km of carbon monoxide (CO);

b) 0.3 g/km of hydrocarbons (HC);

c) 0.6 g/km of nitrogen oxides (NOx);

d) 0.03 g/km of aldehydes (CHO);

e) 0.05 g/km of particles, in the event of vehicles of the Diesel Cycle;

f) half per cent of carbon monoxide (CO) in idle speed.

III – (void)

IV – the heavy duty vehicles of the Otto-cycle engine shall observe the exhaust gases emission levels according to the limits and schedules to be defined by the National Environment Council – CONAMA.

§1 (void)

§2 – Safeguarding the technical criteria of Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), the use of seals in the adjustable devices of the fuel feeding system is mandatory.

§3 – All the non-turbocharged heavy duty vehicles must present null emission of the crank case gases, and the other heavy duty vehicles must observe the provisions in effect of the NATIONAL ENVIRONMENT COUNCIL – CONAMA, which regulate the matter.

§4 – Eighty per cent of the totality of heavy duty vehicles of the Diesel Cycle commercialized by national manufacturers shall have the maximum levels of exhaust gases emission reduced, in two steps, according to the limits and schedules specified below:

I – from January 1st, 1996:

a) 4.9 g/kWh of carbon monoxide (CO);

b) 1.23 g/kWh of hydrocarbons (HC);

c) 9.0 g/kWh of nitrogen oxides (NOx);

d) 0.7 g/kWh of particles for engines with up to 85 kW of power;

e) 0.4 g/kWh of particles for engines with more than 85 kW of power.

II – from January 1st, 2000:

a) 4.0 g/kWh of carbon monoxide (CO);

b) 1.1 g/kWh of hydrocarbons (HC);

c) 7.0 g/kWh of nitrogen oxides (NOx);

d) 0.15 g/kWh of particles, at the NATIONAL ENVIRONMENT COUNCIL – CONAMA discretion, until the end of 1994, due to its technical feasibility.

§5 – For urban buses, the steps set forth in the previous paragraph are anticipated in two years, not applying, however, the limits set forth in item I, *d* and *e*, of the previous paragraph of this item.

§6 – From January 1st, 2002, the totality of heavy duty vehicles of the Diesel Cycle commercialized in Brazil will meet the same limits of exhaust gases emission defined in the §4 of this article.

§7 – For light vehicles of the Otto-cycle engine manufactured from January 1st, 1992, when not derived from automobiles and classified as utility vehicles, mixed use trucks or goods vehicles, the exhaust gases emission limits are the following, effective from December 31st, 1996:

a) 24.0 g/km of carbon monoxide (CO);

b) 2.1 g/km of hydrocarbons (HC);

c) 2.0 g/km of nitrogen oxides (NOx);

d) 0.15 g/km of aldehydes (CHO);

e) three per cent of carbon monoxide (CO) in idle speed.

§ 8 – The light vehicles of the Diesel Cycle manufactured from January 1st, 1992, when not derived from automobiles and classified as utility vehicles, mixed use trucks or goods vehicles, may, depending on the technical features of the engine, defined by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), meet the limits set forth for heavy duty vehicles.

§9 – The supplementations and changes of this article shall be established by the NATIONAL ENVIRONMENT COUNCIL – CONAMA.

Art. 3 The competent bodies to establish procedures for test, measurement, certification, licensing and evaluation of the vehicles, as well as all the supplementary measures regarding the control of pollutants by automotive vehicles are, the NATIONAL ENVIRONMENT COUNCIL – CONAMA and the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), pursuant to the Air Pollution Control Program by Motor Vehicles (PROCONVE), observing the metrological system in effect in the Country.

Art. 4 The imported vehicles are obligated meet the same emission limits and other requirements established in the totality of their sales in the national market.

Art. 5 Only the automotive vehicles that have the LCVM – License for Using the Vehicles or Engine Configuration, issued by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) can be commercialized.

Art. 6 The vehicles and engines, new or used, which go through changes or conversion, are obligated to observe the same limits and requirements foreseen in this Law, and the entity that executed the changes and the vehicle's owner shall be responsible to observing the environmental requirements in effect.

Art. 7 The entities responsible for the power policy, specification, production, distribution and quality control of fuels are obligated to provide commercial fuels, from the date of implementation of the limits set forth by this Law, and reference for approval, certification and development tests, with a minimum advance of thirty six months from the beginning of their commercialization.

Sole paragraph. For fulfillment of this Law, the entities responsible for the import of fuels shall allow the vehicles and engines manufacturers to import up to fifty thousand liters/year of reference diesel oil, for appropriate emission tests for each step, according to the specifications mentioned in the attachment of this Law.

Art. 8 (void)

Art. 9 The percentage for the addition of anhydrous ethanol fuel to the gasoline throughout the national territory is set in twenty two per cent.

§1 – The Executive Power may increase the aforementioned percentage up to the limit of twenty five per cent or reduce it to twenty per cent.

§2 – The variation of one percentage point, up or down, shall be allowed in the determination of the percentages mentioned in this article.

Sole paragraph. There may be a variation of up to one percent, up or down, in the percentage set forth in the caput of this article.

Art. 10 (void).

Art. 11 The use of automotive fuels classified by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) as low pollutant potential shall be stimulated and prioritized, especially in the metropolitan areas.

Art. 12. The state and city governments are hereby authorized to establish through specific plans, rules and additional measures for air pollution control for automotive vehicles in circulation, pursuant to the requirements of PROCONVE and their supplementary measures.

§1 – The plans mentioned in the caption of this article are essential in gradually more restrictive actions, establishing orientation to the user regarding the rules and procedures for the maintenance of vehicles and establishing processes and procedures for periodic inspection and surveillance of emissions by vehicles under circulation.

§2 – The cities with total fleet equal or over three million vehicles may implement their own periodic inspection programs for emissions by vehicles under circulation, being the city Public Power responsible, in the development of its respective programs, for establishing differentiated processes and procedures, as well as more restrictive limits and frequencies, due to the local level of air commitment.

§3 – The state and city programs for periodic inspection of emissions by vehicles in circulation must be harmonized according to the Conama resolutions, with the vehicle safety inspection program, to be implemented by the Federal Government, through Contran and Denatran, except for the legal consolidated situations.

Sole paragraph. The plans mentioned in the caption of this article shall be based on gradually more restrictive actions, establishing orientation to the user regarding the rules and procedures for the maintenance of vehicles and establishing processes and procedures for periodic inspection and surveillance of emissions by vehicles under circulation.

Art. 13 The technical assistance networks related to the manufacturers of engines, motor vehicles and power systems, ignition and emission control for vehicles are required, within eighteen months from the publication of this Law, provided, on a permanent basis

with equipment and skilled staff, according to the recommendations of environmental agencies responsible for carrying out diagnostic services, engines adjustment and emission control systems in line with the PROCONVE objectives and its complementary measures.

§1 – The automobile manufacturers are required to disclose to the dealers and distributors the specifications and technical information required for the diagnosis and adjustment of the engine, its major components and pollutants emission control systems.

§2 – The automobile manufacturers are required to disclose to the consumers the specifications of use, security and maintenance of the vehicles in circulation.

Art. 14. Due to the local traffic and air pollution characteristics, the transit and transportation environmental agencies shall plan and implement measures to reduce vehicle traffic, redirecting traffic and review of the transport system, with the goal of reducing global emissions of pollutants.

Sole paragraph. The plans and measures referred to in the caption of this article will encourage the use of public transport, especially the low pollution potential modalities.

Art. 15. The government environmental departments at federal, state and local level, from the publication of this Law, shall monitor the quality of atmospheric air and shall set guidelines and programs for its control, especially in urban centers with population over five hundred thousand inhabitants and in remote areas under the direct influence of these regions.

Sole paragraph. The periodic measurements shall be performed at determined points and strategically located so as to enable the correct characterization of the conditions of air pollution present.

Art. 16. (Void).
Art. 17. This Law shall enter into force on the date of its publication.
Art. 18. All provisions in contrary shall be revoked.

Itamar Franco	Rubens Ricupero
President of the Republic	Environment Ministry

CONAMA RESOLUTION No. 18/1986

Provides for the creation of the Air Pollution Control Program by Motor Vehicles – PROCONVE. Official Gazette (D.O.U.) of 06.17.1986.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its legal capacities and,

Whereas the automobiles of the Otto-cycle and Diesel cycles are relevant sources of carbon monoxide, hydrocarbons, nitrogen oxides, soot and aldehydes emissions;

Whereas the automobile of the Otto-cycle engines are relevant sources of fuel evaporative emissions;

Whereas the emission of pollutants by motor vehicles contributes to the continuing deterioration of air quality, especially in urban centers;

Whereas the use of appropriate technologies, of proven use, allows the response to the needs of pollution control, as well as fuel saving;

Whereas the needs of time, for technological adjustment of new engines and vehicles to the pollution control requirements, resolves to:

I – Establish, on a national basis, the Air Pollution Control Program by Motor Vehicles (PROCONVE), with the following objectives:

» reduce the emission levels of pollutants by motor vehicles in order to meet the Air Quality Standards, especially in urban centers;

» promote the national technological development, both in automotive engineering, and in methods and equipment for testing and measuring the emission of pollutants;

» create inspection and maintenance programs for motor vehicles in use;

» promote public awareness regarding the issue of air pollution by motor vehicles;

» establish conditions to evaluate the results achieved;

» promote the improvement of technical characteristics of liquid fuels available to the national fleet of vehicles, aimed at the reduction of polluting emissions to the atmosphere.

II – PROCONVE shall count with the participation of:

» Ministry of Urban Development and Environment;

» National Oil Council;

» Ministry of Mines and Energy;

» Ministry of Transport;

» Ministry of Industry and Commerce;

» Ministry of Science and Technology;

» Ministry of Justice;

» State and City Agencies of Environmental Pollution Control;

» Legally constituted associations for the protection of environmental resources;

» Associations representing the manufacturers of engines, automotive vehicles, emission control and autoparts, as well as other bodies and entities related to the program.

III – Establishes a Commission for Follow-Up and Monitoring of PROCONVE-CAP, coordinated by the Brazilian Institute of Environment integrated by:

» General Secretary of the Ministry of Urban Development and Environment Issues for Environmental Affairs;

» Industrial Technology Secretary;

» President of the National Oil Council – CNP;

» President of Brazilian Company of Transportation Planning (Empresa Brasileira de Planejamento dos Transportes) – GEIPOT;

» President of the National Institute of Metrology, Standardization and Industrial Quality – INMETRO;

» Executive Secretary of the Industrial Development Council – CDI;

» President of the National Traffic Council – CONTRAN;

» President of Environmental Sanitation Technology Company (Companhia de Tecnologia de Saneamento Ambiental) – CETESB;

» President of Engineering and Environment State Foundation (Fundação Estadual de Engenharia do Meio Ambiente) – FEEMA;

» Manager of other state body for environmental pollution control;

» General Director of the National Technology Institute.

To support the decisions of CAP, IBAMA may invite representatives of other federal, state and municipal bodies, as well as associations and organizations representing the private sector and the community.

IV – Give power to the PROCONVE Follow Up and Evaluation Commission to:

» Identify and propose measures to optimize the program based on their results and studies under the PROCONVE;

» Develop educational campaigns with respect to air pollution by motor vehicles;

» work together with state and local governments, with the purpose of developing mass transit systems, preferably electrical, and traffic improvements;

» Follow up the status of knowledge of emission control techniques and equipment;

» Organize lectures, seminars and meetings of technical nature, relating to air pollution by motor vehicles;

» make efforts to promote the development of professionals, purchase of equipment and installation of laboratories;

» Promote studies and researches related to air pollution by

motor vehicles, nationalization and development of emission control technologies, equipment testing and emission analysis;

» deliberate about the application of penalties and other actions necessary to monitor the program;

» oversee the monitoring of compliance with the terms of this Resolution, without prejudice to the competence of the bodies involved;

» decide on omitted cases.

V – Attribute to IBAMA competence to:

» Issue for air pollution control purposes, the License for Using the Vehicles or Engine Configuration (LCVM) in the National Territory, based on the Certificate of Approval or Vehicles or Engine Configuration (CAC), issued by STI and the documents submitted by the manufacturer;

» issue notifications required by industries, based on, regarding the certification of compliance and monitoring the production of vehicles, engines and spare parts, actions and tasks of CONMETRO, through its Executive Secretary;

» establish agreements, contracts and related activities with agencies and entities that directly or indirectly, may contribute to the development of PROCONVE;

» delegate to other agencies, duties provided in this Resolution.

VI – Establish the MAXIMUM EMISSION LIMITS of air pollutants for new engines and automotive vehicles:

1. Light vehicles with Otto-cycle engines

1.1 For the new configurations of light motor vehicles launched and marketed from June 19th, 1988, the emission of exhaust gases shall not exceed the following values:

» carbon monoxide: 24.0 grams per kilometer

» hydrocarbons: 2.1 grams per kilometer

» nitrogen oxides: 2.0 grams per kilometer

» carbon monoxides contents in idle speed: 3.0 per cent

1.2 From January 1st, 1989, the emission of exhaust gases by light automotive vehicles shall not exceed, for the models described in 1.2.1., the following values:

» carbon monoxide: 24.0 grams per kilometer

» hydrocarbons: 2.1 grams per kilometer

» nitrogen oxides: 2.0 grams per kilometer

» carbon monoxides contents in idle speed: 3.0 per cent

1.2.1 Models of vehicles subject to the emission limits:

» Uno 1300 ethanol (except Sx);

» Uno 1050 gasoline;

» Prêmio 1300 ethanol;

» Corcel ethanol;

» Belina ethanol;

» Del Rey ethanol (except automatic transmission);

» Scala ethanol (except automatic transmission);

» Escort ethanol (except XR3);

» Monza 1600 ethanol and gasoline;

» Monza 1800 ethanol and gasoline;

» Gol 1600 ethanol and gasoline (water-cooled engine);

» Chevette 1600 ethanol and gasoline;

» Voyage 1600 ethanol and gasoline;

» Parati 1600 ethanol and gasoline;

» Saveiro 1600 ethanol and gasoline (water-cooled engine);

1.3 From January 1st, 1990, the emission of exhaust gases by light motor vehicles, except for light vehicles not derived from automobiles, shall not exceed the following values:

» carbon monoxide: 24.0 grams per kilometer

» hydrocarbons: 2.1 grams per kilometer

» nitrogen oxides: 2.0 grams per kilometer

» carbon monoxides contents in idle speed: 3.0 per cent

1.4 From January 1st, 1992, the emission of exhaust gases by light automotive vehicles shall not exceed the following values:

1.4.1 Light vehicles not derived from automobiles:

» carbon monoxide: 24.0 grams per kilometer

» hydrocarbons: 2.1 grams per kilometer

» nitrogen oxides: 2.0 grams per kilometer

» carbon monoxides contents in idle speed: 3.0 per cent

1.4.2 All vehicles except those described in 1.4.1.:

» carbon monoxide: 12.0 grams per kilometer

» hydrocarbons: 1.2 grams per kilometer

» nitrogen oxides: 1.4 grams per kilometer

» carbon monoxides contents in idle speed: 2.5 per cent

1.5 From January 1st, 1997, the emission of exhaust gases by light automotive vehicles shall not exceed the following values:

» carbon monoxide: 2.0 grams per kilometer

» hydrocarbons: 0.3 gram per kilometer

» nitrogen oxides: 0.6 gram per kilometer

» carbon monoxides contents in idle speed: 0.5 per cent

1.6 IBAMA, after consulting STI, shall coordinate the studies and works necessary to the establishment and implementation of specific maximum limits for emissions of aldehydes and other organic compounds by the exhaust of light motor vehicles, now encompassed and expressed as hydrocarbons, as well as coordinate the revision of these previous limits,

calling at any time, the organs and entities sympathetic to the problem and, after hearing CAP, as appropriate, shall submit to the CONAMA, until December 31st, 1988, the final report with the proposed limits to be required for approval.

1.7 From January 1st, 1988, the emission of crankcase gases of light motor vehicles must be zero in any part of the engine.

1.8 From January 1st, 1990, the evaporative emission of fuel by light automotive vehicles shall not exceed the maximum limit of 6.0 g/test.

IBAMA, after consultation STI, will coordinate the studies and works necessary to review the maximum emission limits, calling at any time, the organs and entities sympathetic to the problem and, after hearing the CAP, as appropriate, shall submit to CONAMA the final report with the proposed limits to be required for approval.

1.9 The manufacturer may request to IBAMA the exemption to meet the maximum exhaust gas emission limits for light automotive vehicles, which production is less than 2,000 units per year and are endowed with the same body configuration, regardless of their mechanics and the type of finish available.

May also be exempt those that, although belonging to a vehicle configuration to which the maximum emission limits are applied, constitute a series for specific use, or military use, use in sporting events and special releases, so considered at the discretion and determination of CAP.

The overall total maximum permitted by manufacturer, is 5,000 units per year.

2. Heavy duty vehicle of the Otto-cycle engines

2.1 IBAMA, after consultation with STI, will coordinate the studies and works necessary to the establishment and deployment of the maximum carbon monoxide, hydrocarbons, nitrogen oxides, aldehydes and other organic compounds emission through the exhaust tube of vehicles equipped with the Otto-cycle engine, calling at any time, the organs and entities sympathetic to the problem and, after hearing the CAP, as appropriate, shall submit to the CONAMA, by December 31st, 1988, the final report with the proposed limits to be required for approval.

2.2 From January 1st, 1989, the emission of crankcase gases of heavy duty vehicles equipped with Otto-cycle engine must be null in any work regimen of the engine.

2.3 IBAMA, after consultation STI, will coordinate the studies and works necessary to the establishment and implementation of the maximum evaporative emission limits for heavy duty automotive vehicles, calling at any time, the organs and entities sympathetic to the problem and, after hearing the CAP, as appropriate, shall submit to CONAMA the final report with the proposed limits to be required for approval.

3. Engines and vehicles of the Diesel Cycle

3.1 The emission of soot through the exhaust tube of engines of the diesel cycle and/or light or heavy duty vehicles fitted with them shall not exceed the values calculated through the equation:

$$c = \frac{k}{\sqrt{G}}$$, according to item 4 of Chap. VII.

3.2 From October 1st, 1987, for urban buses, and January 1st, 1989, for the other diesel vehicles, the maximum permissible value of k is equal to two and a half (2.5), measured according to item 4 of Chap. VII, for angular velocities between 1,200 rpm and maximum engine speed, inclusive.

3.3 IBAMA, after consultation with STI, will coordinate the works needed to establish the implementation schedule for the maximum admissible value of *k* equals two (2.0) for the emission of soot through the exhaust tube for all diesel-powered vehicles, including buses, calling at any time, the organs and entities sympathetic to the problem and, after hearing CAP, as appropriate, shall submit to CONAMA, until December 31st, 1988, the final report with the proposed terms to be set for approval.

3.4 IBAMA, after consultation with STI, will coordinate the studies and works necessary to the establishment and deployment of the maximum carbon monoxide, hydrocarbons, nitrogen oxides, aldehydes and other organic compounds emission limits through the exhaust tube of vehicles equipped with the diesel cycle, calling at any time, the organs and entities sympathetic to the problem and, after hearing the CAP, as appropriate, shall submit to the CONAMA, by December 31st, 1988, the final report with the proposed limits to be required for approval.

3.5 The emission of crankcase gases from automotive vehicles, regardless of type or size of the engine, shall be null in any engine work system. For urban buses with naturally aspirated engine, this control will be implemented from January 1st, 1988. For other diesel vehicles, IBAMA, after consultation with STI, will coordinate the studies and works in needed to define the implementation schedule of this control and, after hearing the CAP, when necessary, submit to CONAMA, December 31st, 1987, the final report with the proposed time limits to be set for approval.

4. All vehicles or engines

4.1 The maximum limits set forth for light motor vehicles, items 1.4.2, 1.5, 1.7 and 1.8, must be guaranteed by the manufacturer in writing, at least for 80,000 km or five years of use, whichever happens first. For this purpose CONMETRO shall establish a test procedure, upon proposal by STI, after hearing IBAMA.

4.2 The maximum limits established for heavy duty vehicles equipped with engines of the diesel or Otto-cycle engine, item 2.1., 2.2., 2.3., 3.2., 3.3., 3.4. and 3.5., must be ensured in writing by the manufacturer, at least for 160,000 km or five years of use, or complying with the dynamometer test procedure, which shall be set by CONMETRO upon proposal from STI, after hearing IBAMA.

4.3 Until the establishment by CONMETRO, of the methods and procedures of the applicable test, the manufacturer's warranties, items 4.1. and 4.2. may be replaced by a 10% reduction in the maximum emission limits established by this resolution, except for the case of carbon monoxide in idle speed. The numerical factor, used to accomplish this reduction, is called the Emission Deterioration Factor.

4.4 IBAMA, after consultation with STI, shall coordinate the studies and works related to any required revision of the maximum emission limits of this Resolution, calling at any time, the organizations sympathetic to the problem, and when necessary, after consultation with CAP, shall present to CONAMA the final report with the proposal.

4.5 The manufacturer of heavy duty vehicles may request to IBAMA the exemption from meeting the maximum emission limits of this Resolution, for omissions, considered as such at the sole discretion and judgment of CAP.

VII - Define the main terms and list the test methods, measurement, verification, certification and supplementary documents, necessary for the performance and for the purposes of this resolution, without prejudice to other specific legislation, the responsibility of the competent bodies.

l - The definitions required for the fulfillment of this resolution are first described in Attachment 1.

2 – The test and measurement of carbon monoxide, hydrocarbons and nitrogen oxides in the exhaust gas of light motor vehicles of the Otto-cycle engine must follow the requirements of ABNT NBR 6601 Technical Standards. – Analysis of Exhaust Gas of Light Road Motor Vehicles powered by Gasoline.

The fuels used in the tests shall comply with ABNT NBR 8989 standard – Light Road Vehicles – Gasoline for Testing and Resolution 01/85, the National Petroleum Council, and the gasoline-ethanol mixture shall be prepared from the respective fuel test, the proportion of 22.0 + or – 1.0 percent alcohol in volume.

3 - The test and measurement method of carbon monoxide in idle speed in light automotive vehicles of the Otto-cycle engine should be established by CONMETRO upon proposal by the STI, after hearing IBAMA.

4 - The test method for measurement of soot in the exhaust gas of diesel cycle engines is prescribed for dynamometric bank, of ABNT NBR 5484 Technical Standards – Reciprocating internal combustion compression ignition (diesel) or ignition by Spark (Four-stroke engine) Variable Speed Angle and ABNT NBR 7027 - Exhaust Gas Emitted by Diesel Engines – Determination of Soot content of steady state.

The measurement of soot shall be performed as prescribed in the Technical Standard ABNT NBR 7027 – Exhaust Gas Emitted by Diesel Engines – Measurement of soot content with sampler through filtering element.

The soot content corrected to the reference atmospheric conditions, the transformations of units and the concentration of soot limit, defined by the equation $c = k / \sqrt{G}$ should be calculated in accordance with the requirements of ABNT NBR 5478 Technical Standard – Measurement Method of Soot Content

in the exhaust gas emitted by diesel engines – Units Correlation and Formula for Building Limit Curve, except for situations where the nominal flow of exhaust gas (*G*) is less than or equals to 42 liters per second or greater than or equals to 200 liters per second, when the maximum admissible concentration "c" of soot should be calculated for the values of "G" equal to 42 or 200 liters per second, respectively.

The fuel(s) used in the tests(s) must be in accordance with resolution(s) CNP No. 01/85 and 08/85, of the National Oil Council.

5 – The test method and measurement of the fuel evaporative emissions of motor vehicles shall be determined by CONMETRO, acting on a proposal from STI, after hearing IBAMA.

6 – The test methods and measurement of aldehydes and other organic compounds exhaust gas of engines and vehicles should be established by CONMETRO, acting on a proposal from STI, after hearing IBAMA.

7 – The test methods and measurement of carbon monoxide, hydrocarbons and nitrogen oxide in the exhaust gas of engines and vehicles should be established by CONMETRO, acting on a proposal from STI, after hearing IBAMA.

8 – The test methods and measurement of carbon monoxide, hydrocarbons and nitrogen oxide in the exhaust gas of Otto-cycle engines, for heavy duty vehicles, should be established by CONMETRO, acting on a proposal from STI, after hearing IBAMA.

9 – The procedure for Conformity Certification of the production with the maximum emission limits should be set by CONMETRO, upon a proposal from STI, after hearing IBAMA.

10 – The procedure for Quality Certification of Replacement Parts must be set by CONMETRO, upon a proposal from STI, after hearing IBAMA.

11 – The model of the Vehicle or Engine Characterization Term necessary for the implementation of this Resolution is presented in Attachment 2.

VIII – Establish the general conditions necessary to the fulfillment of this Resolution:

1. Vehicles with Otto-cycle engines

1.1 Since the date of publication of this resolution, the automotive light vehicle manufacturers must declare to IBAMA and STI, until the last day of each calendar semester, the typical values of carbon monoxide, hydrocarbons, nitrogen oxides and aldehydes emissions in the exhaust gas of all vehicles configurations under production, and present the criteria used to obtain the results conclusion.

A reports of the tests performed must be available to IBAMA and STI for consultation.

1.2 From July 1st, 1987, manufacturers of light motor vehicles should declare to IBAMA and STI, until the last day of the calendar semester, the typical values of the evaporative emissions of fuel, of the vehicle configurations under production, to be determined by IBAMA and STI, as well as presenting the criteria used to obtain the results and conclusion. The reports of the tests performed must be available to IBAMA and STI for consultation.

1.3 From January 1st, 1989, manufacturers of heavy duty motor vehicles equipped with the Otto-cycle engine, shall declare to IBAMA and STI, until the last day of the calendar semester, the typical values of the evaporative emissions of carbon monoxide, hydrocarbons, nitrogen oxides and aldehyde in the exhaust gas of the configurations under production, to be determined by IBAMA and STI, as well as presenting the criteria used to obtain the results and conclusion. The reports of the tests performed must be available to IBAMA and STI for consultation.

1.4 From January 1st, 1987, manufacturers of motor vehicles shall provide the consumer, through the vehicle's Owner's Manual, and the Network of Authorized Service from the Service Manual, the following specifications:

» Emission of carbon monoxide in idle speed, expressed in percentage;

» Angular speed of the engine in idle speed, expressed in revolutions per minute;

» Initial advance angle of the ignition, expressed in degrees;

» Influence of the attitude and environment temperature in the parameters specified, when relevant;

» Other specifications that the manufacturer deems necessary to disclose in order to indicate the correct maintenance and observance of the emission control.

2. Vehicles equipped with Diesel Cycle engines

2.1 From the publication of this Resolution, the Diesel Cycle engines and/or automotive vehicles manufacturers must declare to IBAMA and to STI, by the last day of the calendar semester, the typical amounts for soot emission of the engines under production configurations. The reports of the tests performed must be available to IBAMA and STI for consultation.

2.2 From January 1st, 1987, manufacturers of motor vehicles must provide to the consumer and to the Authorized Services Network, through the Vehicles Owner's, Maintenance and Services Manuals, the maximum values specified as soot emission in the angular speed bands for engine use, indicating also the emission curve or table correction, for altitudes from zero to 1,000 meters, at maximum intervals of 200 meters.

The soot emission shall be expressed simultaneously in the following units:

» blackening degree of the filtrating element;

» opacity.

2.3 From January 1st, 1988, manufacturers of motor vehicles equipped with the Diesel cycle, shall declare to IBAMA and STI, until the last day of the calendar semester, the typical values of the evaporative emissions of carbon monoxide, hydrocarbons, nitrogen oxides and aldehydes in the exhaust gas of the configurations under production, to be determined by IBAMA and STI, as well as presenting the criteria used to obtain the results and conclusion. The reports of the tests performed must be available to IBAMA and STI for consultation.

3. All the engines and automotive vehicles

3.1. From January 1st, 1988, the authorization for manufacturing and commercialization in the national territory, of any model and/or configuration vehicle or engine, or even any extension thereof will only be

granted by the Industrial Development Council (CDI) after acquisition of the License for Using the Vehicles or Engine Configuration (LCVM) issued by SEMA, according to terms, timeframes and limitations of this Resolution.

3.2. The LCVM issuance shall be performed by IBAMA, within 15 working days after receipt of the Vehicle or Engine Configuration Approval Certificate (CAC), issued by STI, except in cases provided for in 1.9. and 4.5. of Chapter VI, where the CAC can be dismissed.

3.3. To obtain the CAC, the manufacturer must submit to STI, in triplicate, the documents required for conformity certification, according to procedure established by CONMETRO, and one copy shall be sent to SEMA.

3.4 The configurations of vehicles and/or engines or their extensions, which did not received or had the LCVM cancelled may not me commercialized in the country.

3.5. For the realization of the tests in experimental fleet powered by alternative fuel vehicles (gasoline, anhydrous ethyl alcohol, hydrated ethyl alcohol and diesel oil), it is mandatory to present to IBAMA a theoretical and/or practical analysis of the pollutants emission, as well as a copy of the physical and chemical analysis of the fuel.

In the events these tests are performed in a region where the population is exposed, it will be necessary to obtain a special authorization from IBAMA.

3.6. It is mandatory to have Certification of Production Conformity with the maximum limits established in this Resolution, according to the procedures to be established by CONMETRO.

3.7. If, through testing, IBAMA determines that a significant number of vehicles and/or engines in use, properly maintained, is(are) not meeting the emission limits of this Resolution, IBAMA shall notify the manufacturer and STI/INMETRO to proceed with an extraordinary check of the production conformity, which results will determine the adoption of measures entailed. All the costs of this correction shall be borne by the manufacturer.

3.8. From the dates of implementation of the requirements in this Resolution, automobile manufacturers must declare to IBAMA and STI, until the last day of each calendar semester, the mean values and standard deviation of emissions referring to the limits required for all configurations of vehicles in production. Such values should represent the manufacturer's "quality control" results, and the reports shall be available to IBAMA and STI for consultation.

This item replaces and cancels in whole or in part the provisions in items 1.1, 1.2, 1.3, 2.1, and 2.3 of Chapter VIII, to the extent that the respective emission limits are set and in effect.

3.9. From January 1st, 1988, every vehicle manufacturer shall disclose, especially in the vehicle's Service and Owner's Manuals, information about the importance of proper vehicle maintenance to reduce air pollution.

In addition, the observance of this maintenance must be recommended in adhesives placed in all national vehicles, in protected place(s) and visible places.

3.10. From October 1st, 1987, any advertising material regarding a vehicle model already in compliance with the maximum emission levels, conveyed in the press or not, shall clearly and objectively inform it compliance with PROCONVE.

3.11. The state and municipal governments may put into practice inspection and maintenance programs for motor vehicles in use, adopting the specific emission limits established in existing law or which may be defined by CONAMA.

The maximum emission limits set forth in this Resolution do not apply to vehicles that exceed the time or mileage warranty issued by the manufacturer.

3.12. If an inspection/maintenance program is recommended for vehicles in use and if a rejection occurs, mainly due to faulty design or manufacture of the vehicle or engine, rather than for reasons of improper usage or maintenance done by the user, the vehicle manufacturer is responsible for the necessary repairs and shall bear all the costs of this action.

3.13. To meet the levels set out in Chapter VI, item 1.5, the National Oil Council (NPC) shall specify and supervise the total exemption of tetraethyl lead in the gasoline-alcohol mixture, kept a minimum of 80 octanes by Motor Method. It should also be monitored the total exemption of lead in fuel alcohol, as certain transport operations allow this type of contamination.

For diesel oil, the CNP shall define, until December 31st, 1987, a program to reduce the total sulfur content (% by weight) of the maximum current value of 1.3 to 0.7.

IBAMA shall be consulted regarding the definition of specifications for commercialization of new fuels, considering the possible environmental impacts.

3.14. The violations of this Resolution shall incur in the penalties provided for in Law No. 6.938 of 08/31/81, Decree No. 88.351 of 06/01/83, and the municipal and state legislations of Environmental Pollution Control.

3.15. Manufacturers must submit, on a monthly basis to IBAMA, from the start date of marketing of models and/or configurations of vehicles or engines, the sales data of these products.

3.16. The total light vehicle commercialized in 1989, meeting items 1.1 and 1.2.1 of Chapter VI, must achieve a minimum of fifty percent (50%) of marketing. If this percentage of sales is not achieved solely because of government mandates, it may be redefined by CAP.

3.17. The manufacturer shall allow the entry of an authorized agent by IBAMA in its facilities when it considers necessary for the fulfillment of this Resolution. In case it does not do so, it shall be subject to the laws in effect.

3.18. From January 1st, 1988, the adjustment screw of the mixture air-fuel at idle speed and other items adjustable calibration of the engine that can significantly affect emissions must be sealed by the manufacturer or have limiters inviolable to the allowable range of regulation, and the vehicle shall comply with the emission limits in this Regulation additionally required at any point of these allowable ranges, as well as its manual control (throttle, ignition timing, throttle etc.)

3.19. At the request of CAC or LCVM, the manufacturer of the vehicles and/or engine must submit to STI or IBAMA, respectively, a list of parts, assemblies and accessories which significantly affect vehicle emissions, which can only be approved by the competent body and marketed for replacement and maintenance in the National Territory, if they observe the same specifications of the vehicle manufacturer and/or or engine to which they are intended and have the approval of quality control. In the case of parts, assemblies, accessories and any accessories that are marketed without the approval of the vehicle or engine manufacturer to which it was intended, it will be necessary to obtain the CONFORMITY CERTIFICATE FOR EMISSION, granted by the competent body, according to procedures to be established by CONMETRO.

3.20. The data, documents and information considered confidential by the manufacturer, with access from IBAMA and STI should be used strictly to meet the requirements of PROCONVE, and may not come to public knowledge or of other industries, without the express authorization of the manufacturer.

Results of testing of vehicles or engines in production are considered to be non-confidential and provided statistically significant, can be used in the preparation of information and be released.

IX – This Resolution becomes effective on the date of its publication, revoking all provisions in contrary.

Deni Lineu Schwartz

Attachment 1 – Definitions

1. ALDEHYDES: total aldehydes present in the exhaust gas.

2. BODY CONFIGURATIONS: unique combination of parts and components that characterize the vehicle body, from its style, size and aerodynamics.

3. ENGINE CONFIGURATIONS: unique engine family combination, emission control system, engine capacity, fuel supply system and ignition system.

4. VEHICLE CONFIGURATIONS: unique combination of basic engine, engine and transmission configurations, vehicle inertia and transmission relations after the gearbox to the wheel.

5. CONFORMITY OF PRODUCTION: observance by the vehicles produced in series or not to the maximum emission limits and other requirements of this Resolution.

6. EVAPORATIVE FUEL EMISSIONS: substances emitted into the atmosphere from evaporation of fuel by the vents, lids and connections of the tank, carburetor or fuel injection system and emission control systems.

7. ENGINES FAMILY: basic classification for the production line from the same manufacturer, determined so that any engine of the same family has the same emission characteristics over the periods guaranteed in writing by the manufacturer, according to ABNT NBR 6601.

8. EMISSION DETERIORATION FACTOR: numerical factor that limits the increase of the emission of a vehicle or engine, depending on their use, to the maximum emission limit.

9. SOOT: particles, including aerosols from incomplete combustion, present in the exhaust gas of diesel engine cycle and produce darkening, reflection and/or refraction of light.

10. CRANKCASE GAS: substances emitted into the atmosphere from any part of the lubrication system and engine crankcase ventilation.

11. EXHAUST GAS: substances emitted into the atmosphere, coming from any opening of the exhaust system downstream of the engine exhaust valve.

12. HYDROCARBONS: total organic substances, including fractions as unburned fuel and by-products from combustion, present in exhaust gas and which are detected by the flame ionization detector.

13. IDLE SPEED: work scheme in which the angular speed of the engine, specified by the manufacturer, must be maintained within about ± 50 rpm and the engine should be running without load and

with the fuel feeding system controls, accelerator and choke in the rest position.

14. VEHICLE MODEL: name that features a vehicles line of production of from the same manufacturer with the same construction, except ornamental.

15. NITROGEN OXIDES: sum of nitric oxide and nitrogen dioxide present in the exhaust gas, as if the nitric oxide was in the form of nitrogen dioxide.

16. TYPICAL EMISSION VALUE: value of pollutants emission, obtained from statistical surveys and which should represent the configuration of vehicles and/or engines under consideration.

17. LIGHT VEHICLE: automotive vehicle for passengers, goods or mixed use, with capacity to transport up to 12 passengers or maximum gross weight not exceeding 2,800 kg.

18. HEAVY DUTY VEHICLE: automotive vehicle for passengers, goods or mixed use, with capacity to transport more than 12 passengers or maximum gross weight over 2,800 kg.

Attachment 2 – Vehicle or engine characterization term

All engine and/or vehicles sold in the country should have its characteristics described according to the following model:

A .Engine characteristics

According to Attachment A – ABNT NBR 8833 ENGINE CHARACTERISTICS FORM – DETERMINATION OF LIGHT VEHICLES CONFORMITY WITH STANDARDS ESTABLISHED FOR EXHAUST EMISSION.

B .Engine characteristics

According to Attachment B – ABNT NBR 8833 VEHICLE CONFIGURATION CHARACTERISTICS FORM –

DETERMINATION OF LIGHT VEHICLE COMPLIANCE WITH THE STANDARDS ESTABLISHED FOR EXHAUST EMISSION.

C. Supplementary data

» Name, address and business phone number(s) of the representative(s) constituted by the manufacturer, responsible(s) and date;

» Signature of the manufacturer's legal representative;

» List of items, parts, subassemblies and assemblies that exert considerable influence on the emissions that should be subject to certification to commercialization as spare parts and services;

» Recommendations and procedures for maintenance of the engine and/or vehicle;

» Estimate of the number of engines and/or vehicles to be commercialized per year;

» Option or not for the use of the Emission Deterioration Factor;

» Statement by the manufacturer that vehicles produced from the date of elaboration of the Characterization Term reflects the descriptions and specifications of that term.

CONAMA RESOLUTION No. 03/1989

Provides for aldehydes emission levels in the gas and exhaust of motor vehicles. Official Gazette (D.O.U.) of 08.25.1989.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities granted by item VI, of the Art. 8 of Law No. 6.938 of August 31st, 1981 and Article 48 of Decree No. 88.351 of June 1st, 1983,

Whereas there is evidence that aldehydes contribute to the deterioration of air quality;

Whereas the automobile of the Otto-cycle engine are relevant sources of aldehydes emissions;

Whereas large-scale use of ethanol as automotive fuel, introduces a pollution problem unique to Brazil and therefore, requires an innovative approach in the control efforts;

Whereas the existing technologies for the control of hydrocarbons also contribute to reducing emissions of aldehydes, RESOLVES:

Art. 1 From January 1st 1992, the emission of aldehydes present in the exhaust gas of light motor vehicles of the Otto-cycle engine, shall not exceed 0.15 grams per kilometer and the manufacturer's designs shall have this as a goal for the issuance of 0.10 gram per kilometer.

Art. 2 To establish the goal, that the emission of aldehydes present in the exhaust gas of light motor vehicles of the Otto-cycle engine, from January 1st, 1997, shall not exceed 0.03 grams per kilometer, and based on available data, the PROCONVE Follow-Up and Monitoring Commission – CAP must ratify or rectify this value until December 31st, 1993, submitting to CONAMA for approval.

Art. 3 For compliance with the emission limits of this Resolution, the manufacturer must use the best technology available.

Sole Paragraph – Until December 31st, 1993, CAP must manifest to CONAMA regarding the guarantee of the aforementioned limits, at least for eighty thousand (80,000) kilometers or five years of use, whichever occurs first.

Art. 4 For purposes of compliance with Articles 19 and 29, it is considered emission of aldehydes as the total mass of aldehydes emitted by the vehicle when it is submitted for testing, according to NBR 6601 Analysis of Exhaust Gas of Light Motor Vehicle Powered by Gasoline.

Art. 5 The aldehyde emission must be the result of the sum of the masses of formaldehyde and acetaldehyde, expressed as grams per kilometer.

Art. 6 The reference analytical method for measuring the emission of aldehydes, is one that is based on the reaction of aldehydes with DNPH (2.4 Dinitrophenylhydrazine) and subsequent identification and quantification of drift-formed through the high-resolution liquid chromatography, as a draft standard 5.11.03.018 1989, the Brazilian Association of Technical Standards-ABNT.

Sole Paragraph – Other analytical processes that shall be used must be approved by CAP and provide equivalent results to those obtained with the reference method.

Art. 7 To meet the emission limits of this Resolution, the manufacturer is exempt from the production certification, until CAP has subsidies to justify such certification, in supplementation to the certification already established for the emission of hydrocarbons by Resolution/ CONAMA/No. 018/86.

Art. 8 From January 1st, 1992 until December 31st, 1993, manufacturers of light motor vehicles of the Otto-cycle engine, must declare to the Brazilian Institute of Environment and Renewable Natural Resources – IBAMA, until the last day of each calendar semester, the typical emission of aldehydes, as defined in Resolution/CONAMA/No. 018/86, identified and quantified according to the present Resolution, of the representative configurations of the vehicles in production.

Sole Paragraph – The test reports shall be available to IBAMA, or entity assigned thereby, for consultation.

Art. 9 This Resolution shall be effective on the date of its publication.

Fernando César de Moreira Mesquita

João Alves Filho

CONAMA RESOLUTION No. 04/1989

Provides for hydrocarbons emission levels by ethanol powered vehicles. Official Gazette (D.O.U.) of 08.25.1989.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by item VI, of the Article 8 of Law No. 6.938, of August 31st, 1981 and Article 48 of Decree No. 88.351, June 1st, 1983 and

Whereas large-scale use of ethanol as automotive fuel, introduces a pollution problem unique to Brazil and therefore, requires an innovative approach in the control efforts;

Whereas the emission of ethanol by automotive vehicles contributes to the air deterioration;

Whereas the measurement of ethanol with a flame ionization detector calibrated with propane, results in a considerable mistake, especially for ethanol powered vehicles;

Whereas within the good scientific practice it is possible to establish correction factors for the alcohol measurement, with flame ionization detector. RESOLVES:

Art. 1 – Based on the information available, the Brazilian Institute of Environment and Renewable Natural Resources – IBAMA shall submit to the PROCONVE Follow-up and Evaluation Commission – CAP until July 31st, 1991, for evaluation and, with its opinion, submission to CONAMA of the proposals for methods for a more precise determination of ethanol, for the exhaust emission;

Art. 2 – From January 1st, 1992 until December 31st, 1993, the manufacturer of light automotive vehicles with engine powered by ethanol must state to IBAMA, by the last day of each calendar semester, the typical values of hydrocarbons emission, as defined in Resolution/CONAMA/No. 018/86, differentiating the non-oxygenated compounds, aldehydes and alcohols;

Art. 3 Based on the information available, CAP must manifest, by December 31st, 1993, about the way to correct the ethanol effects, for purposes of homologation and certification of the hydrocarbons emission, in the exhaust gas of the ethanol vehicles, to observe the emission limits set forth from January 1st, 1997, by Resolution/CONAMA/No. 018/86;

Art. 4 The determination of the evaporative emission of ethanol vehicles, must be according to the "CAP Supplementary Rules and Decisions" No. 04, of December 7th, 1988;

Art. 5 – By December 31st, 1989, IBAMA must present to CAP, for evaluation and submission to CONAMA, a normative text to the measurement of the evaporative emission of ethanol vehicles, based on the "CAP Supplementary Rules and Decisions" No. 4 of December 7th, 1988;

Art. 6 The corrected values of evaporative emission of ethanol vehicles must meet the evaporative emission limits in effect, for hydrocarbons.

Art. 7 This Resolution shall be effective on the date of its publication.

Fernando César de Moreira Mesquita

João Alves Filho

CONAMA RESOLUTION No. 15/1989

Provides for EIAS submission by PETROBRAS on the use of ethanol as fuel. Official Gazette (D.O.U.) of 01.24.90.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by item I, of the §2 of the Article 8 of its Internal Regulation, in view of the provisions in item IV, of the Article 8 of Law 6.938, of August 31st, 1981, and

Whereas the public risk of methanol use that, if not handled with great caution, causes poisoning through the skin, oral and inhalation and may cause blindness, cancer, disability and even death;

Whereas the lack of data on the content of emissions from the combustion of methanol associated to ethanol and to gasoline, because the studies are still preliminary;

Whereas CONAMA is responsible for determining the maximum level of pollutants emission by motor vehicles, aircraft and vessels;

Whereas the timely injunction granted by Federal Judge Alfredo França Neto, suspending the import of methanol for use in automotive vehicles, RESOLVES:

Art. 1 Under article 225, § 1, item IV of the Federal Constitution, at Law 6.938/81 and CONAMA's Resolution 01/86, determine to Petrobras the presentation of a previous environmental impact study resulting from the use of methanol in motor vehicles on National Territory.

Art. 2 Officiate to the Federal Public Ministry, for its actions regarding the occurrence of crime danger of Article 15 of Law 6938/81 (with the new wording provided by Law 7.804/89), including as to the responsibilities of the authorities that did not take appropriate action (Art. 2 of the aforementioned Law).

Art. 3 Reaffirm the importance of compliance by the PROCONVE signatories, of all the stages and schedules of this Program that establishes the essential reduction of the pollutants emissions, by improving the vehicles and fuel stability.

Art. 4 The use of methanol depends on the licensing before the competent environmental agency.

Art. 5 This Resolution shall be effective on the date of its publication.

Fernando César de Moreira Mesquita

João Alves Filho

Sets for national and importer motor vehicles, except motorcycles, scooters, mopeds, bicycles with auxiliary engine and similar vehicles, maximum noise limits with the vehicle in acceleration and in park condition. Official Gazette (D.O.U.) of 02.15.1993. Wording amended by CONAMA Resolution 08/93, 17/95 and 272/00.

THE NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities and powers granted by Law No. 6938 of August 31st, 1981, 8028, of April 12th, 1990, 8490, of November 19th, 1992, by Decree No. 99.274 of June 6th, 1990, and in view of the provisions of its Internal Regulations and,

Whereas the excessive noise causes damages to the physical and mental health and particularly affects hearing;

Whereas the need to reduce noise pollution in urban centers;

Whereas motor vehicles are the main sources of noise in the environment;

Whereas the use of appropriate and known technologies allows to meet the needs to control noise pollution;

Whereas the objectives of the National Education and Control of Noise Pollution "Silence", resolves to:

Art. 1 Sets for national and imported motor vehicles, except motorcycles, scooters, mopeds, bicycles with auxiliary engine and the like, the maximum noise limits with the vehicles in acceleration and in park condition. *(New wording of article provided by resolution No. 08/93)*

§1 – For national vehicles produced for the domestic market, the maximum noise limits is in force with the vehicle in acceleration, defined in Table 1A herein, according to the schedule below, by manufacturer trademark:

a) Otto-cycle engine vehicles, except those of categories c and d:

a.1) at least 20% of the vehicles produced from January 1st, 1994;

a.2) at least 50 % of the vehicles produced from January 1st, 1995;

a.3) 100 % of the vehicles produced from January 1st, 1997;

b) All Diesel cycle motor vehicles and the Otto-cycle engine vehicles of categories c and d:

b.1) at least 40 % of the vehicles produced from January 1st, 1996;

b.2) 100% of the Otto-cycle vehicles produced from January 1st, 1997;

b.3) 100% of the vehicles produced from January 1st, 1998.

§ 2 – For all imported vehicles, the maximum noise limits with the vehicle in acceleration set forth in this Article, shall become effective from March 1st, 1994, except for the vehicles produced or assembled in Argentina, Paraguay and Uruguay, for which the maximum noise limits with vehicle in acceleration, set forth herein, shall become effective from January 1st, 1995 for the vehicles of item a of the § 1 hereof, and from January 1st, 1996 for the vehicles of item b of the § 1 hereof.

§3 – The maximum noise limits established herein should be met during the whole granted warranty period and under the conditions specified by the manufacturer and/or importer.

§4 – Any impossibilities of meeting the percentage established on the schedule shall be evaluated by IBAMA.

§5 – The vehicle noise level, in stop condition, is the reference value of the new vehicle in the verification process. This value, plus three (3) dB(A), will be the maximum noise limit for vehicle monitoring in circulation.

§6 – From March 1st, 1994, the noise level in stop condition should be provided to IBAMA, in two copies, measured close to the

exhaust according to ABNT NBR 9714, of all vehicles' models produced for purposes of vehicle monitoring in circulation.

Table 1A – Maximum noise limits emitted by Vehicle in acceleration, according to NBR 8433

CATEGORY			NOISE LEVEL dB(A) LEVEL		
Description			Otto	Diesel	
A	Passenger vehicles with up to nine seats and mixed use vehicle derived from automobile		77	78	77
B	Passengers vehicle with more than nine seats; goods or traction vehicle and mixed use vehicle derived from automobile	PBT up to 2,000 kg	78	79	78
		PBT above 2,000 kg and up to 3,500 kg	79	80	79
C	Passenger vehicle or mixed use with PBT higher than 3,500 kg	Maximum power under 150 kW (204 HP)	80	80	80
		Maximum power equal or above 150 kW (204 HP)	83	83	83
D	Goods or traction vehicle with PBT above 3,500 kg	Maximum power under 75 kW (102 HP)	81	81	81
		Maximum power between 75 and 150 kW (102 to 204 HP)	83	83	83
		Maximum power equal or above 150 kW (204 HP)	84	84	84

Notes:
1) Vehicle designations according to ABNT NBR 6067
2) PBT: Total Gross Weight
3) Power: Maximum net effective power (ABNT NBR 5484)
4) This table, published on resolution No. 8/1993, cancels and replaces Table 1 of Resolution No. 1/1993.

Art. 2 The tests for measuring noise levels, for the purposes of this resolution shall be conducted according to Brazilian standards ABNT NBR 8433 (1995) – Road automotive vehicles in acceleration – Determination of noise level, and ABNT NBR 9714 (1999) – Road automotive vehicles – Noise emitted in the park condition, with regard to noise measurement near the exhaust. The equipment to perform the measuring test of noise levels should be calibrated by INMETRO or accredited laboratory belonging to the Brazilian Calibration Network-RBC and location of the test must be verified by IBAMA to obtain the Conformity Assessment Statement. (*new wording provided by Resolution No. 272/00*)

Sole paragraph. The positioning of the microphone for the measurement of noise in the vicinity of the exhaust, according to ABNT NBR 9714, must be performed upon the use of template, as described in Attachment D.

Art. 3 The exhaust system must be designed, manufactured, assembled and installed in the vehicle so as to be adequately resistant to vibration and corrosion actions to which the vehicle is normally exposed, and allow full compliance with the requirements of this Resolution in normal use conditions. In case of use of fibrous materials in exhaust systems, these must not contain asbestos. Also, the following measures shall be adopted to guarantee the full compliance with the maximum noise levels established in this Resolution:

a) conditioning of fibrous materials, so that there is no direct contact of the exhaust gases with these materials, or

b) in case of direct contact of the exhaust gases with the fibrous materials, the vehicles verification tests shall be carried out with the exhaust system being previously subjected to conditioning through the simulation of normal use conditions, according to Attachment C or by simply removing the fibrous materials from the muffler.

Art. 4 The main components of the exhaust system must have indelible markings identifying the manufacturer, through its commercial brand.

Art. 5 The vehicle manufacturer or its legal representative or importer(s) must perform the verification of the representative prototype of production before the start of vehicles production or import.

§1 The responsible for checking the prototype must have skilled and specialized technical staff, who must keep constantly updated archive of all verifications and documentation in progress. The full name and address of the person responsible for verifying the prototype and his/her substitutes shall be notified to IBAMA, and whenever there are changes, should be updated.

§2 To determine the noise levels of vehicles belonging to the same family, the tests may be performed in only one vehicle configuration considered as master configuration of the family, according to the technical criteria to be detailed in Attachment A.

§3 The prototype verification reports of all families and their respective master configurations must contain Attachment A of this Resolution and be sent to IBAMA, before the date of production and/or duration of the respective maximum noise limits.

§4 In case of proven impossibility to perform verification tests of the prototype in the country, reports of tests carried out abroad may be accepted, at the discretion of IBAMA.

Art. 6 The prototype verification is valid only for the year and model indicated. However, for vehicles with the same configurations to those observed previously, characterized by the respective attachments and that remain subject to the same requirements, it is allowed to use the same results and information, and the vehicle manufacturer, its legal representative(s) or importer(s) undertake full responsibility for the continuity of the specifications already approved of the vehicles.

Art. 7 For the purpose of checking the conformity of vehicles under production with the requirements of this Resolution, the responsible for this verification may select, for the realization of the tests, randomly selected sample of vehicles on the assembly line or in inventory for sale.

§1 Sample is characterized as a vehicle tested according to standards established in the Art. 2 of this Resolution.

§2 If the noise level of the tested vehicle does not exceed by more than 1 dB(A) the values of the limits set forth, the vehicle model will be considered in accordance with the provisions of this Resolution. (*new wording provided by Resolution No. n° 272/00*)

§3 If the vehicle tested does not satisfy the requirements of the preceding paragraph, another two vehicles of the same model shall be tested. If the noise level of the second or third vehicle exceeds by more than 1 dB(A) the limit values, the vehicle model shall be deemed inconsistent with the provisions of this Resolution and the manufacturer shall take the necessary measures to restore compliance. (*new wording provided by Resolution No. n° 272/00*)

Art. 8 The vehicle manufacturer or its legal representative or importer(s) must provide for each family master configuration a statistical report of production monitoring, which shall be issued by the fifth month after the beginning of the marketing or import, and annually thereafter, indicating noise levels according to ABNT NBR 8433 and/or ABNT NBR 9714, at the discretion of the manufacturer, in vehicles chosen at random and distributed uniformly over the corresponding reported period. Data-has to be kept on file for two years at the disposal of IBAMA.

Sole paragraph. The manufacturer may employ alternative method to prove the quality of production, provided it is proven to IBAMA its correlation with the level of noise emitted by the vehicle.

Art. 9 The vehicle manufacturer or its legal representative or importer(s) which find and correct spontaneously the unconformity in the production of vehicles sold, shall report and forward to IBAMA the corrective measures adopted.

Art. 10. 10 IBAMA may request clarification or review of reports at any time in its discretion, as long as justifiable, and may determine the realization of confirmation testing, of the verification and prototyping and on the conformity of production by selecting for the testing, samples of randomly selected vehicles on the assembly line or in inventory for sale.

Sole paragraph. IBAMA shall be provided with the necessary means for testing according to the Art. 2 of this Resolution, including calibrated measuring instruments and their accessories, field trials and vehicles to be tested.

Art. 11. If irregularities are found in the prototype verification process or production line, IBAMA may issue to the company responsible a Trading Suspension Order for the configurations of vehicles involved.

§1 The Trade Suspension Order involves the immediate compliance by the company with its terms, until the causes that led to the violation are clarified and corrected.

§2 The return to trading can only be made after full-compliance with the requirements of this Resolution.

Art. 12. In case of non-compliance of the product, the vehicle manufacturer, its legal representative or importer must, within 180 days, counted from the date of observation, solve the problems causing the production unconformity, as well as collect and repair all vehicles of the series and configuration involved.

§1 The repairs should be performed by technical support services accredited by the manufacturer, importer or legal representative, under the guidance and responsibility thereof.

§2 The corrections of the production and repair of vehicles already collected should be verified with IBAMA, through documentation that clearly describes the measures taken, their effectiveness and the number of vehicles involved.

§3 In case of non-compliance with the provisions of this article, the commercialization of the vehicle configuration(s) in question shall be prevented or, if the same had already been suspended, the person responsible shall be subject to administrative and legal penalties.

Art. 13. From January 1st, 1994, all non-original parts and components of the models already in compliance with this Resolution, which are part of the exhaust system and produced for the spare parts market, can only be traded after fulfillment of the same verification requirements before the IBAMA by the manufacturer or importer of exhaust systems, regarding the fulfillment of the requirements of this Resolution for products used in new vehicles. The maximum noise level of the replacement exhaust system in the park condition must be the value provided for in the verification process corresponding original prototype model.

§1 The compensation value obtained, according to Attachment E, should not be over that specified in Attachment A for original parts and components.

§2 For the purposes of compliance of the product with the requirements of this Resolution, IBAMA may select, for the performance of tests, samples of exhaust systems randomly selected from the assembly line and/or manufacturer inventory. The process should follow the same procedures prescribed for verification of conformity regarding the production of new vehicles, subject to the remaining paragraphs of this article.

§3 In case of non-compliance with the provisions of this article, the manufacturer or legal representative or the importer(s) cannot market the exhaust system until appropriate modifications are made and proved, according to the requirements of this Resolution.

Art. 14. From January 1st, 1994 for vehicles that already comply with this Resolution, the vehicle owner's manual shall contain the following information:

a) The vehicle complies with current legislation to control noise pollution for motor vehicles;

b) Booklet containing the maximum limit(s) for noise control of vehicle(s) in circulation;

c) Procedure for maintenance of the exhaust system (if applicable).

Art. 15. Costs directly related to the product testing, checking, corrections, collection for repairs and repairs themselves, including the cost of replaced components shall be borne by the manufacturers and/or importers of vehicles and exhaust systems.

Art. 16. Manufacturers, importers or their legal representatives, shall send monthly to IBAMA, from January 1st, 1994, the reports of the sale of all configurations of vehicles sold in the country.

Art. 17. For purposes of this resolution, the definitions of Attachment B shall be established.

Art. 18. IBAMA may establish agreements, contracts and related activities with agencies and entities that directly or indirectly, may contribute to the development of this program, as well as delegate to other bodies the duties set forth herein.

Art. 19. The penalties foreseen in Law No. 6.938/81 shall be applied to the violations of this Resolution's provisions, with the wording provided by Law No. 7.804/89, without prejudice to the other penalties foreseen by federal legislation, and to criminal and civil sanctions.

Art. 20. It is up to IBAMA to deliberate on omission cases herein.

Art. 21. This resolution becomes effective on the date of its publication, prevailing the other rules applicable until the period of implementation of each step of the schedule set forth in the Article 1.

Fernando Coutinho Jorge
President

Attachment A

1. Vehicle Brand:

2. Model of Vehicle/manufacturing year/model:
2.1 – List of configurations represented:
2.2 – Total gross weight:_____(kg) – (except for automobiles and vehicles of mixed use derived from automobiles)
2.3 – Technical criteria for definition of master configuration and configuration represented.

3. Name and address of the chassis manufacturer:

4. Name and address of the Legal representative:

5. Name and address of the importer(s), if applicable:

6. Engine;
6.1 – Manufacturer:
6.2 – Type:
6.2.1 – Otto/Diesel:
6.2.2 – Cycles: 2/4 strokes
6.3 – Model:

6.4 Maximum power:____, (kW) a (l/min) (rpm)
6.5 Engine size:_____(cm^3)_____(1)

7. Transmission:
7.1 Gear box: mechanical/automatic
7.2 Total number of shifts (except reverse), including the transmission relations.

8. Equipment/materials:
8.1 – Exhaust system (scheme).
8.1.1 – Fibrous materials in contact with gases: Yes/No
8.2 – Air admission muffler:
8.2.1 Manufacturer:
8.3 – Catalytic converter (if applicable)
8.3.1 – Manufacturer:
8.4 – Tires designation (ABPA – Associação Brasileira de Pneus e Aros):
8.5 – Additional specifications that the manufacturer deems necessary to ensure the fulfillment of this Resolution.

9. Measurements:
9.1 Noise levels in acceleration according ABNT NBR 8433

Vehicle identification		Model:_____Manufacturing year:				
		VIN No. _____Max. Power:____(kW) PBT_____				
Background Noise Level dB(A)						
1st Measurement		2nd Measurement	3rd Measurement			
	Approximate Speed (km/h)	Angular speed (rpm)	N.R. Right Side dB(A)		N.R. Left Side dB(A)	
			1st Meas.	2nd Meas.	1st Meas.	2nd Meas.
2nd shift						
3rd shift						
4th shift						
5th shift						
6th shift						
Result _____dB(A)						

Notes: The values recorded for the noise levels are the values determined through the measurement less 1 dB(A).

9.2. Noise levels in park condition, according to ABNT NBR 9714.

Vehicle identification		Model: _____ Manufacturing year:_____		
		VIN No.		
Background Noise Level dB(A)				
1st Measurement		2nd Measurement	3rd Measurement	
Rotations (rpm)	Background Noise Level dB(A)			
	1st Measurement	2nd Measurement	3rd Measurement	Arithmetic average
Result _____dB(A)				

9.3 – Maximum permissible value of the exhaust system compensation (According to Attachment E). _____(kPa) (_____mmHg).

9.4 – Measured value of the exhaust system compensation: (_____kPa) (_____ mmHg) (only for manufacturer of original spare components and parts)

10. Data of tested vehicle:

11. Test report data:

12. Test report number:

13. Location:

14. Date:

15. Name and signature of the person responsible for the tests:

Attachment B – Definitions

01. Vehicle category: definitions according to ABNT NBR 6067;

02. Engine size: engine cylinder volume between the top dead center and bottom dead center of the pistons in cm^3 or liters;

03. Original components and parts: those that comprise the production vehicle and those defined as such by the vehicle manufacturer for use in

replacement;

04. Configuration: vehicles characterized by engines of the same size, feeding system, type and transmission relation and equivalent exhaust systems;

05. Master configuration: configuration that represents the constructive and operational characteristics of the vehicles' family in production, so as no other vehicle of the same family presents noise level over this;

06. HP (horse power): power unit;

07. dB(A): unit of sound pressure level in decibels, weighted through the response curve in frequency A, for quantification of the noise level;

08. Families: configuration set of similar vehicles, so that the family master configuration presents the results proving the compliance of maximum noise levels established for the other configurations which compromise it;

09. kW (kilowatts): power unit;

10. Maximum noise limit for inspection of the vehicle in circulation: noise level in the park condition, plus three (3.0) dB(A);

11. Fibrous materials: materials composed of metallic, ceramic or mineral fibers, used in the manufacture of mufflers;

12. Spare part market: systems, parts and components market for vehicles in use;

13. Two-stroke engine: engine whose operating cycle comprises two phases (combustion-exhaustion and intake-compression);

14. Four-stroke engine: engine whose operating cycle comprises four phases (intake, compression, combustion and exhaustion);

15. Total Gross Weight (PBT): weight indicated by the manufacturer for specific operation conditions, based on considerations on the materials strength, tires' load capacity and so on, according to ABNT NBR 6070;

16. Maximum power: maximum net effective power according to ABNT NBR 5484;

17. Repair: recovery of defective or degraded systems, parts or components, with or without replacement;

18. Muffler: vehicular component designed to reduce the noise caused by gases' shock with the environment, whose speed and intensity are gradually reduced by the gas flow inside, and can be broken down in more than one component per vehicle;

19. Exhaust system: set of components comprising the exhaust manifold, exhaust pipe, gas discharge pipe, expansion chamber(s), muffler(s) and catalyst converter(s), where applicable;

20. Similar vehicles: vehicles of two, three or more wheels, whose constructive and propulsion characteristics originate from the motorcycles, scooters, mopeds and bicycles with auxiliary engine or the like. Examples of similar vehicles: motor kick scooters, motorcycles with sidecars or bucket for cargo, scoters with cabin for passengers and/or bucket for cargo etc.;

21. Production compliance checking: confirmation of vehicles' compliance, or of the exhaust systems from the spare part market whether produced in series or not, to the maximum noise limits set forth and other requirements hereof;

22. Prototype checking: commercial pre-production vehicle checking, characterized by the manufacturer as master configuration, with the maximum noise limits set forth and other requirements hereof.

Attachment C

The simulation of normal use conditions can be accomplished through one of the three tests described below or by simple removal of fibrous materials from the muffler;

a) field conditioning by 10,000 km;

a.l) half of the tests should consist of urban conditioning, and the other half on roads at high speeds: the continuous conditioning can be replaced by a test program on test track;

a.2) the two traffic regimes should be alternated several times;

a.3) the full test program should include at least ten stops of at least three hours long, so as to reproduce the effects of cooling and any condensations that may occur;

b) bench conditioning:

b.1) the engine should be coupled to a dynamometer, and the original vehicle exhaust system mounted according to the manufacturer's instructions;

b.2) the test should be conducted in six periods of six hours, with intervals of at least 12 hours between them, so as to reproduce the effects of cooling and any conditions that may occur;

b.3) during each period of six hours, the engine should operate according to the following conditions:

1) five minutes at idle speed;

2) one hour at ¼ of load, at ¾ of maximum power rotation;

3) one hour at ¼ of load, at ¾ of maximum power rotation;

4) ten minutes at full load, at ¾ of maximum power rotation;

5) fifteen minutes at ½ of load, at maximum power rotation;

6) thirty minutes at ¼ of load, at maximum power rotation;

The total sequence length from 1 to 6 is three hours, which should be repeated for the six-hour period totalization;

b.4) the muffler should be cooled through forced air currents. However, if necessary, the muffler shall be cooled so as not to exceed the maximum temperature when the engine is operating at maximum speed condition of the vehicle in circulation;

c) conditioning by pulsation:

c.1) the exhaust system should be installed in the vehicle or engine to be tested. In the first case, the vehicle should be tested on a roller dynamometer, and in the second, the engine should be mounted in a bench dynamometer. The equipment for testing, according to the scheme shown, should be connected at the end of the exhaust gas output pipe. Another combination of equipment may be used, provided that it presents similar results;

c.2) the equipment should be adjusted so that the gas flow is interrupted and re-established alternately through a fast acting valve for 2,500 cycles;

c.3) the valve should open when the back pressure, measured at least 100 mm downstream of the intake flange, reaches a value between 0.35 and 0.40 bar. It should close when the back pressure does not differ by more than 10% of its stabilized value with the open valve;

c.4) the delay device shall be adjusted for the period resulting from the conditions described in item c.3 above;

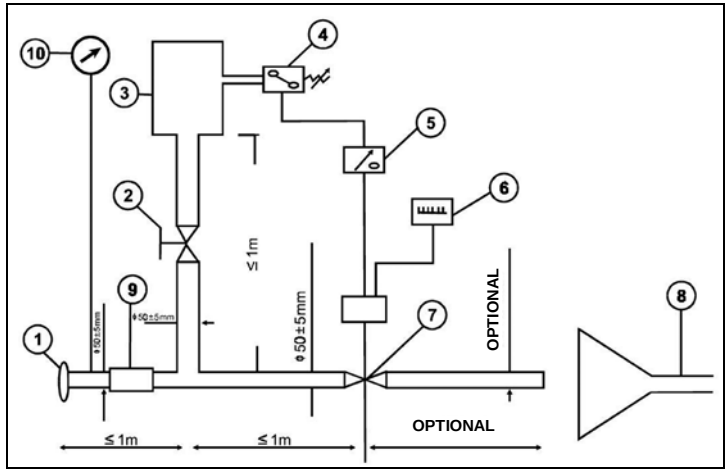
c.5) the engine rotation shall be 75% of the maximum power rotation;

c.6) the power indicated on the dynamometer should be 50% of the full load power, measured at 75% of the maximum power rotation;

c.7) all drains shall be closed during the tests;

c.8) the full test shall be done within 48 hours. If necessary, a cooling period shall be observed after each hour.

Installation Diagram for Conditioning by Pulsation



1. Input flange or sleeve for exhaust tube connection.

2. Manual valve.

3. Buffer tank with 35-40 l capacity.

4. Pressure regulator with operating range from 0.05 to 2.5 bar.

5. Delay device.

6. Pulse counter.

7. Fast-acting valve operated by pneumatic cylinder from 120 N to 4 bar. The response time, at

opening or closing, shall not exceed 0.5 sec.

8. Exhauster.

9. Flexible hose.

10. Pressure gauge.

Attachment D – Instruction for Template use

1. The template for noise measurement is an auxiliary device to enable accurate positioning of the microphone according to ABNT NBR 9714. It consists of a triangle with two backboards (1), one for positioning with the exhaust and the other for placing the microphone. The third trig point has an alignment aid (5). The device also has two spirit levels (3).

2. Depending on the positioning of the exhaust system (left or right side), one of the backboards (1) shall be positioned near the exhaust gas output hole. The correct device leveling should be checked from the levels (3).

3. Through the alignment aid (5), the correct alignment of the backboard (1) with the gas flow is visually looked for.

4. The microphone is positioned on the other backboard (1).

5. In case of vertical exhaust systems, the backboard (1) should match the hole diameter.

6. Depending on the exhaust diameter, the backboards may be greater than those shown in the figure.

7. The device should always be used at a soil height equals to or greater than 0.2 m.

Template for Noise Measurement

1- BACKBOARD
STEEL MATERIAL THICKNESS [illegible]

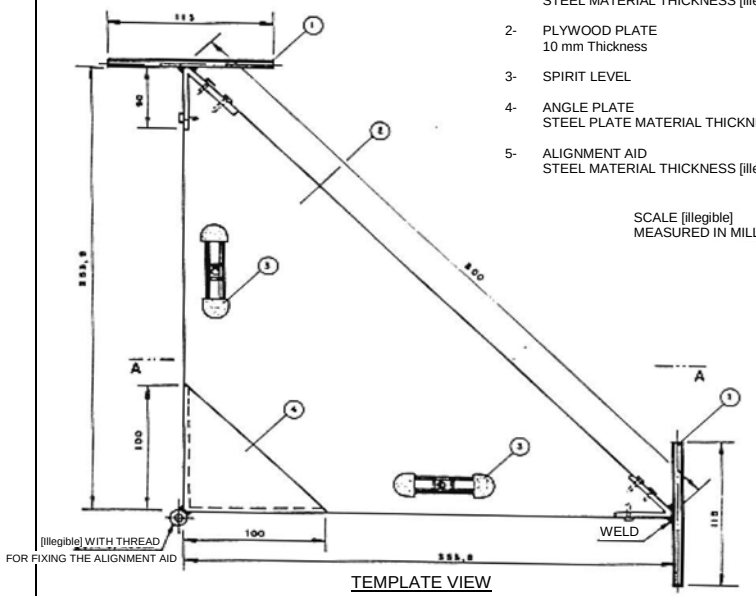
2- PLYWOOD PLATE
10 mm Thickness

3- SPIRIT LEVEL

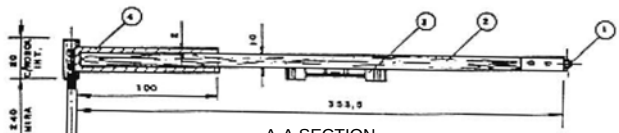
4- ANGLE PLATE
STEEL PLATE MATERIAL THICKNESS [illegible]

5- ALIGNMENT AID
STEEL MATERIAL THICKNESS [illegible]

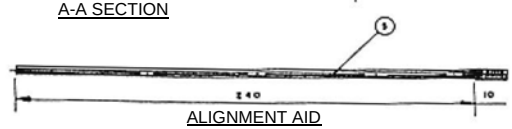
SCALE [illegible]
MEASURED IN MILLIMETERS



TEMPLATE VIEW

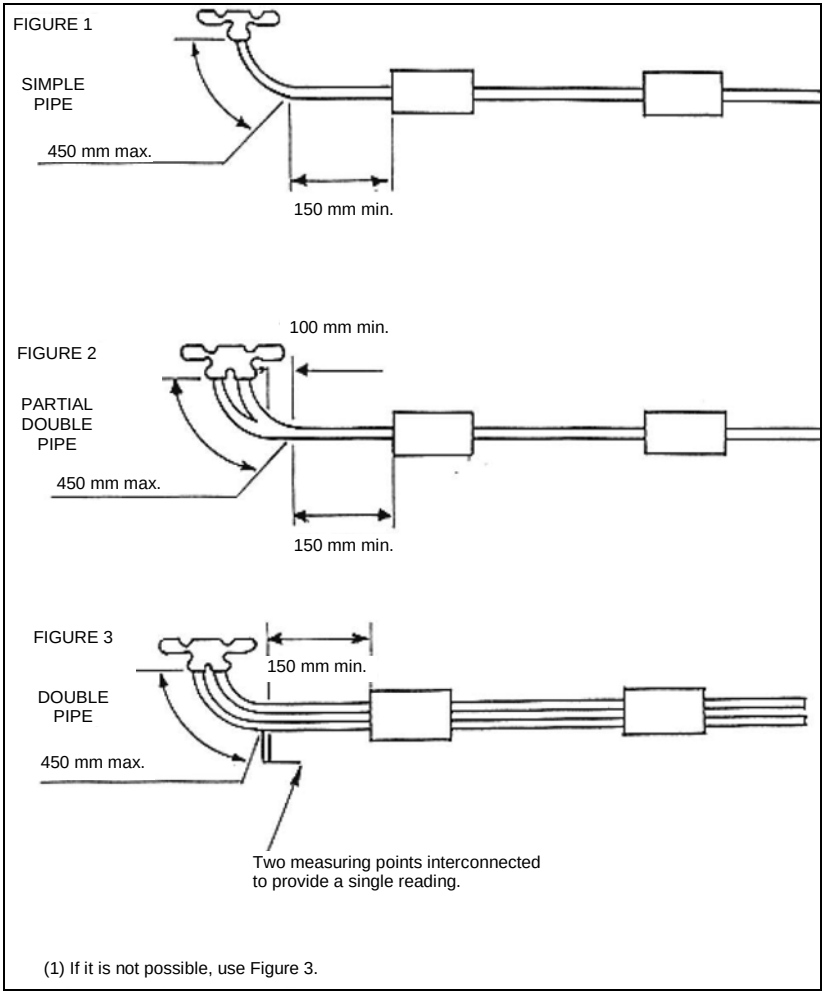


A-A SECTION



ALIGNMENT AID

Attachment E – Back Pressure Measuring Points



(1) If it is not possible, use Figure 3.

CONAMA RESOLUTION No. 02/1993

Provides for the maximum noise limits, with vehicle in acceleration and in stop condition, for motorcycles, scooters, tricycles, mopeds and bicycles with auxiliary motor and the like, national and imported. Official Gazette (D.O.U.) of 02.15.1993. *Wording amended by CONAMA Resolution No. 268/00.*

THE NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities and powers granted by Law No. 6,938 of August 31st, 1981, 8028, of April 12th, 1990, 8490, of November 19th, 1992, by Decree No. 99.274 of June 6th, 1990, and in view of the provisions of its Internal Regulations and,

Whereas the excessive noise causes damages to the physical and mental health and particularly affects hearing;

Whereas the need to reduce noise pollution in urban centers;

Whereas motor vehicles are the main sources of noise in the environment;

Whereas the use of appropriate and known technologies allows to meet the needs to control noise pollution;

Whereas the objectives of the National Education and Control of Noise Pollution – "SILENCE", resolves to:

Art. 1 Set for national and imported motorcycles, scooters, tricycles, mopeds, bicycles with auxiliary engine and similar vehicles, maximum noise limits with the vehicle under acceleration and in park condition.

§1 For national vehicles produced for the domestic market, the maximum noise limits is in force with the vehicle in acceleration, by manufacturer trademark, according to the schedule below:

a) 1st Phase (except mopeds and motorized kick scooters):

a.1) all new releases from July 10th, 1994;

a.2) at least 60% of the vehicles produced from January 1st, 1996;

a.3) at least 80% of the vehicles produced from January 1st, 1997;

a.4) 100% of the vehicles produced from January 1st, 1998.

b) 1st Phase – only for mopeds:

b.1) all new releases from July 1st, 1994;

b.2) 100% of the vehicles produced from January 1st, 1996;

c) 1st Phase – only for motorized kick scooters;

» all vehicles produced from July 1st, 1993.

d) 2nd Phase: - all vehicles produced from January 1st, 2001.

MAXIMUM NOISE LIMITS WITH VEHICLE UNDER ACCELERATION, MEASURED ACCORDING TO ABNT NBR 8433		
CATEGORY	**NOISE LEVEL 1st PHASE dB(A)**	**NOISE LEVEL 2nd PHASE dB(A)**
Up to 80 cm^3	77	75
81 cm^3 to 125 cm^3	80	77
126 cm^3 to 175 cm^3	81	77
176 cm^3 to 350 cm^3	82	80
Above 350 cm^3	83	80

§ 2 For all imported vehicles, the maximum noise limits with the vehicle under acceleration, set forth in this Article for the first phase, are effective as of July 1st, 1993. The maximum noise limits, set forth for the second phase, are effective as of January 1st, 1998.

§3 The maximum noise limits established herein should be met during the whole granted warranty period and under the conditions specified by the manufacturer and/or importer.

§4 Any impossibilities of meeting the established percentage of the schedule shall be evaluated by IBAMA.

§5 The vehicle noise level, in stop condition, is the reference value of the new vehicle in the verification process. This value, plus three (3) dB(A), will be the maximum noise limit for vehicle monitoring in circulation.

§6 From July 1st, 1993, the noise level in stop condition should be provided to IBAMA, in two copies, measured close to the exhaust, according to ABNT NBR 9714, of all vehicles' models produced for purposes of inspection of the vehicles in circulation.

Art. 2 The tests for measuring noise levels for the purpose of this Resolution shall be made according to the Brazilian ABNT NBR 8433 standards – Noise Emitted by Motor Vehicles under Acceleration – Test Method and ABNT NBR 9714 – Noise Emitted by Motor Vehicle in Park Condition – Test Method, with regards to the noise measurement near the exhaust.

§1 For motorcycles, the practices of testing and noise level monitoring can be made according to Chapter 9 of Directive 97/24/EC of the European Economic Community, as an alternative method to the one set forth herein. *(new wording provided by Resolution No. 268/00)*

§2 The vehicles equipped with transmission system with continuous variable ratio should be tested in the same way as the vehicles equipped with automatic gearbox without manual selector.

§3 The positioning of the microphone for measuring the noise in the vicinity of the exhaust, according to ABNT NBR 9714, must be performed upon the use of template, as described in Attachment D.

Art. 3 The exhaust system must be designed, manufactured, assembled and installed in the vehicle so as to be adequately resistant to vibration and corrosion actions to which the vehicle is normally exposed, and allow full compliance with the requirements of this Resolution in normal use conditions.

In case of fibrous material use in the exhaust systems, they should not contain asbestos and can only be used if the appropriate devices ensure their permanence in the original place of the conditioning throughout the muffler's life. Also, the following measures shall be adopted to guarantee the full compliance with the maximum noise levels established in this Resolution:

a) conditioning of fibrous materials, so that there is no direct contact of the exhaust gases with these materials; or

b) in case of direct contact of the exhaust gases with the fibrous materials, the vehicles' verification tests shall be carried out with the exhaust system being previously subjected to conditioning through the simulation of normal

use conditions, according to Attachment C or by simply removing the fibrous materials from the muffler.

Art. 4 The main components of the exhaust system must have indelible markings identifying the manufacturer, through its commercial brand.

Art. 5 The vehicle manufacturer or its legal representative or importer(s) must perform the verification of the representative prototype of production before the start of vehicles production or import.

§1 The responsible for checking the prototype must have skilled and specialized technical staff, who must keep constantly updated archive of all verifications and documentation in progress. The name and full address of the person responsible for verifying the prototype and its substitutes should be notified to the Brazilian Institute of Environment (IBAMA), and whenever there are changes, they should be updated.

§2 To determine the noise levels of vehicles belonging to the same family, the tests may be performed in only one vehicle configuration considered as master configuration of the family, according to the technical criteria to be detailed in Attachment A.

§3 The prototype verification reports of all families and their respective master configurations must contain Attachment A of this Resolution and be sent to IBAMA, before the date of production and/or duration of the respective maximum noise limits.

§4 In case of proven impossibility to perform verification tests of the prototype in the country, reports of tests carried out abroad may be accepted, at the discretion of IBAMA.

Art. 6 The prototype verification is valid only for the year and model indicated. However, for vehicles with the same configurations to those observed previously, characterized by the respective attachments and that remain subject to the same requirements, it is allowed to use the same results and information, and the vehicle manufacturer, its legal representative(s) or importer(s) undertake full responsibility for the continuity of the specifications already approved of the vehicles.

Art. 7 For the purpose of checking the conformity of vehicles under production with the requirements of this Resolution, the responsible for this verification may select, for the realization of the tests, randomly selected sample of vehicles on the assembly line or in inventory for sale.

§1 Sample is characterized as a vehicle tested according to standards established in the Art. 2 of this Resolution;

§2 If the vehicle initially tested does not meet the noise emission limits, measurements should be taken on a larger sample of vehicles, agreed between the producer and IBAMA, limited between five and thirty units of the same configuration, including in this sampling the vehicle initially selected.

§3 The production will be considered in conformity if the following condition is met:

$$\bar{x} + k.S_i \text{ ″ } L_i \qquad si = \sqrt{\frac{\bullet\ (x_i - \bar{x})^2}{(n-1)}}$$

where:

$\bar{x}$ = arithmetic average of the results obtained in all vehicles;

k = statistical factor set forth in Table 1;

n = number of vehicles in the sample;

x_i = each of the results obtained according to ABNT NBR 8433 Standard;

L_i = maximum noise emission limits established.

Table 1 – Statistical Factors

n	5	6	7	8	9	10
k	0.421	0.376	0.342	0.317	0.296	0.279

n	11	12	13	14	15	16	17	18	19
k	0.265	0.253	0.242	0.233	0.224	0.216	0.210	0.203	0.198

Note: If n >, 20, $k = \frac{0.860}{\sqrt{n}}$

Art. 8 The vehicle manufacturer or its legal representative or importer must provide for each family master configuration a statistical report of production monitoring, which shall be issued by the fifth month after the beginning of the marketing or import, and annually thereafter, indicating noise levels according to ABNT NBR 8433 and/or ABNT NBR 9714, at the discretion of the manufacturer, in vehicles chosen at random and distributed uniformly over the corresponding reported period. Data has to be kept on file for two years at the disposal of IBAMA.

Sole paragraph. The manufacturer may employ alternative method to prove the quality of production, provided it is proven to IBAMA its correlation with the level of noise emitted by the vehicle.

Art. 9 The vehicle manufacturer or its legal representative or importer(s) which find and correct spontaneously the unconformity in the production of vehicles sold, shall report and forward to IBAMA the corrective measures adopted.

Art. 10. IBAMA may request clarification or review of reports at any time in its discretion, and may determine the realization of confirmation testing, of the verification and prototyping and on the conformity of production by selecting for the testing, samples of randomly selected vehicles on the assembly line or in inventory for sale.

Sole paragraph. IBAMA shall be provided with the necessary means for testing according to the Art. 2 hereof, including the calibrated measurement instruments and their accessories, test fields and vehicles to be tested.

Art. 11. In case of irregularities are found in the prototype and production compliance verification processes, IBAMA may issue to

Sale Suspension Order to the responsible company for the configurations of

the vehicles involved.

§1 The Sale Suspension Order involves the immediate compliance by the Company with its terms, until the causes that led to the violation are clarified and corrected.

§2 The Sale Suspension Order cancellation in order to return the production and marketing should be immediately performed upon full compliance with the requirements hereof.

Art. 12. In case of non-compliance of the product, the vehicle manufacturer, its legal representative or importer must, within 180 days, counted from the date of observation, solve the problems causing the production unconformity, as well as collect and repair all vehicles of the series and configuration involved.

§1 The repairs should be performed by technical support services accredited by the manufacturer, importer or legal representative, under the guidance and responsibility thereof.

§2 The corrections of the production and repair of vehicles already collected should be verified with IBAMA, through documentation that clearly describes the measures taken, their effectiveness and the number of vehicles involved.

§3 In case of non-compliance with the provisions of this article, the commercialization of the vehicle configuration(s) in question shall be prevented or, if the same had already been suspended, the person responsible shall be subject to administrative and legal penalties.

Art. 13. From July 1st, 1994, all non-original parts and components of the models already in compliance with this Resolution, which are part of the exhaust system and produced for the spare parts market, can only be traded after fulfillment of the same verification requirements before the IBAMA by the manufacturer or importer of exhaust systems, regarding the fulfillment of the requirements of this Resolution for products used in new vehicles. The noise level of the replacement exhaust system in the park condition must be, at the most, the value provided for in the verification process of the corresponding original configuration.

§1 The verification exhaust system should ensure the vehicle functional performance similar to the one obtained with the original exhaust system. Such verification should be done from the engine power curve. The

maximum power and the maximum power rotation measured with the replacement exhaust system should not exceed by more than 5% the maximum power and maximum power rotation measured in the same conditions with the original exhaust system.

§2 For the purposes of compliance of the product with the requirements of this Resolution, IBAMA may select, for the performance of tests, samples of exhaust systems randomly selected from the assembly line and/or manufacturer inventory. The process should follow the same procedures prescribed for verification of conformity regarding the production of new vehicles, subject to the remaining paragraphs of this article.

§3 In case of non-compliance with the provisions of this article, the manufacturer or legal representative cannot market the exhaust systems until appropriate modifications are made and proved, according to the requirements of this Resolution.

Art. 14. From July 1st, 1993 for vehicles that already comply with this Resolution, the vehicle owner's manual shall contain the following information:

a) The vehicle complies with current legislation to control noise pollution for motor vehicles;

b) Procedure for maintenance of the exhaust system (if applicable);

c) Booklet containing the maximum noise limit(s) for the control of the vehicle(s) in circulation;.....dB(A)..... rpm, measured at 0.5 m of distance from the exhaust, according to ABNT NBR 9714.

Art. 15. Costs directly related to the product testing, checking, corrections, collection for repairs and repairs themselves, including the cost of replaced components shall be borne by the manufacturers and/or importers of vehicles and exhaust systems.

Art. 16. Manufacturers, importers or their legal representatives, shall send monthly to IBAMA, from July 1st, 1993, the reports of the sale of all configurations of vehicles sold in the country.

Art. 17. For purposes of this resolution, the definitions of Attachment B shall be established.

Art. 18. IBAMA may establish agreements, contracts and related activities with agencies and entities that directly or indirectly, may contribute to the

development of this program, as well as delegate to other bodies the duties set forth herein.

Art. 19. The penalties foreseen in Law No. 6.938 of August 31st, 1981, shall be applied to the violations of this Resolution's provisions, with the wording provided by Law No. 7.804 of July 18th, 1989, without prejudice to the other penalties foreseen by federal legislation, and to criminal and civil sanctions.

Art. 20. It is up to IBAMA to deliberate on omission cases herein.

Art. 21. This resolution becomes effective on the date of its publication, prevailing the other rules applicable until the period of implementation of each step of the schedule set forth in the Art. 1.

Fernando Coutinho Jorge
Chairman of the Board

Attachment A

1. Vehicle Brand:

2. Model of Vehicle/manufacturing year/model:

2.1 – List of configurations represented:

2.2 – Technical criteria for definition of master configuration and configuration represented.

3. Name and address of the manufacturer:

4. Name and address of the legal representative:

5. Name and address of the importer, if applicable:

6. Engine:

6.1 – Manufacturer:

6.2 – Type:

6.2.1 – Cycles: 2 or 4 strokes

6.3 – Model:

6.4 - Maximum power: _____(kW) at _____(1/min)(rpm)

6.5 – Engine size _____(cm^3)

6.6 – Maximum speed (if applicable): (km/h)

7. Transmission: mechanical/automatic

7.1 - Total number of shifts (except reverse), including the transmission relations.

8. Equipment/materials:

8.1 – Exhaust system:

8.1.1 – Manufacturer

8.1.2 – Legal representative or importer

8.1.3 – Model

8.1.4 – Type _____according to the drawings No. _____

8.1.5 – Fibrous materials in contact with gases: Yes/No

8.1.6 – List of the vehicles' configurations equipped with this exhaust system (only for spare parts' certification):

8.2 – Air admission muffler:

8.2.1 – Manufacturer:

8.2.2 – Legal representative or importer*:

8.2.3 – Model:

8.2.4 – Type according to the drawings No. _____

(*) Dispensable if it is the same as 8.1.2.

8.3 – Catalytic converter (if applicable)

8.3.1 – Manufacturer:

8.3.2 – Legal representative or importer*:

8.3.3 – Model:

8.3.4 – Type _____, according to the drawings No. _____

(*) Dispensable if it is the same as 8.1.2.

8.4 – Acoustic insulation for the reduction of the vehicle's external noise emission:

8.4.1 – Type and application place:

8.4.2 – Commercial specification of the material used, model and

manufacturer:

8.5 – Tires:

Designation ABPA – Associação Brasileira de Pneus e Aros

9. Measurements:

9.1 – Noise levels under acceleration according to ABNT NBR 8433, considering all changes made by Directive CEE 87/56 of the European Economic Community.

<table>
<tr><td rowspan="2">Vehicle identification</td><td colspan="5">Model: _____Manufacturing year:_____</td></tr>
<tr><td colspan="5">VIN/Serial No. _____Max. Pow.: _____(kW) at (1/min)(rpm)</td></tr>
<tr><td colspan="6">Background Noise Level dB(A)</td></tr>
<tr><td>1st Measurement</td><td></td><td>2nd Measurement</td><td colspan="3">3rd Measurement</td></tr>
<tr><td rowspan="2"></td><td rowspan="2">Approximate Speed (km/h)</td><td rowspan="2">Angular speed (rpm)</td><td colspan="2">N.R. Right Side dB(A)</td><td colspan="2">N.R. Left Side dB(A)</td></tr>
<tr><td>1st MEAS.</td><td>2nd MEAS.</td><td>1st MEAS.</td><td>2nd MEAS.</td></tr>
<tr><td>2nd shift</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>3rd shift</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Result _____dB(A)</td></tr>
</table>

Note: The values recorded for the noise levels are the values determined through the measurement less 1 dB(A).

9.2. – Noise levels in park condition, according to ABNT NBR 9714.

<table>
<tr><td rowspan="2">Vehicle identification</td><td colspan="5">Model: _____Manufacturing year: _____</td></tr>
<tr><td colspan="5">VIN/Serial No. _____</td></tr>
<tr><td colspan="6">Background Noise Level dB(A)</td></tr>
<tr><td>1st Measurement</td><td>2nd Measurement</td><td colspan="4">3rd Measurement</td></tr>
<tr><td>Rotation (rpm)</td><td colspan="5">Background Noise Level dB(A)</td></tr>
<tr><td></td><td>1st Measurement</td><td>2nd Measurement</td><td>3rd Measurement</td><td colspan="2">Arithmetic average</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2"></td></tr>
<tr><td colspan="6">Result _____dB(A)</td></tr>
</table>

10. Engine Number:

11. Test report date:

12. Test report number:

13. Location:

14. Date:

15. The following documents are part of this Vehicle Characterization Term:

16. Notes:

17. Name and signature of the person responsible for the test:

Attachment B – Definitions

01. Engine size: engine cylinder volume between the top dead center and bottom dead center of the pistons in cm^3 or liters;

02. Original components and parts: those that comprise the production vehicle and those defined as such by the vehicle manufacturer for use in replacement;

03. External configuration: unique combination of parts and components that characterize the vehicle, from its style, size and aerodynamics.

04. Engine configuration: unique engine combination, emission control system, engine size and fuel feed system;

05. Vehicle configuration: unique combination of both engine and transmission configuration and the transmission ratios after the gearbox up to the wheel, exhaust system, tires and external configuration;

06. Master family configuration: vehicle configuration of a given family that, for presenting the most critical noise emission conditions, can represent (for noise emission levels verification and certification purposes) the vehicles of such family;

07. Conformity Production: observance by the vehicles produced in series

or not to the maximum emission limits set forth and other requirements of this Resolution.

08. HP: (horse power) power unit;

09. dB(A): unit of sound pressure level in decibels, weighted through the response curve in frequency A, for quantification of the noise level;

10. Vehicles' family: basic classification for the production line from the same manufacturer, so that any vehicle of the same family has the same characteristics of the exhaust system, basic engine, engine configuration, transmission and transmission and external configuration item ratio that do not influence the noise emission;

11. kW: (kilowatts) power unit;

12. Maximum noise limit for inspection of the vehicle in circulation: noise level in park condition, plus three (3.0) dB(A);

13. Fibrous materials: materials composed of metallic, ceramic or mineral fibers, used in the manufacture of mufflers;

14. Spare part market: systems, parts and components market for vehicles in use;

15. Two-stroke engine: engine whose operating cycle comprises two phases (combustion-exhaustion and intake-compression);

16. Four-stroke engine: engine whose operating cycle comprises four phases (intake, compression, combustion and exhaustion);

17. New release: introduction in the consumer market of vehicle configuration inexistent up to that moment, with full change of engine conception and external configuration, not derived from existing model;

18. Maximum engine power: maximum power developed by the engine, specified by the manufacturer, with all the equipment and accessories required to its autonomous operation in its particular application;

19. Repair: recovery of defective or degraded systems, parts or components, with or without replacement;

20. Muffler: vehicular component designed to reduce the noise caused by gases' shock with the environment, whose speed and intensity are gradually reduced by the gas flow inside, and can be broken down in more than one

component per vehicle;

21. Exhaust system: set of components comprising the exhaust manifold, exhaust pipe, gas discharge pipe, expansion chamber(s), muffler(s) and catalyst converter(s), where applicable;

22. Similar vehicles: vehicles with two, three or more wheels, whose constructive and propulsion characteristics derive from other classifications covered by this Resolution or similar thereto. Examples of similar vehicles are motor kick scooters, motorcycles with sidecars or bucket for cargo, scoters with cabin for passengers and/or bucket for cargo etc.;

23. Production compliance checking: confirmation of vehicles' compliance, or of the exhaust systems from the spare part market whether produced in series or not, to the maximum noise limits set forth and other requirements hereof;

24. Prototype checking: commercial pre-production vehicle checking, characterized by the manufacturer as master configuration, with the maximum noise limits set forth and other requirements hereof.

Attachment C

Prior to the simulation of normal use conditions, the C1, C2 and C3 tests should be made:

C1) the fibrous materials should be conditioned in a furnace at the temperature of 650 ± 5°C during four hours with no reduction of the fibers' average length, diameter or density;

C2) after conditioning it in a furnace at the temperature of 650 ± 5ºC during one hour, at least 98% of the material should be retained by a mesh sieve with a nominal size of 250 µm which meets ISO-3310/1 Standard, if the test is done according to ISO-2599 Standard;

C3) the weight loss of the material should not exceed 10.5% after immersion during 24 hours at the temperature of 90 ± 5ºC in a synthetic condensate with the following composition:

» 1N hydrobromide acid (HBr): 10 ml

» 1N sulfuric acid (H_2SO_4): 10 ml

» distilled water up to 1,000 ml

Note: the material should be washed with distilled water and dried at 105ºC for one hour before weighing.

The simulation of normal use conditions can be done through one of the three tests, C4, C5 or C6, described as follows:

C4) Conditioning by continuous driving on the road.

C.4.1) According to the vehicle category, the minimum distances to go during the conditioning cycle are:

Engine size in cm^3	Distance (km)
cm^3 under 80	4000
cm^3 above 80 and under 175	6000
cm^3 above 175	8000

C.4.2) 50% ± 10% of the conditioning cycle will consist of urban driving and the rest in long distance and high speed travel: the continuous driving cycle on the road can be replaced by a corresponding conditioning on test track.

C.4.3) The two speed regimes should be alternated at least six times.

C.4.4) The complete test program should include at least ten stops lasting at least 3 hours in order to reproduce the effects of cooling and condensation.

C.5) Conditioning by pulsation.

C.5.1) The exhaust system should be assembled in the vehicle or engine.

In the first case, the vehicle should be placed on the rollers' dynamometer. In the second case, the engine should be installed in the bench dynamometer.

The test equipment shown by the figure is installed at the exhaust system output. Any other equipment is acceptable, provided that it ensures comparable results.

C.5.2) The test equipment should be adjusted so that the exhaust gas flow is alternately interrupted and re-established 2,500 times, using a fast acting valve.

C.5.3) The valve should open when the exhaust gas back pressure, measured

at least 100 mm downstream of the input throttling, reaches a value between 0.35 and 0.40 bar. If, because of the engine characteristics, this value cannot be reached, the valve should open when the back pressure reaches a value equal to 90% of the maximum value, which can be measured before the engine stops. The valve should close when such pressure does not differ more than 10% of its stabilized value, when the valve is open.

C.5.4) The delay command should be adjusted for the exhaust gas production time, which results resulting from the requirements of item C.5.3.

C.5.5) The engine rotation should be 75% of the development rotation of its maximum power.

C.5.6) The power indicated by the dynamometer should be equals to 50% of the full load power, measured at 75% of the maximum power rotation.

C.5.7) Any drain hole in the exhaust system should be plugged during the test.

C.5.8) The test should be completed within 48 hours. If the manufacturer deems it necessary, a cooling period should be observed after each hour.

C.6) Conditioning on test bench.

C.6.1) The exhaust system should be assembled on a representative engine of the type which equips the vehicle for which the system was designed. The engine is then assembled on a test bench.

C.6.2) The conditioning consists of a given number of test cycles specified for the vehicle category, for which the exhaust system was designed. The number of cycles for each vehicle category is:

Engine size in cm^3	**Number of cycles**
cm^3 under 80	6
cm^3 above 80 and under 175	9
cm^3 above 175	12

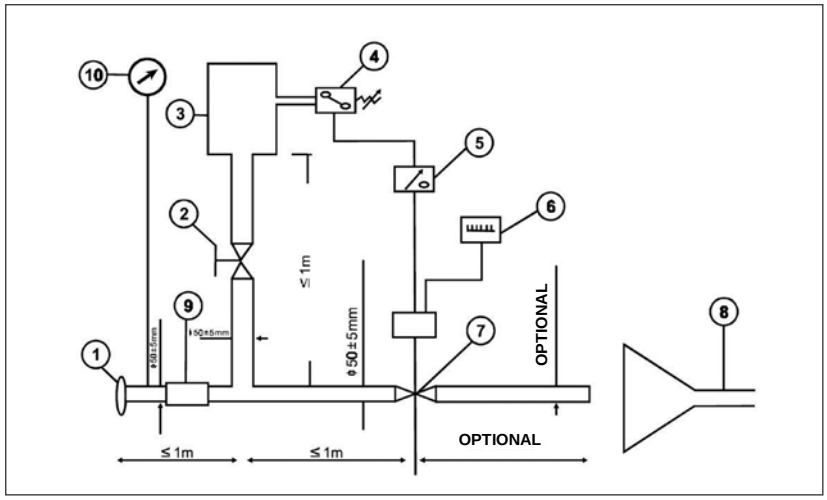
C.6.3) To reproduce the effects of cooling and condensation, each test bench cycle should be followed by a dwell period of at least 6 hours.

C.6.4) Each test bench cycle is done in six phases. The engine operating conditions in each phase and the duration thereof are:

DRIVING CYCLE ON DYNAMOMETER BENCH			
Phase	Conditions	Duration of each phase	
		Engine under 175 cm^3 (min)	Engine of 175 cm^3 or more (min)
1	Idle speed without load	6	6
2	25% of load at 75% of maximum power rotation	40	50
3	50% of load at 75% of maximum power rotation	40	50
4	100% of load at 75% of maximum power rotation	30	10
5	50% of load at 100% of maximum power rotation	12	12
6	25% of load at 100% of maximum power rotation	22	22
Total Duration		2.5h	2.5h

C.6.5) During this conditioning process and at the manufacturer's request, the engine and the muffler should be cooled so that the temperature registered in a point which is not far from the exhaust gas output more than 100 mm, is not above that registered when the vehicle runs at 110 km/h or at 75% of the maximum power rotation, in the highest transmission ratio. The vehicle speed and/or engine regime are determined with an accuracy of 3%.

Installation Diagram
for Conditioning by Pulsation



1 – Input flange or sleeve for exhaust tube connection.

2 – Manual valve.

3 – Buffer tank with 35-40 l capacity.

4 – Pressure regulator with operating range from 0.05 to 2.5 bars.

5 – Delay device.

6 – Pulse counter.

7 – Fast-acting valve operated by pneumatic cylinder from 120 N to 4 bar. The response time, at opening or closing, shall not exceed 0.5 sec.

8 – Exhauster.

9 – Flexible hose.

10 – Pressure gauge.

Attachment D – Instruction for Template use

1. The template for noise measurement is an auxiliary device to enable accurate positioning of the microphone according to ABNT NBR 9714. It consists of a triangle with two backboards (1), one for positioning with the exhaust and the other for placing the microphone. The third edge provides one alignment aid (5). The device also has two spirit levels (3).

2. Depending on the positioning of the exhaust system (left or right side), one of the backboards (1) shall be positioned near the exhaust gas output hole. The correct device leveling should be checked from the levels (3).

3. Through the alignment aid (5), it is checked, visually, the correct alignment of the backboard (I) with the gas flow.

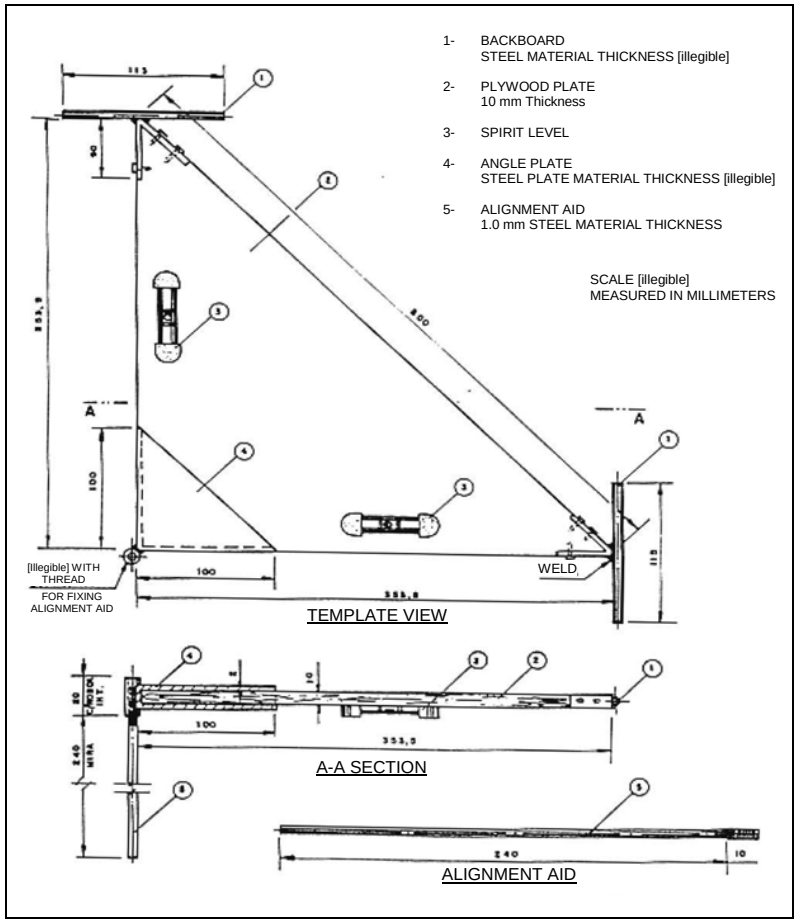
4. The microphone is positioned on the other backboard (1).

5. In case of vertical exhaust systems, the backboard (I) should match the hole diameter.

6. Depending on the exhaust diameter, the backboards may be greater than those shown in the figure.

7. The device should always be used at a soil height equal to or greater than 0.2 m.

Template for Noise Measurement



Attachment E

AMENDED BY DIRECTIVE CEE 87/56 OF DECEMBER 18TH, 1986, FROM EUROPEAN ECONOMIC COMMUNITY, RELATED TO THE EXTERNAL NOISE MEASURING METHOD OF MOTORCYCLE IN ACCELERATION CONDITION.

E.1 – Motorcycle with mechanical gear box – Use of gear box.

E.1.1 – For motorcycles with engine size not exceeding 175 cm^3 and more than four gears, the test must be carried out in third gear.

E.1.2 – For motorcycles with engine size exceeding 175 cm^3 and with more than four gears, the test must be carried out in second and third gears, and the result must be obtained from the arithmetic average of the two measured values.

Note: If during the test in second gear, mentioned in items E.1.1 and E.1.2, the engine speed exceeds 10% the rotation of maximum power before the line BB, the test shall be carried out in third gear, and the measured value being the only to be registered as the test result.

E.2 – Motorcycles with automatic gear box.

E.2.1 – Motorcycles without manual selector. The test should be carried out at different approach speeds stabilized at the entrance of line AA at 30, 40 and 50 km/h, or at 75% the maximum road speed if this value is lower. Register as a result the highest value measured.

E.2.2 – Motorcycles with manual speed selector.

E.2.2.1 – The approach to line AA should be carried out at a steady speed below 50 km/h, at 75% rotation of maximum power, or at a speed of 50 km/h at a rotation lower than 75% rotation of maximum power.

Note: If at the time of the test, at 50 km/h, an overdrive occurs for the first speed, the approach speed of the motorcycle may be increased up to 60 km/h in order to avoid the reduction.

E.2.2.2 – Position of the manual selector. If the motorcycle is equipped with manual speed selector, the test shall be performed at a higher speed. The non-automatic speed reduction device (e.g. kick-down) should not be used. If an automatic drop of speed occurs after line AA, we recommend the test

using the first highest speed, or the second, if necessary, in order to find the highest position of the selector which ensures the test performance without automatic reduction (without kick-down use).

CONAMA RESOLUTION No. 06/1993

Sets deadline for motor vehicle manufacturers and import companies to provide procedures and infrastructure for the systematic dissemination to the public in general, calibration recommendations and specifications, engine adjustment and maintenance, systems of fuel supply, ignition, electric charge, starting, cooling, exhaust and, where applicable, components of gas, particulates and noise emission control systems. Official Gazette (D.O.U.) of 10.01.1993.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, as amended by Laws No. 7.804 of July 18th, 1989 and No. 8.028 of April 12th, 1990, regulated by Decree No. 99.274 of June 6th, 1990, considering the provisions of Law No. 8.490 of November 19th, 1992, as amended by Provisional Decree No. 350 of September 14th, 1993, and in the Bylaws approved by Resolution/CONAMA/No. 025 of December 3rd, 1986.

Whereas the emission of pollutants by motor vehicles contributes to the continuing deterioration of air quality, especially in urban centers;

Whereas the motor vehicles deregulation contributes to the increased pollutants emission and fuel consumption;

Whereas the Air Pollution Control Program by Motor Vehicles – PROCONVE foresees the implementation of Inspection and Maintenance Programs of Vehicles in Use in large urban centers;

Whereas the access difficulties to the motor vehicle maintenance and regulation recommendations and specifications by independent repair shops and the general public represent major limitations to the development of PROCONVE;

Whereas it is of extreme public and environmental interest the comprehensive dissemination of motor vehicle maintenance and regulation specifications by the manufacturers and importers;

Whereas, also, the provisions of Consumer Protection Code – Law No. 8.078 of 09/11/1990, resolves:

Art. 1 The motor vehicle manufacturers and importers shall, within 90 days from the publication of such Resolution, provide procedures and infrastructure for the systematic dissemination to the public in general, calibration recommendations and specifications, engine adjustment and maintenance, systems of fuel supply, ignition, electric charge, starting, cooling, exhaust and, where applicable, components of gas, particulates and noise emission control systems.

§1 For vehicles sold from model year 1994, including the dissemination of calibration recommendations and specifications, the adjustment and maintenance should be made whenever there is the introduction of a new model in the market, new model year versions of vehicles already on sale and change of model year.

§2 For vehicles sold from model year 1988, inclusive, to the model year 1994, the compilation of calibration, adjustment and maintenance recommendations and specifications should be available to the public in general within a maximum period of 270 days from the publication of this Resolution.

§3 For vehicles sold from model year 1988 to the model year 1970, the compilation of calibration, adjustment and maintenance recommendations and specifications should be available to the public in general within a maximum period of 540 days from the publication of this Resolution.

§4 All information to be disclosed in accordance with §1 should also be attached to the License application processes for use of the Vehicle or Engine Configuration – Manufacturer's or importer's LCVM.

Art. 2 The vehicles manufactured for unconventional use, such as military vehicles, farm, paving, earth moving machineries and other special application, previously justified and released by IBAMA are exempt from meeting the requirements of this regulation.

Art. 3 IBAMA may establish agreements, contracts and related activities with agencies or entities that, directly or indirectly, may contribute to the assignment development of this Resolution.

Art. 4 It is up to IBAMA to deliberate on omission cases herein.

Art. 5 To the offenders to the provisions of this Resolution, IBAMA may suspend the issuance of new LCVM and the penalties foreseen in Law 6.938 of 08/31/81 shall apply, com wording provided by Law No. 7.804 of 07/18/89, subject to the other penalties foreseen in the specific legislation, as well as the criminal and civil sanctions.

Art. 6 This Resolution shall be effective on the date of its publication.

CONAMA RESOLUTION No. 08/1993

It complements Resolution No. 18/86, establishing on a national basis, the Air Pollution Control Program by Motor Vehicles – PROCONVE, setting maximum limits of pollutant emission for the engines designed to new heavy duty vehicles, national and imported. Official Gazette (D.O.U.) of 12.31.1993.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, as amended by Laws No. 7.804 of July 18th, 1989 and No. 8.028 of April 12th, 1990, regulated by Decree No. 99.274 of June 6th, 1990,

Whereas the provisions of Law No. 8.490 of November 19th, 1992, as amended by Provisional Decree No. 350 of September 14th, 1993, and the Bylaws approved by Resolution CONAMA No. 25 of December 3rd, 1986,

Whereas the emission of carbon monoxide, hydrocarbons, nitrogen oxides, smoke and particulate matter by vehicles contribute to the continued degradation of air quality;

Whereas there already are technical solutions, of proven use, that allow the improvement of emission control for heavy duty vehicles;

Whereas the need of time so that the technologic suitability of new engines to the control requirements is economically feasible;

Whereas the fuel characteristics influence the level of emission and durability of diesel engines;

Whereas the need of time to improve the Diesel oil quality;

Whereas the need to suit the transport matrix and to prevent the widespread use of light vehicles of Diesel Cycle from compromising PROCONVE's goals;

Whereas the release of engine and motor vehicles imports and the Brazilian trend for the international technologic harmonization;

Whereas the need of matching the implementation schedule of

exhaust gas emission limits with the noise from heavy duty vehicles of Diesel Cycle, established in CONAMA Resolution No. 1 of February 11th, 1993;

Whereas the provisions of the Consumer Protection Code, Law No. 8.078 of September 11th, 1990, resolves to:

Art. 1 In addition to CONAMA Resolution No. 18 of May 6th, 1986, set the Maximum Limits of Pollutants Emission for the engines designed for new national and imported heavy duty vehicles, as shown in Table 1.

§1 The engines and vehicles for special application that cannot be used for urban and/or road transportation, as well as those powered by alternative fuels to Diesel, gasoline and alcohol may be partially or totally exempt from the requirements of this Resolution, at the sole discretion of Brazilian Institute of the Environment (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), in order to encourage the development of low pollution potential options.

§2 Marine and industrial engines are not covered by this Resolution, as well as those designed for agricultural and earthmoving machineries, as defined according to ABNT NBR 6142 and TB-66 standards, respectively.

Table 1 – Maximum emission limits for vehicle heavy duty engines

		Parameters				
		CO (g/kWh)	HC (g/kWh)	NOx (g/kWh)	Smoke (k)(1)	Particulates (g/kWh)(1)
Phases	Phase I	–	–	–	2.5	–
	Phase II	11.2	2.45	14.4	2.5	–
	Phase III	4.9	1.23	9.0	2.5	0.7/0.4(2)
	Phase IV	4.0	1.1	7.0	–	0.15

(1) Applicable to Diesel cycle engines only
(2) 0.7 g/kWh for engines up to 85 kW and 0.4 g/kWh for engines with more than 85 kW.

Art. 2 The engines designed for heavy duty vehicles, manufactured and marketed in Brazil, should meet the maximum emission limits defined in Table 1, according to the minimum percentage of production and dates set forth in this Article, regardless of the type of fuel they use.

Paragraph 1 From March 1st, 1994, all Diesel powered engines produced,

referring to the models chosen by its manufacturer as responsible for at least 80% of its production, should meet the limits of Phase II, and the remaining models should meet the limits of Phase I, as shown in Table 1.

§2 From January 1st, 1996, all engines produced designed to heavy duty vehicles, referring to the models chosen by its manufacturer as responsible for at least 80% of its production, should meet the limits of Phase III, and the remaining models should meet the limits of Phase II, as shown in Table 1.

§3 The limits for Phase IV, as well as the dates of its implementation are prescribed in this Resolution as goals and should be discussed and confirmed by CONAMA until 12/31/1994.

Paragraph 4 From January 1st, 2000, all engines produced designed to heavy duty vehicles, referring to the models chosen by its manufacturer as responsible for at least 80% of its production, should meet the limits of Phase IV, and the remaining models should meet the limits of Phase III, as shown in Table 1, observing the provisions of the Paragraph 3 hereof.

§5 From January 1st, 2002, all engines designed to heavy duty vehicles should meet the limits of Phase IV, as shown in Table 1, observing the provisions of the Paragraph 6 hereof.

§6 For urban buses, the dates set forth in the Paragraphs 2 and 4 are anticipated to 03/01/1994 and 01/01/1998, respectively, not applying, however, the limits set forth for particulate emission prescribed for Phase III, which is effective on 01/01/1996.

§7 The vehicle/engine configurations which meet in advance any phase of the program are entitled to an IBAMA certificate for the claim for preferential treatment with regards to tax benefits and credit lines.

§8 New limits of complementary emission to those established in Table 1 should be discussed and defined with a minimum advance of four years to its entry into force.

§9 Vehicles and engines fitted in the §1 of the Article 1 are not included in 80% of the production which meet the most severe phase of each stage of the program.

Art. 3 All heavy engines and vehicles, imported and designed to the Brazilian market, should meet the emission limits defined in Table 1,

according to the schedule established herein.

§1 From January 1st, 1994, all vehicles should meet the limits of Phase III.

§2 From January 1st, 1998, all vehicles should meet the limits of Phase IV, observing the provisions of §3 of Article 2 hereof.

Art. 4 The emission of crankcase gases of heavy duty engines should be zero in any part of the engine and guaranteed by recirculation devices of such gases, and can be dispensed only in turbocharged diesel cycle engines manufactured until 12/31/95, provided that it is technically justified by the manufacturer.

Sole paragraph. This requirement application to turbocharged Diesel engines shall be discussed and confirmed by CONAMA until 12/31/1994.

Art. 5 The emission levels measured in the heavy duty engines are expressed in g/kWh and refer to the pollutant mass emitted per hour per effective net power unit.

§1 The emission of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) should be measured according to NB-1192 Standards of 1992 – Determination of Exhaust Gas Emission Emitted by Diesel Engine and MB-3295 Standards of 1990 – Diesel Engine – Exhaust Gas Analysis.

§2 Until IBAMA adopts complementary Brazilian standard(s) to NB-1192 and specific for the definition and specification of analysis equipment and test method for measuring the particulate matter (PM), tests are accepted according to Attachment V, item 2, of the Council Directive of European Economic Communities No. 91/542/CEE of 10/01/1991, which will serve as the basis for these standards.

Art. 6 The maximum limit of smoke rate (k) for any vehicle equipped with Diesel Cycle engine refers to the expression $K = c.\ G^{18}$, where: $G = V \cdot n / t$, defined in ABNT NBR 5478 Standard – Measuring Method of Exhaust Gas Soot Content Emitted by Diesel powered engine - Units Correlation and Formula for Limit Curve Construction, except for the situations where the nominal flow of exhaust gas “G” is less or equals to 42 liters per second, or greater or equals to 200 l/s, when the maximum allowable soot concentration “c” should be calculated for the values of “G” equal to 42 l/s or 200 l/s, respectively.

§1 The determinations of soot content emission should be carried out in

steady state through Opacimeter or Filtering Element Sampler, as prescribed in ABNT NBR 5484 Technical Standards - Alternative Engines of Internal Ignition Combustion by Compression (Diesel) or Spark Ignition (Otto) of Variable Angle Speed – Test Method; ABNT NBR 7027 – Exhaust Gas Emitted by Diesel Engines – Determination of Soot Content of Steady State - Test Method; ABNT NBR 7026 – Exhaust Gas Emitted by Diesel powered Engine – Measurement of Soot Content with Sampler through Filtering Element; and Standard Project 05:017.02 – 002 of Mar/92 – Employment of Opacimeter for Soot Content Measurement of Diesel powered Engine – Method of Light Absorption.

§2 When measuring smoke in altitudes of 350 m above sea level, the values observed in Bosch Unit must be reduced by 0.5 Bosch Unit.

§3 The maximum smoke limits, calculated in accordance with this Article, are presented in Attachments I and II for altitudes below 350 m, and to higher altitudes, where the correction mentioned in the §2 is already included.

Art. 7 The manufacturer or importer(s) of vehicles equipped with Diesel cycle engine should submit to IBAMA and to the accredited technical agency until 12/31/1993, the Reports on Typical Smoke Values in Free Acceleration – RVTF, relating to the values obtained with the respective test altitudes, of all configurations of engines produced in 1993 for sale in the national territory, as prescribed in the Standard projects 05:017.02-002 (March/92) – Employment of Opacimeter for Soot Content Measurement of Diesel powered Engine – Method of Light Absorption and Standard Project 05:017.02-005 (July/92) – Exhaust Gas Emitted by Diesel powered Engine in Free Acceleration – Determination of Opacity.

Art. 8 From March 1st, 1994, all approval processes and certification of Diesel cycle engines, for applications in light or heavy duty vehicles, should include smoke rate in free acceleration, measured with the methodology specified in Article 7, such as the manufacturer specification to ensure the proper adjustment of the engine over its use.

§1 IBAMA shall propose CONAMA, until June/94, regulation of the deadline, limits and correction altitude factors for the smoke rate in free acceleration for new engines. The new limits are based on typical values of 1993 and approvals of 1994 and will have the goals of 0.83 m^{-1} (30 HSU) and 1.19 m^{-1} (40 HSU) for naturally aspirated and turbocharged engines, respectively.

§2 From March 1st, 1994, the production conformity certification has, as the limit of smoke rate in free acceleration, the value declared in the prototype approval process for each engine configuration.

Art. 9 The configuration choice to be taken as representative for RVTF approval, certification and presentation purposes may be made using the family criteria, which shall be justified by the manufacturer and submitted for IBAMA and the accredited technical agency approval, prior to carrying out the tests.

Art. 10. The maximum established emission limits should be guaranteed in writing by the manufacturer or importer for 80,000 km for light vehicles, and for 160,000 for heavy duty vehicles, or for five years of use, shown from tests that produce equivalent results in durability, as procedures proposed by the manufacturer and previously approved by IBAMA.

§1 Until the official establishment of test procedures foreseen herein, the manufacturer's warranties may be replaced by a 10% reduction in the maximum established emission limits, except for the carbon monoxide emission at idle speed of the vehicles equipped with Otto-cycle engine.

§2 For the purposes of this Article, the maximum smoke limits calculated with the deterioration factor of 10% are presented in the Attachment II.

Art. 11. To comply with the requirements of this Resolution, the reference fuel(s) should be used for emission tests applicable to the engine type considered, namely, powered by gasoline, alcohol or Diesel oleo, according to the specifications CNP-24/89, CNP-01-85 or those containing in the Attachment III of this Resolution.

§1 In case of alternative fuel use to those mentioned herein, the emission tests should be carried out with the commercial specification fuel until IBAMA defines the reference fuel specification.

§2 For the compliance with this Resolution and fulfillment of CONAMA Resolution No. 18/86, PETROBRAS should ensure the availability of reference Diesel oils and gasoline for emission tests, according to the specifications mentioned herein, with maximum delivery time of three months from the date of delivery of the purchase order to PETROBRAS.

Art. 12. The commercial Diesel oil may have different specifications for use in different regions of the country, according to their environmental needs and specifications of Attachment IV, recommended by this Resolution.

§1 It is recommended that the National Fuel Department – DNC specifies Diesel oils A and B for sale, according to the specifications of Attachment IV, within 30 days from the date of publication of this Resolution.

§2 IBAMA or the technical agency accredited by it will define the actions and coordinate a Work Group, involving the engines manufacturers, DNC, PETROBRAS and CETESB to analyze, until 12/31/1994, the new specifications influence of commercial Diesel oil on the engine pollutant emissions, when compared to the results obtained with the reference fuel, so as to allow the characterization of actual emission of vehicle fleet.

Art. 13. IBAMA shall define, within 15 days from the publication of this Resolution, based on the environmental need of each region and observing the practical feasibility of production and distribution, the regions that will receive the metropolitan Diesel (types B and C).

Art. 14. The agencies and entities responsible for the specification, production and distribution of fuels shall analyze the feasibility of producing Diesel oil with a maximum of 0.05% of sulfur in weight, maximum of 10% of aromatics and cetane number of at least 48, for distribution to all vehicles that meet the limits of Phase IV of this Resolution, being IBAMA responsible, in common agreement with these agencies, for proposing to DNC the specifications and the implementation dates until 12/31/1994.

Art. 15. From March 1st, 1994, the light vehicles equipped with Diesel cycle engine should meet the maximum emission limits of the crankcase and exhaust, except the carbon monoxide content in idle speed, prescribed for light vehicles, according to the requirements of CONAMA Resolution No. 18/86.

§ 1 From March 1st, 1994, the emission of particulate matter in the exhaust gas of light vehicles, equipped with Diesel cycle engine, should be less than the limit of 0.05 g/km, measured in accordance with the test method and the analysis equipment defined in the United States of America Code of Federal Regulations, title 40, part 86, of July 1992, which will serve as base for IBAMA to refer to specific complementary standard.

§2 The light Diesel cycle vehicles of mixed or cargo use, with gross weight exceeding 2,000 kg, may meet the requirements established for heavy duty vehicles, alternatively to the procedures set forth herein, provided that the engine characteristics allow the test.

Art. 16. From July 1st, 1994, the manufacturer and the importer(s) of

vehicles with Diesel cycle engines should provide the customer and the authorized service network, through maintenance and service and vehicle owner's manuals, the maximum soot content amounts in the range of angular use speed of each engine, expressed simultaneously in Bosch Unit (UB) and in light absorption coefficient (m^{-1}), and the smoke rate in free acceleration, expressed in "m^{-1}", applicable to the engines manufactured from March 1st, 1994 on.

Art. 17. From July 1st, 1994, all vehicles with Diesel cycle engine should have attached to the engine compartment, in a protected location and of easy viewing, a sticker with the indications of smoke rate in free acceleration and the angular speeds of idle speed and maximum free, recommended by the manufacturer to ensure the correct engine adjustment.

Art. 18. From the requirement deployment dates of this Resolution, the manufacturers and importers of vehicles/engines should submit to IBAMA, until the last day of each calendar semester, the Emission Quality Control Reports (RCQE) of all vehicles/engines configurations in production or imported, explaining the criteria used for obtaining and concluding the results. The reports of the tests performed should be made available to IBAMA for consultation for three years.

Art. 19. Until December 31st, 1994, IBAMA shall review the procedures of Production Conformity Certification, required from item 3.6 of Chapter VIII of CONAMA Resolution No. 18/86, with the goal to raise the sampling confidence interval to 95%.

Art. 20. The 1st Article of CONAMA Resolution No. 1 of February 11th, 1993, shall hereinafter have the following wording:

"Art. 1 Sets for national and imported motor vehicles, except motorcycles, scooters, mopeds, bicycles with auxiliary engine and the like, the maximum noise limits with the vehicles in acceleration and in stop condition.

§1 For national vehicles produced for the domestic market, the maximum noise limits is in force with the vehicle in acceleration, defined in Table 1A hereof, according to the schedule below, by manufacturer trademark:

a) Otto-cycle engine vehicles, except those of categories *c* and *d*:

a.1) at least 20% of the vehicles produced from March 1st, 1994;

a.2) at least 50% of the vehicles produced from January 1st, 1995;

a.3) 100% of the vehicles produced from January 1st, 1997;

b) All Diesel cycle motor vehicles and the Otto-cycle engine vehicles of categories *c* and *d*:

b.1) at least 40% of the vehicles produced from January 1st, 1996;

b.2) 100% of the Otto-cycle engine vehicles produced from January 1st, 1997;

b.3) 100% of the vehicles produced from January 1st, 1998.

Table 1A – Maximum noise limits emitted by Vehicle in acceleration, according to NBR 8433

CATEGORY			NOISE LEVEL dB(A) LEVEL		
DESCRIPTION			OTTO	DIESEL	
A	Passenger vehicles with up to nine seats and mixed use vehicle derived from automobile		77	78	77
B	Passengers vehicle with more than nine seats; cargo or traction vehicle and mixed use vehicle derived from automobile	PBT up to 2,000 kg	78	79	78
		PBT exceeding 2,000 kg and up to 3,500 kg	79	80	79
C	Passenger vehicle or mixed use with PBT higher than 3,500 kg	Maximum power under 150 kW (204 HP)	80	80	80
		Maximum power equals or above 150 kW (204 HP)	83	83	83

CATEGORY			NOISE LEVEL dB(A) LEVEL		
DESCRIPTION			OTTO	DIESEL	
D	Cargo or traction vehicle with PBT above 3,500 kg	Maximum power under 75 kW (102 HP)	81	81	81
		Maximum power between 75 and 150 kW (102 to 204 HP)	83	83	83
		Maximum power equal or above 150 kW (204 HP)	84	84	84

Notes

1) Vehicle designations according to ABNT NBR 6067

2) PBT: Total Gross Weight

3) Power: Maximum net effective power (ABNT NBR 5484)

4) This Table cancels and replaces Table 1 of CONAMA Resolution No. 1 of February 1st, 1993.

§2 For all imported vehicles, the maximum noise limits with the vehicle in acceleration set forth in this Article, shall become effective from March 1st, 1994, except for the vehicles produced or assembled in Argentina, Paraguay and Uruguay, for which the maximum noise limits with vehicle in acceleration, set forth herein, shall become effective from January 1st, 1995 for the vehicles of item *a* of the § 1 herein, and from January 1st, 1996 for the vehicles of item *b* of the §1 hereof.

§3 The maximum noise limits established herein should be met during the whole granted warranty period and under the conditions specified by the manufacturer and/or importer.

§4 Any impossibilities of meeting the established percentage of the schedule shall be evaluated by IBAMA.

§5 The vehicle noise level, in stop condition, is the reference value of the new vehicle in the verification process. This value, plus three (3) dB(A), will be the maximum noise limit for vehicle monitoring in circulation.

§ 6 From March 1st, 1994, the noise level in stop condition should be

provided to IBAMA, in two copies, measured close to the exhaust, according to ABNT NBR 9714, of all vehicles' models produced for purposes of vehicle monitoring in circulation."

Art. 21. CONAMA Resolution No. 4 and 10 of June 15th, 1988 and September 14th, 1989, respectively, and provisions in contrary are revoked.

Art. 22. The penalties foreseen in Law No. 6.938 of August 31st, 1981, shall be applied to the violations of this Resolution's provisions, with the wording provided by Law No. 7.804 of July 18th, 1989, without prejudice to the other penalties foreseen by federal legislation, and to criminal and civil sanctions.

Art. 23. For the purposes of this Resolution, the exhaust emission results should be submitted through Attachments V and VI of this Resolution.

Art. 24. The vehicles produced and assembled in Argentina, Paraguay and Uruguay shall be treated as national vehicles, pursuant to this Resolution, in case the MERCOSUR Harmonization Commission adopts the same requirements established for Brazilian vehicles.

Art. 25. This Resolution shall be effective on the date of its publication.

Fernando Coutinho Jorge	Simão Marrul Filho
Chairman of the Board	Executive-Secretary

Attachment I

Smoke Limits Values for Different Altitudes

Air flow (1/s)	For altitudes lower or equal to 350 m		For altitudes exceeding 350 m	
	Bosh Unit (UB)	Light Abs. Coeff. (m^{-1})	Bosh Unit (UB)	Light Abs. Coeff. (m^{-1})
≥ 200	3.21	1.08	3.71	1.40
198	3.21	1.08	3.71	1.41
195	3.23	1.09	3.73	1.42
192	3.24	1.10	3.74	1.43
189	3.25	1.10	3.75	1.44
186	3.27	1.11	3.77	1.45
183	3.28	1.12	3.78	1.46
180	3.30	1.13	3.80	1.47
177	3.31	1.14	3.81	1.48
174	3.33	1.15	3.83	1.49
171	3.34	1.15	3.84	1.50
168	3.36	1.16	3.86	1.52
165	3.37	1.17	3.87	1.53
162	3.39	1.18	3.89	1.54
159	3.40	1.19	3.90	1.55
156	3.42	1.20	3.92	1.57
153	3.44	1.22	3.94	1.58
150	3.46	1.23	3.96	1.60
147	3.47	1.24	3.97	1.61
144	3.49	1.25	3.99	1.63
141	3.51	1.26	4.01	1.64
138	3.53	1.28	4.03	1.66
135	3.55	1.29	4.05	1.68
132	3.57	1.30	4.07	1.70
129	3.59	1.32	4.09	1.71
126	3.61	1.33	4.11	1.73

Air flow (1/s)	For altitudes lower or equal to 350 m		For altitudes exceeding 350 m	
	Bosh Unit (UB)	Light Abs. Coeff. (m^{-1})	Bosh Unit (UB)	Light Abs. Coeff. (m^{-1})
123	3.63	1.35	4.13	1.75
120	3.65	1.36	4.15	1.77
117	3.68	1.38	4.18	1.79
114	3.70	1.40	4.20	1.82
111	3.72	1.14	4.22	1.84
108	3.75	1.43	4.25	1.86
105	3.77	1.45	4.27	1.89
102	3.80	1.47	4.30	1.92
99	3.83	1.49	4.33	1.94
96	3.86	1.52	4.36	1.97
93	3.88	1.54	4.38	2.00
90	3.91	1.56	4.41	2.04
87	3.95	1.59	4.45	2.07
84	3.98	1.62	4.48	2.11
81	4.01	1.65	4.51	2.14
78	4.05	1.68	4.55	2.18
75	4.08	1.71	4.58	2.23
72	4.12	1.74	4.62	2.27
69	4.16	1.78	4.66	2.32
66	4.20	1.82	4.70	2.37
63	4.25	1.86	4.75	2.43
60	4.29	1.91	4.79	2.49
57	4.34	1.96	4.84	2.55
54	439	2.01	4.89	2.62
51	4.45	2.07	4.95	2.70
48	4.51	2.14	5.01	2.78
45	4.57	2.21	5.07	2.87
≤ 42	4.63	2.29	5.13	2.98

Attachment II

Smoke Limits Values for Different Altitudes Considering Deterioration Factor of 10%

Air flow (1/s)	For altitudes lower or equal to 350 m		For altitudes exceeding 350 m	
	Bosh Unit (UB)	Light Abs. Coeff. (m^{-1})	Bosh Unit (UB)	Light Abs. Coeff. (m^{-1})
≥ 200	3.03	0.98	3.53	1.27
198	3.04	0.98	3.54	1.28
195	3.05	0.99	3.55	1.29
192	3.06	1.00	3.56	1.30
189	3.08	1.00	3.58	1.31
186	3.09	1.01	3.59	1.32
183	3.10	1.02	3.60	1.33
180	3.12	1.03	3.62	1.34
177	3.13	1.03	3.63	1.35
174	3.14	1.04	3.64	1.36
171	3.16	1.05	3.66	1.37
168	3.17	1.06	3.67	1.38
165	3.19	1.07	3.69	1.39
162	3.21	1.08	3.71	1.40
159	3.22	1.08	3.72	1.41
156	3.24	1.09	3.74	1.42
153	3.25	1.10	3.75	1.44
150	3.27	1.11	3.77	1.45
147	3.29	1.12	3.79	1.46
144	3.31	1.13	3.81	1.48
141	3.33	1.15	3.83	1.49
138	3.34	1.16	3.84	1.51
135	3.36	1.17	3.86	1.52
132	3.38	1.18	3.88	1.54
129	3.40	1.19	3.90	1.55
126	3.42	1.21	3.92	1.57

Air flow (1/s)	For altitudes lower or equal to 350 m		For altitudes exceeding 350 m	
	Bosh Unit (UB)	Light Abs. Coeff. (m^{-1})	Bosh Unit (UB)	Light Abs. Coeff. (m^{-1})
123	3.44	1.22	3.94	1.59
120	3.47	1.23	3.97	1.61
117	3.49	1.25	3.99	1.63
114	3.51	1.26	4.01	1.65
111	3.53	1.28	4.03	1.67
108	3.56	1.30	4.06	1.69
105	3.58	1.31	4.08	1.71
102	3.61	1.33	4.11	1.73
99	3.64	1.35	4.14	1.76
96	3.66	1.37	4.16	1.78
93	3.69	1.39	4.19	1.81
90	3.72	1.41	4.22	1.84
87	3.75	1.44	4.25	1.87
84	3.79	1.46	4.29	1.9
81	3.82	1.49	4.32	1.93
78	3.85	1.51	4.35	1.97
75	3.89	1.54	4.39	2.01
72	3.93	1.57	4.43	2.05
69	3.97	1.61	4.47	2.09
66	4.01	1.64	4.51	2.14
63	4.05	1.68	4.55	2.19
60	4.10	1.72	4.60	2.24
57	4.14	1.76	4.64	2.30
54	4.19	1.81	4.69	2.36
51	4.25	1.86	4.75	2.43
48	4.30	1.92	4.80	2.50
≤ 42	4.43	2.05	4.93	2.67

Attachment III

Specifications for Reference Diesel Oil for Testing Consumption and Emissions

Characteristics Units		Phases			Methods (1)
		I and II	III	IV	
Distillation: P.I.E. 10% 50% 90% PFE	°C	160-190 190-220 245-280 230-360 max. 390	min-245 320-340 max.-370	min-245 320-340 max.-370	MB-45
Total sulfur	% mass	0.2-0.5	max. 0.3	max. 0.05	MB-106
Flashpoint (min.)	ºC	55	55	55	MB-48
Viscosity at 37.8 ºC	cSt	2.5-3.5	2.5-3.5	2.5-3.5	MB-293
Ashes (maximum)	% mass	0.02	0.01	0.01	MB-47
Cetane rate calc.	–	48-54	48-54	48-54	ASTM D-976
Aromatic Carbon	% V	15-25	15-25	15-25	ASTM D-3238
C.F.P.P. (maximum)	ºC	-5	-5	-5	EN 116
Density at 20/4ºC	–	0.832 -0.845	0.832 -0.845	0.832 -0.845	MB-104
Corrosivity to copper 3h to 50ºC (maximum)	–	2	1	1	MB-287

Carbon Residue of the final 10% of dest. (maximum)	% mass	0.25	0.20	0.20	MB-290
Water and Sediments (max.)	% V	0.05	0.05	0.05	MB-38
Color ASTM (max.)	–	3	3	3	MB-351
Aspect – clear and free of material in visual suspension					
Oxidation stability (2)	mg/100 ml	report	report	report	ASTM D 2274
No. of Neutralization (2)	mg/K OH/g	report	report	report	AST D 974
Hydrogen/ Carbon Ratio (2)	–	report	report	report	–

(1) Use the corresponding Brazilian methods or ASTM

(2) Discuss and specify value until 12/31/94.

Attachment IV

Specifications for Commercial Diesel Oil

Characteristics	**Units**	**Specifications**			**Methods(1)**
Type		**A**	**B**	**C**	
Distillation: 50% evap. 85% max. evap. PFE	ºC	260-310 370 –	260-310 370 –	(2) 370 (2)	MB-45
Total sulfur (maximum)	% mass	1.0	0.5	0.3	MB-106
Flashpoint	ºC	(3)	(3)	(3)	MB-48

Viscosity at 37.8ºC	cSt	1.6-6.0	1.6-6.0	1.6-6.0	MB-293
Ashes (max.)	% mass	0.02	0.02	0.02	MB-47
No. of Cetane (minimum)	–	40 (4)	40 (4)	(2)	D-613
Cetane rate minimum calc.	–	45	45	(2)	ASTM D-976
C.F.P.P. (maximum)	ºC	(2)	(2)	(2)	EN 116
Cloud Point	ºC	6-19 (5)	6-19 (5)	6-19 (5)	P-MB-585
Density at 20/4ºC	–	0.82-0.88	0.82-0.88	(6)	MB-104
Corrosivity to copper 3hrs at 50ºC (maximum)	–	2	2	2	MB-287
Carbon Residue of the final 10% of dest. (maximum)	% mass	0.25	0.25	0.25	MB-290
Water and Sediments (maximum)	% V	0.05	0.05	0.05	MB-38
Color ASTM (max.)	–	3	3	3	MB-351
Aspects	–	clear and free of material in visual suspension			

(1) Use the corresponding Brazilian methods or ASTM
(2) Discuss and specify value until 12/31/94.
(3) Only specified for Diesel oil for use in marine engines, whose minimum value is 60°C.
(4) When CFR engine is not available, cetane rate calculated by ASTM D-976 will be acceptable, as an approximation. In case of disagreement, ASTM D-613 method will prevail.
(5) Varying by regions and seasons.
(6) Discuss and specify value until 12/31/1994, studying the feasibility of limiting the variation range in 0.04.

Attachment V

Motor Exhaust Emission Test Report for Heavy Duty Vehicle

1. Laboratory _____

Test_____ No.Date_____

2. Equipment characterization

Dynamometer_____Fuel Consumption Meter _____

Gas Analyzers _____Opacimeter _____

3. Engine Characterization

Brand _____Model _____

Serial Number _____Date of Manufacture_____

Run-in (h)_____Type of Injection _____

Type of aspiration _____

Exhaust back pressure (max.) _____ kPa

Intake depression (max.) _____ kPa

Angular speed M.L. _____ rpm

Interm. angular speed_____ rpm

Maximum free angular speed_____ rpm

Effective power:_____kW a _____ rpm

Maximum Force Momentum: _____ Nm a _____ rpm

4. Type of fuel_____ specific mass _____ kg/L

5. Responsible for the test _____

6. Test results of gaseous emission

Point	1	2	3	4	5	6	7	8	9	10	11	12	13
Angular Speed (rpm)													
Observed Load (Nm)													

Point	1	2	3	4	5	6	7	8	9	10	11	12	13
Barometric Pressure (kPa)													
Dry bulb temperature (ºC)													
Wet bulb temperature (ºC)													
Intake air temperature (ºC)													
Burette fuel temp. (ºC)													
Intake depression (kPa)													
Intake air flow (m^3/h)													
Fuel consumption (kg/min)													
Exhaust back pressure (kPa)													
CO concentration (ppm)													
CO_2 concentration (%)													
HC concentration (ppm)													
NOx concentration (ppm)													
MP mass (g)													
Weighed specific emissions (g/kWh) CO _____HC _____ NOX _____MP _____													

7. Soot content emission test results in steady state

Barometric Pressure _____ kPa

Altitude above sea level _____ m

Point	Rotation (rpm)	U.B. note	U.B. note	U.B. note	Average U.B. note	Deviation U.B. note	U.B. lim.
1							
2							
3							
4							
5							

NOTE: U.B. limit is the value obtained from attachments I or II

8. Test result under free acceleration

Acceleration							Final result
4	5	6	7	8	9	10	

Notes:
1 – The final result is the arithmetic average calculated over four consecutive measurements that do not vary by more than 0.25 m^{-1} and are not in descending order;
2 – Sign the four measurements considered.

Attachment VI
Exhaust Emission Test Report of
Light Diesel Cycle Vehicles

1. Laboratory:

2. Equipment characterization

Dynamometer

Constant Volume Sampler

Analyzers

Fuel Consumption Meter_____

3. Vehicle characterization

Brand_____Model_____Model year

Chassis No._____Odometer

License Plate _____ Engine No _____ Type

Vehicle mass_____kg Transmission type

Type of tires_____ Code

Type of feed system_____ Manufacturer code_____

4. Fuel

Type _____ specific mass _____ kg/L at _____ °C

5. Test conditions

Equivalent inertia ____ kg PRR_{80} Power _____kW

Gearshift speed (km/h) _____

5.1. Responsible for the test

5.2. Test results

Test	1				2				3				Final Average	Deviation
No./Date														
Phase	1	2	3	*	1	2	3	*	1	2	3	*		
Time														
Distance Travelled (km)														
Room Temperature (ºC)														
Barometric Pressure (mm Hg)														
Relative Humidity (%)														
Fuel Mass (g) or Volume (l)														
Measured Autonomy (km/L)														
Stoichiometric Autonomy (km/L)														
CO Emission (g/km)														
CO_2 Emission (g/km)														
HC Emission (g/km)														
NOx Emission (g/km)														
PM Emission (g/km)														

*Note: * = Average*

CONAMA RESOLUTION No. 16/1993

Provides for the environmental licensing requirement for new fuels' specifications, manufacturing, marketing and distribution, and other provisions. Official Gazette (D.O.U.) of 12.31.1993.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, as amended by Law No. 8.028 of April 12th, 1990, regulated by Decree No. 99.274 of June 6th, 1990 and Law No. 8.746 of December 9th, 1993, considering the provision of Law No. 8.490 of November 19th, 1992, and taking into account the provision of its Bylaws, and

Considering that Law No. 8.723 of October 28th, 1993, which provides for the reduction of pollutants emission by motor vehicles in its Article 2, §9, assigns the NATIONAL ENVIRONMENT COUNCIL – CONAMA the competence to supplement and amend the deadline and limits of light and heavy duty vehicle's emission, resolves to:

Art. 1 Ratify the emission limits, the deadlines and other requirements contained in CONAMA Resolution No. 18/86 that assigns the Air Pollution Control Program by Motor Vehicles – PROCONVE, supplemented by CONAMA Resolutions No. 3 of June 15th, 1989, No. 4 of June 15th, 1989, No. 6 of August 31st, 1993, No. 7 of August 31st, 1993, and No. 8 of August 31st, 1993, and by Ordinance IBAMA No. 1937 of September 28th, 1990.

Art. 2 Determine the republication of Resolutions No. 6, 7 and 8 of August 31st, 1993, for being published with errors.

Art. 3 Make the Environmental Licensing with IBAMA mandatory to the specifications, manufacturing, marketing and distribution of new fuels and its final formulation for use throughout the country.

Art. 4 This Resolution shall be effective on the date of its publication.

Rubens Ricupero	Simão Marrul Filho
Chairman of the Board	Executive-Secretary

CONAMA RESOLUTION No. 09/1994

Sets deadline for light and ethanol engine-equipped motor vehicle manufacturers to declare to IBAMA and to the designated technical environmental agencies the typical amounts of hydrocarbon emission, differentiating the aldehydes and alcohols in all their production configurations. Official Gazette (D.O.U.) of 10.04.1994. Fulfilled its object.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, as amended by Law No. 8.028 of April 12th, 1990, regulated by Decree No. 99.274 of June 6th, 1990 and Law No. 8.746 of December 9th, 1993, considering the provision of Law No. 8.490 of November 19th, 1992, and taking into account the provision of its Bylaws, and

Whereas the provisions of CONAMA Resolution No. 04 of June 15th, 1989;

Whereas the existence of international laws that set limits for specific emission of alcohol powered vehicles;

Whereas the measurement of alcohol with flame ionization detector calibrated with propane results in a considerable error, especially for alcohol powered vehicles;

Whereas for the proper determination of alcohol emission of motor vehicles there already is a methodology developed by CETESB– Companhia de Tecnologia de Saneamento Ambiental, with the participation of AEA – Associação de Engenharia Automotiva (Automotive Engineering Association) and of the vehicles and autoparts manufacturers involved, RESOLVE:

Art. 1 Within eight (8) months, from the date of publication of this Resolution, the manufacturers of light motor vehicles equipped with alcohol powered engine should declare to Brazilian Institute of the Environment (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis) and to the designated technical environmental agencies,

the typical values of hydrocarbons emission, differentiating the aldehydes and the alcohols, in all its production configurations.

§1 The analytical determination of alcohol emission contained in the exhaust gas of alcohol powered vehicles should be made by gas-phase chromatography, with samples collect in deionized water, according to the Test Method presented in the Attachment hereof.

§ 2 The analytical determination of hydrocarbons and aldehydes emission should be done according to Brazilian standards MB-1528 and MB-3362, respectively.

Art. 2 Within twelve (12) months from the publication of this Resolution and based on the information available, IBAMA shall forward its position to CONAMA with respect to the limits' setting for alcohol emission contained in the exhaust gas of alcohol powered light Otto-cycle engine vehicles.

Art. 3 The failure to comply with the provisions of the Article 1 hereof subjects the violator to the penalties foreseen by applicable laws.

Art. 4 This Resolution shall be effective on the date of its publication.

Henrique Brandão Cavalcanti
President

Nilde Lago Pinheiro
Executive-Secretary

Attachment

LIGHT ROAD MOTOR VEHICLES DETERMINATION OF UNBURNED ETHANOL CONTAINED IN THE EXHAUST GAS BY GAS CHROMATOGRAPHY

Test Method

1. PURPOSE

1. 1. This Standard prescribes the method for determining the emission of unburned ethanol by gas-phase chromatography contained in the exhaust gas emitted by light road motor vehicles, during the driving cycle developed in chassis dynamometer which simulates the use of the vehicle in urban traffic, according to NBR 6601 (MB 1528).
1.2. This Standard applies to Otto-cycle engine-equipped vehicles that use hydrated ethyl alcohol (hydrated ethanol) as a fuel.

2. SUPPLEMENTARY DOCUMENT

In applying this Standard, it is necessary to consult: NBR 6601 (MB 1528) – Light road motor vehicles – Determination of hydrocarbons, carbon monoxide, nitrogen oxides and carbon dioxide in the exhaust gas – Test Method.

3. SYMBOLS

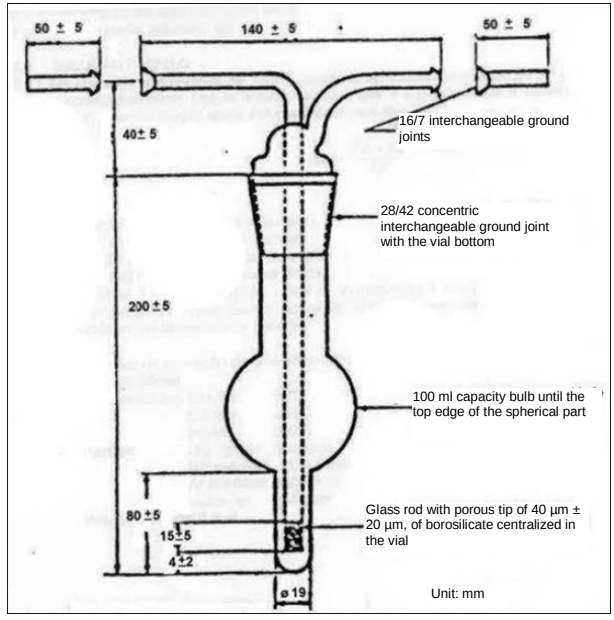
For the purposes of this Standard, the following symbols are adopted:
a) UP = Ultra-pure;
b) pa = Analytical purity

4. APPARATUS, REAGENTS AND SOLUTIONS

4.1 APPARATUS
4.1.1. Gas-phase chromatograph, equipped with flame ionization detector and on column injector.
4.1.2. Capillary chromatographic column of 0.53 mm internal diameter and with stationary phase of polyethylene glycol 2OM.
4.1.3. Potentiometric recorder x.y – y.t, with V entry (O to 1) or electronic system microprocessed for data acquisition and manipulation dedicated to chromatography.

4.1.4. Micro syringe for gas chromatography of 5.0 ul.
4.1.5. Rotameter with flow between (0.5 and 5.0) I/min., measured with air at 21ºC and 101.33 KPa.
4.1.6. Vacuum pump with fluorinated rubber membrane and with stainless steel valve or polytetrafluoroethylene membrane that keeps the flow stable as 4.1.5.
4.1.7. Gas volume totalizer sealed by liquid "Wet Test Meter" or dry-type gas volume totalizer or the like for flow rates (0.03 to 4.00) I/min., measurement uncertainty of 1% with maximum load loss of 5 kPa, equipped with thermometer to measure the totalized gas temperature and the sealing liquid and the differential pressure gauge for measuring the pressure variation between the totalized gas and the environment in order to be able to correct the sampled volume.
4.1.8. Gas-washing vial in borosilicate glass, as shown in Figure 1.

Figure 1 – Gas-washing vial in borosilicate glass



4.1.9. Cooler.
4.1.10. Fluoro-rubber or silicone-rubber hose
4.1.11. Volumetric pipettes of 1 ml, 5 ml and 10 ml.
4.1.12. Volumetric flask of 50 ml and 100 ml.
4.1.13. Stripped long-neck glass funnel, 60º and 70 mm in diameter.
4.1.14. Polyethylene wash bottle of 250 ml.
4.1.15. Beakers of 25 ml and 500 ml.
4.1.16. Analytical balance.
4.1.17. Apparatus used as per NBR 6601 (MB 1528).

4.2. REAGENTS
Reagents should be of analytical purity (p.a) and the water bidistilled and/or deionized.
4.2.1. Absolute ethyl alcohol (C_2H_5OH).
4.2.2. Nitrogen UP.
4.2.3. Hydrogen UP.
4.2.4. Synthetic air zero.

4.3. SOLUTIONS
4.3.1. STOCK SOLUTION
4.3.1.1. Tare a volumetric flask of 100 ml;
4.3.1.2. Place approximately 50 ml of water in the tared flask and weigh. Write down the value obtained in ml.
4.3.1.3. Add, without removing the flask from the scale plate, approximately 1 g of ethanol. Write down the value obtained in m^2.
4.3.1.4. Complete the flask volume with water, writing down the total mass mt.
4.3.1.5. The final solution concentration is given by the formula:

$$Ce = \frac{(m_2 - m_1) \cdot Pe \cdot 10000}{mt}$$

Where:
Ce = stock solution concentration, in mg/L.
m_1 = initial water mass, in g.
m_2 = initial water mass added to the ethanol mass, in g.
mt = total resulting solution mass, in g.
Pe = used ethanol purity, in %.

4.3.2. STANDARD SOLUTION

4.3.2.1. In a volumetric flask of 100 ml, containing approximately 50 ml of distilled water (see 4.2), add approximately 1 ml of stock solution (see 4.3.1). Complete the volume with distilled water and mix. The concentration of this solution is given by the formula:

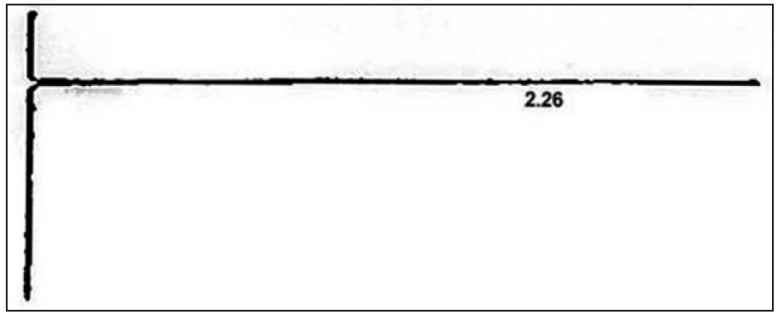
$$Ce = \frac{Ve \cdot Ce}{Vb}$$

Where:
Cp = concentration of standard solution, in mg/L.
Ve = volume of stock solution, in ml (1 ml).
Ce = concentration of stock solution, in mg/L.
Vb = volume of volumetric flask, in ml (100 ml).
Note: After preparing the standard solution, inject into chromatograph and interpret the resulting chromatogram (see Figure 2). If a better resolution is needed, make successive dilutions until the resulting chromatogram meets the work needs.

4.3.2.2. The operating chromatograph conditions are given in Figure 2.
Chromatographic conditions

Temperatures:	Column: 70°C
	Detector: 250°C
	Injector: 200°C
Flows:	Hydrogen: 30ml/min
	Nitrogen: 5.0ml/min
	Synthetic air: 300ml/min
	Make-up: 25ml/min
Injected volume:	0.5 µl

Figure 2 – Chromatographic conditions and typical standard chromatogram



5. TEST EXECUTION

5.1. Test principle

The unburned ethanol present in the exhaust gas emitted by a vehicle, during each of the three phases of a dynamometer test, according to NBR 6601 (MB 1528), is retained by the water. The resulting aqueous solution is analyzed by gas-phase chromatography which separates, identifies and quantifies the ethanol content present in this solution. The calculation method used to determine the ethanol concentration is based on the proportionality of the areas under the chromatographic peaks related to the standard and sample (external standardization method).

$$\frac{Ca}{Cp} = \frac{Aa}{Ap}$$

Where:
Ca = sample concentration.
Cp = standard concentration.
Aa = sample area.
Ap = standard area.

5.2. Sampling system

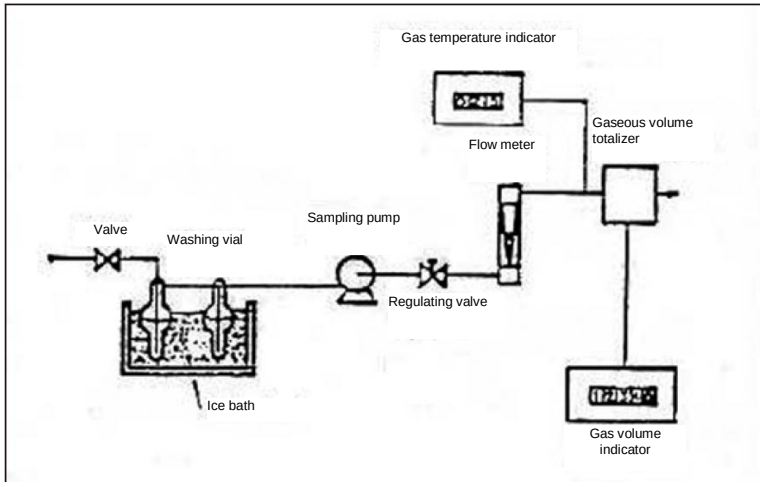
Assemble the sampling system according to the arrangement shown in Figure 3. The gas-washing vials (see 4.1.8) should be mounted in series, two by two, being one pair used for each dynamometer driving cycle phase

(cold transitory phase, stabilized phase and hot transitory phase) and one pair for the dilution air sampling. Each gas-washing vial should contain 10 ml of water (see 4.2).

5.3. Sampling points
Located close to the sampling points of diluted exhaust gas and of the dilution air for analysis, according to NBR 6601 (MB 1528), as shown in Figure 4.

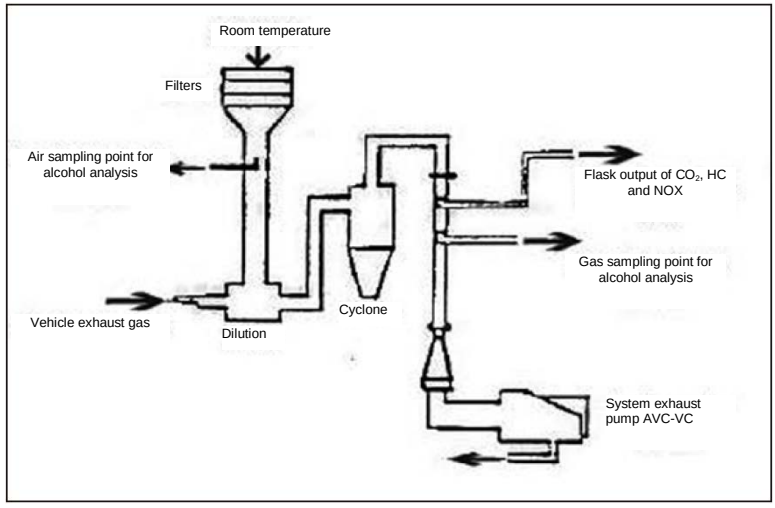
5.4. Sampling time
Perform the sample collect during the entire duration of each phase.
Note: Before starting the dynamometer driving cycle, purge with room temperature for 30 sec. the entire sampling system, except the gas-washing vials.

Figure 3 – Sampling system arrangement



5.5. Sampling temperature
The sampling system should be maintained throughout the whole test period, in the temperature from (0 to 5) ºC through ice bath or submerged cooling worm.

Figure 4 – Sampling points location



5.6. Regular sampling flow to the exhaust gas sampling flow in 2 – 0.2 I/min. Note: Once initiated each sampling, the flow cannot be changed and must remain constant until the end.

5.7. Test
5.7.1. Quantitatively transfer to a 50 ml volumetric flask the content of the two gas-washing vials corresponding to each of the phases of the dynamometer driving cycle and of the dilution air. Complete the flask volume with water and mix.
5.7.2. Inject the solution obtained in 5.7.1 (see 4.3.2.2) into the chromatograph.

6. RESULTS
To calculate the results, some of the required data are obtained by the test equipment according to NBR 6601 (MB 1528).

6.1. Results calculation
6. 1.1. Correction of the sampled gas volume in each phase of the cycle and of the dilution air according to the formula:

$$Vc = \frac{Pa \,.\, Va \,.\, 293{,}15}{Ta \,.\, 101{,}395}$$

Where:
Vc = Corrected volume of sampled gas, in l.
Pa = pressure in which it was read the sampled volume, in kPa.
Va = sampled gas volume reading, obtained in the volume totalizer, in l.
Ta = temperature in which it was read the sampled volume, in K.

6.1.2. Calculation of ethanol concentration in the sampled gas in each phase of the cycle, according to the formula:

$$Cif = \frac{Cpi \cdot Aai \cdot Vf \cdot 24{,}04}{Api \cdot VC \cdot 46}$$

Where:
Cif = ethanol concentration, in ppmv.
Cpi = standard ethanol concentration in mg/L.
Aai = area under the chromatographic peak related to the sampled ethanol, read in the register or integrator.
Api = area under the chromatographic peak related to ethanol standard, read in the register or integrator.
Vf = final absorption solution volume, in ml. Vc = Corrected volume of sampled gas, in l.

6.1.3. Calculation of ethanol mass emitted by vehicle in each phase of the cycle, according to the formula:

$$Mi = Vtc \cdot di\,[Cif - Cid \cdot (1 - 1/RD)] \cdot 10^{-6}$$

Where:
Mi = ethanol mass emitted by vehicle, in g/phase.
Vtc = total corrected volume for the standard conditions of the diluted exhaust gas, in m^3.
di = specific ethanol mass equals to 1913.5 g/m^3 at 20°C and 101.3 kPa.
Cif = ethanol concentration emitted in a given cycle phase, in ppmv.
Cid = ethanol concentration contained in the dilution air of a given cycle phase, in ppmv.
RD = dilution ratio of the exhaust gas emitted by the vehicle through the dilution air.

Note: Vtc and RD values are provided by the constant volume sampler or can be calculated according to NBR 6601 (MB 1528).

6.1.4. The calculation of the final ethanol emission result is given by the following formula:

$$Yi = 0{,}43 \cdot \frac{(Ytf + Ye)}{(Dtf + De)} + 0{,}57 \cdot \frac{(Ytq + Ye)}{(Dtq + De)}$$

Where:
Yi = weighted ethanol emission, in g/km.
Ytf = Mi of the cold transitory phase of the dynamometer driving cycle, in g/phase (see 6.1.3).
Ye = Mi of the stabilized phase of the dynamometer driving cycle, in g/phase (see 6.1.3).
Ytq = Mi of the hot transitory phase of the dynamometer driving cycle, in g/phase (see 6.1.3).
Dtf = distance travelled by the vehicle, measured during the cold transitory phase, in km.
De = distance travelled by the vehicle, measured during the stabilized phase, in km.
Dtq = distance travelled by the vehicle, measured during the hot transitory phase, in km. Note: Dtf, De and Dtq values are provided by the dynamometer equipment.

6.2. REPORT
The report shall include:
a) date, time, place and test number;
b) vehicle brand and model;
c) vehicle identification number;
d) odometer reading at the beginning of the test;
e) minimum characteristics that identify the engine configuration;
f) engine configuration;
g) vehicle mass;
h) used inertia and power at 80.5 km/h (PRE 80 or PRR 80);

i) temperature and relative humidity of room temperature;
j) barometric pressure, in kPa;
l) distance travelled in each phase, in km;
m) total volume, adjusted to standard conditions of the exhaust gas diluted in each phase, in m^3;
n) dilution ratio of the gas emitted by the vehicle through dilution air in each phase;
o) sampling flow of the gas from the gas-washing vials (see 5.6) in each phase, in I/min;
p) volume adjusted of the gas sampled by the gas-washing vials for each phase and for the dilution air (see 6.1.1), in I/min;
q) weighted ethanol emission (see 6.1.4), in g/km;
r) remarks on the test;
s) laboratory;
t) name and signature of the technician responsible.

It sets new deadlines for the compliance with the provisions of CONAMA Resolution No. 008/93, which complements Resolution No. 018/86 that establishes nationally the Air Pollution Control Program by Motor Vehicles
– PROCONVE, setting maximum limits of pollutant emission for the engines designed to new heavy duty vehicles, national and imported. Official Gazette (D.O.U.) of 12.30.1994. Fulfilled its object.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, as amended by Law No. 8.028 of April 12th, 1990, regulated by Decree No. 1.205 of August 1st, 1994 and its Attachment I, taking into account the provision of its Bylaws, and

Whereas the terms of CONAMA Resolution No. 08 of August 31st, 1993, which determines in its Article 8, §1, the presentation by IBAMA to CONAMA, "until June, 1994, and the deadlines, limits and factors regulation of altitude correction for the smoke rate under free acceleration for new engines";

Whereas the same Resolution, in its Article 17, states that "from July 1st, 1994, all vehicles with Diesel cycle engine should have attached to the engine compartment, in a protected location and of easy viewing, a sticker with the indications of smoke rate and idle speed and maximum free angular speeds, recommended by the manufacturer to ensure the correct engine adjustment";

Whereas the proposal of CONAMA Executive-Secretariat, pointing the convenience to extend the deadlines mentioned, for not having yet the necessary information elements to the compliance of the same Resolution, RESOLVES to:

Art. 1 Set new deadlines for the compliance with the following provisions of CONAMA Resolution No. 8 of August 31st, 1993, in line with Phase III prescribed in the said Resolution, namely:

I – 3rd CONAMA ordinary Meeting in 1995, for sending the regulation proposal referred to in the Article 8, § 1, by IBAMA to CONAMA.

II – January 1st, 1996, for the beginning of the mandatory affixation of the adhesive referred to in the Article 17.

Art. 2 This Resolution shall be effective on the date of its publication, and revoke Resolution No. 16 of September 29th, 1994.

CONAMA RESOLUTION No. 14/1995

It sets deadline for light passenger motor vehicle manufacturers equipped with Otto-cycle engine to submit to IBAMA a three-year program for the execution of durability tests by engines' grouping. Official Gazette (D.O.U.) of 12.29.1995. Writing amended by CONAMA Resolution No. 315/02.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th, 1990 and its amendments, taking into account the provision of its Bylaws, and

Considering the need for continuous updating of the Air Pollution Control Program by Motor Vehicles (PROCONVE), established by CONAMA Resolution No. 18 of May 6th, 1986;

Considering the need to prove that the light motor vehicle designs keep the pollutant emissions below the required limits for at least 80,000 km;

Whereas Brazil already masters the knowledge about the test methods and procedures for accumulating mileage, aiming at guaranteeing the pollutant emission limits for light motor vehicles by 80,000 km, resolves:

Art. 1 Until December 31st, 1996, the manufacturers of light passenger motor vehicles equipped with Otto-cycle engine, national or produced in the MERCOSUR countries, should submit to IBAMA a three-year program for the execution of durability tests by engines' grouping, rated according to Standard project ABNT 5:17.01-007 or alternate standard and with foreseen annual sales exceeding 15,000 units.

§ 1 The program foreseen in the caption of this Article shall be reviewed annually in the subsequent years, always until December 31st, according to the manufacturer' sale forecast in order to allow the submission of the deterioration factors of the engines' grouping emissions to IBAMA, according to the following schedule:

a) Until December 31st, 1997, for at least 25% of total annual sales expected until December 31st, 2000;

b) Until December 31st, 1998, for at least 50% of total annual sales expected until December 31st, 2001;

c) Until December 31st, 1999, for at least 75% of total annual sales expected until December 31st, 2002;

d) Until December 31st, 2000, for all engines' grouping with sales expected until December 31st, 2002.

Art. 2 The manufacturers of light passenger motor vehicles, equipped with Otto-cycle engine, national or produced in the MERCOSUR countries, should apply the deterioration factors obtained according to the Standard project ABNT 5:17.01-007 or alternate standard to the vehicles' emissions whose engines' grouping, rated according to this same standard project, have expected annual sales exceeding 15,000 units, in the approvals made for the limits compliance according to the following schedule:

a) From January 1st, 1999, for at least 25% of total annual sales expected until December 31st, 1999;

b) From January 1st, 2000, for at least 50% of total annual sales expected until December 31st, 2000;

c) From January 1st, 2001, for at least 75% of total annual sales expected until December 31st, 2001;

d) From January 1st, 2002, for the total annual sales.

§ 1 For vehicles that do not have the factors determined, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of CAC/LCVM. *(paragraph added by Resolution No. 315/02).*

§2 During this period, the factors established in the Article 4, §4 hereof shall be applied for the issuance of CAC/LCVM. *(paragraph added by Resolution No. 315/02).*

§ 3 For engines' groupings that show increased sales volume forecast at the time of CAC/LCVM revalidation for the following year, surpassing the limit of fifteen thousand units per year, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of CAC/LCVM revalidation. *(paragraph added by Resolution No. 315/02*).

Art. 3 In case of proven impossibility by the manufacturer and accepted by IBAMA of complying with the schedule defined in the Article 2 hereof, the approvals to meet the limits may be made according to the following schedule:

a) Until January 1st, 2000, for at least 25% of total annual sales expected until December 31st, 2000;

b) Until January 1st, 2001, for at least 50% of total annual sales expected until December 31st, 2001;

c) Until January 1st, 2002, for the total annual sales expected.

Art. 4 The manufacturers of light passenger motor vehicles, equipped with Otto-cycle engine, national or produced in the MERCOSUR countries, should apply the deterioration factors obtained according to the Standard project ABNT 5:17.01-007 or alternate standard to the vehicles' emissions whose engines' grouping, rated according to this same standard project or alternate standard, have expected annual sales exceeding 15,000 units, in the approvals made for the limits compliance, shall apply the deterioration factors defined in the paragraphs of this Article:

§ 1 Until December 31st, 1999, the deterioration factors for all pollutants shall be 10%.

§ 2 From January 1st, 2000 to December 31st, 2001, the deterioration factors for alcohol powered vehicles should be: 20% for carbon monoxide (CO); 10% for hydrocarbons (HC); 10% for nitrogen oxides (NOx); 10% for total aldehydes (CHO); 10% for evaporative emission.

§ 3 From January 1st, 2000 to December 31st, 2001, the deterioration factors for gasoline powered vehicles should be: 20% for carbon monoxide (CO);

20% for hydrocarbons (HC); 10% for nitrogen oxides (NOx); 10% for total aldehydes (CHO); 10% for evaporative emission.

§ 4 From January 1st, 2002, the deterioration factors should be: 20% for carbon monoxide (CO); 20% for hydrocarbons (HC);10% for nitrogen oxides (NOx); 10% for total aldehydes (CHO); 10% for evaporative emission.

§ 5 The engines' groupings that show increased sales volume forecast at the time of CAC/LCVM revalidation for the following year, surpassing the limit of fifteen thousand units per year, shall meet the deadline set forth in the Article 2 of CONAMA Resolution No. 14 of 1995, in order to obtain the deterioration factors according to ABNT NBR 14008 Standard. *(Paragraph added by Resolution No. 315/02.).*

Art. 5 Observing the Articles 2 and 3, until December 31st, 2001, the manufacturers of light passenger motor vehicles, equipped with Otto-cycle engine, national or produced in the MERCOSUR countries, may apply deterioration factor equal to 10% to the vehicles' emissions whose engines' groupings, rated according to the Standard project, ABNT 5:17.01-007 or alternate standard, have expected annual sales exceeding 15,000 units, in the approvals made to meet the limits, while they do not have the test results.

Art. 6 Until December 31st, 2001, the manufacturers of light commercial motor vehicles, equipped with Otto-cycle engine, national or produced in the MERCOSUR countries, that have not obtained the deterioration factors according to Standard project, ABNT 5:17.01-007 or alternate standard, may apply the deterioration factors of the Article 4 hereof to the vehicles' emissions whose engines' groupings, rated according this very same standard project or alternate standard, have expected annual sales lower than 15,000 units.

Art. 7 The manufacturers of light commercial motor vehicles, equipped with Otto-cycle engine, national or produced in the MERCOSUR countries, should apply the deterioration factors obtained according to the Standard project ABNT 5:17.01-007 or alternate standard to the vehicles' emissions whose engines' grouping, rated according to this same standard project or alternate standard, have expected annual sales exceeding 15,000 units, in the approvals made for the limits compliance.

§ 1 For vehicles that do not have the factors determined, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of CAC/LCVM. *(paragraph added by Resolution No. 315/02).*

§ 2 During this period, the factors set forth in the Article 4, § 4 hereof shall be applied for the issuance of CAC/LCVM. *(paragraph added by Resolution No. 315/02).*

§ 3 For engines' groupings that show increased sales volume forecast at the time of CAC/LCVM revalidation for the following year, surpassing the limit of fifteen thousand units per year, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of CAC/LCVM revalidation. *(paragraph added by Resolution No. 315/02).*

Art. 8 From January 1st, 1998, the importers of light passenger and light commercial motor vehicles, equipped with Otto-cycle engine, may apply to the vehicles' emissions whose engines' groupings, rated according to the Standard project, ABNT 5:17.01-007 or alternate standard, have expected annual sales lower than 15,000 units, the deterioration factors of the Article 4 of this Resolution, alternatively to the deterioration factors acquisition through the test foreseen in the Standard project ABNT 5:17.01-007 or alternate standard.

Art. 9 From January 1st, 1998, the importers of light passenger and light commercial motor vehicles, equipped with Otto-cycle engine, should apply the deterioration factors obtained according to the Standard project ABNT 5:17.01-007 or alternate standard to the vehicles' emissions whose engines' grouping, rated according to this same standard project or alternate standard, have expected annual sales exceeding 15,000 units, in the approvals made for the limits compliance.

§ 1 During 1997, the importers may use the deterioration factor of 10% for all pollutants.

§ 2 For vehicles that do not have the factors determined, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of LCVM. *(Paragraph added by Resolution No. 315/02.)*

§ 3 During this period, the factors set forth in the Article 4, § 4 hereof for LCVM issuance. *(Paragraph added by Resolution No. 315/02.)*

§ 4 For the engines' groupings that show an increased sales volume forecast at the time of LCVM revalidation for the following year, surpassing the limit of fifteen thousand units per year, it will be admitted because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of LCVM revalidation. *(Paragraph added by Resolution No. 315/02.)*

Art. 10. The tests on imported vehicles, according to Standard project ABNT 5:17.01-007 or alternate standard, for the compliance of this Resolution, may be carried out abroad, being always subject to IBAMA's technical inspection, whose costs shall be of importer's responsibility.

Art. 11. The tests on domestic vehicles or on those produced in the MERCOSUR countries, carried out according to the Standard project ABNT 5:17.01-007 or alternate standard, for the compliance of this Resolution, shall be subject to IBAMA's technical inspection, being that the costs of such monitoring shall be of the manufacturer's responsibility.

Art. 12. To the offenders to the provisions of this Resolution, IBAMA may suspend the issuance of new LCVM and the penalties foreseen in Law 6.938 of August 31st, 1981 shall apply, without prejudice to the other penalties foreseen in the specific legislation, as well as the criminal and civil sanctions.

Art. 13. This Resolution shall be effective on the date of its publication.

Gustavo Krause	Raul Jungman
Chairman of the Board	Executive-Secretary

CONAMA RESOLUTION No. 15/1995

Provides for the new rating of motor vehicles for gas vehicular emission control, particulate and evaporative matter, and other provisions. Official Gazette (D.O.U.) of 12.29.1995.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th, 1990 and its amendments, taking into account the provision of its Bylaws, and

Whereas the emission of pollutants by motor vehicles contributes to the continuing deterioration of air quality, especially in urban centers;

Whereas the need for continuous updating of the Air Pollution Control Program by Motor Vehicles (PROCONVE);

Whereas the national production and the import of motor vehicles, along with the need of international technological harmonization, resolve to:

Art. 1 Establish for the control of vehicular gas emission, particulate and evaporative matter, new classification of motor vehicles, from January 1st, 1996.

§ 1 Light passenger vehicle: It is the motor vehicle with a maximum allowed total mass of 3,856 kg and vehicle in running weight of up to 2,720 kg, designed to the transportation of up to 12 passengers or their derivatives for goods transportation.

§ 2 Light commercial vehicle: It is the motor vehicle not derived from light passenger vehicle with maximum allowable total mass of 3,856 kg and vehicle in running weight of up to 2,720 kg, designed to goods transportation, or mixed or their derivatives, or designed to the transportation of more than 12 passengers, or yet with special characteristics for off road use.

§ 3 Vehicle with special characteristics for off road use: It is the vehicle that has four-wheel drive and at least four of the following characteristics calculated for the vehicle in running weight, on a flat surface, with the front wheels parallel to the longitudinal centerline of the vehicle and the tires inflated with the pressure recommended by the manufacturer:

» minimum scooping angle 25º;

» minimum output angle 20º;

» minimum break-over angle 14º;

» ground clearance, between the axles, at least 200 mm;

» ground clearance under the front and rear axles, at least 180 mm.

§ 4 Heavy duty vehicle: it is the motor vehicle for the transportation of passengers and/or cargo, with maximum allowed total weight higher than 3,856 kg or vehicle in running weight higher than 2,720 kg, designed for the transportation of passengers and/or cargo.

Art. 2 Adopt the following definitions for the purpose of this Resolution.

§ 1 Maximum allowed total mass – maximum vehicle mass defined by the competent legislation for the operating conditions established by it.

§ 2 Vehicle in running weight – vehicle mass with body and equipped with all necessary electrical and auxiliary equipment for the normal operation of the vehicle, plus the elements' mass that the vehicle's manufacturer provides as standard or optional and that should be listed the mass of the following elements, provided that they are normally delivered by the manufacturer:

» lubricants;

» cooling fluid;

» washer fluid (windshield);

» fuel (tank supplied with at least 90% of the capacity specified by the manufacturer);

» spare wheel(s);

» fire extinguisher(s);

» replacement parts;

» wheel chocks;

» tool kit.

§ 3 Vehicle in running weight for incomplete vehicles – it must be declared by the manufacturer, assuming a typical mass for the application.

§ 4 Vehicle mass for the test – vehicle in running weight, plus 136 kg.

Art. 3 Establish pollutant emission limits for new motor vehicles, with Otto-cycle engine, replacing those set forth in CONAMA's Resolutions No. 18/86 and 03/89.

§ 1 From January 1st, 1996, the exhaust gas emission by national or imported light passenger vehicles and by imported light commercial vehicles, shall not exceed the following values:

a) 12.0 g/km of carbon monoxide (CO);

b) 1.2 g/km of hydrocarbons (HC);

c) 1.4 g/km of nitrogen oxides (NOx);

d) 0.15 g/km of total aldehydes (CHO);

e) 2.5% of carbon monoxide (CO) at idle speed.

§ 2 From January 1st, 1996, the exhaust gas emission by light commercial vehicles with maximum allowed total mass up to 2,800 kg, national or produced in the MERCOSUR countries, shall not exceed the following values:

a) 24.0 g/km of carbon monoxide (CO);

b) 2.1 g/km of hydrocarbons (HC);

c) 2.0 g/km of nitrogen oxides (NOx);

d) 0.15 g/km of total aldehydes (CHO);

e) 3.0 % of carbon monoxide (CO) at idle speed.

§ 3 From January 1st, 1996 until December 31st, 1997, the national light commercial vehicles or those produced in the MERCOSUR countries with maximum allowed total mass exceeding 2,800 kg, are exempted from complying with the emission limits, except for the crankcase gas emission, which should be zero in any engine work scheme.

§ 4 From January 1st, 1997, the exhaust gas emission by national and imported light passenger vehicles shall not exceed the following values:

a) 2.0 g/km of carbon monoxide (CO);

b) 0.3 g/km of hydrocarbons (HC);

c) 0.6 g/km of nitrogen oxides (NOx);

d) 0.03 g/km of total aldehydes (CHO);

e) 0.5% of carbon monoxide (CO) at idle speed.

§ 5 From January 1st, 1997, the exhaust gas emission by imported light commercial vehicles, with vehicle mass for test up to 1,700 kg, shall not exceed the following values:

a) 2.0 g/km of carbon monoxide (CO);

b) 0.3 g/km of hydrocarbons (HC);

c) 0.6 g/km of nitrogen oxides (NOx);

d) 0.03 g/km of total aldehydes (CHO);

e) 0.5% of carbon monoxide (CO) at idle speed.

§ 6 From January 1st, 1997, the exhaust gas emission by imported light commercial vehicles, with vehicle mass for test exceeding 1,700 kg, shall not exceed the following values:

a) 6.2 g/km of carbon monoxide (CO);

b) 0.5 g/km of hydrocarbons (HC);

c) 1.4 g/km of nitrogen oxides (NOx);

d) 0.06 g/km of total aldehydes (CHO), or 0.10 g/km provided that the sum of hydrocarbons emission and aldehydes does not exceed 0.50 g/km;

e) 0.5% of carbon monoxide (CO) at idle speed;

§ 7 From January 1st, 1996, all national or imported light passenger and commercial vehicles, the evaporative emission shall not exceed 6.0 g per test, except for vehicular methane gas powered vehicles and those classified in the § 3 hereof, and should have zero crankcase gas emission in any engine work regime.

§ 8 From January 1st, 1998, the exhaust gas emission by national light commercial vehicles and by those produced in the MERCOSUR countries, with vehicle mass for test up to 1,700 kg, shall not exceed the following values:

a) 2.0 g/km of carbon monoxide (CO);

b) 0.3 g/km of hydrocarbons (HC);

c) 0.6 g/km of nitrogen oxides (NOx);

d) 0.03 g/km of total aldehydes (CHO);

e) 0.5% of carbon monoxide (CO) at idle speed;

§ 9 From January 1st, 1998, the exhaust gas emission by national light commercial vehicles and by those produced in the MERCOSUR countries, with vehicle mass for test exceeding 1,700 kg, shall not exceed the following values:

a) 6.2 g/km of carbon monoxide (CO);

b) 0.5 g/km of hydrocarbons (HC);

c) 1.4 g/km of nitrogen oxides (NOx);

d) 0.06 g/km of total aldehydes (CHO), or 0.10 g/km provided that the sum of hydrocarbons emission and aldehydes does not exceed 0.50 g/km;

e) 0.5% of carbon monoxide (CO) at idle speed.

§ 10. In case of impossibility to comply with emission limit of total aldehydes in §s 4, 5 and 8, the alcohol powered vehicles

may, alternatively, during the period from January 1st, 1997 to December 31st, 1998, not exceed 0.06 g/km, provided that the emission sum of hydrocarbons (HC) and total aldehydes (CHO) does not exceed 0.3 g/km and that the technical justification for the use of such alternative is accepted previously by IBAMA.

§ 11. Until December 31st, 1996, based on the environmental needs, IBAMA will decide about the alternative mentioned in the § 10, reviewing the emission limit of total aldehydes (CHO) for application from January 1st, 1999.

Art. 4 The emission levels measured in light passenger and commercial vehicles, expressed in g/km, refer to the pollutant mass emitted by kilometer travelled.

§ 1 The emissions of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) should be measured according to ABNT NBR 6601/1990 Standard – Light Road Motor Vehicles – Determination of Hydrocarbons, Carbon Monoxide, Nitrogen Oxides and Carbon Dioxide in the Exhaust Gas.

§ 2 The emissions of total aldehydes (CHO) should be measured according to ABNT NBR 12026/1990 Standard – Light Road Motor Vehicles – Determination of Aldehydes and Ketone Emission Contained in the Exhaust Gas, by Liquid Chromatography – DNPH Method.

§ 3 The fuel evaporative emission should be measured according to ABNT NBR 11481/1990 Standard – Light Road Vehicles – Evaporative Emission Measurement.

§ 4 The emission of carbon monoxide at idle speed should be measured according to ABNT NBR 10972/1989 Standard – Light Road Motor Vehicles – Concentration Measurement of Carbon Monoxide in the Exhaust Gas at Idle Speed Regime – Laboratory Test, updated by standard projects 05:017.01-004 – Infrared analyzer of carbon monoxide (CO), hydrocarbons (HC) and carbon dioxide (CO_2) contained in the exhaust gas of light motor vehicles – Specification and 05:017.01-005 – Infrared analyzer of carbon monoxide (CO), hydrocarbons (HC) and carbon dioxide (CO_2) contained in the exhaust gas of light motor vehicles – test method.

Art. 5 Establish new pollutant emission limits for new national or imported light passenger and commercial vehicles with Diesel cycle engine, replacing those set forth in CONAMA's Resolution 08/93.

§ 1 From January 1st, 1996, the light passenger or commercial vehicles should comply with the same exhaust emission limits prescribed in §s 1, 2, 4, 5, 6, 8, and 9 of the Article 3 hereof, except for the total aldehydes content (CHO) and carbon monoxide (CO) at idle speed, measured according to the test methods and to the analysis equipment defined in the United States of America Code of Federal Regulations, Title 40, Part 86 of July 1992, which shall serve as the basis for IBAMA to refer to a specific complementary standard.

§ 2 From January 1st, 1996, the emission of particulate matter from the exhaust gas of light passenger and commercial vehicles with vehicle mass for test up to 1,700 kg should not exceed 0.05 g/km for light commercial vehicles with vehicle mass for test exceeding 1,700 kg should not exceed 0.16 g/km, measured according to the test method and analysis equipment defined in the § 1 hereof.

§ 3 From January 1st, 1996 to December 31st, 1997, the national light commercial vehicles and those produced in the MERCOSUR countries, with maximum allowed total mass exceeding 2,800 kg, should meet the requirements set forth in CONAMA's Resolution No. 08/93 for heavy duty vehicles or, alternatively, the limits below, measured according to the test method and analysis equipment defined in the § 1 hereof, being the turbocharged engines exempted from the requirement of zero emission of crankcase gases:

a) 12.0 g/km of carbon monoxide (CO);

b) 1.2 g/km of hydrocarbons (HC);

c) 1.4 g/km of nitrogen oxides (NOx);

§ 4 The light commercial vehicles with maximum allowed total mass exceeding 2,000 kg may comply with the requirements set forth in CONAMA's Resolution No. 08/93 for heavy duty vehicles, alternatively to the procedures set forth herein, provided that the engine characteristics allow the test, being the turbocharged engines, in this case, exempted from the requirement of zero emission of crankcase gases.

Art. 6 IBAMA shall propose better exhaust emission limits to new light commercial vehicles of Diesel cycle in order to match the compliance with the requirements foreseen in the § 2 and 4 of the Article 5 hereof, in accordance with the § 8 of Article 2 of CONAMA's Resolution No. 08/93.

Art. 7 To the offenders to the provisions of this Resolution, IBAMA may suspend the issuance of new LCVM and the penalties foreseen in Law 6.938 of August 31st, 1981 shall apply, without prejudice to the other penalties foreseen in the specific legislation, as well as the criminal and civil sanctions.

Art. 8 This Resolution shall be effective on the date of its publication.

Gustavo Krause	Raul Jungman
Chairman of the Board	Executive-Secretary

CONAMA RESOLUTION No. 16/1995

Provides for the maximum limits of pollutants emission for the engines designed to new, national and imported heavy duty vehicles, and determines the approval and certification of new vehicles of Diesel cycle as for the smoke rate at free acceleration. Official Gazette (D.O.U.) of 12.29.1995.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th, 1990 and its amendments, taking into account the provision of its Bylaws, and

Whereas the vehicles' smoke and particulate matter emission contributes to the continued degradation of air quality;

Whereas the existence of technical solutions, of proven use, allows the intensification of emission control for Diesel oil powered vehicles and assists on the checking and in Inspection and Maintenance Programs for Vehicles in Use – I/M;

Whereas the national production and the import of motor vehicles and engines, along with the need of international technological harmonization;

Whereas the provisions of the Consumer Protection Code, Law No. 8.078 of September 11th, 1990, resolves to:

Art. 1 In addition to CONAMA's Resolution No. 08/93, from January 1st, 1996, the new engines of Diesel cycle for applications in light or heavy duty vehicles, should be approved and certified as for the smoke rate (opacity) under free acceleration, from the test procedure described in ABNT NBR 13037 Standard – Exhaust Gas Emitted by Diesel powered Engine under Free Acceleration – Determination of Opacity in accordance with the limits defined in §s 1 and 2 hereof.

§ 1 The vehicles that meet Phase II requirements, defined in CONAMA's Resolution No. 08/93, should be certified upon the manufacturer's declaration, of the relevant smoke rate (opacity) under free acceleration to be used as parameter of engine adjustment and assessment of vehicle maintenance status in the Inspection and Maintenance Programs for Vehicles in Use – I/M.

§ 2 For the vehicles that meet Phase III, defined in CONAMA's Resolution No. 08/93, the smoke limits under free acceleration, to be met in the reference atmospheric conditions, are as follows:

» Engines naturally aspirated: 0.83 m^{-1} (30 HSU);

» Turbocharged engines: 1.19 m^{-1} (40 HSU).

§ 3 To meet the reference atmospheric conditions, the atmospheric factor(fa) should be in the range of $0.98 < fa < 1.02$.

§ 4 The atmospheric factor (fa) should be calculated by the expression below, as defined by Directive 72/306/EWG of European Economic Community, of August 2nd, 1972, including all subsequent updates, where:

$$fa = \frac{(750)^{0,65}}{H} \cdot \frac{(T)^{0,5}}{298}$$

H = atmospheric pressure observed (mmHg); T = test room temperature (K).

§ 5 Opacity values under free acceleration obtained in new vehicles' approval and certification tests carried out in altitudes exceeding 350 m and that do not meet the conditions set forth in the § 2 hereof, may be adjusted to the reference atmospheric conditions through the division of values in m^{-1} by the numerical factors determined by the manufacturer, provided that they do not exceed 1.50 and 1.35 for the naturally aspired and turbocharged engines, respectively.

§ 6 The opacity measurements may be made with any opacimeter that meets ABNT NBR 12897 Standard – Employment of Opacimeter for Measuring Diesel Engine Soot Content – Light Absorption Method, provided that related to a sampling opacimeter with 0.43 of effective length of the light trajectory through the gas.

Art. 2 The vehicle manufacturer or final car body manufacturer should place on column B of the right front door, label with smoke rate value under free acceleration, being the declared opacity value of its responsibility, whose label is provided by the chassis manufacturer.

§ 1 This label, with the opacity value to be used as limit for the vehicle maintenance status evaluation in the Inspection and Maintenance Programs for Vehicle in Use – I/M, should display the opacity value in the reference atmospheric conditions, stated in the engine and/or vehicle approval and certification process, including an allowance for the production dispersion of 0.5 m^{-1} at the most.

§ 2 The label with the opacity value should be adhesive, weather resistant, yellow, square with minimum side size of 15 mm and with black digits with at least 5 mm height and two decimal places, without the unit (m^{-1}).

§ 3 For the purpose of this Resolution, it is understood as vehicle's column B, the roof structural support, nominally vertical, against which the front door is closed.

Art. 3 The vehicle owner's and service manuals shall contain the smoke rate value (opacity) under free acceleration defined for the label, according to the 1st and Article 2 hereof; angular speeds (rpm) of the engine idle speed and maximum free; correction factor or the value already adjusted for altitudes exceeding 350 m, and the necessary explanations to use this information for the proper vehicle maintenance.

Art. 4 The smoke limits under free acceleration shall be reviewed until December 31st, 1996, aiming its compatibility with the international legislations and environmental needs, for implementation by January 1st, 2000, in accordance with the 8th § of the Article 2 of CONAMA's Resolution No. 08/93.

Art. 5 In addition to CONAMA's Resolution No. 08/93, establish the release of the crankcase gas emission of Diesel cycle turbocharged engines for heavy duty vehicles, maintained the limits of hydrocarbons (HC) set forth in Table 1 of the same Resolution, provided that the crankcase gas emission of new turbocharged engines is at most 1.3% of the intake air flow (m^3/hour), determined in the engines' certification tests.

Art. 6 To the offenders to the provisions of this Resolution, IBAMA may suspend the issuance of new LCVM and the penalties foreseen in Law 6.938 of August 31st, 1981 shall apply, without prejudice to the other penalties foreseen in the specific legislation, as well as the criminal and civil sanctions.

Art. 7 This Resolution shall be effective on the date of its publication.

Gustavo Krause	Raul Jungman
Chairman of the Board	Executive-Secretary

CONAMA RESOLUTION No. 17/1995

Provides for the maximum noise limits for passenger or modified vehicles. Official Gazette (D.O.U.) of 12.29.1995.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th, 1990 and its amendments, taking into account the provision of its Bylaws, and

Whereas the provisions of CONAMA's Resolutions No. 1, 2 and 8 (Art. 20) of 1993, establishing the requirements for the compliance of noise emission limits for motor vehicles;

Whereas every motor vehicle sold in the national territory must meet the maximum noise emission limits;

Whereas the changes performed in vehicles may alter the noise emission levels;

Whereas the forecast difficulties of annual production volumes in the car body manufacturer' sector of passenger vehicles, for the requirements comply of CONAMA's Resolutions No. 1 and 8 (Art. A20.) of 1993, resolves to:

Article 1 Ratify the maximum noise limits and the schedule for its compliance determined in Article 20 of CONAMA's Resolution No. 08/93, except for the requirement set forth for January 1st, 1996.

Article 2 All vehicles that undergo modifications or additions in relation to its original design shall maintain compliance with CONAMA's requirements on the noise emission.

Article 3 For the purposes of this Resolution, those responsible for the car body manufacturing or for the additions or modifications in which changes are made to items directly related to the noise emission, are considered final manufacturers of the vehicle and will be the responsible ones for the compliance with the requirements set forth by CONAMA.

§ 1 Where changes are made in the systems directly related to noise emission, but in ways that provenly do not alter the noise emission levels and in case of changes arising from other legal requirements, IBAMA may, at its discretion, waive the issuance of prototype verification reports and production monitoring reports.

§ 2 In case the vehicle is produced from a chassis for bus or dolly for bus, provided by third parties, it should be considered for all purposes and under CONAMA's Resolutions No. 1 and 8 (Art. 20) of 1993, the adoption of Attachment A1 hereof in replacement of Attachment A of CONAMA's Resolution No. 1 of 1993.

Article 4 – For the purposes of this Resolution, definitions are set forth in Attachment B1.

Article 5 It is up to IBAMA to deliberate on omission cases herein.

Article 6 The penalties foreseen under the federal, state and local laws in effect shall be applied to the violations to the provisions herein.

Article 7 This Resolution shall be effective on the date of its publication, revoking the provisions in contrary.

Attachment A1

1. Chassis/Dolly Brand:

2. Chassis/Dolly Model/year of manufacture/chassis/dolly type:

2.1. List of configurations represented:

2.2. Total Gross Weight: (kg)

2.3. Technical criteria for defining the master configuration and configuration represented

3. Name and address of the chassis/Dolly manufacturer:

4. Name and address of the Legal Representative for the Chassis/ Dolly;

5. Name and address of the importer(s) of the chassis/Dolly, if applicable;

6. Body brand;

7. Name and address of the body manufacturer;

8. Name and address of the body's legal representative;

9. Name and address of the body importer(s), if applicable:

10. Engine

10.1 Manufacturer:

10.2 Type:

10.2.1 – Otto/Diesel:

10.2.2 Cycle: 2/4 strokes;

10.3 Model:

10.4 Maximum power: (kW) to (1/min) (rpm)

10.5 Engine size: (cm^3) (l)

11. Transmission

11.1 Gear box: mechanical/automatic

11.2 Total number of shifts (except reverse), including the transmission relations

12. Equipment/Materials

12.1 Exhaust System (scheme)

12.1.1 Fibrous Materials in Contact with Gases: Yes/No

12.2 Air admission muffler

12.2.1 Manufacturer

12.3 Catalytic converter (if applicable)

12.3.1 Manufacturer

12.4 Tires designation (ABPA – Associação Brasileira de Pneus e Aros)

12.5 Additional specifications that the manufacturer deems necessary to ensure the fulfillment of this Resolution.

13. Measurements

13.1 Noise levels in acceleration according to ABNT NBR 8433

VEHICLE IDENTIFICATION		**MODEL: _____YEAR OF MANUFACTURE: _____**				
		VIN No.: ____MAX. POWER: __(kW) PBT: _____(kg)				
BACKGROUND NOISE LEVEL dB(A)						
1st Measurement		2nd Measure-ment	3rd Measurement			
	Approx. Speed (km/h)	Angular speed (rpm)	N.R. Right Side dB(A)		N.R. Left Side dB(A)	
			1st Meas.	2nd Meas.	1st Meas.	2nd Meas.
2nd shift						
3rd shift						
4th shift						
5th shift						
6th shift						
RESULT: _____dB(A)						

Note: The values recorded for the noise levels are the values determined through the measurement less 1 dB(A).

13.2 Noise levels in park condition according to ABNT NBR 9714

VEHICLE IDENTIFICATION		**MODEL: __YEAR OF MANUFACTURE:**		
		VIN No.:		
BACKGROUND NOISE LEVEL dB(A)				
1st Measurement		2nd Measurement	3rd Measurement	
BACKGROUND NOISE LEVEL dB(A)				
Angular speed (rpm)	1st Measurement	1st Measurement	1st Measurement	Arithmetic average
RESULT: _____dB(A)				

13.3 Maximum allowable backpressure value of the exhaust system according to Attachment E) of CONAMA's Resolution No. 01 of 1993: _____(kPa) (_____mmHg).

13.4 Measured value of the exhaust system compensation:

14. Data of tested vehicle:

15. Test report date:

16. Test report number:

17. Location:

18. Date:

19. Name and signature of the person responsible for the tests:

Attachment B1 – Definitions

Items change directly related to the noise emission: are thus considered the changes in any of the following items:

» exhaust system;

» noise reduction system;

» powertrain;

» chassis;

» adaptation of the auxiliary vehicular axle;

Body: part of the vehicle designed to accommodate the driver, passengers and/or cargo;

Chassis for bus: part of a bus consisting of the necessary components for its self-mobility and that supports the body;

Vehicle supplementation: increase of vehicular equipment (device incorporated into a road vehicle so that it can perform its function or increase its transportation capacity);

dB(A): unit of sound pressure level in decibels, weighted through the response curve in frequency A for quantification of the noise level;

Auxiliary vehicular axle: vehicular axle adapted in two-axle type road motor vehicle by strengthening the chassis with the purpose to provide its load capacity improvement, commonly called the third axle;

Car body manufacturing: passenger or mix-use vehicle manufacturing using dolly or chassis for bus supplied by third parties;

Vehicle change: set of operations performed in a vehicle that changes any of the following items:

» body;

» chassis;

» powertrain;

» exhaust system or noise reduction.

Total Gross Weight (PBT): Weight indicated by the manufacturer for specific operation conditions, based on considerations on the materials strength, tires' load capacity and so on, according to ABNT NBR 6070.

Dolly for bus: part of the bus containing platform and/or lower frame of a body (monoblock) and consisting of the necessary components for its self-mobility;

Maximum power: maximum net effective power according to ABNT NBR
5484, expressed in kW (kilowatts).

Exhaust system: set of components comprising the exhaust manifold, exhaust pipe, gas discharge pipe, expansion chamber(s), muffler(s) and catalyst converter(s), where applicable;

Noise reduction system: devices employed with the purpose of reducing the noise emitted by the vehicle, and it may be composed from sound barriers or insulation to powertrain components encapsulation.

Powertrain: set of components comprising engine (including fuel feed system, cooling, air intake and, if applicable, overfeed) and transmission system;

Production compliance checking: confirmation of vehicles' compliance, or of the exhaust systems from the spare part market whether produced in series or not, to the maximum noise limits set forth and other requirements hereof.

Prototype checking: commercial pre-production vehicle checking, characterized by the manufacturer as master configuration, with the maximum noise limits set forth and other requirements hereof.

Gustavo Krause	Raul Jungman
Chairman of the Board	Executive-Secretary

CONAMA RESOLUTION No. 226/1997

Sets maximum limits of motor vehicle soot emission, the specifications for commercial Diesel oil and the deployment schedule of the Diesel Oil Improvement Schedule. Official Gazette (D.O.U.) of 08.29.1997.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th,

1990, and taking into account the provision of its Bylaws, and

Whereas Law No. 8.723 of October 28th, 1993, which provides for the reduction of pollutants by motor vehicles as integral part of the National Environment Policy;

Whereas the emission of pollutants by motor vehicles contributes to the continuing deterioration of air quality, especially in urban centers;

Whereas the need for continuous updating of the Air Pollution Control Program by Motor Vehicles (PROCONVE);

Whereas the national production and the import of motor vehicles, along with the need of international technological harmonization, resolve to:

Art. 1 Check the limits for Phase IV, the dates of its implementation, as foreseen in CONAMA Resolution No. 08 of August 31st, 1993, and further establish the maximum limits for soot emission to full load, according to the table in the Attachment A hereof.

Sole paragraph. Allow for Diesel cycle engines with maximum swept volume equal to 0.7 dm^3 and maximum rotation equal or above 3,000 rpm, the limit of 0.25 g/kWh for particulate matter emission, and such limit may be reviewed at any time, at the discretion of Brazilian Institute of Environment (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis).

Art. 2 Approve the specifications of commercial Diesel oil and the schedule, as well as the distribution areas included in the tables of Attachment B hereof.

Sole paragraph. Recommend the National Fuel Department (DNC) to render official the specifications which regards the caption hereof.

Art. 3 The national or imported vehicles or engines produced to meet Phase IV (EURO II) shall be considered vehicles/engines designed to produce data required for the determination of the emission deterioration factor, which shall be set by CONAMA until December 31st, 1999, being them released from complying with the provisions of the Art. 10 of CONAMA's Resolution No. 08/1993.

§ 1 IBAMA will create the work group foreseen in CONAMA's Resolution No. 8/93, which will aim to implement the tests and technical assessment schedule of the vehicles and engines behavior, produced to meet Phase IV (EURO II) as for the pollutant emission durability, using Diesel with maximum content of 0.2% of sulfur mass and propose the setting of emission deterioration factor to CONAMA.

§ 2 The Work Group also aims to resume the negotiations on the Diesel with maximum content of 0.05% of sulfur mass in January, 1998.

§ 3 During this period, the manufacturers/importers of engines/vehicles and the manufacturers/distributors of fuel should ensure immediate attention to their user in case any technical problem is detected involving the engines' operation which regards the caption hereof and, if their operation/maintenance is found to be corrected, as well as the fuel storage/supply system, by their owners, this service will not cost anything to them, being the related costs of sole responsibility of the engines/vehicles' manufacturers/importers and of the fuel manufacturers/ distributors.

Art. 4 This Resolution shall be effective on the date of its publication.

Gustavo Krause Gonçalves Sobrinho	Raimundo Deusdará Filho
Chairman of the Board	Executive-Secretary

Attachment A
Maximum Soot Emission Limits at Full Load to Different Altitudes

	For altitudes lower or equal to 350 m		For altitudes above 350 m	
Air flow	**Bosch Unit**	**Light Abs. Coeff.**	**Bosch Unit**	**Light Abs. Coeff.**
(l/s)	**(UB)**	**(m^{-1})**	**(UB)**	**(m^{-1})**
≤ 42	4.61	2.26	5.11	2.94
45	4.55	2.19	5.05	2.85
50	4.46	2.08	4.96	2.71
55	4.37	1.99	4.87	2.58
60	4.28	1.90	4.78	2.47
65	4.22	1.84	4.72	2.40
70	4.16	1.78	4.66	2.31
75	4.10	1.72	4.60	2.24
80	4.03	1.67	4.53	2.17
85	3.98	1.62	4.48	2.11
90	3.93	1.58	4.43	2.05
95	3.88	1.54	4.38	2.00
100	3.83	1.50	4.33	1.95
105	3.79	1.47	4.29	1.91
110	3.74	1.43	4.24	1.86
115	3.70	1.40	4.20	1.82
120	3.66	1.37	4.16	1.78
125	3.63	1.35	4.13	1.75
130	3.59	1.32	4.09	1.72
135	3.57	1.30	4.07	1.69
140	3.52	1.27	4.02	1.65

	For altitudes lower or equal to 350 m		For altitudes above 350 m	
Air flow	Bosch Unit	Light Abs. Coeff.	Bosch Unit	Light Abs. Coeff.
(l/s)	(UB)	(m^{-1})	(UB)	(m^{-1})
145	3.49	1.25	3.99	1.63
150	3.45	1.23	3.95	1.60
155	3.42	1.21	3.92	1.57
160	3.40	1.19	3.90	1.55
165	3.37	1.17	3.87	1.52
170	3.34	1.16	3.84	1.50
175	3.32	1.14	3.82	1.48
180	3.29	1.13	3.79	1.46
185	3.27	1.11	3.77	1.45
190	3.24	1.10	3.74	1.43
195	3.21	1.08	3.71	1.41
≥ 200	3.19	1.07	3.69	1.39

Determined in accordance with the standards and their updates, prescribed in CONAMA's Resolution No. 8 of August 31st, 1993, Article 6, § 1.

Attachment B

Table I - Specifications for Commercial Diesel Oil

CHARACTERISTICS	UNIT	SPECIFICATIONS(1)				ASTM METHOD
TYPES		A	B	C	D	
APPEARANCE Aspect	–	clear and free of impurities				Visual
Color ASTM (max.)	–	0.30				D 1500
COMPOSITION Sulfur, max.	% mass	0.10	0.20	0.35	0.50	D 1552, D 2622 or D 4294
VOLATILITY Distillation: 50% recovered 85% recovered 90% recovered, max. Flash point, min. Density at 20ºC/4ºC	 ºC ºC 	 245 – 310 – 360 – 0.8200 to 0.8600	 245 – 320 – 360 – 0.8200 to 0.8700	 245 – 310 370 – – 0.8200 to 0.8800	 245 – 320 370 – – 0.8200 to 0.8800	 D 86 D 93 D 1298 or D 4052
FLUIDITY Viscosity at 40ºC Point of cold filter plugging, max.	 CSt ºC	 1.6 – 6.0 (2)	 1.6 – 6.0 (2)	 1.6 – 6.0 (2)	 1.6 – 6.0 (2)	 D 445 IP 309
CORROSION Corrosivity to copper (3 hours at 50ºC), max.	–	2	2	2	2	D 130
COMBUSTION Ashes, max. RCR in the final 10% of distillation, max. Cetane number, min. Cetane rate calculated minimum	 % mass % mass	 0.020 0.25 42 (3) 45	 0.020 0.25 42 (3) 45	 0.020 0.25 40 (3) 45	 0.020 0.25 42 (3) 45	 D 482 D 524 D 613 D 4737
CONTAMINANTS Water and sediments	% volume	0.05	0.05	0.05	0.05	D 1796

(new table provided by Resolution No. 321/03)

(1) All specified limits are absolute values in accordance with ASTM E-29 Standard.
(2) According to TABLE II.
(3) In case of Brazilian refineries that do not have CFR engine, the determination of cetane number is exempted. However, diesel oil shall have cetane number guaranteed as specified.

Table II – Point of Cold Filter Plugging (ºC, Maximum Values)

STATES	JAN/FEB/MAR/DEC	APR/OCT/NOV	MAY/JUN/JUL/ AUG/SEP
DF – GO – MG – ES – RJ	13	11	07
SP – MT – MS	12	09	05
PR – SC – RS	11	08	02

Table III – Diesel Oil Improvement Program/ Implementation Schedule

DIESEL OIL TYPE	OCT/1996	OCT/1997	JAN/1998	JAN/2000
DIESEL A (1.0% sulfur)	other regions	other regions	extinct	extinct
DIESEL B (0.5% sulfur)	Porto Alegre, Curitiba, Rio de Janeiro, Belo Horizonte, Recife, Fortaleza	—	other regions	other regions
DIESEL C (0.3% sulfur)	São Paulo, Santos, Cubatão, Salvador, Aracaju	previous regions and Porto Alegre, Curitiba, São José dos Campos, Rio de Janeiro, Belo Horizonte, Recife, Fortaleza, Belém	Porto Alegre, Curitiba, São José dos Campos, Campinas, Belo Horizonte, Belém	extinct

DIESEL OIL TYPE	OCT/1996	OCT/1997	JAN/1998	JAN/2000
DIESEL E (0.2% sulfur)	—	—	São Paulo, Santos, Cubatão, Rio de Janeiro, Salvador, Aracaju, Recife, Fortaleza	previous regions and Porto Alegre, Curitiba, São José dos Campos, Campinas, Belo Horizonte, Belém

DIESEL OIL TYPE	Jan/2000	Jan/2002
DIESEL A (0.10% sulfur)	–	São Paulo metropolitan region, Baixada Santista, São José dos Campos and Campinas
DIESEL B (0.20% sulfur)	São Paulo, Santos, Cubatão, Rio de Janeiro, Salvador, Aracajú, Recife, Fortaleza, Porto Alegre, Curitiba, São José dos Campos, Campinas, Belo Horizonte and Belém	Rio de Janeiro metropolitan region, Salvador, Aracajú, Recife, Fortaleza, Porto Alegre, Curitiba, Belo Horizonte and Belém
DIESEL C (0.35% sulfur)	–	Other regions
DIESEL E (0.50% sulfur)	Other regions	extinct

(new table provided by Resolution No. 321/03)

CONAMA RESOLUTION No. 230/1997

Prohibits the use of equipment that could reduce the effectiveness of pollutants and noise emission control. Official Gazette (D.O.U.) of 08.26.1997.

THE NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities granted by Law No. 6938 of August 31st, 1981, regulated by Decree No. 99.274 of 6 June 6th, 1990, and in view of the provisions in its Internal Regulation, and

Whereas the requirements established in Law No. 8723 of October 28th, 1993, to control noise emissions and atmospheric pollutants from automotive vehicles;

Whereas compliance with the emission limits established is made according to standard procedures, implemented to reproduce the characteristic and representative conditions of automotive vehicles operation in normal use;

Whereas the automotive industry has as one of its major goals the optimization of its products, and in the realization of such goal it adopts technological solutions involving systems of any nature, fuels, lubricants, additives, parts, components, devices, software components and operational procedures that may be directly or indirectly related with the control of noise and atmospheric pollutant emission;

Whereas the presence of certain components, parts, devices, software components, systems, lubricants, additives, fuels and operational procedures in the vehicles, considered as an integral part of them, may adversely affect the control of noise and atmospheric pollutants of automotive vehicles, under normal use and operation conditions, also resulting in their lack of compliance, in the most extreme cases;

Whereas the standard procedures for monitoring compliance with the emission limits may, in many cases, not be sufficiently sensitive to the action of parts, components, devices, software components, systems, lubricants, additives, fuels and operational procedures used, thus enabling the occurrence of results not representative of the conditions to be reproduced, invalidating the results, resolves to:

Art. 1 Define as “undesirable action items” any parts, components, devices, systems, software, lubricants, additives, fuels and operating procedures in disagreement with the approval of the vehicle, which reduce or may reduce the effectiveness of the noise and atmospheric pollutants emissions of automotive vehicles, or produce variations of the above standards discontinuous of these emissions in conditions that can be expected during their normal operation.

§ 1 The approval shall consider any exceptional circumstances contained in the caption when changes occur for safety reasons, protection of the vehicle or its components.

§ 2 Also considered as "undesirable action items” are those described in the caption of this article which facilitate the recognition of procedures or the vehicle, specifically the conditions of the test cycle, and which do not occur in the same way when the vehicle is in normal use on the streets.

Art. 2 Prohibit the use of equipment considered as “undesirable action items”, as defined in the caption of the previous article.

Art. 3 Any vehicle that has its systems of control of noise and atmospheric emissions controlled in whole or in part by computerized systems, must have safety features that do not allow modifications, programming, especially the exchange of memory components or even access to the programming code.

Art. 4 IBAMA may test or require the execution of tests in any vehicle, in a place it designates, aiming at investigating the eventual presence or action of "undesirable action items".

§ 1 Upon the execution of the tests mentioned in the caption of this article, IBAMA may use any test procedures and conditions that may be expected during normal operation of the automotive vehicle.

§ 2 When notified by IBAMA, due to evidence of the presence of "undesirable action items", the person responsible for the production, import or design of the vehicle, must provide all necessary tests, such as: vehicle, instrumentation, computers, software components and interfaces for access to monitored data and electronic parameters, as well as all the other systems and components.

§ 3 IBAMA may request the responsible for vehicle production, import or design, with indications of the presence of "undesirable action items" to submit detailed information on the test programs and results, engineering assessments, design specifications, calibrations, algorithms of the vehicle computers and project strategies incorporated in the operation, both in the standardized driving cycle and in normal use.

Art. 5 To the violators of the provisions of this Resolution, IBAMA can, cumulatively, suspend the issuance of new LCVM and request the collection of vehicles involved in the repair or replacement of "undesirable action items" subject to the sanctions provided for in Law No. 6938 of August 31st, 1981.

Art. 6 Any omissions in this Resolution shall be resolved by IBAMA.

Art. 7 This Resolution shall be effective on the date of its publication.

Art. 8 Resolution No. 20, of October 24th, 1996 is hereby revoked.

Gustavo Krause Gonçalves Sobrinho — President

Raimundo Deusdará Filho — Executive-Secretary

CONAMA RESOLUTION No. 241/1998

Establishes the maximum limits for the emission of pollutants by imported vehicles. Date of Law: 06/30/1998 – Publication. Official Gazette (D.O.U.) of 08.05.1998.

THE NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities granted by Law No. 6938 of August 31st, 1981, regulated by Decree No. 99.274 of 6 June 6th, 1990, and in view of the provisions in its Internal Regulation, and

Whereas Law No. 8.723 of October 28th, 1993, in its Article 4 determines that "the imported vehicles are obligated to meet the same limits and the other requirements established in the totality of their sales in the national market, resolves to:

Art. 1 The timeframes for the fulfillment of the requirements regarding PROCONVE for imported vehicles, foreseen in the CONAMA Resolutions, especially No. 08, of August 31st, 1993, and No. 226, of August 20th,
1997 become the same as those established for the national vehicles.

Art. 2 This Resolution becomes effective on the date of its publication, revoking all provisions in contrary.

Gustavo Krause Gonçalves Sobrinho — President

Raimundo Deusdará Filho — Executive-Secretary

CONAMA RESOLUTION No. 242/1998

Harmonizes PROCONVE with MERCOSUR.
D.O .U. of 08.05.1998.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th, 1990, taking into account the provision of its Bylaws, and

Whereas the harmonization of technical regulations on pollutants and noise emitted by motor vehicles between the States Members of Mercosur aims to eliminate barriers to trade and the free movement of motor vehicles in the Region;

Whereas the Member States have already agreed to adapt their legislation to allow the exchange of automotive vehicles, according to the Ouro Preto Protocol, from December 17th, 1994, articles 38, 40 and 42, as well as the MERCOSUL/GMC/RES Resolution No. 128, of December 13th, 1996, resolve to:

Art. 1 The maximum emission limit of particulate matter for light commercial vehicles with reference mass for test up to 1,700 kg contained in art. 5, § 2, of Resolution No. 15, of December 13th, 1995, becomes 0.124 g/km.

Art. 2 Vehicles with special features for off road use shall have the limits of "Table 1A – Maximum noise levels by vehicles in acceleration, according to ABNT NBR 8433" contained in CONAMA Resolution No. 1, of February 11th, 1993, added with:

I – One (1) dB(A) for those with engine with power under 150 kW. I – Two (2) dB(A) for those with engine with power equals or above 150 kW.

Art. 3 This Resolution shall be effective on the date of its publication.

Gustavo Krause Gonçalves Sobrinho — President

Raimundo Deusdará Filho — Executive-Secretary

CONAMA RESOLUTION No. 268/2000

Establishes an alternative method for monitoring of motorcycle noise. Official Gazette (D.O.U.), No. 237, of 12.11.2000.

THE NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities granted by Law No. 6938 of August 31st, 1981, regulated by Decree No. 99.274 of 6 June 6th,

1990, and in view of the provisions in its Internal Regulation, and

Whereas the objectives of the National Education and Control of Noise Pollution – "Silence", established by CONAMA Resolution No. 2 of March 8th, 1990, and established by CONAMA Resolution No 2 of February 11th, 1993, relating to the emission of noise by motorcycles, scooters, tricycles, scooters, mopeds with auxiliary engine and similar vehicles;

Whereas Chapter 9 of the European Directive 97/24/EC replaces Directive 87/56/EEC, revised by 89/235/EEC, cited as supplementary reference to CONAMA Resolution No. 2, 1993;

Whereas the development of technologies for monitoring the levels of noise emitted by vehicles provides greater accuracy of information, contributes to the stability of production and to the compliance with the established limits;

Whereas the unification of regulatory requirements is a trend worldwide, and allows the assimilation of progress reached internationally to benefit the global population, making the level of demands on domestic vehicles compatible to that prevailing in the international community; and

Whereas the application of unified requirements makes the vehicles manufactured locally suitable for acceptance abroad, bringing more competitiveness and development to the Brazilian industry economy, resolves to:

Art. § 1 of art. 2 of CONAMA Resolution No. 2, of February 11th, 1993, shall be effective with the following wording:

"Art. 2 .....

§ 1 For motorcycles, the practices of testing and monitoring of noise levels can be made under Chapter 9 of Directive 97/24/EC of the European Economic Community, as an alternative to the provisions in this Resolution."

Art. 2 This Resolution enters in force on the date of its publication.

José Sarney Filho	José Carlos Carvalho
Chairman of the Board	Executive-Secretary

CONAMA RESOLUTION No. 272/2000

Provides for maximum noise limits for national and imported vehicles in acceleration, except motorcycles, scooters, mopeds and the like. Official Gazette (D.O.U.) of 01.10.2001.

THE NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities granted by Law No. 6938 of August 31st, 1981, regulated by Decree No. 99.274 of 6 June 6th, 1990, and in view of the provisions in its Internal Regulation, and

Whereas the excessive noise causes damages to the physical and mental health and particularly affects hearing;

Whereas the need to reduce noise pollution in urban centers pursuant to CONAMA Resolutions No. 1, of February 11th, 1993; 8, of August 31st, 1993; 17, of December 13th, 1995 and 252, of January 7th, 1999;

Whereas motor vehicles are one of the main sources of noise in the environment;

Whereas the use of appropriate and known technologies allows to meet the needs to control noise pollution;

Whereas the objectives of the National Education and Control of Noise Pollution – "SILENCE", resolves to:

Art. 1 Establish, for national and imported motor vehicles, manufactured from the date of the Publication of this Resolution, except motorcycles, scooters, mopeds, bicycles with auxiliary engine and the like, the maximum noise limits with the vehicles in acceleration.

§ 1 – For national vehicles produced for the domestic market and imported vehicles, the maximum noise limits is in force with the vehicle in acceleration, defined in Table 1A hereof, according to the schedule below.

I – Automotive vehicles of category “a”:

a) at least 40% of the national and imported vehicles produced from January 1st, 2002;

b) at least 80% of the national and imported vehicles produced from January 1st; 2004; and

c) 100% of the national and imported vehicles produced from January 1st, 2006;

II – Automotive vehicles of the categories “b”, “c” and “d”:

a) at least 40% of the national and imported vehicles produced from January 1st, 2005; and

b) 100% of the national and imported vehicles produced from January 1st, 2006;

§ 2 Occasional impossibilities to observe the percentages set forth in items I and II of the previous paragraph shall be evaluated by the Brazilian Environment and Renewable Natural Resources (IBAMA).

§ 3 The percentages mentioned in items I and II of the § 1 relate to the volume of production per manufacturer or importer.

Table – Maximum Noise Emission Limits for Automotive Vehicles

CATEGORY			NOISE LEVEL – dB(A) LEVEL		
DESCRIPTION			OTTO	DIESEL	
				Injection	
				Direct	Indirect
a	Passenger vehicle up to nine seats		74	75	74
b	Passengers vehicle with more than nine seats; cargo or traction vehicle and mixed use vehicle	PBT up to 2,000 kg	76	77	76
		PBT between 2,000 kg and 3,500 kg	77	78	77
c	Passenger vehicle or mixed use with PBT higher than 3,500 kg	Maximum power under 150 kW (204 HP)	78	78	78
		Maximum power equals or above 150 kW (204 HP)	80	80	80
d	Cargo or traction vehicle with PBT above 3,500 kg	Maximum power under 75 kW (102 HP)	77	77	77
		Maximum power between 75 kW (102 HP) and 150 kW (204 HP)	78	78	78
		Maximum power equals or above 150 kW (204 HP)	80	80	80

Notes:
1) Vehicle designations according to NBR-6067.
2) PBT: Total Gross Weight.
3) Power: Maximum net effective power according to NBR-ISO 1585.

§ 4 For vehicles equipped with more than one tractor axle, of permanent drive or not, the limits will be increased by 1 dB(A) for vehicles that are equipped with an engine with power of less than 150 kW; and 2 dB(A), if equipped with an engine with power less than 150 kW (204 HP).

Art. 2 The manufacturers, importers or their legal representatives shall request to IBAMA the Statement of Conformity with the noise limits according to the attachment to this Resolution, sending to IBAMA for analysis the noise tests for each master configuration and copy of the Income Collection – DR – Environmental Control paid.

Art. 3 The tires used for the test will be selected by the vehicle manufacturer and shall be available to the market; corresponding to one of the designations of the tire measurement according to ABNT NBR 6087 and ABNT NBR 6088, indicated for the vehicle by its manufacturer from Attachment A, item 8.4 of CONAMA Resolution No 1 of February 11th, 1993, and meet the requirements for tire groove depth according to CONTRAN Resolution 558 or alternate resolutions. The tires shall be calibrated with the pressures foreseen for the vehicle test mass.

Art. 4 The vehicles designed exclusively for military application, competition, agricultural machinery, road machines and other special applications, as well as those which are not used for urban and/or road transportation shall be exempted from meeting the requirements of this Resolution.

Art. 5 The Art. 2 and § 2 and 3 of Art. 7 Resolution No. 1, of February 11th, 1993, shall become effective with the following wording:

"Art. 2 The tests for measuring noise levels for the purpose of this Resolution shall be made according to the Brazilian ABNT NBR 8433 (1995) – Road automotive vehicles in acceleration – Determination of the noise level, and ABNT NBR 9714 (1999) – Automotive road vehicles – Noise emitted in the park condition, regarding the noise measurement near the exhaust. The equipment to perform the measuring test of noise levels should be calibrated by INMETRO or accredited laboratory belonging to the Brazilian Calibration Network-RBC and location of the test must be verified by IBAMA to obtain the Conformity Assessment Statement.

Art. 7 .....

§ 2 If the noise level of the tested vehicle does not exceed by more than 1 dB(A) the values of the limits set forth, the vehicle model will be considered in accordance with the provisions of this Resolution.

§ 3 If the vehicle tested does not satisfy the requirements of the preceding paragraph, another two vehicles of the same model shall be tested. If the noise level of the second or third vehicle exceeds by more than 1 dB(A) the limit values, the vehicle model shall be deemed inconsistent with the provisions of this Resolution and the manufacturer shall take the necessary measures to restore compliance."

Art. 6 Any omissions in this Resolution shall be resolved by IBAMA.

Art. 7 This Resolution shall be effective on the date of its publication.

José Sarney Filho — Chairman of the Board

José Carlos Carvalho — Executive-Secretary

Attachment

Compliance Statement No. /2000

We hereby state for all due purposes, before the traffic, foreign business and customs authorities, that the company _____, CNPJ No. _____.__._____/_-__, complied with the procedures necessary to comply with CONAMA Resolutions No. 1/93, 8/93 and 252/99, regarding the noise levels of the vehicle models, classified as (category – description – a, b, c, d), listed in the table below, for being vehicles for commercialization.

BRAND	MASTER CONFIGURATION	ORIGIN

We therefore inform that this Compliance Statement remains valid provided the aforementioned configurations do not suffer any change of components and/or systems which affect the noise emission values already approved/stated by the manufacturer or importer, being them fully responsible for the charges and consequences arising from any irregular situation verified in the aforementioned vehicles by the competent authorities.

Brasília, , 2000.
Environmental Control Board
IBAMA/DCA

CONAMA RESOLUTION No. 282/2001

Sets the requirements for catalytic converters designed for replacement, and other provisions. Official Gazette (D.O.U.) of 11.19.2001.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities granted by Law No. 6.938, of August 31st, 1981, regulated by Decree No. 99.274, of June 6th, 1990 and in view of the provisions in its Internal Regulation, and

Whereas the provisions in the Art. 7 of Law No. 8.723, of October 29th, 1993, and Art. 98 of Law No. 9.503, of September 23rd, 1997, which establish the need for previous authorization of the competent bodies for changes on the specifications of the original vehicles design;

Whereas the emissions control systems with catalytic converters present high effectiveness on the reduction of exhaust emissions of automotive vehicles and that these catalytic converters suffer wear or are damaged and, therefore, require replacement;

Whereas the non-original catalytic converters need to present quality and durability characteristics compatible to the environmental control needs;

Whereas the vehicle inspection programs shall demand the replacement in large amounts of catalytic converters;

Whereas the need for appropriate identification of the catalytic converters upon their acquisition and inspection actions in autoparts distribution chains, of field inspection and realization of vehicle inspection programs, resolves that:

Art. 1 May only be distributed and sold catalytic converters for replacement in vehicles equipped with Otto-cycle engine, which obtained registration of the SUPPLIER'S STATEMENT – DF, according to the provisions of Resolution No. 4, of December 16th, 1998, of the National Council of Metrology, Standardization and Industrial Quality – CONMETRO.

§ 1 For the purposes of this Resolution the definitions set out in Attachment I shall be considered.

§ 2 The DF shall be accompanied by a FORM FOR PREPARATION OF SUPPLIER'S STATEMENT FOR REPLACEMENT CATALYTIC CONVERTER, Attachment II of this Resolution, and forwarded to the National Institute of Metrology, Standardization and Industrial Quality – INMETRO and the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) in a period of sixty days before placing the catalytic converter on the market.

§ 3 In the event of changes in the dimensional, geometric, formulation characteristics of the substances participating in the process of catalysis of the exhaust gases, of support to the catalytic substances and encapsulation, and new applications for the catalytic converter for replacement, the manufacturer or importer shall issue a new DF and forward it to INMETRO and IBAMA.

§ 4 The original catalytic converters are excluded from the provisions of this resolution.

§ 5 The manufacturer or importer of replacement catalytic converter shall update the DF with INMETRO IBAMA every two years.

Art. 2 For the issuance or update of the DF, the manufacturer or importer for replacement catalytic converters shall meet the requirements for issuance or updating of the DF, in Attachment III of this Resolution.

Art. 3 The installation of a catalytic converter of the oxidation-reduction type shall be permitted as replacement of one of the oxidation type.

Art. 4 In cases of voluntary or compulsory collection, performed by the manufacturers, distributors or importers of vehicles involving operational weakness of the original catalytic converter, the use of non-original catalytic converters for replacement will not be allowed.

Art. 5 The importers and manufacturers of replacement catalytic converters shall present to IBAMA annual reports specifying the volume of sales by product type and model.

Art. 6 IBAMA may, at its discretion and at any time, select samples of catalytic converters lots from the manufacturers or importers to prove compliance with the requirements of this Resolution.

Art. 7 The replacement catalytic converters, which have the DF shall bear a specific identification with indelible characteristics, approved by IBAMA and by INMETRO from the effective date of this Resolution.

Art. 8 The manufacturer and the importer shall be responsible, respectively, for the collection and environmentally sound disposal of catalytic converters discarded after use.

Art. 9 INMETRO may seize the stock of replacement catalytic converters marketed without the DF or that are inconsistent with the provisions of this Resolution.

Art. 10. The costs arising from the actions of this Resolution, such as testing, collections, administrative costs, products transportation, personnel involved, the issue of the DF, including those arising from the actions foreseen in Art. 6 of this Resolution, shall be borne by the manufacturer, importer or legal representative.

Art. 11. Failure to comply with the provisions of this Resolution shall subject the violators to the penalties and sanctions provided for in Law No. 9605 of February 12th, 1998, Decree No. 3179 of September 21st, 1999, and in specific legislation.

Sole paragraph. Without prejudice to the penalties and sanctions referred to in the caption of this article, INMETRO, after hearing IBAMA, may cancel the existing DF.

Art. 12. IBAMA and INMETRO shall, upon previous consultation to IBAMA, deliberate on the omissions in this present Resolution;
Sole paragraph. IBAMA shall submit bi-annually to CONAMA summary report on the results of the application of this present Resolution.

Art. 13. This Resolution shall take effect one hundred eighty days after the date of its publication.

José Carlos Carvalho
Interim Chairman of the Board

Attachment 1 – Definitions

I – Catalyst: ceramic or metal element impregnated with chemicals responsible for chemical reactions,

II – Substrate: ceramic or metallic element used in support of catalyst chemical elements;

III – Catalytic converter: set composed mainly of one or more catalysts and their metal enclosure;

IV – Oxidation catalytic converter: promotes the oxidation of hydrocarbons and carbon monoxide contained in exhaust gases;

V – Oxidation-reduction catalytic converter: promotes, simultaneously, the oxidation of hydrocarbons and carbon monoxide contained in exhaust gases and reduces the nitrogen oxides;

VI – original catalytic converter: equipment or set approved by the vehicle manufacturer and with its identification;

VII – Replacement catalytic converter: catalytic converter or set of catalytic converters that have characteristics similar to the original catalytic converter(s);

VIII – Supplier Statement-DF: document issued by the manufacturer or importer of the catalytic converter to the market that, pursuant to Resolution No. 04, of December 16th, 1998, of the National Council of Metrology, Standardization and Industrial Quality, gives written assurance that the product complies with the requirements of this Resolution;

IX – Operational Durability: durability of the catalytic converter, verified after mileage accumulation, according to the cycle established at ABNT NBR 14008 – Light Automotive Road Vehicles – determination of the causes of Deterioration Factor of the Gases Emissions During the Mileage Accumulation;

X – Conversion Effectiveness: percentage of carbon monoxide (CO) reduction or hydrocarbons (HC) and nitrogen oxides (NOx) calculated from the emissions measurements before and after the catalytic converter, according to standard procedure;

XI – Manufacturer: supplier of the replacement catalytic converter, complete and ready for installation on the vehicle;

XII – Importer: responsible for the replacement catalytic converter import, complete and ready for installation on the vehicle;

Attachment II

FORM FOR THE ELABORATION OF THE SUPPLIER STATEMENT-DF REGARDING THE REPLACEMENT CATALYTIC CONVERTER

The replacement catalytic converter Supplier Statement, to be submitted to IBAMA and INMETRO, according to § 2, art. 1 of this Resolution shall be accompanied by the form below, duly completed.

I – Manufacturer/Importer (Corporate name and full address);

II – Brand/model/type/version;

III – Catalyst volume (cm^3);

IV – Total mass of the catalytic converter (kg);

V – Application (Detailed description informing the physical arrangement, brand and model of the vehicles, brand and model of the engine(s), types of fuel);

VI – Substrate: (amount, material, geometric shape, walls thickness e number of cells per unit of area);

VII – Catalyst: (supplier(s), composition and mass of the noble metals used);

VIII – Shape/type of fixation of the substrate;

IX – Shape/type of thermal isolation;

X – Characteristics of the metal housing (material, number of plates, plates thickness, construction method);

XI – Legal representative of the manufacturer/importer (full name and address);

XII – Attached documents (quantity and title of the documents/reports/guarantees/leaflets/etc., presented for analysis of the approval request);

XIII – Date and location;

XIV – Name and signature of the responsible.

Attachment III

REQUIREMENTS FOR THE EMISSION OR UPDATE OF THE SUPPLIER STATEMENT

I – regarding the product:

a) check conversion efficiencies greater than or equals to 70% for carbon monoxide (CO), 70% for hydrocarbons (HC) and 60% for the nitrogen-oxides (NOx) for minimum operational durability of 40,000 km, as established in the "TEST PROCEDURES FOR THE PURPOSE OF THE ISSUANCE OF THE REPLACEMENT CATALYTIC CONVERTERS SUPPLIERS STATEMENT", Attachment IV to this Resolution;

b) ensure that the structural strength of the product is compatible with the minimum operational durability of 40,000 km;

c) ensure the compatible use with commercial fuels for the recommended application;

d) demonstrate that the maximum back pressure is measured within a range of variation equals to ± 20% of that measured under the same conditions with the original catalytic converter;

e) ensure thermal insulation equivalent to the original catalytic converter;

f) ensure that it will not adversely affect the safety conditions, drivability, performance, overall functioning, thermal comfort, and fuel consumption of the vehicle;

g) ensure that its normal use will not increase the vehicle's noise emission, measured according to ABNT NBR 9714 – Noise Emitted from Motor Vehicles in Park Conditions – Test Method and result in the emission of hazardous substances.

II – regarding the product installation:

a) provide those responsible for the distribution, sale and installation of the products, with technical catalogues, containing information on their characteristics, application, installation requirements and warranty period;

b) hold training courses stressing that:

1. the installation of the catalytic converter follows the same layout and location of the original product and allows proper integration with other catalytic converters, in case the vehicle originally presents more than one converter;

2. only catalytic converters that are appropriate and recommended for each application are installed;

3. the catalytic converter is installed according to the manufacturer or importer's recommendations, does not present leakage of exhaust gas and increased noise, and the connections with sensors and air injectors are appropriately restored and do not affect the operational efficiency of these components.

Attachment IV

TEST PROCEDURES FOR THE ISSUANCE OF THE REPLACEMENT CATALYTIC CONVERTERS SUPPLIERS STATEMENT

I – The catalytic converter object of the Suppliers Statement issuance shall be properly identified as to its characteristics, as foreseen Attachment II of this Resolution, for each specific application by the manufacturer or importer.

II – Tests of exhaust gas emissions required to subside the drafting of the Supplier Statement, carried out with the catalytic converter installed on at least one representative vehicle of the application defined, which must have the following characteristics:

a) be in good maintenance conditions and present engine regulation according to the vehicle's manufacturer specification. In the event of unavailability of the original engine in appropriate use conditions, the use of a refurbished engine shall be accepted, provided the refurbishment process has been carried out according to the manufacturer's specifications;

b) present original configuration of the gas exhaust system, which must not present leakage or any other abnormalities;

c) represent the application with the largest sales projection and, within this application, be the vehicle that presents the greatest operational request for the catalytic converter. The identification of the application with the greatest operational request must follow the precepts established at ABNT NBR 14008 – Light Automotive Road Vehicles – Determination of the Deterioration Factor of the Gases Emissions During the Mileage Accumulation or, in case this methodology does not identify such application, according to the alternative procedure, duly described, justified and presented together with the documentation foreseen in the Attachment I of this Resolution.

III – The selection of vehicles for the applications defined and, if applicable, the detailed description of the alternative procedure adopted must be submitted, prior to the tests realization, to the approval by IBAMA, directly or through an accredited technical entity.

IV – The emissions tests for exhaust gases shall be performed in a laboratory accredited by INMETRO and follow the provisions of ABNT NBR 14008 – Determination of the Deterioration Factor of the Gases Emissions During the Mileage Accumulation, ABNT NBR 6601 – Light Automotive Road Vehicles – Determination of hydrocarbons, carbon monoxide, nitrogen oxides and carbon dioxide in the exhaust gas – Test Method and ABNT NBR 8689 – Light Automotive Road Vehicles – Test Fuels – Gasoline, Ethanol and gasohol.

V – The test must observe the following sequence:

a) after installation of the catalytic converter, object of the Supplier Statement issuance, the vehicle must accumulate at least 40,000 kilometers or the distance corresponding to the guaranteed operating durability, whichever is greater, according to the cycle defined in ABNT NBR 14008. The mileage accumulation by an alternative method will be allowed, provided it results in an equivalent effect and is accepted in advance by IBAMA;

b) reaching the established mileage, the vehicle must be tested for exhaust gas emissions, according to ABNT NBR 6601, measuring the gross emission and the controlled emission of CO, HC and NOx, respectively before and after the catalytic converter;

c) initially, the controlled emission shall be measured. Subsequently, the catalytic converter must be replaced by a device that simulates the same back pressure caused by its presence and the vehicle must have its gross emission measured. Alternatively to this procedure, the collection of gases before and after the catalyst is admitted during the same test, provided the configuration of the sampling system and gases analysis allows it;

d) three tests shall be performed for each condition of gross or controlled emission, and the respective arithmetic averages shall be calculated. The tests that produce results with variation greater than 15% between the highest and lowest value measured for CO, HC and NOx, expressed in grams of pollutant/km, shall be discarded. In such cases, the tests shall be repeated, until three consecutive measurements valid for the three gases are obtained. Based on the averages calculated for gross emissions (Eb) and controlled (Ec), it must be calculated for CO, HC and NOx the conversion efficiency (E) using the following formula:

$$E = \frac{(Eb - Ec)}{Eb} \cdot 100$$

VI – The manufacturer or importer shall attach to the Manufacturer's Statement to be sent to IBAMA and INMETRO as provided for in the § 1, article 1 of this Resolution, the original test reports issued, the calculations for the conversion efficiency recorded, the data relating to the components used in tests, indicating the date of manufacture, period of mileage accumulation and vehicle or alternative system that performed it and other information relevant to the conformity verification.

VII – In case of results compliance with the requirements of this Resolution, the manufacturer or importer must keep available for INMETRO and for IBAMA or its technical body under contracts for a minimum period of 30 days from the notification of the results to IBAMA or its technical agency under contract, the vehicle and catalytic converter used in the tests for possible confirmatory test.

CONAMA RESOLUTION No. 291/2001

Regulates the sets for converting vehicles to use natural gas and other provisions. Official Gazette (D.O.U.) of 04.25.2002.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities granted by Law No. 6.938, of August 31st, 1981, regulated by Decree No. 99.274, of June 6th, 1990 and in view of the provisions of Laws No. 8.723, of October 28th, 1993, 9.503, of September 23rd, 1997, on Decree No. 1.787, of January 12th, 1996, on Resolution CONTRAN No. 25, of May 21st, 1998, and its Internal Regulation, and

Whereas the requirements of the Air Pollution Control Program by Motor Vehicles (PROCONVE) established by the National Environment Council – CONAMA through CONAMA Resolution No. 18 of May 6th, 1986, and other complementary resolutions;

Whereas the Vehicles in Use Inspection and Maintenance Programs – I/M, defined in Resolution CONAMA No. 7, of August 31st, 1993, complemented by Resolution CONAMA No. 227, of August 20th, 1997;

Whereas the interest from the environment sector so as the automotive vehicle incorporate technological advances in the pollutants emission control;

Whereas the need for continuous updating of PROCONVE as well as the completion of its implementation procedures, resolves that:

Art. 1 This document institutes the Environmental certificate for Use of Natural Gas in Automotive Vehicles (CAGN).

§ 1 CAGN shall be issued by the Brazilian Environment and Renewable Natural Resources (IBAMA), for each model of Set of System Components for Natural Gas vehicles, for each type of engine, according to art. 2, item IV, of this Resolution, and for each fuel, nominal to the manufacturer or importer, with annual validity, with the possibility of renewal, provided all the procedures in this Resolution are observed.

§ 2 After ninety days of publication of this Resolution, the vehicle which has the set of Components of the GN System shall only be registered in the state traffic agencies upon presentation of CAGN.

Art. 2 The following deadlines are established to meet the emission limits applicable to the "Set of Components of the GN System" in Otto-cycle engines, subject to the technological level established in the phases of the Air Pollution Control Program by Motor Vehicles (PROCONVE):

I – up to ninety days after publication of this Resolution, regardless of the phase PROCONVE, all vehicles with NG systems installed shall meet the limits set forth in Resolution CONAMA 7, of August 31st, 1993, and configuration of their technological level, as attached.

II – up to ninety days after publication of this resolution, the manufacturers and importers of NG components must declare the typical values of pollutant gases emissions for vehicles with natural gas systems installed which meet phase III of PROCONVE (vehicles produced from January, 1997), using a more representative vehicle/model more representative.

III – after twelve months of publication of this resolution, the company interested in receiving the CAGN, shall present a vehicle with its NG System Components for Vehicles of the Otto-cycle engine of PROCONVE Phase III, approved according to the requirements prescribed in the Resolution CONAMA No. 18 of May 6th, 1986, and December 15th, 1995, and in accordance with the configuration of their technological level, included
in the attachment of this Resolution.

IV – twenty-four months after the publication of this Resolution, the sets of the NG System Components for Otto-cycle engine vehicles of PROCONVE Phase III will be homologated according to engine and fuel volume class, as per sections below and observing the requirements of CONAMA Resolutions No. 18, of May 6th, 1986 and 15, of December 15th, 1995, and meeting the technological baseline of its configurations as in this Resolution's attachment.

a) A-class: Engine size up to 1000 cc.

b) B-class: engine size from 1000 to 1500 cc;

c) C-class: engine size from 1500 to 2000 cc;

d) D-class: engine size from 2000 to 2500.; and

e) E-class: engine size above 2500 cc.

V – after thirty-six months of publication of this Resolution, the sets of the NG System Components for Otto-cycle engine vehicles of PROCONVE Phase III will be approved according to the requirements of section III of this article, by brand/model/engine vehicle;

§ 1 – The NG conversion systems for Otto-cycle engine vehicles, intended to vehicles produced to meet the phases after Phase III, shall be approved according to the rules that govern that phases, by brand/model/motorization of the vehicle.

§ 2 – All the vehicles with more than five years of manufacture with the NG system installed regardless of the PROCONVE phase, shall observe the provisions of Section I of this article.

§ 3– Upon reinstallation of the NG System from one vehicle to the other, it shall meet the provisions of this article, according to the condition of the vehicle object of reinstallation.

Art. 3 The installations of the NG system for vehicles of Phase III of the PROCONVE and the later phases shall meet the conditions listed below:

I – the installation of the NG system may not change any of the technological resources incorporated, such as: catalyst, oxygen sensor, stepper motor, learning system, calibration, among others;

II – the pollutant gases emission levels of the vehicle with the NG system installed shall not exceed the emission levels obtained for the same vehicle before the installation of the NG System, with the original fuel;

III – the emission levels of carbon monoxide (CO), nitrogen oxides (NOx) and non-methane hydrocarbons (NMHC) of the vehicle with the NG System installed, when measured with natural gas, shall be equal or

under those measured with the original fuel, except for total hydrocarbons (THC);

IV – the realization of the evaporative emission tests shall not be applicable.

Art. 4 The limits and procedures included in this Resolution apply to all installations of NG System performed in original configurations already approved by IBAMA.

Art. 5 The manufacturers and importers of components for NG interested in obtaining the CAGN for sets of components of the NG System, national or imported, shall present a request to IBAMA, accompanied by technical information included in the Attachment to this Resolution.

Art. 6 The tests for the acquisition of the CAGN for the set of components of the NG System shall be conducted in Brazil, in a laboratory inspected by IBAMA, or accredited by National Institute of Metrology, Standardization and Industrial Quality – INMETRO, according to the Brazilian standards and accompanied by an IBAMA technician.

§ 1 – The manufacturers of importers shall inform, with a minimum advance of thirty days, the date of availability of the vehicle having the Set of components of the NG System for the realization of the tests.

§ 2 – The costs inherent to the realization of the tests shall be borne by the manufacturer or importer and shall be charged in the process of approval of the Set of Components of the NG System.

Art. 7 IBAMA may request, at its discretion, a sample of the Set of Components of the NG System, manufactured or imported, for commercialization in the Country, for the purposes of evidencing the compliance with PROCONVE requirements.

§ 1 – The costs of the tests to evidence the compliance shall be borne by the manufacturer or importer.

§ 2 – The verification of non-compliance with the requirements of the legislation, by the manufacturer or importer, implies in the rejection of the CAGN emission request for the set of components of the NG System object of the request.

§3 The finding of noncompliance with the requirements of legislation, after receiving the CAGN, implies in the cancellation thereof, as well as in the collection of the lots involved for repair by the manufacturer or importer, and subsequent evidence of compliance before IBAMA, according to the requirements of current legislation, ensuring the effectiveness of the corrections made.

§ 4 The manufacturer or importer of the NG System Components Sets shall bear all costs arising from the provisions of the § 3.

Art. 8 For control purposes, the manufacturer or importer shall submit bi-annually to IBAMA, a report on the sales volume of the NG System Components Set sold in the country through it.

Art. 9 The installation of natural gas system in any type of automotive vehicle will only be executed by the installer registered at INMETRO for this purpose.

Art. 10. The installation of the GN system in any type of automotive vehicle will only be permitted if it uses the NG System Components Sets and observes the procedures authorized by IBAMA.

Art. 11. The installation of the NG system will not be allowed in fitted automotive supercharged (turbo or supercharger).

Sole paragraph. The provisions set forth in the caption of this article shall not apply to the installation of the NG system in supercharged vehicles, originally configured as such in the factory.

Art. 12. The installation of the NG system may not change the calibration parameters or controls and systems existing for the vehicle in the use of the original fuel.

Art. 13. The company and the technician responsible for installation of the natural gas system are responsible for the performance of the vehicle with NG installed system and compliance with the requirements of specific legislation of the Inspection and Maintenance Programs for Vehicles in Use – I/M.

Sole paragraph. The emission limits for the purposes of inspection of these vehicles are those contained in Resolution CONAMA No. 7, of August 31st, 1993.

Art. 14. Up to thirty days after the publication of this resolution, all installers registered at INMETRO shall inform IBAMA of the amount of NG systems installations already carried out so far and at the end of each calendar semester, the volume of natural gas system installations made through them, informing NG System Components Set used.

Art. 15. This Resolution shall be effective on the date of its publication.

José Carlos Carvalho

Chairman of the Board

Attachment

CHARACTERISTICS OF THE BI-FUEL ENGINE CONVERSION SYSTEM OF OTTO-CYCLE ENGINES

1. Manufacturer/importer of the conversion system (set)

1.1. Corporate name, CNPJ, State Registration.

1.2. Technical Responsible with CREA

2. Technological Configuration of the system

2.1. PROCONVE PHASE I

2.2. PROCONVE PHASE II

2.3. PROCONVE PHASE III

3. Engine description

3.1. Manufacturer

3.2. Model

3.3. Year/Model of the vehicle equipped

3.4. Volumetric displacement (cm^3)

3.5. Fuels used

4. Operating characteristics for each fuel

4.1. Idle speed revolutions (rpm)

4.2. Concentration of carbon monoxide (% v) in idle speed and 2500 rpm

4.3. Concentration of hydrocarbons (ppm C) in idle speed and 2500 rpm

4.4. Maximum net effective power moment

4.5. Maximum net effective power

5. Admission system

5.1. Inform any change in the original system of the vehicle, if any.

6. Mix formation

6.1. Per carburetor

6.1.1. NG feeding dosing system, with detailed illustrative scheme and brief description of the operation;

6.1.2. Type (mixer or nozzle)

6.1.3. Location of mixer or nozzle

6.2. Per fuel injection

6.2.1. NG feeding dosing system, with detailed illustrative scheme and brief description of the operation

6.2.2. Type (mixer or nozzle)

6.2.3. Mixer location

6.2.4. Nozzle manufacturer

6.2.5. Type of nozzle (code/specification)

7. Ignition system

7.1. In vehicles with carburetor

7.1.1. Timing advance processors, with brief description of the operation and original advance with original fuel and NG

7.2. In vehicles with fuel injection

7.2.1. Input and output resources and parameters of the control unit

7.2.2. System description (describe changes/replacements)

7.2.3. Specification of the initial advance

7.2.4. Opening of the spark plug electrodes

7.2.5. Timing advance processors (describe operation, original advance with original fuel and with NG).

8. List of NG System Components

8.1. Pressure reducer (quantity, manufacturer, part code);

8.2. Stepper motor assembly (idem)

8.3. Stepper motor assembly for idle speed (idem)

8.4. Electronic control unit (idem)

8.5. Venturi/mixer assembly (idem)

8.6. Timing advance processor (idem)

8.7. Closed loop system control unit (management of the oxygen sensor signal) (idem)

8.8. Dispensing valve (idem)

8.9. Emulators set “Signal simulators” (injector, oxygen sensor, map-“Collector Pressure Meter” ad others) with the respective connecting cables (idem)

9. Procedures to perform the conversion (discriminate)

CONAMA RESOLUTION No. 297/2002

Sets limits for pollutant gas emissions by new mopeds, motorcycles and the like. Official Gazette (D.O.U.) of 03.15.2002.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, in the use of its capacities granted by Law No. 6.938, of August 31st, 1981, regulated by Decree No. 99.274, of June 6th, 1990 and in view of the provisions in its Internal Regulation, and

Whereas the expressive growth of the mopeds, motorcycles and the like in the main metropolitan areas of the country;

Whereas the emission of pollutants by mopeds, motorcycles and the like contributes to the continuing deterioration of the quality of life, especially in urban centers;

Whereas the mopeds, motorcycles and the like are relevant sources of emission of pollutants hazardous to the public health and to the environment;

Whereas the existence of appropriate technologies, of proven effectiveness, which allow the fulfillment of the pollution control needs, resolves;

Art. 1 Establish the limits for pollutant gases emissions by mopeds, motorcycles and new similar vehicles.

Art. 2 To establish, as of January 1st, 2003 as a prerequisite for the import, production and marketing of new mopeds, new motorcycles and the like, throughout the national territory, the License for Use of the Configuration of mopeds, motorcycles and the like (LCM).

§ 1 Only configurations of new mopeds, new motorcycles and the like, or any extension thereof, which possess LCM to be issued by the Brazilian Environment and Renewable Natural Resources (IBAMA) may be marketed within the national territory.

§ 2 The LCM shall be valid for the calendar year of issue and may be revalidated by IBAMA, on a yearly basis, and shall be the exclusive property of the person or entity that requests it.

§ 3 The LCM issued in the third quarter shall also have its validity explained to the following calendar year.

§ 4 The values of emission of exhaust gases approved for an LCM may be extended to other configurations, provided they use the same engine configuration, exhaust system and transmission, and the mass in running order of the vehicle to receive the extension is at most one class of inertia above or below the vehicle initially approved, as defined in Attachment I to this resolution.

§ 5 The revalidation mentioned in the § 1 of this Article shall only be granted where there is no change in the specifications laid down in Attachment II of this Resolution.

Art. 3 For the purposes of this Resolution, the definitions mentioned in the Attachment I to this Resolution shall be considered.

Art. 4 To obtain the LCM the applicant must submit a formal request to IBAMA, along with the information listed in Attachment II of this Resolution.

Art. 5 The test method and measurement of pollutants in the exhaust gas must follow the requirements of Attachments I and II of the European Community Directive No. 97/24/EC, for mopeds and motorcycles and the like, respectively.

Sole paragraph. To comply with the determinations of the caption of this article, the current version of the European Community Directive mentioned shall be used or one that replaces it, until the respective national regulated procedures are established.

Art. 6 The emissions tests for configuration certification shall be held in Brazil, in a certified laboratory for the analysis in question by the National Institute of Metrology, Standardization and Industrial Quality (INMETRO), according to the requirements of this Resolution.

§ 1 The tests mentioned in the caput of this Article shall be accompanied by IBAMA representatives IBAMA or technical agent engaged.

§ 2 Where there is evidence that the lack of local conditions require testing

abroad, it shall be at IBAMA's discretion to approve of the tests schedule, local vehicles to be tested and the monitoring team, which will consist of a maximum of three technicians.

§ 3 For the tests conducted in the National Territory, manufacturers and importers must report, at least thirty days in advance, the availability date of vehicles for their realization.

§ 4 For the tests conducted abroad, manufacturers and importers must report, at least sixty days in advance, the availability date of vehicles for their realization.

§ 5 The manufacturers and importers must submit to IBAMA the documentation provided for in the Attachment II of this Resolution, at least twenty days before the tests performance.

§ 6 The competent environmental agency may, at any time require the attainment of additional tests in an accredited laboratory.

§ 7 The cost inherent to the realization of the tests shall be borne by the manufacturer or importer.

Art. 7 The maximum limits of exhaust gas emissions for new mopeds are as follows:

I – For vehicles produced from January 1st, 2003:

a) carbon monoxide: 6.0 g/km;

b) hydrocarbons + nitrogen oxides: 3.0 g/km;

II – For the launching of new models, equipped with new engine configurations, power systems, transmission and exhaust, produced from January 1st, 2005:

a) carbon monoxide: 1.0 g/km;

b) hydrocarbons + nitrogen oxides: 1.2 g/km;

III – For all models made from January 1st, 2006, the emission limits are the same as those in paragraphs "a" and "b" of section II of this article.

Art. 8 The maximum limits of exhaust gas emissions for new mopeds and the like are as follows:

I – For vehicles produced from January 1st, 2003:

a) carbon monoxide: 13.0 g/km;

b) hydrocarbons: 3.0 g/km;

c) nitrogen oxides: 0.3 g/km;

d) carbon monoxides contents in idle speed:

1 – 6.0% in volume for motorcycles with volumetric displacement less than or equals to two hundred and fifty cubic centimeters, and

2 – 4.5% in volume for motorcycles with displacement greater than two hundred fifty cubic centimeters.

§ 1 For the launching of new models, equipped with new engine configurations, power systems, transmission and exhaust, produced from January 1st, 2005, IBAMA shall propose to CONAMA, until December 31st, 2002, the new limits to be observed.

§ 2 For all models in production from January 1st, 2006, the emission limits are the same to be established in the first paragraph of this article.

§ 3 To establish the proposal envisaged in the first paragraph of this article, IBAMA shall be based on the corresponding limits adopted by the European Community in its second stage of control.

Art. 9 On the effective date of the limits set forth in this resolution, and on the date of change of the limits provided in its articles 7 and 8, will be allowed, for a period of four months, the sale of the inventory of vehicles manufactured before the effective date of the new limits.

Art. 10. For mopeds, which marketing is less than four thousand units per year, equipped with the same configuration of engine/vehicle, regardless of the type of finish available, the manufacturer may request to IBAMA the exemption from observing the maximum exhaust gas emission limits, referred to in art. 7 of this Resolution, being the overall total maximum permitted, by manufacturer, ten thousand units per year.

§ 1 The exemption from observing the emission limits in effect does not relieve the manufacturer or importer from submitting the respective LCM to IBAMA.

§ 2 From January 1st, 2005, for new launchings of mopeds, the exemption from meeting the maximum exhaust gas emission limits will be for sale of less than fifty units per year, for vehicles with the same configuration of engine/vehicle being the overall total maximum permitted, of one hundred units a year, per manufacturer.

Art. 11. For mopeds and similar vehicles, with the same configuration of engine/vehicle, regardless of the type of finish available, and which commercialization is less than fifty units per year, the manufacturer or importer may request to IBAMA the exemption from observing the maximum exhaust gas emission limits, referred to in art. 8 of this Resolution, being the overall total maximum permitted, by manufacturer, one hundred units per year.

§ 1 May, also, be exempted those vehicles which, although belonging to a configuration to which the maximum emission limits apply, constitute a series for specific use: military use, for research on alternative fuels other than gasoline and diesel oil, in competitive sports and special releases, so considered at the discretion and decision of IBAMA.

§ 2 The exemption from observing the emission limits in effect does not relieve the manufacturer or importer from requesting the respective LCM to IBAMA.

Art. 12. For all mopeds, motorcycles and the like:

§ 1 From January 1st, 2006, the maximum emission limits of gaseous pollutants shall be guaranteed in writing by the manufacturer or importer, in accordance with the durability criteria to be established by CONAMA by December 31st, 2003.

§ 2 IBAMA must present to CONAMA, by December 31st, 2002, a regulatory proposal for the durability criteria of the emissions mentioned in the § 1 of this article.

§ 3 The fuel for the tests shall be of the “standard type for emission test”, defined by IBAMA, and comply with the regulations established by the National Petroleum Agency – ANP, and the mix gasoline-alcohol shall be prepared at a ratio of 22.0% ± 1.0% of anhydrous ethanol by volume.

§ 4 The engine lubricating oils used during the emission test shall be in accordance with the recommendations for normal use in the respective vehicle owner's manual.

Art. 13. The spare parts which affect emissions of vehicles, excluding those with original manufacturer's warranty shall have their quality certified by INMETRO.

Sole paragraph. INMETRO, when establishing procedures for certification mentioned in the caption of this article, shall listen to IBAMA.

Art. 14. Twelve months after the date of publication of this Resolution, the manufacturers of mopeds, motorcycles and the like must declare to IBAMA, until the last day of each calendar semester, the typical emission values of carbon monoxide, hydrocarbons and nitrogen oxides in the exhaust gas of all vehicles configurations under production, and present the criteria used to obtain the results conclusion.

Sole paragraph. The typical values of the carbon monoxide and hydrocarbons contents in idle speed regimen shall declared to IBAMA by the manufacturer and importer of the vehicle, within six months counted from the date of publication of this resolution.

Art. 15. The emission limits for exhaust gases and their control mechanisms set forth in this resolution, integrate, on a national basis, the Program for the Control of Air Pollution by motorcycles and similar vehicles – PROMOT, which will be executed by IBAMA, which aims at:

I – reducing the emission levels of gaseous pollutants by mopeds, motorcycles and the like, with the purpose of meeting the national environmental quality standards in force;

II – promoting the national technological development of the motorcycles and similar vehicles industry, both project's engineering and manufacturing, as well as in methods and equipment for testing and measuring the emission of pollutants;

III – proposing criteria and limits for the inspection and maintenance of mopeds, motorcycles and similar vehicles in use, and the emission of pollutants gases;

IV – promoting public awareness regarding environmental pollution provided by mopeds, motorcycles and the like;

Art. 16. From January 1st, 2003, aiming at the correct setting of the engines, manufacturers and importers of mopeds, motorcycles and the like shall provide the consumer through the owner's manual, the recommended values of:

I – concentration of carbon monoxide and hydrocarbons in exhaust gases, in idle speed, expressed in percentage by volume and parts per million (ppm), respectively;

II – Angular speed of the engine in idle speed, expressed in revolutions per minute.

Sole paragraph. The recommended values in items I and II of this article shall appear in a plate or sticker on all vehicles, in a secure and easily accessible place.

Art. 17. From January 1st, 2003, manufacturers and importers must disclose prominently, in the Service and Owner's Manuals, the following:

I – that the vehicle meets the requirements of the Program for the Control of Air Pollution from Motorcycles and Similar Vehicles (PROMOT);

II – Information on the importance of proper vehicle maintenance to reduce air pollution;

Sole paragraph. From the date set forth in the caption of this article, and any and all media (specialized or not) promotional material on the vehicle model holding the LCM, shall inform, clearly and objectively, their compliance with this Resolution.

Art. 18. IBAMA, based on proven facts, may request, at its discretion, samples of vehicles lots produced or imported for sale in the country for the purposes of proving the compliance with the requirements of this Resolution, by conducting emission tests.

§ 1 The cost of the conformity assessment tests, held in Brazil or abroad, as well as any actions resulting from repair and storage shall be borne by the manufacturer or importer of the vehicle.

§ 2 The finding of non-compliance with the requirements of this resolution by the vehicle manufacturer or importer, leads to the cancellation of its LCM, rendering the offender unable to continue their trades throughout the national territory.

§ 3 The finding of non-compliance with the requirements of the legislation after obtaining the LCM will entail the collection of the lots involved for repair by the manufacturer or importer and subsequent evidence before IBAMA, according to the requirements of this Resolution, thereby ensuring the effectiveness of corrections made.

Art. 19. From January 1st, 2006, manufacturers and importers shall submit semiannually to IBAMA the Emission Report of Vehicle under Production (REVP), referring to the configurations produced or imported during the preceding calendar semester;

Sole paragraph. IBAMA shall propose to CONAMA, by December 31st, 2003, the specific regulations and obligations relating to the Reports mentioned in the caption of this article.

Art. 20. The pollutants emission limits and specific procedures for the periodic inspection of vehicles in use in the Vehicle Inspection Program shall be established in a specific Resolution, to be proposed by IBAMA to CONAMA by December 31st, 2002.

Art. 21. Manufacturers and importers shall submit, on a monthly basis to IBAMA, from the start date of marketing of models and/or configurations of vehicles or engines, the sales data of these products.

Art. 22. The manufacturer or importer shall allow the entry of an authorized agent by IBAMA in its facilities when it considers necessary for the fulfillment of this Resolution.

Art. 23. Results of the certification tests of the vehicles already in production shall not be deemed confidential and may be used in the elaboration of information to be disclosed.

Art. 24. The revision of the emission limits for exhaust gases set out in this Resolution or the establishment of new limits shall be coordinated by IBAMA, calling at any time, the agencies involved and submit to CONAMA the proposed regulations for consideration.

Art. 25. Failure to comply with this Resolution shall give rise to the application of penalties, set forth in Law No. 9.605 of February 12th, 1998, regulated by Decree No. 3179 of September 21st, 1999.

Art. 26. This Resolution shall be effective on the date of its publication.

José Carlos Carvalho

Chairman of the Board

Attachment 1 – Definitions

Moped: two-wheeler and their similar three-wheeler (tricycle) or four-wheeler (quad), equipped with an internal combustion engine, which engine size does not exceed fifty cubic centimeters and which maximum factory speed does not exceed fifty kilometers per hour

Inertia class: refers to the equivalent inertia of the vehicle used in the test and varies according to the mass in running order, as established in the European Community Directive No. 97/24/EC in Attachments I and II, for mopeds and motorcycles and the like, respectively.

Engine configuration: unique combination of engine family, emission system, displacement, fuel supply system and ignition system.

Vehicle configuration: unique combination of engine, inertia and transmission including their relations from the gearbox to the wheel.

Exhaust gas: substances originating from the internal combustion engine and emitted into the atmosphere by the engine exhaust system.

Hydrocarbons: total organic substances, consisting of fractions of unburned fuel and combustion by-products.

Mass in running order: the total mass of the vehicle with all necessary fluid reservoirs filled as recommended by the manufacturer, and the fuel tank with at least 90% of its maximum capacity.

Vehicle mass for test: is the mass in running order plus 75 kg.

Idle speed: engine work regimen, specified by the manufacturer or importer, operating without load.

Vehicle model: name that features a vehicles line of production of from the same manufacturer with the same construction, except ornamental.

Motorcycle: two-wheeler vehicle and their similar three-wheeler (tricycle)

four wheeler (quad), equipped with an internal combustion engine, which engine size does not exceed fifty cubic centimeters and which maximum factory speed does not exceed fifty kilometers per hour.

Carbon monoxide: pollutant gas resulting from incomplete burning of fuels in internal combustion engines.

Nitrogen oxides: pollutant gases generated by the combination of air oxygen and nitrogen at temperature and pressure conditions inside the engine cylinder.

Revalidation: Extend the validity of the LCM to the next calendar year, provided that the vehicle approved does not present any change in its basic configuration.

Typical Emission Value: value of pollutants emission, obtained from statistical surveys and that should represent the configuration of motorcycles and the like, and may not be regarded as regulated specific limit.

Attachment II

VEHICLE CHARACTERISTICS FORM

A – ENGINE CHARACTERISTICS

1. Engine description

1.1. Manufacturer:

1.2. Type:

1.3. Engine cycle: ( ) 4 strokes ( ) 2 strokes

1.4. Cylinders number and arrangement: (mm)

1.5. Cylinder(s) diameter: (mm)

1.6. Piston(s) path: (mm)

1.7. Volumetric displacement: (cm^3)

1.8. Compression rate:

1.9. Design of the combustion chamber and piston, including rings

1.10. Cooling system

1.11. Supercharging use: (describe system)

1.12. Design of the air filter(s) or manufacturer and type

1.13. Lubricating system (2-stroke engines)

2. Additional pollution control systems

2.1. Description and diagrams

3. Air and fuel feeding system

3.1. Description and diagrams of the air admission system

3.2. Fuel feeding system

3.2.1. Per carburetor part Code:

3.2.1.1. Manufacturer:

3.2.1.2. Type/model;

3.2.1.3. Specifications:

3.2.1.3.1. Injectors:

3.2.1.3.2. Venturi:

3.2.1.3.3. Bowel level:

3.2.1.3.4. Float weight:

3.2.1.3.5. Float needle valve:

3.2.1.4. Choke: ( ) manual ( ) automatic

3.2.1.5. Feeding pump pressure: (or characteristic diagram)

3.2.2. Per injection system:

3.2.2.1. Feeding pump

3.2.2.1.1. Manufacturer:

3.2.2.1.2. Type/model:

3.2.2.1.3. Injected volume: mm^3 per cycle in the rpm rotation

3.2.2.2 Nozzles

3.2.2.2.1. Manufacturer:

3.2.2.2.2. Type/model:

3.2.2.2.3. Opening pressure: (MPa)

4. Valves triggering

4.1. Valves triggering by mechanical means

4.1.1. Maximum elevation and opening and closing angles

4.1.2. Valve lash

4.2. Distribution per window (2T)

4.2.1. Crankcase volume with piston in bottom dead center

4.2.2. Description of the reed valves, if any (display drawings)

4.2.3. Description of the head (with drawing) and valves diagrams

5. Ignition system

5.1. Per distributor

5.1.1. Manufacturer;

5.1.2. Type/model:

5.1.3. Ignition advance curve

5.1.4. Initial ignition advance;

5.1.5. Contact lash:

6. Exhaust system

6.1. Description and diagrams

7. Additional information on the test conditions

7.1. Lubricant used

7.1.1. Manufacturer:

7.1.2. Type:

7.1.3. Percentage of addition to the fuel: (% vol.)

7.2. Ignition spark plugs

7.2.1. Manufacturer:

7.2.2. Type:

7.2.3. Opening (mm)

7.3. Ignition coil

7.3.1. Manufacturer:

7.3.2. Type:

7.4. Ignition condenser

7.4.1. Manufacturer:

7.4.2. Type:

7.5. Idle speed system. Describe the operation and regulation, cold start.

7.6. Carbon monoxides contents in idle speed: (% vol.)

8. Engine performance data

8.1. Idle speed revolutions: (rpm)

8.2. Maximum power revolutions: (rpm)

8.3. Maximum power: (kW)

B – VEHICLE DESCRIPTION

1. Manufacturer:

2. Importer:

3. Brand/Model/Version:

4. Fuel:

5. Engine used:

6. Mass in running order: (kg)

7. Vehicle mass for test: (kg)

8. Roll resistive load: (kW)

9. Transmission: ( ) manual ( ) automatic

10. Number of shifts:

11. Transmission relations:

12. Final transmission relation

13. Tires

13.1 Type:

13.2. Measure:

13.3. Dynamic radius: (mm)

C – SUPPLEMENTARY DATA:

1 – Name, address and business phone number(s) of the representative(s)

constituted by the manufacturer, responsible(s) and date;

2 – Signature of the manufacturer or importer legal representative.

3 – Vehicle owner's manual or recommendations and procedures for the vehicles maintenance.

4 – Estimate of the number of vehicles to be sold per year.

5 – Statement by the manufacturer that vehicles produced from the date of elaboration of the Characterization Term reflects the descriptions and specifications of that term.

CONAMA RESOLUTION No. 299/2001

Sets procedures for preparing the Amount Report for the Emission Control of new produced and/or imported vehicles. Official Gazette (D.O.U.) of 05.20.2002.

The NATIONAL ENVIRONMENT COUNCIL (CONSELHO NACIONAL DO MEIO AMBIENTE) – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th, 1990, considering the provisions of Law No. 8.723 of October 28th, 1993 in Resolution CONAMA No. 18, of May 6th, 1986, as well as the provisions in its Internal Regulation, and

Whereas the environmental interests in the use of vehicles that incorporate technological advances in emissions already implemented or approved in the country;

Whereas the requirements of the Air Pollution Control Program by Motor Vehicles (PROCONVE) established by the National Environment Council – CONAMA through CONAMA Resolution No. 18 of May 6th, 1986, and other complementary resolutions;

Whereas the need for continuous updating of PROCONVE as well as the completion of its implementation procedures, resolves to:

Art. 1 Establish the Production Emission Values Report (RVEP), for the configurations of new vehicles or engines, domestic or imported, produced for marketing in the country during the period of one calendar semester.

Art. 2 At the beginning of each calendar semester, the manufacturer or importer representative, shall furnish to the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), within thirty days, the RVEP for the immediately preceding semester.

§ 1 The reports shall contain the identification of the laboratory and performing unit, and by tested vehicle or engine configuration, date and number their essays with their emission values obtained, and the mean and standard deviation, and, for each vehicle or engine configuration, the respective reference value shall be provided, as defined in the Attachment of this Resolution.

§ 2 Semester volumes under one thousand units per configuration of light vehicle, including its extensions, and the semi-annual volumes less than one hundred units per engine configuration for heavy duty vehicles are exempt from the requirements of this article.

§ 3 IBAMA, in the case of the exemptions referred to in the preceding paragraph, may select, at its discretion, a sample of lots of new vehicles or engines from the manufacturers or importers representatives in the country, in order to evidence the compliance with the respective regulated emission limits.

Art. 3 The failure to provide the reports by the manufacturer, by the manufacturer or importer representative, as set forth in art. 2 of this Resolution shall imply in the suspension, at the discretion of IBAMA, of the approvals, extensions or revalidation that the manufacturer or importer representative so requests, until the pending item is normalized, except in cases arising from force majeure or those technically justified.

Art. 4 All expenses arising from the actions of this Resolution, such as testing, recalls, repairs, administrative costs, costs of transporting goods or personnel involved shall be borne exclusively by the manufacturer, importer or their representative or, failing that, by the importer responsible for the lot of vehicles or engines.

Art. 5 The conditions for the preparation of the RVEP are described in the attachment of this Resolution.

Art. 6 This Resolution shall take effect one hundred eighty days after the date of its publication.

José Carlos Carvalho

Chairman of the Board

Attachment

PRODUCTION EMISSION VALUES REPORTS (RVEP)

1. SPECIFIC CONDITIONS

1.1. Emissions test for light vehicles classified according to CONAMA Resolution No. 15 of 1995, are executed in accordance with Standards: ABNT NBR 6601 – "Light Automotive Road Vehicles – Determination of hydrocarbons, carbon monoxide, nitrogen oxides and carbon dioxide – Test Method"; ABNT NBR 10972 – "Light Automotive Road Vehicles – Measurement of the carbon monoxide concentration in exhaust gas in idle speed – Laboratory Test "Test Method"; ABNT NBR 12026 – "Light Automotive Road Vehicles – Determination of the emission of aldehydes and ketones contained in exhaust gas, through liquid chromatography – DNPH method – Test method ", including their updated or alternate versions, provided they approved by IBAMA.

1.2. The emissions testing of heavy duty vehicles classified according to CONAMA Resolution No. 15 of 1995, as well as other classifications that may be tested as such, will be executed according to the Standards: ABNT NBR 14489 – "Diesel Engine – Analysis and determination of gases and material particles emitted by diesel engines cycle – Cycle 13 points"; ABNT NBR 7027 – "Exhaust Gas Emitted by Diesel Engines "Determination of soot in steady state – Test method"; ABNT NBR 13037 – "Issued by Exhaust Gas Free Diesel Motor Acceleration – Determination of Opacity – Test method "including their updated versions or surrogate, if approved by IBAMA.

2. GENERAL CONDITIONS

2.1. For the preparation of RVEP new vehicles or engines will be used for the domestic market and approved by the manufacturer or importer quality control, randomly chosen on the assembly lines or in their inventory, throughout the semester.

2.2. The emissions tests for RVEP may be made on the premises of the manufacturer or third party, provided that they take place in a laboratory recognized by IBAMA or accredited by INMETRO for this purpose.

2.3. The vehicle or engine selected for the RVEP is subjected to tests for pollutants regulated under the legislation contained in the exhaust gas

according to the rules laid down respectively in items 1.1 and 1.2.

2.3.1. For light passenger or commercial vehicles, the evaporative emissions will not be determined.

2.3.2. The vehicles having a system for evaporative emission control may be tested without heating the fuel tank, as prescribed in ABNT NBR 6601.

2.3.3. For light passenger or commercial vehicles powered by gasoline, the total emission of aldehydes shall not be determined across the sample selected, according to item 3, but only in five vehicles thereof, randomly distributed, subject to the provisions of item 3.8.

2.4. The production vehicles or engines will be tested without the break-in period, with the millage they present in new condition.

2.4.1. For the production engines classified as heavy duty vehicles, a break-in factor may be applied, provided it has been duly proven and accepted by IBAMA.

2.5. The selected vehicles or engines will be tested only once.

2.6. Vehicles or engines tested, which value of any pollutant "i" exceeds the respective limit established, shall be reworked in order to meet such value.

2.6.1. The vehicle or engine reworked shall be tested again. The

new x_i value obtained shall be included in the xi average, but reported in separate.

2.7. For each configuration of vehicle or engine, the following condition for each regulated pollutant shall be fulfilled.

$$\overline{x}_i + k \cdot s_i \leq L_i$$

$$s_i = \sqrt{\frac{\sum(x_i - x_i)}{n-1}}$$

Where:

$\overline{x}_i$ = pollutant “i” average

s_i = standard deviation of pollutant “i”

k = statistical factor established in table No. 1

n = No. of vehicles tested per configuration

x_i = each value measured for pollutant “i”

L_i = legal limit established for pollutant “i”

Table 1 – Statistical factor k

n	3	4	5	6	7	8	9	10	11
k	1,061	0.978	0.941	0.920	0.906	0.896	0.889	0.883	0.879

n	12	13	14	15	16	17	18	19	20	>20
k	0.876	0.873	0.870	0.868	0.866	0.865	0.863	0.862	0.861	0.860

3. SAMPLING DETERMINATION FOR THE RVEP

The sampling of the vehicles or engines for the RVEP must observe the following plan:

3.1. For new configurations of light vehicles, according to item 1.1: New configuration of light vehicle is classified as that corresponding to the calendar semester in which the production thereof started. Vehicles extensions are classified according to the master configuration.

3.1.1. The respective average value x_i obtained in the certification for acquisition of the respective approval is adopted as reference value for pollutant “i”.

3.2. For configurations already existing of light vehicles, according to item 1.1:

Existing configurations of light vehicles are classified as all those already in production, at least since the preceding calendar semester, or from extensions of master configurations already in production in the previous semester.

3.2.1. It is adopted as the reference value for each pollutant "i" the respective average x_i its average obtained in the evaluation of the production of the semester immediately preceding.

3.3. For configurations of light vehicles that present all the reference values lower than 60% of its maximum (L_i), will be tested during the semester n> 0.3% of their total production therein.

Example: $\bar{x}_i \leq 0.60\ L_i \rightarrow n = 0.3\%$

3.4. For configurations of light vehicles that present all the reference values lower than 80% of its maximum (L_i), it should be tested during the semester, n> 0.4% of the respective total production therein.

Example: $\bar{x}_i \leq 0.80\ L_i \rightarrow n = 0.4\%$

3.5. For configurations of light vehicles that present all reference values lower than 100% of its maximum (L_i), it should be tested during the semester, n> 0.5% of the respective total production therein.

Example: $\bar{x}_i \leq 1.60\ L_i \rightarrow n = 0.5\%$

3.6. If a light vehicle configuration presents its emissions, respectively, at different levels in relation to its limits, will be tested throughout its production, one sample "n" corresponding to the highest level.

Example:

$$\left.\begin{array}{l} \overline{x}_1 \leq 0{,}60 L_1 \\ \overline{x}_2 \leq 0{,}60 L_2 \\ \overline{x}_3 \leq 1{,}60 L_3 \\ \overline{x}_4 \leq 0{,}80 L_4 \end{array}\right\} \rightarrow n = 0{,}5\%$$

Where $\overline{x}_i$, $\overline{x}_2$, $\overline{x}_3$ e $\overline{x}_4$ = average pollutants 1, 2, 3 e 4, respectively.

Sampling n> 0.5% of the configuration was determined by the emission of pollutant 3, which is in the highest level of the respective limit.

3.7. For configurations of heavy duty vehicles or engines, according to item 1.2, will be tested, during the semester n> 0.4% of the respective total production thereof.

3.8. For any configuration of vehicle or engine which is tested, sampling shall be of at least three units/semester.

3.9. For configurations of light and heavy duty vehicles (or engines), already in production, will be granted a reduction of 0.1 percentage point (a tenth of a percentage point) in the volume to be sampled during the semester, in case, for each regulated pollutant in the previous calendar semester, the condition defined in item 2.7 of this attachment is observed, using the

statistical factor k established by Table 2 below:

Table 2 – Statistical factor k (for item 3.9)

n	3	4	5	6	7	8	9	10	11
k	2.92	2.35	2.13	2.02	1.94	1.90	1.86	1.83	1.81

n	12	13	14	15	16	17	18	19	20	>20
k	1.80	1.78	1.77	1.76	1.75	1.75	1.74	1.73	1.73	1.70

CONAMA RESOLUTION No. 315/2002

Provides for the new step of the Air Pollution Control Program by Motor Vehicles (PROCONVE). Official Gazette (D.O.U.) of 11.02.2002.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers and competences conferred to it by Law No. 6.938 of August 31st, 1981, as amended by Law No. 8.028, of April 12th, 1990, regulated by Decree No. 99.274 of June 6th, 1990 and taking into account the provisions of its Internal Regulations, attached to Ordinance No. 326, of December 15th, 1994;

Whereas the emission of pollutants by automotive vehicles contributes significantly to the ongoing deterioration of the environmental quality, especially in urban centers;

Whereas the automobile of the four-stroke engine cycle are relevant sources of fuel evaporative emissions;

Whereas the use of proper automotive technologies, of proven effectiveness, allows to comply with the pollution control needs, fuel economy and market competitiveness;

Whereas the need and timeframes to promote the quality of the national automotive fuels to allow the introduction of modern fuel provision and pollution control technologies;

Whereas the needs of time, for technological adjustment of new engines and vehicles to the pollution control requirements, and

Whereas the need to establish new emission standards for national and imported vehicular engines and heavy duty motor vehicles, aiming at reducing the air pollution in urban centers of the country and the fuel economy; resolves:

Art. 1 This document institutes new steps for the Air Pollution Control Program by Motor Vehicles (PROCONVE), nationally, in order to be observed in the approvals of new automotive vehicles,

national or imported, light or heavy, intended solely to the Brazilian internal market, with the following purposes:

I - reducing the emission levels of pollutants through the exhaust and by evaporation, with the purpose of meeting the national environmental quality standards in force;

II - Promote the national technological development, both in automotive engineering, and in methods and equipment for testing and measuring the emission of pollutants; and

III – promote the adjustment of the automotive fuels commercialized, so they result in products less aggressive to the environment and to the public health, and which allow the adoption of automotive technologies necessary to meet the requirements of this Resolution.

Art. 2 It is hereby set forth that, starting one hundred and eighty days from the publication of this Resolution, for new approvals, the limit of two grams of total hydrocarbons per test for evaporative emission of all the light automotive vehicles that use Otto Cycle engines, except those that use solely natural gas (PROCONVE L-4).

Art. 3 It is hereby set forth that, from January 1st, 2007, the following maximum limits for pollutants coming from the exhaust system of light passengers vehicles (PROCONVE L-4):

a) carbon monoxide (CO): 2.0 g/km;

b) total hydrocarbons (THC), only for natural gas vehicles: 0.30 g/km;

c) non-methane hydrocarbons (NMHC): 0.16 g/km;

d) nitrogen oxides (NOx) for Otto cycle engines: 0.25 g/km;

e) nitrogen oxides (NOx) for Diesel cycle engines: 0.60 g/km;

f) aldehydes (CHO), only for Otto cycle engines (except natural gas):0.03 g/km;

g) particulate matter (MP), only for Diesel cycle engines: 0.05 g/km;

h) carbon monoxide contents in idle speed, only for Otto cycle engines: 0.50% vol.

Art. 4 It is hereby set forth, from January 1st, 2009, the following maximum limits for pollutants coming from the exhaust system of light passengers vehicles (PROCONVE L-5):

a) carbon monoxide (CO): 2.0 g/km;

b) total hydrocarbons (THC), only for natural gas vehicles: 0.30 g/km;

c) non-methane hydrocarbons (NMHC): 0.05 g/km;

d) nitrogen oxides (NOx) for Otto cycle engines: 0.12 g/km;

e) nitrogen oxides (NOx) for Diesel cycle engines: 0.25 g/km;

f) aldehydes (CHO), only for Otto cycle engines (except natural gas): 0.02 g/km;

g) particulate matter (MP), only for Diesel cycle engines: 0.05 g/km;

h) carbon monoxide contents in idle speed, only for Otto cycle engines: 0.50% vol.

Art. 5 It is hereby set forth, from January 1st, 2007, the following maximum limits for air pollutants emission for light commercial vehicles, with vehicle mass for test under or equal one thousand and seven hundred kg PROCONVE L-4):

a) carbon monoxide (CO): 2.0 g/km;

b) total hydrocarbons (THC), only for natural gas vehicles: 0.30 g/km;

c) non-methane hydrocarbons (NMHC): 0.16 g/km;

d) nitrogen oxides (NOx) for Otto cycle engines: 0.25 g/km;

e) nitrogen oxides (NOx) for Diesel cycle engines: 0.60 g/km;

f) aldehydes (CHO), only for Otto cycle engines (except natural gas): 0.03 g/km;

g) particulate matter (MP), only for Diesel cycle engines: 0.08 g/km;

h) carbon monoxide contents in idle speed, only for Otto cycle engines: 0.50% vol.

Art. 6 It is hereby set forth, from January 1st, 2009, the following maximum limits for the emission of pollutants coming from the exhaust system of light commercial vehicles, with vehicle test mass under or equal 1,700 kg (PROCONVE L-5):

a) carbon monoxide (CO): 2.0 g/km;

b) total hydrocarbons (THC), only for natural gas vehicles: 0.30 g/km;

c) non-methane hydrocarbons (NMHC): 0.05 g/km;

d) nitrogen oxides (NOx) for Otto cycle engines: 0.12 g/km;

e) nitrogen oxides (NOx) for Diesel cycle engines: 0.25 g/km;

f) aldehydes (CHO), only for Otto cycle engines (except natural gas): 0.02 g/km;

g) particulate matter (MP), only for Diesel cycle engines: 0.05 g/km;

h) carbon monoxide contents in idle speed, only for Otto cycle engines: 0.50% vol.

Art. 7 It is hereby set forth, from January 1st, 2007, the following maximum limits for the emission of pollutants coming from the exhaust system of light commercial vehicles, with vehicle test mass above 1,700 kg (PROCONVE L-4):

a) carbon monoxide (CO): 2.7 g/km;

b) total hydrocarbons (THC), only for natural gas vehicles: 0.50 g/km;

c) non-methane hydrocarbons (NMHC): 0.20 g/km;

d) nitrogen oxides (NOx) for Otto cycle engines: 0.43 g/km;

e) nitrogen oxides (NOx) for Diesel cycle engines: 1.00 g/km;

f) aldehydes (CHO), only for Otto cycle engines (except natural gas): 0.06 g/km;

g) particulate matter (MP), only for Diesel cycle engines: 0.10 g/km;

h) carbon monoxide contents in idle speed, only for Otto cycle engines: 0.50 % vol.

Art. 8 It is hereby set forth, from January 1st, 2009, the following maximum limits for the emission of pollutants coming from the exhaust system of light commercial vehicles, with vehicle test mass above 1,700 kg (PROCONVE L-5):

a) carbon monoxide (CO): 2.7 g/km;

b) total hydrocarbons (THC), only for natural gas vehicles: 0.50 g/km;

c) non-methane hydrocarbons (NMHC): 0.06 g/km;

d) nitrogen oxides (NOx) for Otto cycle engines: 0.25 g/km;

e) nitrogen oxides (NOx) for Diesel cycle engines: 0.43 g/km;

f) aldehydes (CHO), only for Otto cycle engines (except natural gas): 0.04 g/km;

g) particulate matter (MP), only for Diesel cycle engines: 0.06 g/km;

h) carbon monoxide contents in idle speed, only for Otto cycle engines: 0.50% vol.

Art. 9 The heavy duty automotive vehicles, with Otto Cycle engine, with total authorized mass between three thousand, eight hundred and fifty six kilos and four thousand, five hundred and thirty six kilos, may be tested, alternatively, as light commercial vehicle with reference test mass higher than one thousand, seven hundred kilos, applying the provisions of articles. 7 and 8 of this Resolution.

Sole paragraph. For the cases mentioned in the *caput* of this article, the vehicle test mass shall be the arithmetic mean between the vehicle mass in running order and the total maximum mass authorized.

Art. 10. It is hereby set forth the size of the devices/systems for on board diagnosis (OBD), of the engine management functions that exercise influence on the air pollutants emission, for all light passenger and light commercial vehicles.

Sole paragraph. The Brazilian Environment and Renewable Natural Resources (IBAMA) shall propose to the NATIONAL ENVIRONMENT COUNCIL – CONAMA the specification of the implementation dates, the technological characteristics and the reach necessary for the devices and systems mentioned in the *caput* of this article.

Art. 11. The manufacturers or importer of light passengers and light commercial vehicles shall apply the deterioration factors, for eighty thousand kilometers or five years of use, as established in this Resolution, in CONAMA Resolution No. 14, of December 13th, 1995, and supplementary standards, so as to prove the respective observance to the maximum pollutants emission limits, established in arts. 2 to 8 hereof.

Art. 12. The manufacturers or importers shall observe the maximum air pollutants emission limits established in arts. 3, 5 and 7, as well as the application of the deterioration factor determined by art. 11, all of this Resolution, according to the phases schedule defined in §s 1, 2 and 3, below:

§ 1 – At least, forty per cent of the annual total of light automotive passengers vehicle, produced two years from the dates set forth in the aforementioned articles;

§ 2 – At least, seventy per cent of the annual total of light automotive passengers vehicles added to the commercial vehicles, produced two years from the dates set forth in the aforementioned articles;

§ 3 – One hundred per cent of the annual total of automotive passengers vehicles added to the light commercial vehicles, produced from the dates established in the aforementioned articles.

Art. 13. IBAMA may propose to CONAMA the change of the NMHC limit equal to 0.05 g/km for light vehicles powered by ethanol, gasoline added to ethanol or natural gas, provided the technical impossibility to its fulfillment is evidenced.

Art. 14. The new configurations of light vehicles produced and launched from January 1st, 2006, must meet, with one hundred per cent of the production, the limits mentioned in arts. 3, 5 and 7, as well as the application of the deterioration factor determined by Art. 11 hereof.

Art. 15. This Resolution sets forth the maximum limits of pollutants and respective implementation dates, according to Table 1 and Table 2, below, for the engines intended to heavy duty automotive vehicles, national or imported, according to the standard ESC, ELR and ETC test cycles, defined in the attachment I of this present Resolution.

§ 1 – The engines and vehicles for special applications which may not be used for urban and road transportation may be exempted in whole or in part from the requirements of this Resolution, upon motivated decision by IBAMA.

§ 2 – Marine and industrial engines are not covered by this Resolution, as well as those designed for agricultural and earthmoving machineries, as defined according to ABNT NBR 6142 and TB66 standards, respectively.

§ 3 – The conventional engines of the Diesel Cycle and those equipped with electronic fuel injection, exhaust gases recirculation (EGR) and/or oxidation catalysts shall meet the emission levels expressed in Line 1, of Table 1, being tested according to the ESC and ELR cycles, and to meet the limits of Line 2 of Table 1, the engine must observe, in addition, the limits of Line 2, of Table 2, according to the ETC cycle.

§ 4 – The Diesel cycle engines equipped with post-treatment systems of the exhaust gases, such as NOx catalysts and/or particles filter, in addition to meeting the limits expressed in Line 1, of Table 1, must observe, in addition, the emission limits established for the ETC test cycle, according to Line 1, of Table 2.

§ 5 – The natural gas engines shall meet the emission limits set forth in Table 2, according to the ETC test cycle.

§ 6 - IBAMA shall confirm the emission limits for the natural gas engines, established in the § 5 of this article.

§ 7– Until December 31st, 2004, the natural gas engines may be partially exempted from the requirements of this Resolution, upon motivated decision from IBAMA.

Art. 8 For urban buses the implementation date of the limits established in Line 1, of Table 1, shall be January 1st, 2004, observing the §4 of this article.

§ 9 – For microbuses the implementation date of the limits established in Line 1, of Table 1, shall be January 1st, 2005, observing the §4of this article.

§ 10. For heavy duty vehicles, except urban bus and microbus, for forty per cent of the annual production, per manufacturer or importer, the date for implementation of the emission limits established in Line 1, of Table 1, shall be January 1st, 2005, observing the §4 of this article.

§ 11. Alternatively to the provisions in the §8 of this article, the manufacturer or importer may meet the emission limits with a minimum of sixty per cent of the annual urban bus production, to be supplemented mandatorily until January 1st, 2005, and, in this case, it shall be obligated to meet the provisions of the §10 with at least sixty per cent of the annual production of the other heavy duty vehicles.

§ 12. For heavy duty vehicles, for one hundred per cent of the annual production, per manufacturer or importer, the implementation date of the emission limits set forth in Line 2, of Tables 1 and 2, shall be January 1st, 2009.

Table 1 – Limit Values – EsC and ELR tests

Effective Compliance	**Carbon Monoxide CO – (g/kWh)**	**Total Hydrocarbons THC – (g/kWh)**	**Nitrogen Oxides NOx – (g/kWh)**	**Particulate Matter MP – (g/kWh)**	**Opacity (ELR) m^{-1}**
Line 1- From Jan/1st/2006 (PROCONVE P-5)	2,1	0,66	5,0	0.10 or 0,13(1)	0,8
Line 2- From Jan/1st/2009 (PROCONVE P-6)	1,5	0,46	3,5	0,02	0,5

(1) Applicable only to single displacement engines under 0.75 dm^3 and rotation at nominal power above 3000 min^{-1};

Table 2 – Limit Values – ETC[(1)] tests

Effective Compliance	Carbon Monoxide CO – (g/kWh)	Total non-methane Hydrocarbons THC – (g/kWh)	Methane CH_4 [(2)] – (g/kWh)	Nitrogen Oxides NOx – (g/kWh)	Particulate matter MP[(3)] – (g/kWh)
Line 1- From Jan/1st/2006 (PROCONVE P-5)	5,45	0,78	1,6	5,0	0.16 or 0,21[(4)]
Line 2- From Jan/1st/2009 (PROCONVE P-6)	4,0	0,55	1,1	3,5	0,03

(1) For natural gas engines, the test conditions, according to the ETC cycle, and the limit values established shall be confirmed by IBAMA by December 31st, 2004;
(2) Only for natural gas engines;
(3) Not applicable to engines powered by natural gas;
(4) Applicable only to single displacement engines under 0.75 dm³ and rotation at nominal power above 3,000 min^{-1};

Art. 16. For the purposes of approval, upon evidence of the observance of the exhaust emission limits of heavy duty vehicles of the Diesel cycle engines, the Emission Deterioration factors shall not be applied, however, the manufacturer undertakes to maintain the respective emissions within the limits of PROCONVE for one hundred and sixty thousand kilometers run of the vehicle of a five-year period, whatever happens first.

Art. 17. The Environment Ministry shall present to CONAMA studies and proposals to implement incentives to the manufacturers and importers of automotive vehicles and automotive fuels, through the reduction of incurring taxes, so they can voluntarily anticipate the dates set forth for commercialization in the national market of products that meet the limits prescribed by this Resolution, except for the ones that meet the mandatory percentages established in arts. 12, 14 and 15 of this Resolution.

Art. 18. The fuels necessary to meet the provisions of this Resolution shall be available as established in art. 7, of Law No. 8.723 of October 28th, 1993.

§ 1 – For the purposes of developing products, certification tests and approval, the reference fuels shall be available, according to the Law mentioned in the *caput* of this article.

§ 2 – The commercial fuels shall have appropriate characteristics compatible with the technologies to be adopted and be available on the dates foreseen in this Resolution.

Art. 19. For measurement of the pollutants emission coming from the light passengers and light commercial automotive vehicles exhaust, which are tested according to the procedure of Brazilian Standard ABNT NBR 6601, the criteria set forth in CONAMA Resolution No. 18, of May 6th, 1986 shall apply.

§ 1 – The light automotive vehicles of the Diesel cycle shall be tested according to the methodology mentioned in the Code of Federal Regulations of the United States of America, volume 40, part 86, until the publication of the equivalent Brazilian standard.

§ 2 – The measurement of methane gas from the exhaust of light automotive vehicles, shall be performed according to the methodology mentioned in the Code of Federal Regulations of the United States of America, volume 40, part 86, until publication of the equivalent Brazilian standard.

Art. 20. The test and aldehydes measurement in the exhaust gas of the light passenger and commercial Otto cycle motor vehicles shall be carried out in compliance with the Brazilian ABNT NBR 12026 standard.

Art. 21. The test and aldehydes measurement in the exhaust gas of the light passenger and commercial Otto cycle motor vehicles shall be carried out in compliance with the Brazilian ABNT NBR 11481 standard.

Art. 22. The measurement tests of carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter in the engine exhaust gas for heavy duty motor vehicles shall be made, according to the methods and procedures established for the ESC, ELR and ETC cycles of Directive 1999/96 of European Parliament and Council of December 13th, 1999, its alternates and complements, until the publication of the equivalent Brazilian standard.

Art. 23. The light commercial vehicles of the diesel cycle with maximum total mass authorized greater than two thousand kilos, may,

optionally meet the requirements established for heavy duty vehicles, provided that the engine characteristics allow the test, and the supplementary documentation requirements, to be established by IBAMA Normative Instruction shall be met.

Art. 24. IBAMA shall coordinate the studies and works regarding any review necessary to the maximum emission limits and timeframes foreseen herein, calling, at any time, the bodies and entities sympathetic to the problem and, shall submit to the CONAMA, the final report with the proposal for appreciation.

Art. 25. The vehicles for specific use, military use, use in sporting events and special releases, so considered at the discretion and determination of IBAMA, may be exempted from the Requirements of this Resolution.

Art. 26. Vehicles having alternative propulsion system or which use fuels not foreseen in this Resolution may be partially exempted from the requirements set forth in this regulation, upon motivated and exclusive decision from IBAMA, for a maximum period of twenty four months.

Art. 27. All fuels used in the tests shall be of the standard type for emission tests and shall be according to the regulations of the National petroleum Agency, and the gasoline mix with ethanol is prepared from the respective standard test fuels, containing 22.0% ± 1.0% in volume of ethanol.

Art. 28. The manufacturer or importer shall allow the entry of an authorized agent by IBAMA in its facilities when it considers necessary for the fulfillment of this Resolution.

Sole paragraph. The denial of access authorization to its facilities shall subject the manufacturer or importer to the penalties of the laws in effect.

Art. 29. Art. 2 of CONAMA Resolution No. 14, of December 13th, 1995, shall have the addition of the following paragraphs:

"Art. 2 .....

§ 1 – For vehicles which do not have the determined factors, it will be admitted, due to the duration of the tests for determination of the deterioration factors, that they are declared within the maximum period of three hundred and sixty five days, plus the current year, counted from the CAC/ LCVM issuance date.

§ 2 – During this period, the factors established in art 4, § 4, of this Resolution, shall be applied for the issuance of the CAC/LCVM.

§ 3 – For engines' groupings that show increased sales volume forecast at the time of CAC/LCVM revalidation for the following year, surpassing the limit of fifteen thousand units per year, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of CAC/LCVM revalidation".

Art. 30. Art. 2 of CONAMA Resolution No. 14, of December 13th, 1995, shall have the addition of the following paragraphs:

"Art. 4 .....

§ 5 - For engines' groupings that show increased sales volume forecast at the time of CAC/LCVM revalidation for the following year, surpassing the limit of fifteen thousand units per year, shall respect the timeframe established in art. 2 of CONAMA Resolution No. 14, of 1995, for acquisition of the deterioration factors according to Standard ABNT NBR 14008."

Art. 31. Art. 7 of CONAMA Resolution No. 14, of 1995, shall have the addition of the following paragraphs:

"Art. 7 .....

§ 1 – For vehicles that do not have the factors determined, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of CAC/LCVM.

§ 2 – During this period, the factors established in art 4, § 4 of this Resolution, shall be applied for the issuance of the CAC/LCVM.
§ 3 - For engines' groupings that show increased sales volume forecast at the time of CAC/LCVM revalidation for the following year, exceeding the

limit of fifteen thousand units per year, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of CAC/LCVM revalidation.

Art. 32. Art. 9 of CONAMA Resolution No. 14, of 1995, shall have the addition of the following paragraphs:

"Art. 9 .....

§ 2 – For vehicles that do not have the factors determined, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of LCVM.

§ 3 – During this period, the factors established in art. 4 of this Resolution, shall be applied for the issuance of the CAC/LCVM.

§ 4 – For the engines' groupings that show an increased sales volume forecast at the time of LCVM revalidation for the following year, surpassing the limit of fifteen thousand units per year, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period of three hundred and sixty-five days, except for the current year, counted from the issue date of LCVM revalidation.

Art. 33. The manufacturers or importers of light automotive commercial vehicles, equipped with Otto Cycle engines, which did not obtain the deterioration factors according to the Standard ABNT NBR 14008 shall apply the deterioration factors of art. 4, § 4, of Resolution No. 14, of 1995 to the emissions of vehicles which engines grouping, classified according to the same Standard, have a sales forecast under fifteen thousand units.

Sole paragraph. For the engines' groupings that show an increased sales volume forecast at the time of LCVM revalidation for the following year, exceeding the limit of fifteen thousand units per year, it will be admitted, because of the tests duration to determine the deterioration factors, that they are declared within a maximum period

period of three hundred and sixty-five days, except for the current year, counted from the issue date of CAC/LCVM.

Art. 34. IBAMA, upon motivated and exclusive decision, may grant to the manufacturer or importer a temporary exemption to comply with the provisions of this Resolution.

Art. 35. The necessary definitions to the execution of this Resolution are described in the Attachment I.

Art. 36. Failure to comply with the provisions of this Resolution shall subject the violators to the penalties and sanctions provided for in Law No. 9605 of February 12th, 1998, Decree No. 3179 of September 21st, 1999, and in specific legislation.

Art. 37. This Resolution shall be effective on the date of its publication.

Art. 38. It is hereby revoked item 1.9 of § VI, of CONAMA Resolution No. 18, of May 6th, 1986.

Mônica Maria Libório
Executive Secretary of the Board

Attachment I – Definitions

1 - ELR Cycle – referred to as European Load Response cycle – test cycle consisting in a sequence of four levels at constant revolutions and increasing loads from ten to one hundred percent to determine the exhaust emission opacity;

2 - ESC Cycle – referred to as European Steady-State Cycle – consists in a test cycle with 13 operation modes in steady state;

3 - ETC Cycle – referred to as European Transient Cycle – test cycle consisting in one thousand eight hundred transient modes, second to second, simulating the actual use conditions;

4 - Devices and/or on board diagnosis (OBD) – devices or systems installed on board of a vehicle and connected to the electronic control module, aiming to identify any deterioration or malfunction of the emission control system components, alert the vehicle user to carry out

maintenance or repair of the emission control system, store and provide access to the occurrence of defects and/or maladjustments in the control systems and provide information to interested parties on the status of emission control systems' maintenance and repair.

5 – Total Hydrocarbons - total organic substances, including fractions as unburned fuel and byproducts from combustion, present in exhaust gas and which are detected by the flame ionization detector.

6 - Non-methane hydrocarbons – portion of total hydrocarbons, minus the faction of methane;

7 - New Approvals – are those that comprise the new vehicles' configurations not yet in production or the already existing configurations with changes in the emission control system, except, however, the revalidations of already existing approvals.

8 - Motor vehicles – motor vehicles for road use.

9 – New configurations – light vehicles models launched in the market, which are not derived from vehicles under production.

10 - Urban bus – according to the definition of bus provided by Law No. 9.503, of September 23rd, 1997, Attachment I, of use predominantly urban.

11 – Micro-bus –according to the definition of micro-bus provided by Law No. 9.503, of 1997, attachment I.

Correlations:
Amends Resolution No. 226/97 (tables I and III)

Provides for changing of CONAMA Resolution No. 226 of August 20th, 1997, which concerns the commercial diesel oil specifications, as well as the distribution regions. Published in Official Gazette (D.O.U.) No. 53 of 03.18.2003, Section 1, page 54.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA (CONSELHO NACIONAL DO MEIO AMBIENTE), exercising the powers conferred to it by Law No. 6.938 of August 31st, 1990, regulated by Decree No. 99.274 of June 6th, 1990 and its amendments, taking into account the provision of its Bylaws, attached to Ordinance No. 499, of December 18th, 2002, and

Whereas Law nº 8.723, of October 28th, 1993, that prescribes the reduction of the emission of pollutants by automotive vehicles, is an integral part of the Environment National Policy;

Whereas the prescriptions of the Air Pollution Control Program by Motor Vehicles (PROCONVE) instituted by the National Council for Environment through Resolution CONAMA nº 18, of May 6th, 1986, and further supplementary resolutions its update and the supplementation of its execution procedures;

Whereas there is a reduction on the environmental contamination upon the use by the automotive vehicles with fuels of the best quality, resolves:

Art. 1 Tables I and III of Attachment B of CONAMA Resolution No. 226, of August 20th, 1997, are replaced by the tables included in Attachments A and B of this Resolution.

§ 1 - Table I shall be effective according to the table on Attachment A.

§ 2 - Table III shall be effective according to the table on attachment B.

Art. This Resolution shall be effective on the date of its publication.

Marina Silva
Chairman of the Board

Attachment A

Table I — Minimum amount for commercial diesel oil

CHARACTERISTICS	UNIT	SPECIFICATIONS(1)				ASTM METHOD
TYPES		**A**	**B**	**C**	**D**	
APPEARANCE Aspect	–	clear and free of impurities				Visual
Color ASTM (max.)	–	0,30				D1500
COMPOSITION Sulfur, max.	% mass	0,10	0,20	0,35	0,50	D 1552, D 2622 or D4294
VOLATILITY Distillation: 50% recovered 85% recovered 90% recovered, max. Flash point, min. Density at 20ºC/4ºC	 ºC ºC 	 245 – 310 – 360 – 0.8200 to 0,8600	 245 – 320 – 360 – 0.8200 to 0,8700	 245 – 310 370 – – 0.8200 to 0,8800	 245 – 320 370 – – 0.8200 to 0,8800	D86 D93 D 1298 or D4052
FLUIDITY Viscosity at 40ºC Point of cold filter plugging, max.	 CSt ºC	 1,6 – 6,0 (2)	 1,6 – 6,0 (2)	 1,6 – 6,0 (2)	 1,6 – 6,0 (2)	 D445 IP 309
CORROSION Corrosivity to copper (3 hours at 50ºC), max.	–	2	2	2	2	D130
COMBUSTION Ashes, max. RCR in the final 10% of distillation, max. Cetane number, min. Cetane rate calculated minimum	 % mass % mass 	 0,020 0,25 42 (3) 45	 0,020 0,25 42 (3) 45	 0,020 0,25 40 (3) 45	 0,020 0,25 42 (3) 45	 D482 D524 D613 D4737
CONTAMINANTS Water and sediments	% volume	0,05	0,05	0,05	0,05	D1796

(1) All specified limits are absolute values in accordance with ASTM E-29 Standard.
(2) According to TABLE II.
(3) In case of Brazilian refineries that do not have CFR engine, the determination of cetane number is exempted. However, diesel oil shall have cetane number guaranteed as specified.

Annex B

Table III – Diesel Oil Improvement Program / Implementation Schedule

DIESEL OIL TYPE	Jan/2000	Jan/2002
DIESEL A (0.10% sulfur)	–	São Paulo metropolitan region, Baixada Santista, São José dos Campos and Campinas
DIESEL B (0.20% sulfur)	São Paulo, Santos, Cubatão, Rio de Janeiro, Salvador, Aracajú, Recife, Fortaleza, Porto Alegre, Curitiba, São José dos Campos, Campinas, Belo Horizonte and Belém	Rio de Janeiro metropolitan region, Salvador, Aracajú, Recife, Fortaleza, Porto Alegre, Curitiba, Belo Horizonte and Belém
DIESEL C (0.35% sulfur)	–	Other regions
DIESEL E (0.50% sulfur)	Other regions	extinct

CONAMA RESOLUTION No. 342/2003

Sets new limits for pollutant gas emissions by new mopeds, motorcycles and the like, in compliance with Resolution No. 297 of February 26th, 2002, and other provisions.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by arts. 6 and 8 of Law No. 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th, 1990 and taking into account the provision of its Bylaws, attached to Ordinance No. 499, of December 18th, 2002, and

Whereas the provisions of Law No. 8.723, of October 28th, 1993, which provides for the reduction of pollutants by automotive vehicles, and Resolution No. 297, of February 26th, 2002, which establishes limits for the emission of pollutant gases by mopeds, motorcycles, and similar new vehicles; and

Whereas the expressive growth of the mopeds, motorcycles fleet and the like in the main metropolitan areas of the country; and

Whereas the existence of appropriate technologies, of proven effectiveness, which allow the fulfillment of the pollution control needs, resolves;

Art. 1 Establish limits for pollutant gases emissions through the exhaust for motorcycles and similar new vehicles, pursuant to the § 1of art. 8 of CONAMA Resolution No. 297, of February 26th, 2002, in the following terms:

I - For the launching of new models, equipped with new engine configurations, power systems, transmission and exhaust, produced from January 1st, 2005:

a) vehicles with volumetric displacement engines < 150 cm^3:

1. carbon monoxide: 5.5 g/km;

2. hydrocarbons: 1.2 g/km;

3. nitrogen oxides: 0.3 g/km.

b) vehicles with volumetric displacement engines < 150 cm^3:

1. carbon monoxide: 5.5 g/km;

2. hydrocarbons: 1.0 g/km;

3. nitrogen oxides: 0.3 g/km.

II - For all models made from January 1st, 2006, the emission limits are the same as those in paragraphs "a" and "b" of section II of this article.

III – for the three-wheelers and four-wheelers the limits are:

a) For the launching of new models, equipped with new engine configurations, power systems, transmission and exhaust, produced from January 1st, 2005:

1. carbon monoxide: 7.0 g/km;

2. hydrocarbons: 1.5 g/km;

3. nitrogen oxides: 0.4 g/km.

b) For all models made from January 1st, 2006, the emission limits are the same as those in item "a" of this article.

IV – for all vehicle models in production from January 1st, 2009:

b) vehicles with volumetric capacity engines < 150 cm^3:

1. carbon monoxide: 2.0 g/km;

2. hydrocarbons: 0.8 g/km;

3. nitrogen oxides: 0.15 g/km.

b) vehicles with volumetric capacity engines < 150 cm^3:

1. carbon monoxide: 2.0 g/km;

2. hydrocarbons: 0.3 g/km;

3. nitrogen oxides: 0.15 g/km.

Art. 2 The test procedures for the determination of exhaust gases in the several control steps foreseen in the CONAMA Resolution No. 297, of 2002, shall accompany the modifications in the equivalent technical adopted by the European Community.

Art. 3 The regulation for the durability guarantee criteria of the exhaust emissions mentioned in the § 1 of Art. 12 of Resolution CONAMA No.297, of February 26th, 2002, shall be presented to CONAMA until 12/30/2003.

Art. 4 The pollutants emission limits and the specific procedures related to the periodic inspection of vehicles in use for the Vehicle Inspection Programs mentioned in article 20 of CONAMA Resolution No. 297, of February 26th, 2002, must be proposed to CONAMA until 12/30/2003.

Art. 5 The exhaust gases emissions reports, within the scope of Program for the Control of Air Pollution from Motorcycles and Similar Vehicles (PROMOT), shall present data regarding the emission of carbon dioxide, aiming at subsiding the Brazilian studies regarding the global warming emissions (greenhouse effect).

Art. 6 The timeframes established in item IV of art. 1 of this Resolution, may be reviewed by CONAMA, upon technical and environmental motivation, by June 30th, 2008.

Art. 7 Failure to comply with the provisions in this Resolution shall subject the violators to the penalties and sanctions, respectively, foreseen at Law No. 9.605, of February 12th, 1998 and Decree No. 3.179, of September 21st, 1999.

Art. 8 This Resolution shall be effective on the date of its publication.

Marina Silva
Chairman of the Board

Provides for the requirements for OBD system adoption in light motor vehicles aiming to preserve the emission control systems' functionality. Official Gazette (D.O.U.) of 12.14.2004.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by arts. 225 and 170, item VI of the Federal Constitution, by Law No. 6.938, of August 31st, 1981, especially its articles 6 and 8, as well as its regulation by Decree No. 99.274, of June 6th, 1990 and in view of the provisions in its Internal Regulation, Attached to Ordinance No. 499, of December 18th, 2002, and

Whereas the need for continuous updating of the Air Pollution Control Program by Motor Vehicles (PROCONVE), established by CONAMA Resolution No. 18 of May 6th, 1986, Law No. 8.723, of October 29th, 1993 and other supplementary regulations;

Whereas the change in the regulation of vehicles characteristics resulting of its use contributes to the bad operation of the emission control systems and results in the increase of the atmospheric pollutants levels;

Whereas CONAMA Resolution No. 315/02 establishes the use of On board Diagnose Systems (OBD) once they constitute a proven action technology on the identification of malfunctioning in the emission control systems allowing the anticipation of corrective measures and the consequent prevention of the atmospheric pollutants emission increase;

Whereas the adoption of OBD in automotive vehicles represents an expressive technological advance which allows the vehicle user to prevent the occurrence of severe damages to the emission control systems, contributing for the improvement of environmental quality, safeguarding this way the interests of the consumer and the society in general;

Whereas the importance of the Inspection and Maintenance Program for Vehicles in Use – I/M acquire the data provided in the OBD System to better evaluate the maintenance conditions of the vehicles inspected, resolves:

Art. 1 Establish for light passengers and light commercial vehicles, national or imported, intended to the Brazilian market, equipped with Otto cycle engines, the use of On board Diagnose (OBD) introduced in two consecutive and supplementary steps called OBDBr-1 and OBDBr-2, pursuant to CONAMA resolution No. 315, of October 29th, 2002, article 10.

§ 1 – The OBDBr-1 system must have the minimum characteristics for detection of failures in the following components (when applicable) to evaluate the operation of the ignition and fuel injection systems:

a) Absolute Pressure Sensor or Air Flow

b) Throttle Position Sensor

c) Cooling Temperature Sensor

d) Air Temperature Sensor

e) Oxygen Sensor (only pre-catalyst sensor)

f) Vehicle Speed Sensor

g) Valve Command Axis Position Sensor

h) Crankshaft position sensor

i) Exhaust Cases Recirculation Systems (EGR)

j) Detonation Detection Sensor

k) Injector Valves

l) Ignition System

m) Engine Electronic Control Module

n) Malfunction indication lamp (LIM)

o) Other components that the manufacturer deems relevant for the correct evaluation of the vehicle operation and pollutants emissions control.

§ 2 – In addition to the functions and characteristics of the OBDBr-1 system, the OBDBr-2 system must detect and record the existence of combustion failures, deterioration of the primary oxygen sensor(s) and effectiveness of the catalyst conversion that cause increase on the emissions, also present minimum characteristics for the detection of failure in the following components (when applicable).

a) Oxygen sensors (pre and post-catalyst)

b) Canister Purge Control Valve

c) Other components that the manufacturer deems relevant for the correct evaluation of the vehicle operation and pollutants emissions control.

Art. 2 The vehicles manufacturers or importers are responsible for the implementation of the OBDBr-1 system according to the following paragraphs:

§ 1 – From January 1st, 2007, at least for 40% of the annual total of light passengers vehicles, produced or imported to the internal market,

§ 2 – From January 1st, 2008, at least for 70% of the annual total of light passengers vehicles, produced or imported to the internal market,

§ 3 – From January 1st, 2009, at least for the totality of the annual total of light passengers vehicles, produced or imported to the internal market;

Art. 3 The vehicles manufacturers or importers are responsible for the implementation of the OBDBr-2 system according to the following paragraphs:

§ 1 – From January 1st, 2010, at least for 60% of the annual total of light passengers and light commercial vehicles, produced or imported to the internal market,

§ 2 – From January 1st, 2011, at least for the totality of the annual total of light passengers and light commercial vehicles, produced or imported to the internal market;

Art. 4 IBAMA may exempt the fulfillment of a few requirements of the system, for natural gas, bi-fuel and multi-fuel vehicles, in the event of specific projects, where the manufacturer demonstrates the unfeasibility of the fulfillment, until new rules are set for these cases.

Art. 5 The OBDBr-1 and OBDBr-2 systems shall be certified in the process to acquire the License for Use of the Vehicle or Engine Configuration – LCVM according to the procedure to be defined in a specific IBAMA ordinance.

Sole paragraph. The OBDBr-2 system shall indicate the failure of a component or system, according to the § 2 of the 1st Article, when this produces increments of the test vehicle emissions levels above values to be defined in the aforementioned ordinance.

Art. 6 Models of different vehicles of the same manufacturer which present OBD systems with the same characteristics and functional parameters may be classified as belonging to the same vehicle-OBD family.

Sole paragraph. The approval granted to a type of vehicle regarding the OBD system must be extended to different types of vehicles belonging to the same vehicle-OBD family, according to a specific IBAMA Ordinance.

Art. 7 When required, the production compliance of a vehicle-OBD family must be evidenced through the test of a vehicle randomly removed from production and subject to the tests prescribed in a specific IBAMA ordinance.

Art. 8 For the communications with data acquisition, vehicle inspection and diagnosis equipment, the OBD systems, their interfaces, communication protocols, formatting, protection means and language of the information stored shall be standardized through a specific IBAMA ordinance based on international standards.

Art. 9 The programs defined for periodic inspection of vehicles in use shall use appropriate equipment for the OBD systems data acquisition, through their standardized communication interfaces, from the availability of these systems in the market, respecting the I/M regulation timeframes.

Sole paragraph. The manufacturers and importers of vehicles and systems shall provide the technical information necessary, regarding the OBD systems and their vehicles models, when required by IBAMA.

Art. 10. Failure to comply with this Resolution shall give rise to the application of penalties, set forth in Law No. 9605 of February 12th, 1998, regulated by Decree No. 3179 of September 21st, 1999.

Art. 11. This Resolution shall be effective on the date of its publication.

Marina Silva
Chairman of the Board

CONAMA RESOLUTION No. 373/2006

Published in Official Gazette (D.O.U.) No. 88 of May 10th, 2006, Section 1, page 102. It defines criteria for selecting areas to receive Diesel Oil with Lower Sulfur Content – DMTE, and other provisions.

THE NATIONAL ENVIRONMENT COUNCIL - CONAMA, in the use of its capacities granted by Law No. 6938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th, 1990, and in view of the provisions of its Internal Regulations, attached to Ordinance No. 499 of December 19th, 2002,

Whereas the impact on health and on the environment of the sulfur compounds contained in the motor vehicles' emission and the greater exposure of urban populations to respiratory diseases' risks resulting from the concentration levels of particulate matter arising from the use of Diesel oil;

Whereas the influence of the diesel oil content influence on the vehicular emissions, particularly in the emissions of particulate matter;

Whereas CONAMA's Resolution No. 315 of October 29th, 2002 which provides for new stages of the Vehicular Emission Control Program – PROCONVE; and

Whereas the air quality standards and the other requirements need to be met by CONAMA's Resolution No. 3 of June 28th, 1990, resolves:

Art. 1 Establish criteria for the selection of cities and micro regions to receive Diesel Oil with the Lower Sulfur Content – DMTE, aiming at reducing the emissions of motor vehicles.

Art. 2 The following definitions for the purposes of this Resolution are set forth:

I – fleet density: fleet of bus, microbus and vans in the city, as per the information from the National Transit Department – DENATRAN, or local authority, divided by the city area;

II – local air quality index – IQA: indices used to rank cities according to the annual concentrations average of inhalable particles - MP10 and/or smoke - FMC, calculated according to the criteria set forth in the Attachment hereof;

III – pollutants' concentration urban area representative location: air quality monitoring station positioning place located at a minimum distance of 20 m from industries or other stationary sources, and roads with traffic volume above 20,000 vehicles per day, including light and heavy duty vehicles;

IV – micro region: geographic regional division formed by a group of cities, as classified by Brazilian Institute of Geography and Statistics (IBGE-Instituto Brasileiro de Geografia e Estatística); and

V – Diesel Oil with Lower Sulfur Content – DMTE: fuel for automotive use with lower sulfur content between the ones specified by National Petroleum Agency (ANP-Agência Nacional de Petróleo, Gás Natural e Biocombustíveis).

Art. 3 Every city in which air quality standards violations are observed over the past three years related to the particulate matter, expressed in terms of inhalable particles – MP10 and/or smoke – FMC, according to CONAMA's Resolution No. 3 of June 28th, 1990, shall receive DMTE together with the micro region to which it belongs.

Art. 4 Serving the cities and respective micro-regions mentioned in the previous article, and in case DMTE is available, they shall receive it in order of priority:

I – the cities that show the worst local air quality indices, even if not in violation with the air quality standards, according to the criteria set forth in the Attachment hereof;.

II – the cities that do not provide for monitoring and air quality data considered valid, selected according to criteria of highest fleet density.

Sole paragraph. For purposes of this Article, the cities with population above 200 thousand inhabitants shall be considered.

Art. 5 The Ministry of the Environment, based on the monitoring data sent by the relevant environmental agencies and on the criteria

set forth by this Resolution, shall update annually the list of cities and micro-regions, as established in the Art. 3 hereof, and recommend under the Art. 4, those which may receive DMTE, forwarding it to ANP.

§ 1 – The monitoring data shall be those existing in the last three years prior to the assessment.

§ 2 – The air quality monitoring shall be done in pollutants' concentration urban area representative location.

Art. 6 In case of the emancipation of the cities, the new city shall continue to receive DMTE.

Art. 7 This Resolution shall be effective on the date of its publication, and will be reviewed until June 1st, 2009.

Bazileu Alves Margarido Neto

Interim Chairman of the Board

Attachment

CRITERIA FOR DETERMINING
THE AIR QUALITY INDEX

For purposes of comparison among the commitment levels of air quality in different cities, the annual concentration average of the inhalable particles – MP10 and/or smoke - FMC corresponding to the locations where the monitoring is performed, should be transformed into local air quality indices - AQI, upon the following criteria:

1. Select the Highest Annual Average – MMA of the last three monitoring years for MP10 ($MMA_{(MP10)}$) and FMC ($MMA_{(FMC)}$);

2. Calculate the air quality index for MP10 – ($IQA_{(MP10)}$), obtained from the ratio:

$IQA_{(MP10)} = [MMA_{(MP10)} / PQA_{(MP10)}] \times 100$, where $PQA_{(MP10)}$ is the annual secondary standard of the air quality for inhalable particles, according to CONAMA's Resolution No. 3 of 1990.

3. Calculate the air quality index for FMC – ($IQA_{(FMC)}$), obtained from the ratio:

$IQA_{(FMC)} = [MMA_{(FMC)} / PQA_{(FMC)}] \times 100$, where $PQA_{(FMC)}$ is the annual secondary standard of the air quality for smoke, according to CONAMA's Resolution No. 3 of 1990.

4. The total air quality index – AQI will be the highest value among those obtained in items 2 and 3 above.

CONAMA RESOLUTION No. 403/2008

Provides for the new requirement phase of the Air Pollution Control Program by Motor Vehicles (PROCONVE) for new heavy duty vehicles (Phase P-7) and other provisions. Official Gazette (D.O.U.) of 12.12.2008.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by the Art. 8, item VII of Law No. 6.938 of August 31st, 1981, and by the Art. 2, §9, and the Art. 3 of Law No. 8.723 of October 28th, 1993, in view of the provisions in its ByLaws; and

Whereas the emission of pollutants by automotive vehicles contributes significantly to the ongoing deterioration of the environmental quality, especially in urban centers;

Whereas the use of proper automotive technologies, of proven effectiveness, associated with fuel specifications that allow to comply with the pollution control needs, fuel economy and market competitiveness;

Whereas the need of time and investment to promote the improvement of the national automotive fuel quality to enable the introduction of modern fuel feed technologies and of pollution control.

Whereas the need of time for the technological adjustment of vehicular engines and of motor vehicles to the new pollution control requirements;

Whereas the need to establish new emission standards for national and imported vehicular engines and heavy duty motor vehicles, aiming at reducing the air pollution in urban centers of the country and the fuel economy;

Whereas the need to improve the knowledge on the emission of carbon dioxide and of aldehydes by Diesel cycle engines, resolves:

Chapter I

MAXIMUM EMISSION LIMITS FOR NEW HEAVY DUTY VEHICLES

Art. 1 From January 1st, 2012, new maximum pollutants' emission limits for Diesel cycle engines are set forth for new national and imported heavy duty motor vehicles, hereinafter referred to as Phase P-7 of the Air Pollution Control Program by Motor Vehicles (PROCONVE), according to the table containing in Attachment I hereof.

§ 1 - To meet non-methane hydrocarbons limits (NMHC), the measuring values of total hydrocarbons (THC) shall be accepted, provided that they meet NMHC limits.

§ 2 – For the purpose of motor vehicles' approval regarding this Resolution, the guarantee of emission limits' compliance shall meet the provisions of the Art. 16 of CONAMA Resolution No. 315 of October 29th, 2002, being that, after three years from the effective date of the emission limits hereof, this warranty shall be transferred to vehicles with total gross weight (PBT) above 16 tons to 500,000 km or the period of seven years of use, whichever comes first.

§ 3 - The measurement tests of carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter in the engine exhaust gas for heavy duty motor vehicles shall be made, according to the methods and procedures established for European Steady-State Cycle (ESC), European Load Response (ELR) and European Transient Cycle (ETC) of Directive 1999/96 of European Parliament and Council of December 13th, 1999, its alternates and complements, until the publication of the equivalent Brazilian standard.

Art. 2 The obligation to incorporate devices or self diagnosis systems (OBD) of the engine management functions that influence the air pollutants' emissions, equipped with fault indicators to the driver and features that reduce

the engine power in case of failures that persist for more than two consecutive days for all heavy duty vehicles is set forth for phase P-7 .

Art. 3 The manufacturers and importers of Diesel cycle engines or Diesel powered vehicles for the national market should submit to Brazilian Institute of Environment (IBAMA - Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis) until December 31st, 2012, a report on typical values of carbon dioxide and total aldehydes' emissions, and the specific fuel consumption, measured in the tests of European Transient Cycle (ETC) and European Steady-State Cycle (ESC) and expressed in g/kWh.

§ 1 – The tests' results obtained in the representative engines from one or more engine models in production are accepted as typical values, whose criteria used for obtaining and completing the results should be defined, justified and presented by its manufacturer.

§ 2 – The emissions of total aldehydes (CHO) should be measured according to the procedure to be determined by IBAMA until December 31st, 2010

Chapter II

CHARACTERISTICS OF THE STANDARD TEST DIESEL OIL

Art. 4 - Emission tests standard diesel oil characteristics for development and approval purposes, required to the limits' compliance set forth hereof, shall be established by the National Petroleum Agency (ANP-Agência Nacional do Petróleo, Gás Natural e Biocombústiveis), within a period compatible with the compliance of the provisions in the *caput* of the Art. 7 of Law No. 8.723 of October 28th, 1993.

Sole paragraph: The emission test standard Diesel oil characteristics are set forth according to Attachment III with eminently indicative character, for development and approval purposes.

Art. 5 ANP is responsible for specifying the emission test standard Diesel oil, according to the characteristics of Attachment II hereof, within a period compatible with the compliance of the provisions in the *caput* of the Art. 7 of Law No. 8.723 of 1993.

Sole paragraph. Unless otherwise specified within the time established by Law, the indication shown in the Attachment II shall be adopted.

Chapter III

COMMERCIAL DIESEL OIL CHARACTERIZATION AND DISTRIBUTION

Art. 6 The commercial Diesel oil characteristics, for distribution and consumption purposes, shall be established by ANP within a period compatible with the fulfillment of the provisions in the *caput* of the Art. 7 of Law No. 8.723 of 1993.

§ 1 – The commercial Diesel oil characteristics for distribution and consumption purposes are established according to Attachment III with eminently indicative character–.

§ 2 – ANP, as the federal regulator agency, may specify the fuel for marketing purposes in different margins from those indicated in the Attachment II, ensuring the maximum sulfur content of 10 ppm and compatible features with those of the test standard Diesel oil and so as not to significantly change the engines' performance obtained with the test standard Diesel.

Art. 7 ANP shall be responsible for presenting the required fuel supply plan to comply with this Resolution, spreading its contents widely, especially to the Ministry of Environment and of Mines and Energy.

§ 1– Upon the elaboration and execution of the supply plan, the fuel to comply with phase P-7 shall mainly be made available for new vehicles throughout the country and, later, within twelve months, for the other cities and micro-regions' vehicles of CONAMA Resolution No. 373 of May 9th, 2006, and this period may be revised by CONAMA upon justification.

§ 2– Fuel producers, importers, distributors and retailers shall submit to ANP, within the period determined by it, the necessary information for the elaboration of such plan.

§ 3– The plan prepared by ANP shall provide for fuel availability in the required volume and advance, as well as its distribution in stations geographically located that allow a phase P-7 vehicle to travel the country, always supplying with Diesel specified by ANP under the Art. 9 hereof.

Chapter IV

FINAL AND TRANSITORY PROVISIONS

Art. 8 The Technical Chamber of Environmental Control and Quality shall submit to CONAMA, within 60 days from the publication of this Resolution, a review proposal of CONAMA Resolution No. 8 of May 6th, 1986, with regard to the Monitoring Commission and PROCONVE Assessment – CAP.

Art. 9 In the period from January 1st, 2012 to December 31st, 2012, the commercial Diesel supply shall be admitted which meets the specification described in ANP Resolution No. 32 of October 16th, 2007, for use in phase P-7 vehicles in place of commercial Diesel S10.

Art. 10. CONAMA shall urgently prepare and deliberate a Resolution proposal, establishing the new maximum limits of pollutants' emission and the relevant implementation date for light vehicles equipped with Diesel cycle engine.

Sole Paragraph - IBAMA shall present the proposal mentioned in the *caput* within 30 days.

Art. 11. IBAMA shall regulate the application of specific emission control technologies to allow the appropriate system management that aims at introducing nitrogen oxides sensors, monitoring the quality and correct dose of liquid reducing agent, the availability of this product in the tank, engine performance changes when there is lack of reducing reagent and emission of new undesirable pollutants.

§ 1– The self-diagnosis system (OBD) shall be defined with engine management functions which detect the absence of reagent and other failures that potentiate increased air pollutants' emissions and shall be equipped with fault indicators to the driver and features that reduce the engine power in case of failures that persist for more than two consecutive days, and the application of other measures to discourage modifications on the emission reduction systems.

§ 2– The control technologies foreseen in the *caput* hereof should consider the engine calibration strategy definitions in order to limit them, so that they do not qualify as undesirable action devices, set forth in CONAMA Resolution No. 230 of August 22nd, 1997.

§ 3– IBAMA shall regulate the specification of NOx (urea solution) liquid reducing agent until November 30th, 2008, based on the characteristics set forth in DIN 70070 and ISO 22241-1:2006 standards.

Art. 12. This Resolution shall be effective on the date of its publication.

Carlos Minc
CONAMA President

Attachment I

Emission limits

	NOx g/kWh	**HC g/kWh**	**CO g/kWh**	**(2) g/kWh**	**MP g/kWh**	**NMHC g/kWh**	**Opacity (m^{-1})**	**NH_3 (ppm) average value**
ESC/ ELR Test	2,00	0,46	1,5	N.A.	0,02	N.A.	0,5	25
ETC(1) Test	2,00	N.A.	4,00	1,10	0,03(3)	0,55	N.A.	25

(1) Gas powered engines tested only in this cycle
(2) Only gas powered engines are subjected to this limit
(3) Gas powered engines are subjected to this limit

Attachment II

Indicative Characteristics of Diesel oil (standard and commercial)

Parameter	**Unit**	**Limits(1)**		**Test Method**
		Minimum	**Maximum**	
Cetane index(2)		52	54	EN-ISO 5165
Density at 15º	kg/m³	833	837	EN-ISO 3675

Parameter	Unit	Limits[1]		Test Method
		Minimum	Maximum	
Distillation: - 50% point - 95% point - final boiling point	°C °C °C	245 345 –	– 350 370	EN-ISO 3405 EN-ISO 3405 EN-ISO 3405
Flashpoint	°C	55		EN 227 19
Point of cold filter plugging	°C		-5	EN 11 6
Viscosity at 40°C	mm²/s	2,3	3,3	EN-ISO 3104
Polycyclic aromatic hydrocarbons	% in mass	2,0	6,0	IP 391
Sulfur content[3]	mg/kg		10	ASTM D5453
Corrosion test in cooper		–	Class 1	EN-ISO 21 60
Ramsbottom carbon residue in the final 10% of destilation	% in mass		0,2	EN-ISO 10370
Content and ashes	% in mass		0,01	EN-ISO 6245
Water content	% in mass		0,02	EN-ISO 12937
Neutralization index (strong acid)	mg KOH/g		0,02	ASTM D974
Oxidation stability[4]	mg/ml		0,025	EN-ISO 12205
Lubricity	µm		400	CEC F-06-A-96

Parameter	Unit	Limits[1]		Test Method
		Minimum	Maximum	

(1) The values mentioned in the specifications are "true values". To set the limit values, ISO 4259 standard has been applied i.e. "Petroleum products – Determination and application of precision data in relation to methods of test", and to set a minimum value, a minimum difference of 2R above zero has been taken into consideration; in setting a maximum and minimum value, the minimum difference is 4R (R = reproducibility).
Although this measure is necessary for technical reasons, the fuel manufacturer should, however, try to obtain the zero value, when the maximum value established is 2R, and the average value, in case the maximum and minimum limits are given. If it is necessary to determine whether or not a fuel meets the specification conditions, ISO 4259 standard applies.
(2) The range indicated for cetane index is not in accordance with the requirements of a minimum of 4R. However, in case of divergences between the fuel supplier and user, ISO 4259 standard may be applied to solve such divergences, provided that a enough number of repeated measures is carried out in order to obtain the necessary accuracy instead of performing unique measurements.
(3) The actual fuel sulfur content used in the Type 1 test shall be reported.
(4) Although the oxygenation stability is controlled, it is likely that the product shelf life is limited. It is recommended to consult the supplier about the storage conditions and durability.

Attachment III – Definitions

1. ELR Cycle – referred to as European Load Response cycle – test cycle consisting in a sequence of four levels at constant revolutions and increasing loads from ten to one hundred percent to determine the exhaust emission opacity;

2. ESC Cycle – referred to as European Steady-State Cycle – consists in a test cycle with 13 operation modes in steady state;

3. ETC Cycle – referred to as European Transient Cycle – test cycle consisting in one thousand eight hundred transient modes, second to second, simulating the actual use conditions;

4. CH_4 – methane;

5. CHO – total aldehydes;

6. CO - carbon monoxide;

7. CO_2 – carbon dioxide;

8. Devices and/or self-diagnosis systems (OBD) – devices or systems installed on board of a vehicle and connected to the electronic control module, aiming to identify any deterioration or malfunction of the emission control system components, alert the vehicle user to carry out maintenance or repair of the emission control system, store and provide access to the occurrence of defects and/or maladjustments in the control systems and provide information to interested parties on the status of emission control systems' maintenance and repair.

9. HC - hydrocarbon;

10. NMHC – non-methane hydrocarbons – portion of total hydrocarbons, minus the faction of methane;

11. MP – particulate matter;

12. NH_3 – ammonia;

13. New Approvals – are those that comprise the new vehicles' configurations not yet in production or the already existing configurations with changes in the emission control system, except, however, the revalidations of already existing approvals.

14. THC – Total Hydrocarbons - total organic substances, including fractions as unburned fuel and byproducts from combustion, present in exhaust gas and which are detected by the flame ionization detector.

15. Motor vehicles – motor vehicles for road use.

CONAMA RESOLUTION No. 414/2009

Amends the NATIONAL ENVIRONMENT COUNCIL (CONAMA-CONSELHO NACIONAL DO MEIO AMBIENTE) Resolution No. 18 of May 6th, 1986 and restructures PROCONVECAP Monitoring and Assessment Commission regarding their objectives, scope, composition and operation. Official Gazette (D.O.U.) of 09.25.2009.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by the Art. 3, of Law No. 8.723 of October 28th, 1993 by the Art. 41 of its Bylaws, attached to Ordinance No. 168 of June 10th, 2005, and the provisions of Proceeding No. 02000.000078/2009-04, and

Whereas the need to improve the Air Pollution Control Program by Motor Vehicles (PROCONVE) by updating monitoring mechanisms, as well as their results evaluation instruments;

Whereas the provisions of the Art. 8 of CONAMA Resolution No. 403 of November 11th, 2008, regarding the presentation to CONAMA by Environmental Control and Quality Technical Chamber, of the review proposal for CONAMA Resolution No. 18 of May 6th, 1986 which concerns to PROCONVE Follow up and

Evaluation Commission – CAP; and

Whereas the need to restructure CAP and its objectives, composition and operation to meet the demand of PROCONVE technical monitoring and evaluation of its results, resolves:

Chapter I

GOALS AND COMPETENCES

Art. 1 PROCONVE Follow Up and Evaluation Commission (CA) a Technical Assistance Group–, aims at following up and assessing the execution of the Air Pollution Control Program by Motor Vehicles (PROCONVE), with the following goals:

I – follow up the compliance with the provisions of PROCONVE;

II - assess the Program as for its efficiency and effectiveness with regards to the conduction of its objectives set forth in the NATIONAL ENVIRONMENT COUNCIL (CONAMA-Conselho Nacional do Meio Ambiente) of May 6th, 1986, and the other norms required for the implementation of its different phases.

Art. 2 It is CAP's responsibility:

I – prepare PROCONVE Follow up and Evaluation Report;

II – evaluate technical studies and researches on the effects of vehicular emissions on the air quality and the development of emission control technologies, test equipment and emission analysis that justify the deployment of new PROCONVE phases;

III – deliberate on its organization and operation; and

IV – deliberate on omissions' cases.

§ 1– CAP may request technical information from public and private entities for the proper Program follow up and evaluation.

§ 2– For the fulfillment of its competences, CAP may indicate partnerships with public and private entities involved with the issue, notably research centers and universities.

Art. 3 PROCONVE Follow up and Evaluation Report will be annually submitted to CONAMA, and will contain, at least, the following information:

I – Program follow up schedule, with emphasis on the compliance of deadlines and obligations set forth in CONAMA's resolutions and other similar legal norms;

II – program effectiveness analysis based on performance indicators; and

III – recommendations for improving the program.

Sole paragraph. PROCONVE Follow up and Evaluation Report will be reviewed by the Technical Chamber of Environmental Control and Quality, and forwarded to CONAMA Plenary in the first half of the subsequent year to which the Report refers to.

Art. 4 Wide publicity shall be given to all documents produced by CAP.

Chapter II

COMPOSITION

Art. 5 CAP consists of the following agencies and entities' representatives' members of CONAMA and of invited members to be indicated by the institutions and agencies described below, being one full and the other alternate member:

I – Ministry of Environment, which will coordinate it;
II – Ministry of Health;

III - Ministry of Mines and Energy;

IV – Brazilian Environment Institute (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis)

V – National Petroleum Agency (ANP—Agência Nacional de Petróleo, Gás Natural e Biocombustíveis);
VI – Brazilian Association of State Environment Entities (ABEMA – Associação Brasileira de Entidades Estaduais de Meio Ambiente);
VII – National Association of City Environment Agencies (ANAMMA - Associação Nacional de Órgãos Municipais de Meio Ambiente);

VII – National Industry Confederation (CNI – Confederação Nacional da Indústria);
IX – PROCONVE Technical Agent; and

X – Non-governmental Organization indicated by Permanent Committee

of the National Environmentalist Entity Registry (CNEA - Cadastro Nacional de Entidades Ambientalistas).

§ 1– The Ministry representatives shall be appointed by the respective Ministers of State.

§ 2– Public agencies and entities' representatives, which items IV, V, VI, VII, VIII and IX refer to shall be appointed by the respective Presidents or Directors.

§ 3– The members nominated by both ABEMA and ANAMMA, which items VI and VII refer to shall be renewed every two years, and the mandate renewal may be admitted for equal period.

Chapter III

CAP GENERAL OPERATING GUIDELINES

Art. 6 CAP shall meet ordinarily every six (6) months and, extraordinarily, whenever called by its President, or upon request of at least three of its member.

§ 1– The ordinary meetings shall have an annual schedule to be set at the last meeting of the previous year.

§ 2– In any postponement of the ordinary meeting, a new date will be set within thirty (30) days, counted from the date previously determined.

§ 3– The meetings' agenda and the related documents will be sent to CAP's members in advance of fifteen (15) days from the date previously set.

§ 4 – The meetings may be held outside Distrito Federal whenever the reasons justify such action.

§ 5 – The extraordinary meetings shall be called at least five (5) days in advance, with the provision, within the same period, of both the agenda and documents for analysis.

Art. 7 CAP shall meet in public session and with the presence of at least half plus one of its members.

Sole paragraph. CAP's Coordinator may invite representatives of public agencies, public or private entities and experts to attend the meetings on his/her behalf or by indication of the other Committee's members due to the issues included in the agenda.

Art. 8 In the exercise of CAP's coordination, Ministry of Environment shall be responsible for:

I – planning, organizing and coordinating technical and administrative activities;

II – organizing and maintaining the documentation file related to the activities;

III – organizing the data and information required to the activities;

IV – proposing and monitoring the meetings' schedule and agenda;

V – calling meetings and issuing notices to members;

VI – providing technical and administrative secretariat works;

VII – providing clarifications whenever it is requested;

VIII – communicating, forwarding and having its acts published;

IX – publishing PROCONVE Follow up and Evaluation Report; and

X – performing other related assignments proposed by CAP.

Art. 9 CAP's members' participation is considered a public service of relevant nature, non-paid, being the integral agencies and entities responsible for bearing the costs necessary to its representation.

Chapter IV

GENERAL PROVISIONS

Art. 10. CAP's first ordinary meeting shall take place within 90 days from the publication of this Resolution.

Art. 11. This Resolution shall be effective on the date of its publication.

Art. 12. Items III and IV of CONAMA Resolution No. 18 of May 6th, 1986 are revoked.

Carlos Minc
Chairman of the Board

CONAMA RESOLUTION No. 415/2009

Provides for the new requirement phase (PROCONVE L6) of the Air Pollution Control Program by Motor Vehicles (PROCONVE) for new road-use light motor vehicles, and other provisions.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by the Art. 8, *item VII of Law No. 6.938 of August 31st, 1981, and by the Art. 2, §9, and the Art. 3 of Law No. 8.723 of October 28th, 1993, in view of the provisions set forth in the Art. 10 of NATIONAL ENVIRONMENT COUNCIL (CONAMA-CONSELHO NACIONAL DO MEIO AMBIENTE) Resolution No. 403 of November 11th, 2008, and in its Bylaws, attached to Ordinance No. 168 of June 13th, 2005; and

Whereas the emission of pollutants by automotive vehicles contributes significantly to the ongoing deterioration of the environmental quality, especially in urban centers;

Whereas the use of proper automotive technologies, of proven effectiveness, associated with fuel specifications that allow to comply with the pollution control needs, fuel economy and market competitiveness;

Whereas the need of time and investment to promote the improvement of the national automotive fuel quality to enable the introduction of modern fuel feed technologies and of pollution control.

Whereas the need of time for the technological adjustment of vehicular engines and of motor vehicles to the new pollution control requirements;

Whereas the need to establish new emission standards for national and imported vehicular engines and light motor vehicles, aiming at reducing the air pollution in urban centers of the country and the fuel economy;

Whereas the need to improve the knowledge on the emission of carbon dioxide and of aldehydes by Diesel cycle engines;

Whereas the principles of environmental education and information, expressed in the 22Art. 5, §1, item VI of the Federal Constitution; Art. 9, item XI of Law No. 6.938 of 1981, and in the 10th Principle of Rio de Janeiro Declaration of 1992;

Considering the need for promoting the awareness of the population for the question of air pollution by automotive vehicles, resolves:

Chapter I

MAXIMUM EMISSION LIMITS FOR NEW LIGHT VEHICLES

Art. 1 The following maximum pollutants emission limits, from the exhaust of light passenger road-use motor vehicles, are set forth for PROCONVE L6 phase:

I - carbon monoxide (CO): 1.30 g/km;

II - total hydrocarbons (THC), only for natural gas powered vehicles: 0.30 g/km;

III – non-methane hydrocarbons (NMHC): 0.05 g/km;

IV – nitrogen oxides (NOx): 0.08 g/km;
V – aldehydes (HCO) for Otto cycle: 0.02 g/km;

VI – particulate matter (MP) for Diesel cycle: 0.025 g/km; and

VII – carbon monoxide at idle speed for Otto cycle: 0.2% in volume.

Art. 2 – The following maximum pollutants emission limits from the exhaust of light commercial road-use motor vehicles with vehicle mass for testing equal or lower than 1,700 kilograms are set forth for PROCONVE L6 phase:

I - carbon monoxide (CO): 1.30 g/km;

II - total hydrocarbons (THC), only for natural gas powered vehicles: 0.30 g/km;

III – non-methane hydrocarbons (NMHC): 0.05 g/km;

IV – nitrogen oxides (NOx): 0.08 g/km;

V – total aldehydes (HCO) for Otto cycle: 0.02 g/km;

VI – particulate matter (MP) for Diesel cycle: 0.030 g/km; and

VII – carbon monoxide at idle speed for Otto cycle: 0.2% in volume.

Art. 3 – The following maximum pollutants emission limits from the exhaust of light commercial road-use motor vehicles with vehicle mass for testing above 1,700 kilograms are set forth for PROCONVE L6 phase:

I - carbon monoxide (CO): 2.00 g/km;

II - total hydrocarbons (THC), only for natural gas powered vehicles: 0.50 g/km;

III – non-methane hydrocarbons (NMHC): 0.06 g/km;

IV – nitrogen oxides (NOx) for Otto cycle: 0.25 g/km;

V – nitrogen oxides (NOx) for Diesel cycle: 0.35 g/km;

VI – total aldehydes (HCO) for Otto cycle: 0.03 g/km;

VII – particulate matter (MP) for Diesel cycle: 0.040 g/km; and

VIII – carbon monoxide at idle speed for Otto cycle: 0.2% in volume.

Art. 4 – The maximum limits established in this Resolution take effect according to the schedule as follows:

I – light vehicles of Diesel cycle: 100% from January, 2013.

II – light vehicles of Otto cycle: from January 1st, 2014 for the new models, and from January 1st, 2015 for the others.

Art. 5 From January 1st, 2012, the limit of one and a half (1.5) grams of evaporated fuel per test for evaporative emission is established for new approvals, according to NBR 11.481 of all light motor vehicles that use Otto cycle engines, except those that use only natural gas.

Sole paragraph. For the test described in the *caput* of this Article, the sealed chamber of variable volume may be alternatively used, according to the procedures described in "Code of Federal Regulations", Volume 40, Part 86, of the United States of America, using the limit of two (2.0) grams of evaporated fuel per test for evaporative emission.

Art. 6 The manufacturers and importers shall include the values of carbon dioxide emission from light vehicle exhaust gases in all emission test reports, according to NBR 6601 within thirty (30) days from the publication date hereof.

Art.7 Light Diesel cycle vehicles manufacturers and importers for the national market should submit the typical value report of total aldehydes (HCO) exhaust emission, measured in the driving cycle of all its models on sale, until December 31st, 2013, according to ABNT NBR 6601 and expressed in grams per kilometers (g/km) to the Brazilian Institute of Environment (IBAMA - Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis).

Sole paragraph. Total aldehydes (HCO) emission should be measures according to the procedure to be determined by IBAMA until December 31st, 2011.

Art. 8 The manufacturers and importers of light motor vehicles shall submit to IBAMA the typical values of nitrogen oxide emission for all its models on sale in the country, obtained from the tested vehicle according to the road cycle of NBR 7024, following deadlines below:

I – light Diesel cycle vehicles, from January 1st, 2013 to December 31st, 2013;

II – light Otto cycle vehicles, from January 1st, 2014 to December 31st, 2015.

Chapter II

REFERENCE FUELS AND THEIR SPECIFICATIONS

Art. 9 National Petroleum Agency (ANP-Agência Nacional de Petróleo, Gás Natural e Biocombustíveis) will specify the reference fuels, gasoline, ethyl alcohol

fuel and vehicular fuel gas, required to meet the limits set herein in time to allow their supply in advance of 36 months, according to the provisions in the *caput* of the Art. 7 of Law No. 8.723 of October 28th, 1993.

§ 1– Gasoline and anhydrous ethyl alcohol fuel mixture shall be prepared from the respective reference fuels, containing 22%, ranging from one percentage point to more or less in anhydrous ethyl alcohol fuel volume, as defined in the Art. 9 of Law No. 8.723 of 1993.

§ 2– It shall be considered for development and approval purposes, the reference fuel specifications, gasoline, ethyl alcohol fuel, diesel oil, vehicular fuel gas, set forth in the technical regulations of ANP Resolutions No. 21 of July 2nd, 2009, 05 of February 24th, 2005, 40 of December 24th, 2008, 16 of June 17th, 2008 and ABNT NBR 8689 Standard of 2006, respectively or in any legislation that might replace them.

Chapter III

COMMERCIAL FUELS AND THEIR SPECIFICATIONS

Art. 10. The commercial fuel specifications, gasoline, ethyl alcohol fuel and natural gas, for distribution and consumption purposes shall be set forth by ANP, in a compatible timeframe to ensure the supply on the deployment date of the limits set herein, according to the provisions in the *caput* of the Art. 7 of Law No. 8.723 of 1993.

§ 1– The diesel oil for meeting PROCONVE L6 phase limits shall primarily be made available for new vehicles produced from January 1st, 2013 and, later, to the other vehicles from the cities and micro-regions defined in CONAMA Resolution No. 373 of May 9th,
2006.

§ 2– Fuels for sale purposes shall have low sulfur content and characteristics compatible with those of reference gasoline, alcohol and gas fuel, so as not to significantly alter the engine performance obtained with the reference fuel.

Art. 11. ANP shall be responsible for presenting the required fuel supply plan to comply with this Resolution, spreading its contents widely, especially to the Ministry of Environment and of Mines and Energy.

§ 1– Fuel producers, importers, distributors and retailers shall submit to ANP, within the period determined by it, the necessary information for the elaboration of such plan.

§ 2– The plan prepared by ANP shall provide for fuel availability in the required volume and advance, as well as its distribution in stations geographically located that allow a phase L6 vehicle to travel the country, always supplying with the fuel specified by ANP.

Chapter IV

TEST PROCEDURES

Art. 12. For measuring the pollutants emission from the exhaust of light passenger and commercial motor vehicles, which are tests according to Brazilian NBR 6601 Standard procedure, the criteria established in CONAMA Resolution No. 18 of May 6th, 1986 remains.

Art. 13. All vehicles' models which present annual production above 33%, equipped with air conditioning systems in the driver's/passengers' cabin shall be tested by observing the Prescription No. A4 of Attachment A of the Brazilian ABNT NBR 6601 Standard of 2005.

Art. 14. The test and aldehydes (HCO) measurement in the exhaust gas of the light passenger and commercial Otto cycle motor vehicles shall be carried out in compliance with the Brazilian ABNT NBR 12026 standard.

Chapter V

GENERAL PROVISIONS

Art. 15. The vehicles, which engines are equipped with exhaust gas recirculation systems (EGR) should be guaranteed by their

manufacturers and importers that this system has the technical conditions to operate at altitudes up to 1,000 meters.

Art. 16. From January 1st, 2013, the new approvals of light Diesel cycle vehicles shall prove the compliance with the maximum pollutants emission limits regulated for eighty thousand (80,000) km or five years of use.

§ 1– For vehicles which engines' grouping classified according to NBR 14.008 has annual sales' forecast greater than fifteen thousand (15,000) units, the deterioration factors shall be determined according to NBR 14.008, adopting the same period and criteria established by CONAMA Resolution No. 14 of December 13th, 1995 and supplemented by CONAMA Resolution No. 315 of October 29th, 2002.

§ 2– For vehicles, which engines' grouping classified according to NBR 14.008, has annual sales forecast of up to fifteen thousand (15,000) units, the deterioration factor of ten percent (10%) may be optionally adopted for each regulated pollutant.

Art. 17. The heavy duty motor vehicles, with Otto cycle engine, with maximum allowed total weight between 3,856 kg and 4,536 kg, may be alternatively tested as light commercial vehicle with mass for test above 1,700 kilos, applying the provisions of the Art. 3 of this Resolution.

Art. 18. From January 1st, 2015, for the light Diesel cycle motor vehicles, bearing of devices/systems for on board diagnosis (ODB) of the engine management functions which influence the air pollutants emission will be required

Art. 19. IBAMA shall regulate the application of specific emission control technologies to allow the proper management of light vehicles with Diesel cycle engine, including the on board diagnosis (OBD), informing CONAMA within 24 months after the publication of this Resolution.

Sole paragraph. For vehicles with selective catalysis systems to control nitrogen oxide (NOx) emission and using liquid reducing agent, the self diagnosis system (OBD) project shall consider measures that reduce significantly the vehicle's performance if it is detected malfunction on the emission control system or attempts to cheat it.

Art. 20. IBAMA shall coordinate studies and works related to any required revision to the maximum emission limits and deadlines foreseen in this Resolution, calling at any time, the agencies/entities that support the theme and shall submit to CONAMA a final report with the proposal for appreciation.

Art. 21. The vehicles for specific use, agricultural, military, competition and special releases, so considered by IBAMA's motivated and exclusive decision, may be exempted from the requirements of this Resolution.

Art. 22. The vehicles equipped with alternative propulsion systems or using fuel not foreseen in this Resolution may be partially exempt from the requirements determined in this regulation, upon motivated and exclusive IBAMA's decision, for a maximum period of twenty-four (24) months.

Art. 23. The Ministry of Environment shall submit to CONAMA' studies and proposals aiming to establish incentives for the motor vehicles and automotive fuel manufacturers and importers, through the reduction of incident taxes, in order to voluntarily anticipate the established sales' dates in the domestic market of products that meet the limits prescribed in this Resolution.

Art. 24. Failure to comply with the provisions of this Resolution shall subject the offenders to sanctions foreseen in Law No. 9.605 of February 12th, 1998 and in Decree No. 6.514 of July 22nd, 2008, without prejudice to other sanctions foreseen in the specific legislation.

Art. 25. IBAMA shall regulate by December 31st, 2009, the continued release by World Wide Web of the emission data contained in the processes of motor vehicle approval, which should be disclosed by make/model for all Licenses to Use of the Vehicle or Engine Configuration – issued LCVM.

Art. 26. From January 1st, 2013, the post-treatment systems of exhaust gases shall provide for the replacement of active emission control elements, aiming at reducing the maintenance costs.

Sole paragraph. IBAMA shall be responsible for the active elements replacement regulation foreseen in the *caput* of this Article, within 180 days after publication of this Resolution.

Art. 27. Attachment items 3.3, 3.4, 3.5 and 3.7 of CONAMA Resolution No. 299 of October 25th, 2001 will have the samples reduced by 0.1 percentage point, and the new sample values will be applied from the calendar half-year following the publication date of this Resolution.

Art. 28. For production emission control purposes in order to present the Production Emission Values Report – RVEP, according to CONAMA Resolution No. 299 of 2001, the light vehicles manufacturers and importers are allowed to present the measured values of total hydrocarbons (THC), alternatively to the non-methane hydrocarbons (NMHC) values, by applying in this case, the limit of fifteen hundredths of gram per kilometer (0.15 g/km).

Sole paragraph. In case of opting for an alternative to present the total hydrocarbons (THC) values, the manufacturer or importer shall submit at least five vehicles per model with the measured results of non-methane hydrocarbons (NMHC).

Art. 29. This Resolution shall be effective on the date of its publication.

Art. 30. From January 1st, 2013, § 2 of the Art. 15 of CONAMA Resolution No. 8 of August 31st, 1993 and the Art. 23 of CONAMA Resolution No. 315 of 2002 are revoked.

Sole paragraph. The light commercial vehicles approved as heavy duty vehicles shall have the engine and the vehicle's LCVMs revalidated until December 31st, 2012, observing the carryover.

Carlos Minc
Chairman of the Board

CONAMA RESOLUTION No. 418/2009

Provides for criteria for preparing the Vehicular Pollution Control Plans (PCPV) and implementing Inspection and Maintenance Programs for Vehicles in Use - I/M by the state and local environment agencies and determines new emission limits and procedures for assessing the maintenance status of vehicles in use. Official Gazette (D.O.U.) of 11.26.2009. 11.2009.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by the Art. 8, item VI of Law No. 6.938 of August 31st, 1981, and by the Arts. 3 and 12, of Law No. 8.723 of October 28th, 1993, the Arts. 104 and 131, among other provisions of Law No. 9.503 of September 23rd, 1997, in view of the provisions in its Bylaws, and

Whereas the Environmental Vehicular Inspection, if properly implemented, can be an effective instrument for reducing the pollutant gas and particulate and noise emissions by the motor vehicles fleet in use, under the National Air Quality Control Program (PRONAR), established by CONAMA Resolution No. 5 of June 15th, 1989, as well as by the Air Pollution Control Program by Motor Vehicles (PROCONVE), created by CONAMA Resolution No. 18 of May 6th, 1986 and by the National Vehicle Noise Control Program, under CONAMA Resolutions No. 1 and 2 of 1993;

Whereas the lack of maintenance and improper maintenance of the vehicles can be responsible for the increased pollutant emission and fuel consumption;

Whereas the need to develop strategies to reduce vehicular pollution, especially in urban areas with atmospheric contamination and noise pollution problems; and

Whereas the need to review, update and systematize the legislation relating to the environmental vehicular inspection, in view of the vehicular technology evolution and the development of new inspection procedures, and the need for the systematic development of cost-benefit studies, aiming at continuous improvement of public policies of air pollution control by motor vehicles, resolves:

Chapter I

GENERAL PROVISIONS

Art. 1 This Resolution establishes criteria for preparing the Vehicular Pollution Control Plans (PCPV) to implement the Inspection and Maintenance Programs for Vehicles in Use - I/M by the state and local environment agencies and to determine new emission limits and procedures for assessing the maintenance status of vehicles in use.

Art. 2 The following definitions are used for this Resolution purposes:

I – Motorcycle: any two-wheel-type motor vehicle, including mopeds, scooters and motorcycles;

II – Responsible agency: state or local environmental agency responsible for the I/M Program, and may also be the executing agency of the Program operation and audit;

III – OBD System: on board diagnostic system used in controlling emissions and capable of identifying the likely failures origin, checked by means of fault codes stored in the engine control module, deployed in Brazil in two phases, OBDBr-1 and OBDBr-2; and

IV – Intensive-use vehicles: light commercial vehicles, heavy duty vehicles and taxis.

Chapter II

VEHICULAR POLLUTION CONTROL PLAN - PCPV

Art. 3 The Vehicular Pollution Control Plan _ PCPV consists in air quality management instrument of the National Air Quality Control Program (PRONAR) and of the Air Pollution Control Program

by Motor Vehicles (PROCONVE), with the aim of establishing management and control rules of vehicles' pollutants emission and of fuel consumption.

Art. 4 PCPV to be prepared by the state, local and after hearing agencies and the Federal District PCPV shall be based on the mobile sources emission inventory and, if any, the air quality monitoring, aiming at reducing the pollutants' emission and shall clearly and objectively characterize the alternative actions of pollutants' emission management and control and of fuel consumption, including an Inspection and Maintenance Program for Vehicles in Use - I/M, when necessary.

§ 1– PCPV shall contain, among other information, data on the air quality impairment in the regions covered and on the relative contribution of mobile sources for such impairment.

§ 2– Based on the data in the §1, PCPV shall evaluate and compare the different instruments and alternatives of air pollution control for motor vehicles, technically justifying the measures selected based on their cost and effectiveness in terms of emission reduction and air quality improvement.

Art. 5 The state and Federal District environment agencies shall, within twelve (12) months, prepare, approve and publish PCPV and acknowledge it to the respective state environment councils, from the publishing date of this Resolution.

§ 1– The deadline specified in the caput hereof also applies to the local environment agencies with vehicle fleet above three million.

§ 2– The cities with vehicle's fleet below three million is entitled to prepare their own PCPVs.

§ 3– The local PCPVs should be prepared pursuant to the state PCPV.

Art. 6 In cases where PCPV indicates the execution of an Inspection and Maintenance Program for Vehicles in Use – I/M, it shall describe its conceptual and operational characteristics set herein, and establish at least:

I – the geographic extension and the areas to be prioritized;

II – the target fleet and respective technical and legal basis;

III – implementation schedule;

IV – the link form with the state vehicle registration and licensing system;

V – inspection frequency;

VI - economic analysis;

VII – integration form, where appropriate, with vehicular safety inspection programs and other similar programs.

§ 1– The target fleet of the Inspection and Maintenance Program for Vehicles in Use – I/M shall be defined to cover the motor vehicles, motorcycles and similar vehicles with internal combustion engine, regardless of the fuel type they use.

§ 2– The target fleet may comprise only a portion of the licensed fleet in the region of interest, to be expanded or restricted at the discretion of the responsible agency by reason of experience and of the results obtained with the implementation of the Program and the regional needs.

§ 3– The target fleet of the Inspection and Maintenance Program for Vehicles in Use – I/M will be defined city to city, based on its contribution to the air quality impairment.

§ 4 – With regards to the target fleet, PCPV may determine the mandatory inspection exemption for vehicles designed solely for military, agriculture and competition applications, tractors, embanking and paving machines and others of special application or design without specific procedures for obtaining LCVM/LCM.

Art. 7 PCPVs should further provide for the creation of specific measures to encourage the heavy-use fleet maintenance and inspection especially the one focused on public and goods transportation and on specific conditions for motor vehicle circulation.

Art. 8 It is at the responsible agency discretion, under PCPV, to establish and implement Integrated Inspection and Maintenance Programs,

so that, besides the mandatory inspection of the items related to the pollutant and noise emissions, the ones related to vehicular safety is also included, according to the specific regulation of the traffic department.

Sole paragraph. The responsible agency or the contracted companies, in the case of indirect execution regime, shall seek agreements with vehicular safety inspection concessionaires, contracted under the rules of the National Traffic Council (CONTRAN-Conselho Nacional de Trânsito) to perform the two inspections in the same place, maintaining the individual responsibilities of each executor.

Art. 9 PCPV will be periodically evaluated and reviewed by the responsible agency based on the following criteria:

I – comparison among the expected results and those obtained, especially with regard to the emissions initially foreseen and those effectively obtained through the implementation of the Plan;

II – evaluation of new vehicular pollution control alternatives;

III – vehicular technology evolution of new models and of environmental vehicular inspection technologies;

IV – projections referring to the evolution of the circulating fleet; and

V – cost/benefit ratio of the Inspection and Maintenance Programs for Vehicles in Use- I/M identified in the studies provided by the fourteenth (14^{th}) Article of this Resolution and of other alternative actions of pollutants emission management and control and of fuel consumption.

Sole paragraph. PCPV shall be reviewed at least every three years, and the responsible agency may establish a shorter interval between revisions.

Chapter III

INSPECTION AND MAINTENANCE PROGRAM FOR VEHICLES IN USE - I/M
SECTION I –
GENERAL GUIDELINES

Art. 10. The Inspection and Maintenance Program for Vehicles in Use – I/M aims to identify non-conformities of vehicles in use, with reference to:

I – the original specifications of the vehicles' manufacturers;

II - PROCONVE regulatory requirements; and

III – maintenance failures and changes on the original design which cause increased pollutants' emission.

Sole paragraph. The implementation of the Inspection and Maintenance Program for Vehicles in Use – I/M may only be made after the preparation of a Vehicular Pollution Control Plan (PCPV).

Art. 11. The competent authorities may develop inspection at field based on the procedures and limits established in this Resolution and in its supplementary regulations and standards.

Art. 12. The Inspection and Maintenance Programs for Vehicles in Use – I/M shall be deployed as a priority in regions that present, based on technical study, air quality impairment due to pollutants emissions by the circulating fleet.

§ 1– The Inspection and Maintenance Program for Vehicles in Use – I/M, mentioned in the *caput*, shall be deployed within 18 months counted from the publication date of PCPV.

§ 2- The technical services inherent to the execution of the Inspection and Maintenance Program for Vehicles in Use – I/M may be performed directly by the respective responsible agency or through hiring the public power of specialized services.

Art. 13. The state environment agency shall be responsible for the execution of the Inspection and Maintenance Program for Vehicle in Use – I/M, as defined in the PCPV.

§ 1- The cities with total fleets equal or greater than three million vehicles may implement their own Inspection and Maintenance Programs for Vehicles in Use – I/M under specific agreement with the state.

§ 2– The other cities or cities' consortiums, appointed by the Vehicular Pollution Control Plan, may also deploy their own Inspection and Maintenance Programs for Vehicles in Use - I/M under specific agreement with the state, being the state responsible for the program supervision.

Art. 14. The environment agencies responsible for the execution of the vehicular inspection and their operators should develop and keep updated every three years by publishing studies on cost/benefit ratio of the ongoing Inspection and Maintenance Programs for Vehicles in Use – I/M.

Sole paragraph. The costs and benefits mentioned in the *caput* of this Article shall be identified by the operators of the Inspection and Maintenance Programs of Vehicles in Use – I/M in common agreement with the environmental and public health authorities and valued according to the vest applicable practices.

Art. 15. In the final stage of the Inspection and Maintenance Program for Vehicles in Use – I/M, the responsible agency may consider, at its discretion, for a maximum period of 12 months, counted from the beginning of the operation, a test phase with dissemination objectives of its systematic, public awareness and adjustment of the Program requirements.

Art. 16. The environmental vehicular inspection periodicity shall be annual.

Sole paragraph. In case of heavy-use fleets, the actions shall be intensified for adopting the Internal Self-Monitoring Program for Proper Fleet Maintenance, according to the guidelines established by IBAMA, as well as those focused on the implementation of state programs to improve the maintenance of diesel powered vehicles and on voluntary inspection and maintenance business programs.

Art. 17. The responsible agency shall permanently disclose the target fleet participation conditions in the Program and the basic information related to the inspection.

Art. 18. The state and local environment agencies shall promote actions aiming at concluding an agreement with the competent executive

traffic agency, which aims at meeting the procedures of its competence in the implementation of the Inspection and Maintenance Program for Vehicles in Use – I/M, in view of the following guidelines:

I – the execution, by delegation, of the pollutants and noise emission inspections;

II – the establishment of integrated Inspection and Maintenance Programs for Vehicles in Use – I/M, by maintaining the individual responsibilities of each executor, as determined by CONAMA and by National Traffic Council – CONTRAN;

III – the integration of activities to avoid the coexistence of duplicated programs of emissions and safety in one same field of actuation, except for the consolidated legal situations;

IV – the inclusion, in areas not yet covered by PCPV and upon delegation, of the environmental items' verifications in the safety inspection programs, according to the technical criteria defined by CONAMA e under the guidance and supervision of the respective state environmental agency; and

V – the continuous information exchange, especially on the environment that is necessary for the proper vehicle licensing and the information from the executive traffic agencies necessary for the proper operation of the environmental inspection.

Art. 19. The Ministry of Environment, through the Brazilian Institute of Environment (IBAMA - Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis) shall guide the responsible agencies for the implementation of the Inspection and Maintenance Programs for Vehicles in Use – I/M that may experience technical difficulties.

SECTION II

OPERATION AND EXECUTION

Art. 20. After the deadlines foreseen in the Art. 5 and in the § 1of the 12th Art., the target fleet vehicles subjected to the periodic inspection may not get the annual license without having been inspected and approved regarding the emission levels, according to the procedures and limits established by CONAMA or, when appropriate, by the responsible agency.

§ 1– The target fleet vehicles shall be inspected up to ninety days prior to the deadline for their annual license.

§ 2– For the light passenger vehicles equipped with Otto cycle engine, the inspection mentioned in this Resolution shall only be mandatory from the second annual licensing, inclusive.

Art. 21. The actual beginning of the pollutants and noise emission inspections, observing the deadline foreseen in the first paragraph of the Article 12 hereof, shall be formally notified by the responsible agency to the executive State traffic agency for adopting the measures foreseen in the §2 and 3 of the 131st Article of the Brazilian Traffic Code.

Art. 22. By meeting the conditions established in this Resolution, the responsible agency shall be in charge of preparing the criteria for implementation and execution of the Inspection and Maintenance Programs for Vehicles in Use – I/M and for certification of line operators of the inspection centers, as well as the establishment of quality control procedures, audits and complementary regulations, in view of the local peculiarities.

Art. 23. The environment agencies responsible for implementing the Inspection and Maintenance Programs for Vehicles in Use – I/M should develop permanent audit systems, conducted by reputable and technically qualified institutions, covering the equipment quality and procedures, as well as the statistical performance of the inspection records, according to the requirements to be defined by the responsible agency.

Sole paragraph. In case of programs operated by third parties, the systematic failures identified by the audit should necessarily be linked to a clearly defined contractual penalty system.

Art. 24. The Inspection and Maintenance Programs of Vehicles in Use – I/M shall be sized by foreseeing the construction of inspection lines for light and heavy duty vehicles, motorcycles and similar vehicles, in proper proportion to the target fleet of the Program.

Art. 25. The mandatory inspections shall be performed in inspection centers distributed by the covered Program area.

Art. 26. The operation of mobile inspection stations is allowed to solve specific problems or for in-loco servicing of large dedicated fleets.

Art. 27. IBAMA shall regulate, within three months after the approval of this Resolution, the general inspection procedures to be adopted by the Inspection and Maintenance Programs for Vehicles in Use – I/M, informing CONAMA in the subsequent meeting to the set deadline.

SECTION III

ACCESS TO THE INFORMATION AND DATA FROM THE PROGRAM

Art. 28. All the activities for data collection, information registration, execution of inspection procedures, matching of inspection data vs. established limits, and supply of certificates and reports must be performed by using computer systems, according to the requirements defined by the responsible agency.

§ 1– The service provider is required to provide all data referring to the environment inspection to the responsible agencies.

§ 2– The responsible agencies shall make available the information consolidated by the States referring to the vehicular environmental inspection, in electronic data transmission system to the Brazilian Institute of Environment (IBAMA- Instituto Brasileiro de Meio Ambiente e dos Recursos Naturais e Renováveis).

Art. 29. The Program information is public, being the agency responsible for the environment inspection to provide annual reports referring to the program outcomes, as determined in the respective PCPV.

§ 1– The reports mentioned in the *caput* shall count at least:

I – approval and rejection results, explaining the reason for rejection;

II – pollutants emission data of inspected vehicles, segmented by category, detailing the mean and standard deviation; and

III – evaluation of the program effects on air quality, taking as basis the monitoring network data, if any.

§ 2– The consolidated information by state relating to items I and II should be presented according to the fuel, category, type, vehicle's year of manufacture, vehicle's classification under CONAMA Resolution No. 15 of December 13th, 1995 and later, as well as the classification of make-model-version.

§ 3– IBAMA shall be responsible for preparing, from the reports mentioned in the previous paragraph, a National Report on Environmental Vehicular Inspection, which shall contain the compilation of all reports presented in a systematized document.

§ 4 – National Report on Environmental Vehicular Inspection shall be submitted to CONAMA annually.

§ 5 – Wide publicity should be given to the annual reports disciplined in this Article.

Chapter IV

LIMITS AND PROCEDURES FOR THE EVALUATION OF THE MAINTENANCE STATE OF VEHICLES IN USE

Art. 30. The maintenance state of vehicles in use shall be evaluated according to the procedures to be defined by IBAMA's act.

§ 1– The regulation mentioned in the *caput* of this Article shall be prepared within 120 days after the approval of this Resolution, and shall define:

I – test procedures of the vehicles emissions with Otto cycle engine in circulation, including motorcycles for the versions and fuels available in the market;

II – test procedures of the vehicles emissions with Diesel cycle engine for the versions and fuels available in the market; and

III – evaluation procedure of the exhaust noise level coming from the vehicles in use.

§ 2– In the process of preparing and updating IBAMA's acts, the deadline for implementation, the specific technical standards and the best engineering practices and processes shall be observed.

Art. 31. IBAMA should coordinate with the responsible agencies regular studies to identify more appropriate and effective inspection procedures to the new vehicular technologies, including the possibility of using load emission inspection and on board diagnosis system - OBDBr.

§ 1– By technically approving more appropriate and effective inspection procedures, IBAMA shall submit to CONAMA the technical reports with new procedures and limits proposals to be appreciated by the Council, aiming at incorporating them to the Program standards.

§ 2– The responsible agency or its contractors shall make available the necessary means to carry out activities foreseen in the *caput* of this Article.

§ 3– The responsible agency is entitled to propose specific procedures to IBAMA for vehicles that provenly do not meet the procedures set forth herein.

Art. 32. For state evaluation of the vehicles in use, the emission limits in the Attachment I should be used.

Chapter V – Final Provisions

Art. 33. The States and cities that have already granted or authorized the vehicular environmental inspection services shall adapt themselves, where applicable, to the terms of this Resolution within 24 months from its publication.

Art. 34. The motor vehicles manufacturers, importers and distributors, motorcycles and auto parts shall be responsible for developing, guiding and disseminating along with the technical service linked to them, the requirements and procedures related to the proper maintenance and calibration of their vehicles as to the limits and procedures foreseen in this Resolution.

Art. 35. Within a period of twelve months after the publication of this Resolution, IBAMA should make available in its website, the required vehicle characteristics for carrying out the vehicular inspection.

Art. 36. CONAMA Resolutions No. 7 of August 31st, 1993; No. 15 of September 29th, 1994; No. 18 of December 13th, 1995; No. 227 of August 20th, 1997; No. 251 of January 12th, 1999; No. 252 of February 1st, 1999; and No. 256 of June 30th, 1999 are revoked.

Art. 37. This Resolution shall be effective on the date of its publication.

Carlos Minc
CONAMA President

Attachment I – Emission Limits

1. For the vehicles with Otto cycle engine, the maximum limits of exhaust emission of CO corrected and HC corrected, dilution and angular engine speed are defined in Tables 1 and 2 below:

Table 1 – Maximum emission limits of $CO_{corrected}$, at idle speed and at 2,500 rpm for motor vehicles with Otto cycle engine

Manufacturing year:	Limits of $CO_{corrected}$ (%)			
	Gasoline	Alcohol	Flex	Natural Gas
All until 1979	6,0	6,0	–	6,0
1980 — 1988	5,0	5,0	–	5,0
1989	4,0	4,0	–	4,0
1990 — 1991	3,5	3,5	–	3,5
1992 — 1996	3,0	3,0	–	3,0
1997 — 2002	1,0	1,0	–	1,0
2003 — 2005	0,5	0,5	0,5	1,0
2006 onwards	0,3	0,5	0,3	1,0

Note: In cases of vehicles that use liquid and gas fuel, the limits of each fuel shall be considered.

Table 2 – Maximum emission limits of $HC_{corrected}$, at idle speed and at 2,500 rpm for vehicles with Otto cycle engine

Manufacturing year:	Limits of $HC_{corrected}$ (ppm of hexane)			
	Gasoline	Alcohol	Flex	Natural Gas
Until 1979	700	1100	–	700
1980 — 1988	700	1100	–	700
1989	700	1100	–	700
1990 — 1991	700	1100	–	700
1992 — 1996	700	700	–	700
1997 — 2002	700	700	–	700
2003 — 2005	200	250	200	500
2006 onwards	100	250	100	500

Note: In cases of vehicles that use liquid and gas fuel, the limits of each fuel shall be considered.

1.1. The angular speed at idle speed shall be in the range from 600 to 1,200 rpm and be stable within ± 100 rpm;

1.2. The angular speed at accelerated regime of 2,500 rpm should have ± 200 rpm tolerance;

1.3. The dilution factor of exhaust gases should be equal or less than 2.5. In case of dilution factor is less than 1.0, it shall be considered equal to 1.0 for CO and HC corrected values calculation purposes.

2. For motorcycles and the like with Otto cycle engine, the maximum limits of exhaust emission of $CO_{corrected}$ and $HC_{corrected}$, are defined in the Table 3 below.

2.1. The dilution factor of exhaust gases should be equal or less than 2.5. In case of dilution factor is less than 1.0, it shall be considered equal to 1.0 for CO and HC corrected values calculation purposes.

2.2. The angular speed at idle speed shall be stable within a range of 300 rpm and not exceed the maximum limits from 700 rpm up to 1,400 rpm.

Table 3 – Maximum emission limits of $CO_{corrected}$, $HC_{corrected}$ at idle speed and of factor and dilution(1) for motorcycles and similar vehicles with Otto cycle four-stroke engine(2)

Manufacturing year:	Engine size	1st Phase (2010)		2nd Phase (as from 2011)	
		CO_{corr} (%)	HC_{corr} (ppm)	CO_{corr} (%)	HC_{corr} (ppm)
Until 2002	All	7,0	3500	5,0	3500
2003 to 2008	<250 cm^3	6,0	2000	4,5	2000
	≥ 250 cm^3	4,5	2000	4,5	2000
From 2009	All	1,0	200	1,0	200

(1) The dilution factor should be up to 2.5.
(2) The gas emission limits apply only to motorcycles and similar vehicles equipped with Otto cycle four-stroke engine.

3. For Diesel cycle motor vehicles, the maximum limits of opacity at free acceleration are the values certified and released by the manufacturer. The Diesel cycle motor vehicles, which do not have maximum limits of opacity at free acceleration disclosed by the manufacturer, are set forth in Tables 4 and 5.

Table 4 - Maximum limits of opacity at free acceleration of vehicles not covered by CONAMA Resolution No. 16/95 (prior to model-year 1996)

Altitude	Engine Type	
	Natural air suction or turbocharged with LDA (1)	Turbocharged
Up to 350 m	1.7 m^{-1}	2.1 m^{-1}
Above 350 m	2.5 m^{-1}	2.8 m^{-1}

(1) LDA is the control device of the fuel injection pump for adequacy of its debit to the turbocharger pressure.

Table 5 – Opacity limits at free acceleration of diesel powered vehicles after the term of CONAMA Resolution No. 16/95 (model-year 1996 onwards)

Model-year	Altitude	Opacity (m^{-1})
1996 – 1999	Up to 350 m	2,1
	Above 350 m	2,8
2000 and later	Up to 350 m	1,7
	Above 350 m	2,3

4. For all national or imported motor vehicles, the maximum noise limits in stopped condition are the values certified and disclosed by the manufacturer. In the inexistence of such information, the maximum noise limits in stopped condition containing in Table 6 are set forth.

Table 6 – Maximum noise limits emitted by motor vehicles in stopped condition for vehicles in use

Category	Engine position	Noise Level dB(A)
Passenger vehicle with up to nine seats and mixed use vehicles derived from automobile	Front	95
	Rear	103
Passenger vehicle with more than nine seats; cargo or traction vehicles and mixed use vehicle not derived from automobile and TGW up to 3,500 kg	Front	95
	Rear	103
Passenger or mixed use vehicle with more than 9 seats and TGW up to 3,500 kg	Front	92
	Rear and inter-axle	98
Cargo or traction vehicle with TGW above 3,500 kg	All	101
Motorcycles, scooters, mopeds, bicycles with auxiliary engine, and similar vehicles	All	99

Notes:
1) Vehicle designations according to NBR 6067
2) TGW: Total Gross Weight
3) Power: Maximum net effective power according toNBR-ISO 1585.

5. Definitions

» CO: Carbon monoxide contained in the exhaust gases, measured in volume %.

» $CO_{corrected}$: It is the measured value of carbon monoxide, and corrected with regard to the dilution of sampled gases, according to the expression:

$$CO_{corrected} = \frac{15}{(CO + CO_2)_{measured}} . CO_{measured}$$

» $HC_{corrected}$: it is the HC measured and corrected value for the dilution of sampled gases, according to the expression:

$$HC_{corrected} = \frac{15}{(CO + CO_2)_{measured}} . HC_{measured}$$

» Exhaust gas dilution factor: It is the volumetric dilution percentage of the exhaust gas sample due to the entry of air into the system,
given by the expression below:

$$F_{diluid} = \frac{15}{(CO + CO_2)_{measured}}$$

» Idle speed: work operation in which the angular engine speed specified by the manufacturer should be kept during the engine operation without load, and with the fuel supply system controls, accelerator, and throttle in the idling (resting) position.

» Diesel cycle engines: an engine that operates with the ignition-compression principle.

» Otto cycle engines: an engine that operates by means of spark ignition.

» Opacity: measurement of the absorption of light reached by a luminous beam when crossing an exhaust gas column, expressed in m^{-1}, between the emergent and incident light rays.

» Biofuel vehicle: a vehicle with two separate tanks for different fuels, excluding the auxiliary start reservoir.

» Flex vehicle: a vehicle that could operate with gasoline or hydrated ethylic alcohol or any mixture of these two fuels in the same tank.

Amends the Arts. 4 and 5, *caput* and the § 1 of CONAMA Resolution No. 418 of 2009, setting new deadlines for the Vehicular Pollution Control Plan and the Inspection and Maintenance Program for Vehicles in Use. Official Gazette (D.O.U.) of 12.15.2010.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by the Art. 8, of Law 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of July 6th, 1990 and, in view of the provision in its Bylaws, Attached to Ordinance MMA No. 168 of June 13th, 2005:

Whereas the provisions of the Arts. 4 and 5, *caput* and the § 1of CONAMA Resolution No. 418 of November 25th, 2009, which provide deadlines for preparing the Vehicular Pollution Control Plans - PCPV- and for the implementation of Inspection and Maintenance Programs for Vehicles in Use – I/M – by the state and local environment agencies and determine new emission limits and procedures for evaluating the maintenance state of the vehicles in use; and

Whereas only in 2010, the 1st National Inventory of Atmospheric Emissions has been completed for Motor Road Vehicles, prepared by the Work Group created by MMA Ordinance No. 336 of September 2009, and whereas the methodology used in the aforementioned study is of relevant value and contribution to the States, Federal District and Cities work; resolves:

Art. 1 Postpone until June 30th, 2011, the deadlines established in the Art. 5, *caput* and § 1 of CONAMA Resolution No. 418 of November 25th, 2009.

Art. 2 The States whose PCPVs provide for the deployment of the Inspection and Maintenance Program for Vehicles in Use shall implement them until April 25th, 2012.

Art. 3 Revoke the § 1of the 12th Art. of CONAMA Resolution No. 418 of November 25th, 2009.

Art. 4 This Resolution shall be effective on the date of its publication.

Izabella Teixeira
Chairman of the Board

CONAMA RESOLUTION No. 432/2011

Sets new phases of pollutants gas emission control for new mopeds, motorcycles and the like, and other provisions. Official Gazette (D.O.U.) of 07.14.2011.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by the Art. 8, item VII of Law No. 6.938 of August 31st, 1981, and by the Art. 2, §9, and the Art. 3 of Law No. 8.723 of October 28th, 1993, in view of the provisions in its ByLaws; and

Whereas the provisions of Law No. 8.723 of October 28th, 1993, which provides for the reduction of pollutants by motor vehicles and Resolution No. 297 of February 26th, 2002, which creates the Air Pollution Control Program for Mopeds, Motorcycles and the like – PROMOT;

Whereas the need of continuous PROMOT development and updating, resolves:

Art. 1 Establish new control phases of pollutant gases emissions through the exhaust for new mopeds, motorcycles and similar vehicles, pursuant to the § 1of the Art. 8 of CONAMA Resolution No. 297, of February 26th, 2002, in the following terms:

Chapter I

MAXIMUM EMISSION LIMITS AND TEST PROCEDURES

Art. 2 From January 1st, 2014, the maximum pollutants emission limits from motorcycles, tricycles and quads exhaust are set forth, PROMOT M4 phase, according to table I of Attachment A.

Art. 3 From January 1st, 2016, the maximum pollutants emission limits from motorcycles, tricycles and quads exhaust are set forth, PROMOT M4 phase, according to table I of Attachment A.

Art. 4 In PROMOT M4 phase, the test procedures to determine the exhaust gases from motorcycles, tricycles and quads are now foreseen in the European Community regulation, by using the transient driving cycle WMTC – Worldwide Motorcycle Test Cycle, available in Ibama's website.

Art. 5 From January 1st, 2014, the maximum pollutants emission limits from mopeds exhaust are set forth, PROMOT M4 phase, according to table II of Attachment A.

Art. 6 All vehicles covered in this Resolution should have the values of CO, HC and angular engine speed at idle declared by the manufacturer or importer based on the Resolution Proposal values which establish the new PROMOT phases – LIMPA version – 62nd CTAJ – Date: May 5th and 5th, 2011 proven in the certification test, and shall be disclosed through the vehicle's Owner's Manual, and to the Authorized Service Network, through the Service Manual.

Art. 7 The testing procedures to determine the mopeds' exhaust gases are those foreseen in CONAMA Resolution No. 297 of February 26th, 2002.

Art. 8 For development and approval purposes, the reference fuel specifications for gasoline, ethyl alcohol fuel, diesel oil, vehicular fuel gas shall be those set forth in the technical regulations of ANP Resolutions No. 21 of July 21st, 2009, No. 38 of December 9th, 2009, No. 23 of July 6th, 2010, No. 40 of December 24th, 2008, No. 16 of June 17th, 2008, and ABNT NBR

standard No. 8.689 of 2006, respectively or in legislation that shall replace them, observing, yet, the provisions of the Art. 7, *caput*, of Law No. 8.723/93 regarding the commercial availability of the fuels to be supplied.

Art. 9 From January 1st, 2016, it is instituted the maximum evaporative emission limit of one (1) gram/test for all mopeds, motorcycles, tricycles and quads.

Sole paragraph. In order to determine the evaporative emission of the vehicles included in the *caput* of this Article, the procedure of the hot phase shall be adopted according to the Brazilian NBR standard 11.481 – "Light motor road vehicles – measurement of evaporative emission", using the volume of 0.14 m^3.

Chapter II

EMISSIONS DETERIORATION FACTORS

Art. 10. From January 1st, 2014, on the approval processes, the manufacturers and importers of mopeds, motorcycles, three-wheelers and four-wheelers must apply the deterioration factors (FD) obtained according to the Standard ABNT NBR 14008, or similar standard, to the emissions of vehicles with the same configuration of engine and transmission which have an annual sales forecast over 10,000 units, as follows:

a) for mopeds the distance to be travelled for the determination of the FD is 10,000km and the emission tests must be performed during the vehicles maintenance interval, according to the maintenance plan recommended by the manufacturer;

b) for motorcycles, three-wheelers and four-wheelers with maximum speed under 130km/h the distance to be travelled for the FD determination is 18,000km and the emission tests must be performed during the vehicles maintenance interval, according to the maintenance plan recommended by the manufacturer;

c) for motorcycles, three-wheelers and four-wheelers with maximum speed over or equal 130km/h the distance to be travelled for the determination of the FD is 30,000km and the emission tests must be performed during the vehicles maintenance interval, according to the maintenance plan recommended by the manufacturer;

§1 – For productions or imports under 10,000 units /year of vehicles with same configuration of engine and transmission, the pre-determined deterioration factor of 20% will be applied to CO, HC and NOx, being the manufacturer or importer entitled to the determination of FDs for a specific configuration.

§2– The mileage accumulation shall be performed according to the Standard ABNT NBR 14008, in the AMA cycle, with commercial fuel and the evidence tests with standard fuel.

§3– For the engine groups that present an increase in the sales volume forecast, upon revalidation of the license for use of the configuration of mopeds, motorcycles and the like – LCM for the

following year, exceeding the limit of ten thousand units per year, shall be admitted due to the duration of the tests for determination of the deterioration factors, which are declared within one year, plus the current year counting, from the date of issuance of the LCM revalidation.

Chapter III

PRODUCTION CONTROL

Art. 11 Institute, from July 1st, 2011, with the frequency of one calendar semester the Production Emission Values report – RVEP, for the configurations of mopeds, motorcycles, three-wheelers and four-wheelers, with production or import for commercialization in the national territory over 1,000 units per semester, including its extensions.

§1 – At the beginning of each calendar semester, the manufacturer or importer representative, shall furnish to the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), within thirty days, the RVEP for the immediately preceding semester.

§2 – The reports shall contain the identification of the laboratory and executing unit and, by configuration of tested vehicle, date and number of the respective tests, with the emission amounts obtained, as well as the average and standard deviation, and for each configuration of vehicle or engine, the respective reference value shall be provided, as defined in the Attachment of this Resolution.

Art. 12 The emission tests for the production control carried out in Brazil or abroad shall be performed in laboratories certified by INMETRO or accepted by IBAMA.

Art. 13 For each configuration of mopeds, motorcycles, three-wheelers and four-wheelers subject to RVEP, three units shall be tested per semester. If the average results are below the respective pollutants limits established for the phase in which the vehicle was approved, the production shall be deemed in compliance.

§1 – In the event of non-conformity according to the condition defined in the caput of this article, up to two units may be added to the sample, always considering the average results obtained with the pollutants limits.

§2 – If the limit is not observed for any pollutant, using up to five units in the sample, the production shall be deemed in non-conformity.

Chapter IV

GENERAL PROVISIONS

Art. 14 All expenses arising from the actions of this Resolution, such as testing, recalls, repairs, administrative costs, costs of transporting goods or personnel involved shall be borne exclusively by the manufacturer, importer or their representative or, failing that, by the importer responsible for the lot of vehicles or engines.

Art. 15 IBAMA shall coordinate studies and works related to any required revision to the maximum emission limits and deadlines foreseen in this Resolution, calling at any time, the agencies/entities that support the theme and shall submit to CONAMA a final report with the proposal for appreciation.

Art. 16 IBAMA shall update and whenever necessary regulate, through normative instruction with technical basis, the test procedures and emission and noise to PROMOT.

Art. 17 This Resolution shall be effective on the date of its publication on Official Gazette (D.O.U.).

Izabella Mônica Teixeira
CONAMA President

Attachment A

Table I

Category	Effective Date	Maximum Speed	Limits			
			CO (g/Km)	HC (g/Km)	NOx (g/Km)	CO_2 (g/Km)
Motorcycles and the like	01/01/2014	< 130 km/h	2,0	0,8	0,15	
		≥ 130 km/h	2,0	0,3	0,15	
	01/01/2016	< 130 km/h	2,0	0,56	0,13	inform
		≥ 130 km/h	2,0	0,25	0,17	

Table II

Category	Effective Date	Limits			
		CO (g/Km)	HC (g/Km)	NOx (g/Km)	CO_2 (g/Km)
Mopeds	01/01/2014	1,0	0,8	0,15	inform

CONAMA RESOLUTION No. 433/2011

Provides for the creation of the Air Pollution Control Program by Motor Vehicles – PROCONVE and established maximum noise emission limits for new agricultural and road machines. Official Gazette (D.O.U.) of 07/14/2011.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by the Art. 8, item VII of Law No. 6.938 of August 31st, 1981, and by the Art. 2, §9t, and the Art. 3 of Law No. 8.723, of October 28th, 1993, in view of the provisions in its Internal Regulation; and

Whereas Law nº 8.723, of October 28th, 1993, that prescribes the reduction of the emission of pollutants by automotive vehicles, is an integral part of the Environment National Policy;

Whereas the prescriptions of the Air Pollution Control Program by Motor Vehicles (PROCONVE) instituted by the National Council for Environment through Resolution CONAMA nº 18, of May 6th, 1986, and further supplementary resolutions;

Whereas the need of continuous PROCONVE development and updating, resolves:

Art. 1 Include in the Air Pollution Control Program by Motor Vehicles – PROCONVE and establish maximum noise emission limits for new agricultural and road machines.

Art. 2 The following definitions are used for this Resolution purposes:

I – Engine Configuration: unique combination of engines family, which can be described through the systems that affect directly the emission control.

II – Engines Family: basic classification for the production line of the same manufacturer, determined in such a way that any engine of the same family has the same emission characteristics.

III – Road Machine: Self-propelled machine with wheels, conveyors or legs which has equipment or accessories especially designed to perform operations for the opening of ditches, excavation, loading, transportation, dispersion or compacting of soil and similar materials.

IV – Agricultural Machine: Self-propelled machine with wheels, conveyors or legs which has equipment or accessories especially designed to perform operations in the preparation of soil, plantation, cultural traits, harvest of agricultural and forestry products.

V – Model of Agricultural or Road Machine: name that features a machines line of production of from the same manufacturer with the same construction characteristics.

VI – New Launch: introduction in the consumer market of agricultural or road machine configuration, having a new engine configuration.

Art. 3 The maximum limits for pollutants emission are set forth to the Diesel Cycle engines, foreseen in Table I of Attachment A, intended to the to new agricultural and road machines, national or imported, defined through the Mercosur Common Nomenclature – MCN according to Attachment B.

Art. 4 The engines with power equal or above 19 kW intended to agricultural and road machines, national or imported, commercialized in Brazil, must observe the maximum emission limits defined in Table I and the dates set forth in this article.

§1– From January st, 2015, the engines with power range equal or above 37 kW, intended to new launches of road machines, must observe the limits of phase MAR-I according to Table I of Attachment A.

§2– From January 1st, 2017, all the engines intended to road machines in production or imported, to all the power ranges, must observe the limits of phase MAR-I according to Table I of Attachment A.

§3 - From January 1st, 2017, all the engines intended to new road machines in production or imported, with power equal or

above 75 kW, must observe the limits of phase MAR-I according to Table I of Attachment A.

§4 – From January 1st, 2019, all the engines intended to road machines in production or imported, with power equal or above 19kW and up to 75 kW, must observe the limits of phase MAR-I according to Table I of Attachment A.

Art. 5 The emission levels measured in the agricultural and road machines engines are expressed in g/kWh and refer to the pollutant mass emitted per hour per effective net power unit.

§1 – The emissions of carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NOx) and particulate matter (MP) shall observe the standard ISO 8178-1.

§2 – At the Ibama discretion, the NBR standards that arise from the ISO standard mentioned in the previous paragraph may be adopted for the measurement mentioned in the *caput*.

Art. 6 The reference fuel for the approval test shall be, for phase MAR-I, that regulated by Agencia Nacional de Petróleo, Gás e Bio-combustíveis – ANP.

Art. 7 Only the agricultural and road machines, national or imported, that have the LCVM – License for Use of the Vehicles or Engine Configuration, issued by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) can be commercialized.

Sole Paragraph – The procedures and requirements to obtain the LCVM are the same ones established for the supplementary regulation of PROCONVE.

Art. 8 From January 1st, 2015, the maximum noise emission limits are established for the road machines, such as: hydraulic excavators, excavators, blade tractors, shovel loaders, graders, backhoes and drum rollers with installed power under 500 kW, national or imported, for commercialization in the national market.

§1 – The sound power level must be measured under the conditions established according to NBR-NM-ISO 6395, and shall not exceed the permissible level Lwa in dB(A) / 1 pW specified regarding the net installed power P in kW according to tables II and III, in Attachment A.

§2 The formulas foreseen in Table II of the Attachment A are valid only for higher values than the lowest sound power levels for the machine types. These lower sound power levels correspond to lower net installed power values for each type of machine.

§3 – For the net installed powers below these values, the permissible sound power levels are given by the lowest level showed in Table III of Attachment A.

§4 – The net installed power P must be determined as defined in Standard ISO 14396:2002.

Art. 9 The equipment, the location and the test method used to measure the noise level of the machines, for the purposes of this Resolution, shall be according to NBR-NM-ISO 6395 and its normative references.

Art. 10 IBAMA, shall be responsible, through Normative Instruction, for establishing supplementary procedures and requirements necessary to the implementation of the determinations of this Resolution.

Art. 11 IBAMA shall coordinate studies and works related to any required revision to the maximum emission limits and deadlines foreseen in this Resolution, calling at any time, the agencies/entities that support the theme and shall submit to CONAMA a final report with the proposal for appreciation.

Art. 12 This Resolution shall be effective on the date of its publication on Official Gazette .

Izabella Mônica Teixeira
CONAMA President

Attachment A

Table I – Maximum emission limits for agricultural and road machines engines – (PROCONVE MAR-I)

(Power P in kW*)	CO (g/kWh)	HC + NOx (g/kWh)	MP (g/kWh)
130 ≤ P ≤ 560	3,5	4,0	0,2
75 ≤ P ≤ 130	5,0	4,0	0,3
37 ≤ P ≤ 75	5,0	4,7	0,4
19 ≤ P ≤ 37	5,5	7,5	0,6

** Maximum power according to Standard ISO 14396:2002, which at Ibama's discretion may adopt the equivalent ABNT standard.*

Table II – Road Machines

Type of Road Machine	Calculation formula
Track-type blade tractors, track-type shovel loaders, track-type backhoes	$L_{wa} = 87 + 11 \log P$
Wheeled blade tractors, wheeled shovel loaders, wheeled backhoes, non-vibratory drum roller	$L_{wa} = 85 + 11 \log P$
Vibratory drum rollers	$L_{wa} = 89 + 11 \log P$
Excavators	$L_{wa} = 83 + 11 \log P$

Table III – Road Machines

Type of Road Machine	Lowest level of sound power in (A)/1 pW
Track-type blade tractors, track-type loaders, track-type backhoes	106
Wheeled blade tractors, wheeled shovel loaders, wheeled backhoes, non-vibratory drum roller	104
Vibratory drum rollers	109
Excavators	96

Attachment B

Agricultural and Road Machines covered by this Resolution

NCM Code	Description
8424	MECHANICAL APPLIANCES (WHETHER OR NOT HAND-OPERATED) FOR PROJECTING, DISPERSING OR SPRAYING LIQUIDS OR POWDERS; FIRE EXTINGUISHERS, WHETHER OR NOT CHARGED; SPRAY GUNS AND SIMILAR APPLIANCES; STEAM OR SANDBLASTING MACHINES AND SIMILAR JET PROJECTING MACHINES.
8424.81.19	Self-propelled spray equipment
8429	SELF-PROPELLED BULLDOZERS, ANGLEDOZERS, GRADERS AND LEVELLERS, SCRAPERS, MECHANICAL SHOVELS, EXCAVATORS, LOADERS AND SHOVEL LOADERS, TAMPING MACHINES AND ROADROLLERS
8429.1	Bulldozers and angledozers

8429.11	Caterpillar type
8429.11.10	Maximum output power greater than or equal to 387.76 kW (520 HP)
8429.11.90	Others
8429.11.90	e.g. 001 – Caterpillar bulldozer with front blade and rear ripper, maximum output power greater than 405 HP and less than 520 HP
8429.19	Others
8429.19.10	Bulldozers with maximum output power greater than or equal to 234.90 kW (315 HP)
8429.19.90	Others
8429.20	Graders and levelers
8429.20.10	Articulated motor grader and leveler with maximum output power greater than or equal to 205.07 kW (275 HP)
8429.20.90	Others
8429.30.00	Scrappers
8429.40.00	Tamping machines and roadrollers
8429.40.00	e.g. 001 – Self-propelled engine motor tamping machine for garbage with planetary servo transmission and maximum output power of 340 HP, operating weight equal to 81,498 lb (36,967 kg), with jaw-type toothed roll crusher, front blade for displacement
8429.40.00	e.g. 002 – Self-propelled soil tamping machines with vibrating drum, with maximum operating weight greater than 15,432 lb (7,000 kg)
8429.40.00	e.g. 003 – Self-propelled hydrostatic vibratory diesel driven soil tamping machines, with approximated maximum capacity for tamping asphalt of 5.91 in (15 cm) and soil of 24 in (61 cm) and operating weight of 5,621 lb (2,550 kg)
8429.40.00	e.g. 004 – Self-propelled remotely controlled vibratory tamping machines, with two rolls

	with crowbars, engine driven with maximum output power of 21 HP, tamping capacity of 29.53 in (75 cm) deep, productivity of 10,462 ft²/h (972 m²/h) and operating weight of 3,247 lb (1,473 kg)
8429.5	Mechanical shovels, excavators, loaders and shovel loaders
8429.51	Front loading loaders and shovel loaders
8429.51.1	Transporting loaders
8429.51.11	Like the ones used in subterranean mines
8429.51.19	Others
8429.51.2	Motor infrastructure suitable to use equipment from item 8430.69.1
8429.51.21	Maximum output power greater than or equal to 454.13 kW (609 HP)
8429.51.21	e.g. – excavator wheel traction unit, no similar national product
8429.51.29	Others
8429.51.29	e.g. – excavator wheel traction unit, no similar national product
8429.51.9	Others
8429.51.91	Maximum output power greater than or equal to 297.5 kW (399 HP)
8429.51.92	Maximum output power less than or equal to 43.99 kW (59 HP)
8429.51.99	Others
8429.52	Machines whose superstructure is able to perform a 360° revolving motion
8429.52.1	Excavators
8429.52.11	Maximum output power greater than or equal to 484.7 kW (650 HP)
8429.52.12	Maximum output power less than or equal to 40.3 kW (54 HP)

8429.52.19	Others
8429.52.19	e.g. 001 – Self-propelled excavator with superstructure able to perform a 360° revolving motion, load capacity ranging from 377.8 ft³ (10.7 m³) to 2701.5 ft³ (76.5 m³), equipped with direct current electrical motor for driving, revolving and lifting processes, with no steering wheel in the engine, with loading skip lifting system driven by cables
8429.52.19	e.g. 002 – Self-propelled excavator with superstructure able to perform a 360° revolving motion, equipped with alternating current electrical motor for driving, revolving and lifting systems, with loading skip lifting system driven by cables and maximum weight greater than 670.9 ft³ (19 m³)
8429.52.20	Motor infrastructure suitable to use equipments from subheadings 8430.49, 8430.61 or 8430.69, whether with rail displacement device or not
8429.52.90	Others
8429.59.00	Others
8432.40.00	- Manure spreaders and fertilizer distributor
8701.	TRACTORS (EXCEPT CAR-TRACTORS FROM HEADING 8709)
8701.10.00	Pedestrian-controlled tractors
8701.20.00	e.g. – Truck tractor, particularly built for heavy duties, designated to tasks directly linked to the transportation of ore, stones, earth with stones and similar matters, which cannot be identified as a commercially traded truck tractor, or an ordinary truck tractor adapted or strengthened
8701.30.00	Caterpillar tractors
8701.30.00	e.g. 001 – Forest crawler tractors, such as feller bunchers, used to fell trees, with maximum output power greater than 200 HP, with hydraulic driven crane to support feller head

8701.30.00	e.g. 003 – Rubber caterpillar tractors, diesel driven with gross output power greater than 200 HP
8701.30.00	e.g. 004 – Self-propelled forest crawler tractors, such as feller bunch, used to fell trees, with maximum output power greater than 120 kW, with hydraulic driven crane to support feller head
8701.90	Others
8701.90.10	Tractors specially manufactured to skid logs ("log skidders")
8701.90.10	"Wheeled agricultural tractors, with no crawlers"
8701.90.10	"4-wheeled agricultural tractors"
8701.90.90	Others
8701.90.90	e.g. 01 – Mechanical or hydraulic PTO
8701.90.90	"4-wheeled microtractors for horticulture and agriculture"
8701.90.90	"Wheeled agricultural tractors, with no crawlers"
8701.90.90	"4-wheeled agricultural tractors"
8704.	AUTOMOBILE VEHICLES FOR GOODS TRANSPORT
8704.10	Dumbers designed to off-road use
8705.10	Truck cranes
8705.10.10	Equipped with telescopic boom with maximum height greater than or equal to 137.8 ft (42 m), maximum lifting capacity greater than or equal to 60 t, according to DIN 15019, part 2, and with 2 or more steering wheel axles
8705.10.90	Others
8433.	HARVESTING OR THRESHING MACHINERY, INCLUDING STRAW OR FODDER BALERS; GRASS OR HAY MOWERS; MACHINES FOR CLEANING, SORTING OR GRADING EGGS,

	FRUIT OR OTHER AGRICULTURAL PRODUCTS, OTHER THAN MACHINERY OF HEADING 84.37.
8433.30.00	Self-propelled forage harvesters
8433.5	Other harvesting machinery and equipment; threshing machinery and equipment
8433.51.00	Mower-threshers
8433.52.00	Other threshing machinery and equipment
8433.53.00	Root or tuber harvesting machines
8433.59	Others
8433.59.1	Cotton harvesters
8433.59.11	With capacity of working up to two furrows at the same time and output power less than or equal to 59.7 kW (80 HP)
8433.59.19	Others
8433.59.90	Others
8433.59.90	e.g. 001 – Tomato harvester with electronic selector, revolving shaker and vibrating spokes with alternating motion for fruit sorting and unloading ramp
8433.59.90	e.g. 002 – Self-propelled harvesters for corn on the cob, with platform with nine or more lines, double cleaning system for cobs, unloading elevator, with four-wheel hydrostatic transmission
8433.59.90	e.g. 003 – Sugarcane grinding harvesters, four-wheel drive, output power of 350 HP, air flow cleaning system with two extractors and two turbines, unloading elevator for non-reversible sugarcane, cutting device, sugar rows clearance of 3.28 ft (1 m), with capacity of harvesting two sugarcane rows simultaneously
8436	OTHER AGRICULTURAL, HORTICULTURAL, FORESTRY, POULTRY-KEEPING OR BEE-KEEPING MACHINERY, INCLUDING GERMINATION PLANT FITTED WITH MECHANICAL OR THERMAL EQUIPMENT; AND POULTRY INCUBATORS

	AND BROODERS
8436.80.00	e.g. 008 – Self-propelled wheeled harvester machines for felling trees, delimbing and debarking of timbers, four-wheel drive or superior, with no loading platform
8436.80.00	e.g. 010 – Self-propelled crawler harvester machines for felling trees, delimbing and debarking of timbers, output power ranging from 250 to 249 HP, boom head maximum length of 292 ft (8.9 m)
8436.80.00	e.g. 011 – Self-propelled crawler machines for felling trees, delimbing and debarking of timbers, output power greater than 240 HP, suitable for processor head use.
8479	MACHINES AND MECHANICAL APPLIANCES WITH SPECIFIC FUNCTION, NOT SPECIFIED OR INCLUDED ELSEWHERE IN THIS CHAPTER
8479.10	Machines and appliances for public constructions, civil construction or similar jobs
8479.10.10	Self-propelled machines to spread and compress bituminous pavements
8479.10.90	Others (MILLING MACHINES)
8430.50.00	MILLING MACHINES
8430	OTHER MOVING, GRADING, LEVELLING, SCRAPING, EXCAVATING, TAMPING, COMPACTING, EXTRACTING OR BORING MACHINERY, FOR EARTH, MINERALS OR ORES; PILEDRIVERS AND PILE-EXTRACTORS; SNOWPLOUGHS AND SNOWBLOWERS
8430.50.00	Other self-propelled machines and appliances
8430.50.00	e.g. – Hydraulic wedge
8430.50.00	e.g. - Dismantler
8430.50.00	e.g. 001 – Self-propelled, articulated and lowered equipment, equipped with bulldozer blade and telescopic

	boom with hydraulic breaker of 850 lb-ft for moving loose stones on subterranean mine roofs.
8430.50.00	e.g. 002 - Self-propelled, articulated and lowered equipment, equipped with bulldozer blade and telescopic boom with claw for moving loose stones on subterranean mine roofs.
8430.50.00	e.g. 003 – Self-propelled remote controlled electro-hydraulically or diesel-hydraulically driven demolition equipment, with outriggers, slewing table with revolving motion greater than or equal to 245°, supplied with articulated jib with 3 sections suitable to connect to several types of tools, and output power greater than or equal to 4.0 Kw
8430.50.00	e.g. 004 – Self-propelled equipment, with chassis articulated on wheels and equipped with piston-type concrete pump, and mono-type accelerator pump, electric motor drive, with pulse suppression control and accelerator flow controlled by programmable logic controller (PLC), with articulated jib and boom, air compressor and lighting system, used in subterranean mines.

IBAMA ORDINANCE No. 85/1996

Establishes that every company that has its own transportation fleet for goods or passenger, whose vehicles are powered by diesel oil, should create and adopt an Internal Self-Monitoring Program for Correct Fleet Maintenance as for the Black Smoke Emission, according to the guidelines contained in Attachment I hereof; Official Gazette (D.O.U.) of 10.21.1996.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), exercising the powers conferred to him by the Art. 24 of the Regulating Structure, attached to Decree No. 78, of April 5th, 1991, and Art. 83, item XIV, of Internal regulation, approved by Ministry Ordinance GM No. 45, of August 16th, 1989, and;

Whereas the provisions of Law No. 8.723, of November 28th, 1993, Articles 3 to 15, of Resolution CONAMA No. 7, of August 13th, 1993.

Whereas the emission of black smoke and particulate matter of the vehicles powered by Diesel Oil contributes for the continuous degradation of the air quality, mainly in urban centers.

Whereas the disregulation and change of the original characteristics of the automotive vehicles powered by Diesel oil contribute significantly for the increase of the black smoke and particulate matter emissions.

Whereas the correct maintenance of these vehicles, by their owners, is an essential factor to allow the emission control of the vehicles powered by Diesel oil and assist in the inspection and in Vehicles in use Inspection and Maintenance programs – I/M, resolves:

Art. 1 Every company that has its own transportation fleet for goods or passenger, whose vehicles are powered by diesel oil, should create and adopt an Internal Self-Monitoring Program for Correct Fleet Maintenance as for the Black Smoke Emission, according to the guidelines contained in Attachment I hereof; Official Gazette (D.O.U.) of 10.21.1996.

Art. 2 Every company hiring load or passenger transportation services, through third parties, shall be deemed co-responsible for the correct maintenance of the

vehicles contracted, under the terms of the previous article.

Art. 3 The timeframe for the creation and operation of the program mentioned in the 1st art. is ninety (90) days counting from the publication of this Ordinance.

Art. 4 The black smoke emission limits to be observed for vehicles powered by Diesel oil, in any regimen are:

a) lower or equal to the No. 2 standard of the Ringelman Scale, when measured in locations up to five hundred (500) meters of altitude;

b) lower or equal to the No. 3 standard of the Ringelman Scale, when measured in locations up to five hundred (500) meters of altitude;

§1 – The provisions of this article do not include vehicles with circulation restrict to urban centers, which, even in locations above five hundred (500) meters of height, shall have the emission of black smoke limited to the standard No. 2 of the Ringelman scale.

§2 – For the purposes of the provisions in this Ordinance, will be deemed in disagreement the vehicle that presents black smoke emission for more than five (5) consecutive seconds.

Art. 5 IBAMA shall perform inspections in the garages of the companies mentioned in the 1st and 2nd articles, for verification of the compliance with the provisions hereof, at its discretion or whenever a certain company has suffered more than three (3) fines, applied by the competent authorities, for emission of black smoke above the allowed limit, in its vehicles or vehicles contracted thereby.

Art. 6 The violations to the provisions in this Ordinance shall suffer the penalties foreseen at Law No. 6.938, of August 31st, 1981, regulated by Decree No. 99.274, of June 6th, 1990, TITLE III – Penalties, Art. 33 and Art. 34 items II and III, without prejudice of the other penalties foreseen in the federal legislation, as well as criminal and civil sanctions.

Art. 7 This Resolution shall be effective on the date of its publication.

Eduardo de Souza Martins

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1 Text with wording corrected, as published in Official Gazette (D.O.U.) of October 22nd, 1996.

Attachment I

Guidelines for the creation of an internal program for Self-Inspection of the Correct Maintenance of the Fleet of vehicles powered by Diesel regarding the emission of black smoke.

A – PURPOSES

Implementation of the environmental management concept in the administration and operation of the urban buses fleet.

B – GOALS AND PRIORITIES

1. Black smoke emission control for vehicles in circulation in order to comply with the Environmental Laws in effect.

2. Reduction of fuel consumption.

3. Control of oils, greases and other substances so as to avoid their launching in the public sewer and rain water galleries.

4. Environmental education of the company's employees.

C – DIAGNOSE OF THE CURRENT SITUATION

1. Survey and evaluation of the conditions of the current fleet regarding the Environmental Laws.

2. Survey and evaluation of the conditions of acquisition, warehousing, handling and provision of parts, components, equipment, lubricants, fuels, etc.

3. Survey and evaluation of the maintenance infrastructure (internal and external).

D – DEFINITION OF RESPONSIBILITIES

1. Directive/managerial level

2. Operational level: administration – operation – supplies – maintenance.

E – DEFINITION OF PROCEDURE AND ELABORATION OF EDUCATIONAL MATERIAL

(manuals, forms, worksheets etc.)

1. Administrative level

2. Operational level: administration – operation – supplies – maintenance.

F – TRAINING FOR ALL EMPLOYEES

(including board of directors and management)

1. Regarding the company's environmental management commitment.

2. Basic concepts regarding environmental pollution and how to avoid problems.

3. Laws

4. Self-inspection

5. Benefits- institutional (economic, company image etc.), personal (quality of life, bonus, promotion etc.)

6. Technical qualification: – shop managers – mechanics – drivers – inspectors.

G – ADEQUATION OF THE ADMINISTRATIVE AND OPERATIONAL INFRASTRUCTURE.

1. Acquisition and/or modernization of equipment, tools, performance meters etc.

2. Application of the procedures, goals and priorities already defined.

H – ACTIONS

1. Preventive nature.

1.1 Reception: fuel (Metropolitan diesel, periodic analysis):– lubricants (recycled?); – parts/components, must meet the manufacturer's specifications; – vehicles – Free acceleration test (T.A.L.)

1.2 fuel warehousing/handling; – storage (company's tanks / vehicle's tanks); – drainage; – filtering; – supply.

1.3 Fleet control – consumption of lubricant oil and fuel (consumption factor); frequency and cause and pane / breakage / disregulation; – frequency of exhaust system change (tubes, mufflers etc.); – speed control / engine rotation; – control of the revision and maintenance services timeframes (according to the manufacturer's specifications) with focus on engine and sir admission and fuel injection systems.

1.4 Smole emission control (black, blue, white); – Internal self-inspection with T.A.L. and Ringelman for black smoke; – internal self-inspection with visual observation of blue or white smoke emission-internal route;

1.5 Employees motivation plan; – involvement of the employee with the activities in a participative manner; establishment of campaigns agains waste (lubricant materials, lubricants, crankcase oil, fuel etc.); and external (consumption, tire, break, throttle etc.);
- valorization of the services performed effectively and economically.

1.6 Fleet renewal program; – criteria for selection of new vehicles (compliance with PROCONVE and noise control program, weight-power relation, type of fuel, exhaust position etc.);

2. Corrective nature

2.1 External self-inspection (Ringelman); – verification of the non-observance of the standards by the company's team in an appropriate form and submission for collection in the same day; – collection of the vehicle, free acceleration test and submission of the vehicle for diagnose and corrective maintenance service; – realization of free acceleration test, registration of the amounts observed and comparison with the values before the maintenance; – in case of satisfactory result return the vehicle for circulation; – in the event of unsatisfactory result, repeat the cycle from the diagnose and maintenance step.

2.2 Similar procedure for the cases of white and blue smoke emission.

2.3 Vehicle operation behavior; – request from the drivers the appropriate conduction of the vehicle avoiding the unnecessary operation in idle speed, in addition to avoid sudden, unnecessary and repeated accelerations (replication).

2.4 Traffic Operation Behavior; – do not block crossings; – circulate to the right and observe the traffic in exclusive lane, whenever applicable;

– park the vehicle correctly in the stops during the entrance and exit of passengers; – do not double park.

2.5 Registration of bad behavior occurrence in the operation of the vehicle and operation in traffic and of services performed inappropriately, with waste, shall be considered in the motivation program adopted by each company.

I – REVIEW AND UPDATES

Based on the data surveyed, review and update periodically the procedures and activities related to the objectives defined.

IBAMA ORDINANCE No. 86/1996

Regulates the procedures for motor vehicles and motorcycles import as for the requirements of Air Pollution Control Program by Motor Vehicles – PROCONVE. Official Gazette (D.O.U.) of 10.21.1996.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), exercising the powers conferred to him by the Art. 24 of Regimental Structure attached to Decree No. 78 of April 5th, 1991, and the Art. 83, Item XIV, of Bylaws, approved by Ministerial Ordinance GM No. 45 of August 16th, 1989, and;

Whereas Law No. 8.723 of October 28th, 1993, which provides for the reduction of pollutants by motor vehicles as integral part of the National Environment Policy; and the Provisional Measure that institutes the Automotive regimen;

Whereas the requirements of the Air Pollution Control Program by Motor Vehicles (PROCONVE) established by the National Environment Council – CONAMA through CONAMA Resolution No. 18 of June 6th, 1986, CONAMA Resolutions No. 01 and 02 of January 11th, 1993 and other complementary resolutions of CONAMA;

Whereas the imported vehicles are obligated to observe the same limits of gases emission and noise levels that those established for the national vehicles;

Whereas the imported vehicles may only be commercialized after the acquisition before the Brazilian Institute of Environment (IBAMA), of the license for use of the Vehicle or Engine Configuration Use (LCVM);

Whereas the national interests in the use of vehicles which incorporate the technological advances already internationally implemented.

Whereas the specifications of the automotive fuels in effect in the country, resolves:

Art. 1 The imported automotive vehicles are obligated to observe the same pollutants emission and noise level limits established for

the national vehicles by obtaining the License for Use of the Vehicle or Engine Configuration (LCVM) by the importer, individual or entity with the Brazilian Institute of Environment (IBAMA-Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), as required by the Articles 4 and 5 of Law No. 8.723 of October 28th, 1993.

Art 2. To obtain the LCVM mentioned in the previous Article, the importer, individual or entity shall meet the requirements contained in Attachment I "Requirements for obtaining the License for Use of the Vehicle or Engine Configuration (LCVM)" of this Ordinance.

§1 – The LCVM is valid only for the importer, vehicle model and the calendar year indicated therein.

§ 2 – For the engines or vehicles with the same configurations as those previously licensed, characterized by the respective attachments and that remain subject to the same requirements, the LCVM revalidation is allowed upon request of the importer to IBAMA, taking the responsibility for the continuity of the specifications already approved of the vehicles or engines.

§ 3 – The motor vehicles' import and customs clearance may be made by third parties, individuals or entities, exclusively to companies holding the LCVM under the following conditions:
I – presentation to IBAMA of a copy of the agreement signed between the parties, which characterize the delivery link of all imported vehicles by the contracted party to the contracting party;

II – extension to the contracted individual or entity of the responsibilities imputed to the importer, provided for in the Art. 7 of this Ordinance.

Art. 3 The responsible agencies for permitting motor vehicles' import and customs clearance shall require the LCVM presentation by the importer.

Art. 4 Upon request, according to the model in Attachment II, IBAMA through LCVM Exemption Certificate shall relieve the importer from the obligations contained in the Article 1 for imported vehicles or engines to be used as prototypes for emission tests and adjustment tests for 'economic feasibility test', adjusted for the disabled use, donation to philanthropic entities, for use by the holder of privileges and diplomatic or consular immunities, as well as old vehicles' collection.

Sole paragraph. All vehicles mentioned in this Article shall only be traded after obtaining LCVM on behalf of its importer and for the respective model, except those for use by the holder of diplomatic or consular privileges and immunities as foreseen in the Vienna Convention on Diplomatic and Consular Relations, promulgated by Decrees No. 56435 of June 8th, 1965 and No. 61078 of July 26th, 1967, respectively.

Art. 5 IBAMA, at its discretion, may issue an LCVM based on the test reports performed abroad in laboratory, according to the Brazilian standards and previously checked and recognized by IBAMA or INMETRO accredited.

Art. 6 For motorcycles, scooters, tricycles, mopeds, bicycles with auxiliary motor and similar vehicles import, the importer shall demonstrate the noise levels established in CONAMA Resolution No. 2 of January 11th, 1993, according to the procedure contained thereof.

Sole paragraph. After meeting all the requirements, IBAMA shall issue the "Compliance Statement" through its Control and Inspection Board, according to the model in the attachment III, which will be the qualified document for submitting to the traffic, foreign trade and customs authorities.

Art. 7 The importer is responsible for any voluntary or involuntary action or omission which represents noncompliance with the standards set forth in this Ordinance, including the costs arising from any required certification, tests, withdrawal, addition or repairs.

Art. 8 Penalties foreseen in the environment control legislation shall be applied to the violator of the provisions hereof.

Art. 9 IBAMA shall issue the LCVM, Compliance Statement and Certification mentioned in the Art. 4, within up to 60 working days, from the delivery date of all required information to the full compliance with the requirements set forth in this Ordinance.

Art. 10. This Ordinance shall be effective on the date of its publication.

Art. 11. The provisions in contrary are revoked, especially IBAMA Ordinance No. 1937 of September 28th, 1991.

Eduardo de Souza Martins
President

Attachment I

REQUIREMENTS FOR OBTAINING LICENSE FOR USE OF VEHICLE OR ENGINE CONFIGURATION (LCVM) FOR IMPORTED VEHICLES

1 – For obtaining an LCVM, the importer shall submit a request to IBAMA and to the accredited agency for analysis in 2 copies, being that, the characterization terms of the vehicle and the supplementary information, according to the attachments A1, A2, B1, B2, C1, C2 and C3 (CONAMA Resolution No. 18 of June 6th, 1986) and the emission test reports of at least one vehicle or engine of each configuration to be imported tested three (3) times, shall be sent only to the accredited agency.

2 – The compliance to the emission limits set forth by the current legislation should be confirmed by tests, by using national standard fuel, according to the Brazilian standards in laboratories recognized by IBAMA or INMETRO accredited.

3 – The null emission of crankcase gases shall be proven, through a detailed description of the deployed control system, which will depend on IBAMA's approval.

4 – The evaporative emission limit compliance shall be proven through test or, at IBAMA's discretion, through an analysis of the deployed control system project, based on similarity to the other configurations already approved.

5 – The noise level compliance shall be proven by tests according to the Brazilian standards in laboratories recognized by IBAMA or INMETRO accredited, as established in CONAMA Resolution No. 1 of January 11th, 1993.

6 – The importers, legal entities, shall send a sales volume report of the models and configurations of vehicles or engines traded by it to IBAMA on semiannually basis.

Attachment II (Model)

"APPLICATION FOR LCVM EXEMPTION

to IBAMA Superintendence in (State)
(applicant), CPF or CNPJ No. _____resident/ established at _____comes through this apply for the exemption mentioned in the Article 4 of IBAMA Ordinance No. 086/96 of October 17th, 1996, from this Institute, to release from the obligation to get the Import License with the Foreign Trade Operation Department – DECEX (Departamento de Operações de Comércio Exterior) and customs release with the Federal Income Revenue - DpRF, concerning vehicle's import as described below:

EXEMPT CONDITION
( ) prototypes for emission tests and adaptation tests;
( ) for economic feasibility tests;
( ) adapted for use by disabled people;
( ) donation to philanthropic entities (attach documentation to prove);
( ) for diplomatic use (attach approval document from Itamaraty – Foreign Ministry);
( ) for own use (attach Certificate of Origin).

VEHICLE CHARACTERISTICS
» vehicle make/model
» type of fuel
» vehicle chassis number with 17 digits (*VIN*- Vehicle Identification Number)
» vehicle origin (country where the vehicle is coming from)
» importer name/CNPJ/CPF

I hereby declare to be aware of the § 2 content of the Article 4 of IBAMA Ordinance No. 086/96 dated October 17th, 1996, i.e., regarding the impossibility of selling this vehicle before obtaining the LCVM (which can only be obtained according to the procedures set forth in the Article 2 of the respective Ordinance and for brand new vehicles), according to the Article 5 of Law No. 8723/95, being of my entire and exclusive responsibility the cost and consequences of any irregular condition found in that vehicle by competent authorities.

Respectfully
Submitted

Name and Signature"

Attachment III

INSTITUTO BRASILEIRO DO MEIO AMBIENTE E DOS RECURSOS NATURAIS RENOVÁVEIS
CONTROL AND INSPECTION BOARD - DIRCOF

COMPLIANCE STATEMENT

We hereby state for all due purposes that (applicant) CPF/CNPJ No. has complied with the procedures regarding the compliance with CONAMA Resolution No. 2 of January 11th, 1993, regarding the noise levels for the vehicle model(s), classified as motorcycles, scooters, tricycles, mopeds, bicycles with auxiliary motor or similar vehicles, mentioned in the Article 6 of IBAMA Ordinance No. 086/96 of October 17th, 1996, listed in the table below:

MAKE/MODEL	VERSION	ENGINE SIZE	COUNTRY OF ORIGIN

Please note further that such Statement does not imply, by IBAMA and before third parties, in conformity certification nor value judgment of any kind, being the importer's entire and exclusive responsibility the cost and consequences of any irregular condition found in that(those) vehicle(s) by competent authorities.

Brasília-DF

Control and Inspection Board

Regulates the procedures for motor vehicles and motorcycles import as for the requirements of Air Pollution Control Program by Motor Vehicles – PROCONVE. Official Gazette (D.O.U.) of 10.21.1996.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), exercising the powers conferred to him by the 2Art. 4 of Regimental Structure attached to Decree No. 78 of April 5th, 1991, and the 8Art. 3, Item XIV, of Bylaws, approved by Ministerial Ordinance GM No. 445 of August 16th, 1989, and;

Whereas Law nº 8.723, of October 28th, 1993, that prescribes the reduction of the emission of pollutants by automotive vehicles, is an integral part of the Environment National Policy;

Whereas the prescriptions of the Air Pollution Control Program by Motor Vehicles (PROCONVE) instituted by the National Council for Environment through CONAMA Resolution No. 18 of May 6th, 1986, and other supplementary Resolutions and IBAMA Ordinance No. 86 of October 17, 1996;

Whereas the Inspection and Maintenance Programs (I/M) of vehicles in use which had their basic guidelines and emission standards set by CONAMA Resolution No. 7 of August 31st, 1993, supplemented by CONAMA Resolution No. 227 of August 20th, 1997;

Whereas the environmental interests in the use of vehicles that incorporate technological advances in emissions already implemented or approved in the country;

Whereas the need for continuous updating of PROCONVE as well as the completion of its implementation procedures, resolves:

CONFIGURATION CERTIFICATION

Art. 1 For national or imported motor vehicles conformity certification purposes with PROCONVE, the applicants should submit

to IBAMA-accredited technical agent, duly fulfilled, the Attachments A1, A2, B1, B2, B3, C1 C2 and C3 of this Ordinance, as appropriate.

Art. 2 – The emission tests for configuration certification purposes shall be carried out in Brazil by an IBAMA-inspected laboratory, belonging to the interested party or third parties, according to the Brazilian standards and followed by IBAMA or by an accredited technical agent, as deemed necessary.

§1 – The manufacturers or importers shall inform with at least thirty (30) days in advance, the vehicles/engines availability date to perform the tests.

§ 2 - Where there is evidence that the lack of local conditions require testing abroad, it shall be at IBAMA's discretion to approve of the tests schedule, local vehicles/engines to be tested and the monitoring team, which will consist of a maximum of three technicians.

§ 3 – The test monitoring costs shall be borne by the manufacturer or importer, and will be charged in the certification process by IBAMA-accredited technical agent;

Art. 3 The importer shall be exempted from the requirements of the 2nd Article of this Ordinance if the annual import volumes of vehicles or engines configurations do not exceed one hundred (100) units/year per vehicle or engine configuration. In this case, the importer shall provide, for configuration certification purposes, emission test reports performed in the manufacturer's laboratory or by local official recognized agency, being at IBAMA or its accredited technical agent discretion the acceptance of such tests.

Art. 4 IBAMA, at its discretion, may require a sample of vehicles/engines batches which were produced or imported to be sold in the country, for PROCONVE requirements compliance proof purposes by conducting emission tests, performed according to the Brazilian standards.

§1 – The costs of any conformity proof tests, carried out in Brazil or abroad, shall be borne by the manufacturer or importer;

§ 2 – Any irregularities found in the compliance of the legislation requirements by the manufacturer or importer shall imply the rejection of the LCVM issuance application, and they will be unable to sell the vehicle or engine object of the application throughout the national territory.

§ 3 - The finding of noncompliance with the requirements of legislation, after receiving the LCVM, implies in the cancellation thereof, as well as in the collection of the batches involved for repair by the manufacturer or importer, and subsequent evidence of compliance before IBAMA, according to the requirements of current legislation, ensuring the effectiveness of the corrections made.

Art. 5 The manufacturer or importer shall semiannually submit to IBAMA and to the accredited technical agent, sales volume report of the vehicles or engines models and configurations sold in the country through them.

Art. 6 Each License for Use of Vehicle or Engine Configuration will be charged the amount listed in "IBAMA Service Price List".

Art. 7 The rights and duties of an LCVM may be extended to legally constituted subsidiaries upon request by its matrix holder.

ASSEMBLED AND/OR MODIFIED VEHICLES

Art. 8 To obtain LCVM for assembled and/or modified vehicles' configurations, the responsible for assembling and/or modification shall submit directly to IBAMA's Control and Inspection Board the application contained in the attachment I hereof, regarding the assembling and/or modification performed, being exempted from the compliance certification process.

Sole Paragraph – The procedure contained in caput hereof only applies to the configuration of assembled and/or modified vehicles which have not undergone any components and/or systems' change that influence the emission values of gases, particulate matter, smoke and noise already declared and approved by their original manufacturers/importers. In case of diesel powered vehicles, the assembler or modifier shall keep the mandatory label application with the smoke emission value in free acceleration test, according to CONAMA Resolution No. 16 of December 13th, 1995.

Art. 9 When the assembling and/or modification implies in components and/or systems change that alter the emission values of gases, particulate matter, smoke and noise already declared and approved by the original manufacturer or importer, the assembler or modifier is required to approve such configurations according to the procedures foreseen in PROCONVE.

Art. 10. The motor vehicle manufacturer for special use in leisure activity, identified as "buggy" and that fits in the conditioning specifications below may request IBAMA for the compliance exemption to the legal exhaust and evaporative gas emission limits currently in force at PROCONVE.

a. domestic production;

b. handmade manufacturing, with production limited to one hundred (100) vehicles/year;

c. mass in running order of seven hundred (700) kilos (maximum);

d. vehicle without full traction or 4x4;

e. being the vehicle with mass in running order on flat surface with the front wheels parallel to the vehicle longitudinal centerline and the tires inflated to the pressure recommended by the manufacturer, it shall show an minimum scooping angle of 25º; a minimum output angle of 20º; ground clearance between the axles, minimum of 200 mm and ground clearance under the front and rear axles, at least 180 mm.

Art. 11. The manufacturer of special motor vehicle, considered as replica of classic or sports car, of original production discontinued for more than thirty (30) years now and with estimated production limited to thirty (3) units/year, may request IBAMA the exemption from meeting the legal limits of exhaust and evaporative gas emission currently in force at PROCONVE.

COMPLIANCE WITH THE INSPECTION AND MAINTENANCE PROGRAMS (I/M)

Art. 12. The company or the technician responsible for vehicles configuration assembling or modification approved before PROCONVE, or the manufacturer of any special motor vehicle (buggy or replica) is responsible for the performance of modified vehicle before the specific legislation requirements of the inspection and maintenance programs (I/M) for vehicles in use. The emission limits for inspection purposes of these vehicles are those defined for the model year before 1980, listed in Attachment I of CONAMA Resolution No. 7 of August 31st, 1993.

Art. 13. Light commercial vehicles of Otto cycle, model year 1997, with reference mass for testing up to 1,700 kg, according to the classification given by CONAMA Resolution No. 15 of December 13th, 1995, should comply with the emission limits of corrected carbon

monoxide (CO) at idle speed or at 2500 rpm, foreseen for the model year range from 1992 to 1996, listed in Attachment I of CONAMA Resolution No. 7 of August 31st, 1993.

HEAVY OTTO CYCLE VEHICLES

Art. 14. The heavy motor vehicles with Otto cycle engine, powered by liquid fuel, with maximum total authorized mass between 3856 kg and 4536 kg, may be alternatively tested as light commercial vehicle with reference mass for test greater than 1,700 kg, applying the provisions set forth in CONAMA Resolution No. 15 of December 13th, 1995.

Sole Paragraph – For the cases mentioned in the *caput* of this Article, the vehicle mass for test shall be the arithmetic average between the vehicle mass in running order and the maximum allowed total mass.

PASSING STOCKS IN PHASE CHANGE

Art. 15. When the new pollutants emission limits become effective for motor vehicles, the Licenses validity for Use of the Vehicle or Engine Configuration – LCVM issued for models that do not meet the new limits is extended until March 31th, the following year, as described in the paragraphs hereof.

§1 – For domestic or MERCOSUR vehicles produced until the last validity day of the respective LCVM;

§ 2 – For imported vehicles produced until the last validity day of LCVM and that have obtained the respective Import Licenses - IL until the same date.

§ 3 – The holders of the extended LCVM shall provide IBAMA until January 31st, the following year, with their validity, the number of vehicles per model covered by this article.

§ 4 – The data referring to the identification of each vehicle shall be available for consultation when requested by IBAMA.

§ 5 – These vehicles should be included in the Emission Quality Control Report – RCQE, referring to the 2nd semester of the LCVM validity year.

Art. 16. This Ordinance shall be effective on the date of its publication.

Eduardo de Souza Martins

Attachment I – (model)

LCVM APPLICATION FOR ASSEMBLED/MODIFIED CONFIGURATION

To Control and Inspection Board
(applicant) , CNPJ/CPF No._____, established at_ _____, comes through this apply for the License for the Use of Vehicle or Engine Configuration – LCVM for the configuration detailed below, assembled/modified by this company, from the original configuration (make/model/version), stating for all due purposes that such assembling or modification does not undergo any change of components and/or systems that influence in the equipment and noise emission values already approved/declared by the original manufacturer/importer.

VEHICLE CHARACTERISTICS

» make/ model / version of configuration (original)

» make/ model / version of the new configuration (assembled/modified)

» type of fuel (NBR 6067 and 6601)

» Mass in running order (NBR 6070) (kg), for original and modified vehicle

» Vehicle mass for test (NBR 6601) (kg), for original and modified vehicle

We hereby declare that we are aware of the content in Law No. 8.723 of October 28th, 1993, Article 6, regarding the assembling or modifications made in the motor vehicle configuration already approved by IBAMA, while ensuring that the vehicle described above will meet the legal requirements of the inspection and maintenance programs for vehicles in use (I/M), in force in the country, blaming us for any corrections to the project(s) or specification(s) in the event such vehicle(s) fail in future inspections, being of our entire and exclusive responsibility the costs and consequences arising from any finding of irregular condition in any assembled or modified vehicle, according to this application.
Respectfully
Submitted
Location and date
name, CPF and signature of the company's responsible
name, CPF, CREA and signature of the technical responsible for assembling or modification
Note: Use the Company's letterhead.

Attachment A1 (model)

ENGINE CHARACTERISTICS – OTTO CYCLE

1. ENGINE DESCRIPTION

1.1. Manufacturer: [Full corporate name and address]

1.2. Importer: [Full corporate name and address]

1.3. Model: [Trade name and plant name when they are different]

1.4. Engine stroke: [2/4]

1.5. Cylinders number and arrangement:

1.6. Mounting position in the vehicle:

1.7. Cylinder diameter (mm):

1.8. Piston(s) path (mm):

1.9. Volumetric displacement (cm3):

1.10. Compression ratio:

1.11. Coolant:

1.12. Type of aspiration: [Natural / turbocharged]

1.13. Type of fuel:

1.14. Number of valves per cylinder:

2. OPERATING CHARACTERISTICS

2.1. Idling rotation (rpm): [*]

2.2. Maximum carbon monoxide concentration in idling (%):[*]

2.3. Maximum net effective power moment (Nm/rpm): [According to ISO 1585 standard]

2.4. Maximum net effective power (kW/rpm): [According to ISO standard 1585]

3. ELECTRONIC MANAGEMENT

3.1. Injection control module make, type and name: [Including mapping code if other than that shown on the part]

3.2. Ignition control module make, type and name: [Case incorporated to the previous, just point out; if not, include mapping code if other than that shown on the part]

3.3. Transmission module make, type and name: [Case incorporated to the previous, just point out; if not, include mapping code if other than that shown on the part]

4. MIX FORMATION

4.1. Per fuel injection

4.1.1. Type: (analog/digital, mono/multipoint, simultaneous/semi-/sequential, direct/indirect)

4.1.2. System description: [Attach diagrams, input and output parameters and components]

4.1.3. Injection valve feeding pressure (kPa): [*]

4.2. Per carburetor

4.2.1. Carburetors' amount:

4.2.2. Make and model: [Describe the operation of all contained systems]

4.2.3. Seals: [Describe type and position]

4.2.4. Auxiliary starting devices, including throttle: [Describe the operation mode]

4.3. Fuel transfer pump: [mechanic/electric, location]

5. IGNITION SYSTEM

5.1. System description: [Attach diagrams, input and output parameters and components]

5.2. Initial advance (º):[*]

5.3. Opening of the spark plug electrodes (mm):

6. INTAKE AND EXHAUST SYSTEM

6.1. Air filter: [Mention the type of filter element and the type of service]

6.2. Turbocharger and its maximum operating pressure (kPa): [Mention the type]

6.3. Describe the intake system: [Attach drawings and schemes detailing and positioning the components]

6.4. Intake geometry variation system: [Describe the operation and attach scheme]

6.5. Valves triggering

6.5.1. Number of intake and exhaust valves and their maximum openings (mm):

6.5.2. Number of valve command trees per cylinder roll and its location:

6.5.3. Valve opening and closing angles (º):

6.5.4. Angle variation devices / opening lifting: [Describe the system operation and the obtained variations]

7. ANTI-POLLUTION DEVICES

7.1. Recirculation of crankcase gases: [Describe the operation and attach scheme]

7.2. Recirculation of exhaust gases: [Describe the operation and attach scheme]

7.3. Exhaust air injection: [Describe the operation and attach scheme]

7.4. Others: [Describe the operation and attach scheme where applicable]

8. LIST OF COMPONENTS MENTIONED IN THE PREVIOUS COMPONENT ITEMS, ATTACHMENT ITEM, QUANTITY, MANUFACTURER, CODE

Component	Attachment item	Quantity	Manufacturer	Code

[In the components' list, the code must be that stamped on the part]

Notes:

a) The indicated instructions between [brackets] and these notes should not be transcribed in filling the Attachments.

b) When an item is not applicable, indicate "N.A.". The items derived from this should be omitted.

c) In case of non-conventional engines or systems, indicate the equivalent data for the requested items.

d) In the items marked with (*), tolerances should be specified.

e) The requested descriptions and schemes should be presented in "APPENDIXES" with the same numbering of the corresponding item.

Attachment A2 (model)

ENGINE CHARACTERISTICS – DIESEL CYCLE

1. ENGINE DESCRIPTION

1.1. Manufacturer: [Full corporate name and address]

1.2. Importer: [Full corporate name and address]

1.3. Model: [Full manufacturer trade name when they are different]

1.4. Engine stroke: [2/4]

1.5. Cylinders number and arrangement:

1.6. Mounting position in the vehicle:

1.7. Cylinder diameter (mm):

1.8. Piston(s) path (mm):

1.9. Volumetric displacement (cm^3):

1.10. Compression ratio:

1.11. Coolant:

1.12. Type of aspiration: [Natural / turbocharged]

1.13. Type of fuel:

1.14. Type of Injection: [direct/indirect, type of combustion chamber]

1.15. Number of valves per cylinder:

1.16. Compliance phase of CONAMA Resolution No. 8/93:

1.17. Vehicular application type: [Road bus/urban bus/truck/others]

2. OPERATING CHARACTERISTICS

2.1. Idling rotation (rpm): [*]

2.2. Load cut rotation (rpm): [*]

2.3. Non-load cut rotation (rpm): [*]

2.4. Working temperature of the lubricating oil (ºC):

2.5. Maximum allowable intake depression (kPa):

2.6. Maximum exhaust back pressure (kPa):

2.7. Maximum net effective power moment (Nm/rpm): [According to ISO 1585 standard]

2.8. Maximum net effective power (kW/rpm): [According to ISO standard 1585]

2.9. Procedure for the operating temperature stabilization: [Describe]

3. ELECTRONIC MANAGEMENT

3.1. Injection control module make, type and name: [Including mapping code if other than that shown on the part]

3.2. Transmission module make, type and name: [Case incorporated to the previous, just point out; if not, include mapping code if other than that shown on the part]

4. INJECTION SYSTEM

4.1. Injection pump or equivalent

4.1.1. Make, type and name: [Correlate with item 3 when electronic]

4.1.2. Injection control function code:

4.1.3. Maximum flow (mm3/cycle): [*]

4.1.4. Seals: [location type and scheme]

4.1.5. Static injection point (º):

4.1.6. Nozzle opening pressure (MPa):

4.2. Regulator or equivalent

4.2.1. Make, type and name:

4.2.2. Operation description:

4.3. Auxiliary injection correction devices: [Centrifugal advance or others]

4.4. Fuel transfer pump

4.4.1. Work pressure (kPa):

4.4.2. Type and location: [mechanic/electric]

5. INTAKE AND EXHAUST SYSTEM

5.1. Air filter: [Mention the type of filter element and the type of service]

5.2. Turbocharger and its maximum operating pressure (kPa): [Mention the type]

5.3. Air cooler: [Mention the type]

5.4. Describe the intake system: [Attach drawings and schemes detailing and positioning the components]

5.5. Intake geometry variation system: [Describe the operation and attach scheme]

5.6. Valves triggering

5.6.1. Number of intake and exhaust valves and their maximum openings (mm):

5.6.2. Number of valve command trees per cylinder roll and their location:

5.6.3. Valve opening and closing angles (º):

5.6.4. Angle variation devices / opening lifting: [Describe the system operation and the obtained variations]

6. AUXILIARY COLD START DEVICE

[Describe the system, its location and operating procedures by the user]

7. ANTI-POLLUTION DEVICES

7.1. Recirculation of crankcase gases: [Describe the operation and attach scheme]

7.2. Recirculation of exhaust gases: [Describe the operation and attach scheme]

7.3. Exhaust air injection: [Describe the operation and attach scheme]

7.4. Others: [Describe the operation and attach scheme when applicable]

8. LIST OF COMPONENTS MENTIONED IN THE PREVIOUS COMPONENT ITEMS, ATTACHMENT ITEM, QUANTITY, MANUFACTURER, CODE

Component	Attachment item	Quantity	Manufacturer	Code

[In the components' list, the code must be that stamped on the part]

Notes:
a) The indicated instructions between [brackets] and these notes should not be transcribed in filling the Attachments.

b) When an item is not applicable, indicate “N.A.”. The items derived from this should be omitted.

c) In case of non-conventional engines or systems, indicate the equivalent data for the requested items.

d) In the items marked with (*), tolerances should be specified.

e) The requested descriptions and schemes should be presented in "APPENDIXES" with the same numbering of the corresponding item.

Attachment B1 (model)

LIGHT PASSENGER VEHICLE CONFIGURATION CHARACTERISTICS

1. VEHICLE CONFIGURATION

1.1. Manufacturer: [Full corporate name and address]

1.2. Importer: [Full corporate name and address]

1.3. Brand /Model/Version: [According to RENAVAM registration]

1.4. Type of fuel:

1.5. Engine used: [According to item 1.3 “Model” of attachment A1/A2]

1.6. Type of vehicle body: [According to RENAVAM Table]

1.7. Mass in running order (kg): [According to NBR 6070]

1.8. Vehicle mass for test (kg): [According to NBR 6601]

1.9. Front area of the vehicle and protuberances (m2): [According to NBR 6601]

1.10. Roll resistive power at 80.5 km/h (kW): [According to NBR 6601, including the method used]

2. TRANSMISSION

2.1. Type: [manual /automatic]

2.2. Nr. of gear shifts:

2.3. Transmission relations: 1st shift, 2nd shift, ...

2.4. Automatic transmission characteristics: [switch options and/or manual switch, where applicable]

2.4.1. Maximum ratio of torque converter:

2.5. Final transmission relation:

2.6. Traction type: [4x2/4x4, selection options]
2.7. Driver shaft: [front / rear / integral]
2.8. Tires
2.8.1. Type:
2.8.2. Measure:
2.8.3. Dynamic radius (mm):

3. FUEL TANK

3.1. Capacity (l):
3.2. Position on the vehicle:
3.3. Building material:
3.4. Evaporative emission control system description: [Attach scheme]
3.5. Vapor-liquid separator: [Position on the vehicle]
3.6. Fuel vapors collector and storer: [Position on the vehicle]
3.6.1. Absorbent material:
3.6.2. Pressure and Purge control valve: [Position in the system]

4. EXHAUST SYSTEM

4.1. System description: [Attach scheme]
4.2. Catalyst
4.2.1. Manufacturer:
4.2.2. Quantity and arrangement:
4.2.3. Substrate: [quantity, material and number of cells per area unit]
4.2.4. Volume (cm3):
4.2.5. Load of each noble metal (g):
4.3. Number and diameter (mm) of the exhaust pipe(s):

5. LIST OF COMPONENTS MENTIONED IN THE PREVIOUS COMPONENT ITEMS, ATTACHMENT ITEM, QUANTITY, MANUFACTURER, CODE

Component	Attachment item	Quantity	Manufacturer	Code

[In the components' list, the code must be that stamped on the part]

Notes:
a) The indicated instructions between [brackets] and these notes should not be transcribed in filling the Attachments.

b) When an item is not applicable, indicate "N.A.". The items derived from this should be omitted.

c) In case of non-conventional systems, indicate the equivalent data for the requested items.

d) The requested descriptions and schemes should be presented in "APPENDIXES" with the same numbering of the corresponding item.

7. OTHER INFORMATION

7.1 Type of gas used in air conditioning (when applicable)

7.2 Which components use asbestos in their composition (where applicable)

Attachment B2 (model)

HEAVY DUTY VEHICLE CONFIGURATION CHARACTERISTICS

1. VEHICLE CONFIGURATION

1.1. Manufacturer: [Full corporate name and address]

1.2. Importer: [Full corporate name and address]

1.3. Brand /Model/Version: [According to RENAVAM registration]

1.4. Type of fuel:

1.5. Engine used: [According to item 1.3 "Model" of attachment A1/A2]

1.6. Type of vehicle body: [According to RENAVAM Table]

1.7. Number of passengers:

1.8. Maximum total indicated/allowed mass (t): [According to NBR 6070; TGW]

1.9. Maximum indicated/allowed mass of combined vehicle (t): [According to NBR 6070; CMT]

2. TRANSMISSION

2.1. Type: [manual /automatic]

2.2. Nr. of gear shifts:

2.3. Automatic transmission characteristics: [switch options and/or manual switch, when applicable]

2.3.1. Maximum ratio of torque converter:

2.4. Rear axle ratio:

2.5. Traction type: [4x2/4x4]

2.6. Number of axles

3. FUEL TANK

3.1. Capacity (l):

3.2. Position on the vehicle:

3.3. Building material:

4. EXHAUST SYSTEM

4.1. System description: [Attach scheme]

4.2. Catalyst

4.2.1. Manufacturer:

4.2.2. Quantity and arrangement:

4.2.3. Substrate: [quantity, material and number of cells per area unit]

4.2.4. Volume (cm3):

4.2.5. Load of each noble metal (g):

4.3. Other exhaust emission control systems
[Describe operation, attach schemes and mention components]

5. SMOKE VALUE LABEL IN FREE ACCELERATION

[Only for Diesel powered vehicles, according to CONAMA Resolution No. 16/95 - attach label, copy or drawing]

6. LIST OF COMPONENTS MENTIONED IN THE PREVIOUS ITEMS

Component	Attachment item	Quantity	Manufacturer	Code

[In the components' list, the code must be that stamped on the part]

Notes:

a) The indicated instructions between [brackets] and these notes should not be transcribed in filling the Attachments.

b) When an item is not applicable, indicate “N.A.”. The items derived from this should be omitted.

c) In case of non-conventional systems, indicate the equivalent data for the requested items.

d) The requested descriptions and schemes should be presented in "APPENDIXES" with the same numbering of the corresponding item.

7. OTHER INFORMATION

7.1 Type of gas used in air conditioning (when applicable)

7.2 Which components use asbestos in their composition (when applicable)

Attachment B3 (model)

LIGHT COMMERCIAL VEHICLE CONFIGURATION CHARACTERISTICS

1. VEHICLE CONFIGURATION

1.1. Manufacturer: [Full corporate name and address]

1.2. Importer: [Full corporate name and address]

1.3. Brand /Model/Version: [According to RENAVAM registration]

1.4. Type of fuel:

1.5. Engine used: [According to item 1.3 “Model” of attachment A1/A2]

1.6. Type of vehicle body: [According to RENAVAM Table]

1.7. Number of passengers:

1.8. Mass in running order (kg): [According to NBR 6070]

1.9. Vehicle mass for test (kg): [According to NBR 6601]

1.10. Maximum total mass (kg): [According to NBR 6070]

1.11. Front area of the vehicle and protuberances (m2): [According to NBR 6601]

1.12. Roll resistive power at 80.5 km/h (kW): [According to NBR 6601, including the method used]

2. TRANSMISSION

2.1. Type: [manual /automatic]

2.2. Nr. of gear shifts:

2.3. Transmission relations: 1st shift, 2nd shift, ...

2.4. Automatic transmission characteristics: [switch options and/or manual switch, where applicable]

2.4.1. Maximum ratio of torque converter:

2.5. Final transmission ratio:

2.6. Traction type: [4x2/4x4, selection options]

2.7. Driver shaft: [front / rear / integral]

2.8. Tires

2.8.1. Type:

2.8.2. Measure:

2.8.3. Dynamic radius (mm):

3. FUEL TANK

3.1. Capacity (l):

3.2. Position on the vehicle:

3.3. Building material:

3.4. Evaporative emission control system description: [Attach scheme]

3.5. Vapor-liquid separator: [Position on the vehicle]

3.6. Fuel vapors collector and storer: [Position on the vehicle]

3.6.1. Absorbent material:

3.6.2. Pressure and Purge control valve: [Position in the system]

4. EXHAUST SYSTEM

4.1. System description: [Attach scheme]

4.2. Catalyst

4.2.1. Manufacturer:

4.2.2. Quantity and arrangement:

4.2.3. Substrate: [quantity, material and number of cells per area unit]

4.2.4. Volume (cm3):

4.2.5. Load of each noble metal (g):
4.3. Number and diameter (mm) of the exhaust pipe(s):

5. OFF-ROAD USE CHARACTERISTICS

[Describe according to CONAMA Resolution No. 15/95, where applicable]

6. SMOKE VALUE LABEL IN FREE ACCELERATION

[Only for Diesel powered vehicles, according to CONAMA Resolution No. 16/95 - attach label, copy or drawing]

7. LIST OF COMPONENTS MENTIONED IN THE PREVIOUS ITEMS

Component	Attachment item	Quantity	Manufacturer	Code

[In the components' list, the code must be that stamped on the part]

Notes:

a) The indicated instructions between [brackets] and these notes should not be transcribed in filling the Attachments.

b) When an item is not applicable, indicate "N.A.". The items derived from this should be omitted.

c) In case of non-conventional systems, indicate the equivalent data for the requested items.

d) The requested descriptions and schemes should be presented in "APPENDIXES" with the same numbering of the corresponding item.

8. OTHER INFORMATION

8.1 Type of gas used in air conditioning (when applicable)

8.2 Which components use asbestos in their composition (where applicable)

Attachment C1 (model)

CONDITIONS AND OUTCOMES OF LIGHT VEHICLE EMISSION TESTS

1. VEHICLE CONFIGURATION

1.1. Manufacturer: [Full corporate name and address]
1.2. Importer: [Full corporate name and address]
1.3. Brand /Model/Version: [According to RENAVAM registration]
1.4. Type of fuel:
1.5. Engine used: [According to item 1.3 “Model” of attachment A1/A2]

2. EMISSION LABORATORY

2.1. Full corporate name and address:
2.2. Equipment characterization
2.2.1. Dynamometer:
2.2.2. Sampler:
2.2.3. Analyzers:
2.2.4. Aldehydes collection equipment:
2.2.5. Aldehydes analysis equipment:
2.2.6. Sealed chamber:
2.2.7. Particulate matter sampler:
2.2.8. Mass measuring device of particulate matter:
2.2.9. Consumption gauge:

3. VEHICLE CHARACTERIZATION

3.1. Year of manufacture / model:
3.2. Chassis number: [VIN]
3.3. Odometer:
3.4. License Plate:
3.5. Engine Number:
3.6. Mass in running order (kg): [According to NBR 6070]
3.7. Vehicle mass for test (kg): [According to NBR 6601]
3.8. Transmission

3.8.1. Type: [manual /automatic, identification code]

3.8.2. Number of speeds:

3.8.3. Selection option, where applicable: [for automatic transmissions with options, including manual shift]

3.8.4. Final drive ratio:

3.8.5. Drive option: [4x2/4x4]

3.8.6. Drive shaft: [front / rear/ integral]

3.9. Tires

3.9.1. Type:

3.9.2. Dimensions:

3.10. Injection control module make, type and designation: [Including mapping code if other than the code appearing on the part]

3.11. Ignition control module make, type and designation: [If embodied into the preceding, just indicate so; if not, include mapping code if other than the code appearing on the part]

3.12. Transmission module make, type and designation: [If embodied into the preceding one, just indicate so; if not, include mapping code if other than the code appearing on the part]

4. Fuel

4.1. Type:

4.2. Specific mass (kg/l) at (ºC):

5. STANDARDS EMPLOYED

5.1. Exhaust gas emissions:

5.2. Evaporative emissions:

5.3. Aldehyde emissions:

5.4. CO emission at idle speed:

5.5. Fuel consumption:

5.6. Particulate emission:

6. TEST CONDITIONS:

6.1. Equivalent inertia (kg):

6.2. PRR80 (kW):

6.3. Gear shift speed (km/h):

6.4. Vehicle volume (m3):

6.5. Fuel supply volume for test (l):

6.6. DIC response factor: [For alcohol-fueled vehicle evaporative test only]

7. FUEL HEATING CURVE; EVAPORATIVE EMISSION TEST TEMPERATURE, BAROMETRIC PRESSURE AND TIME RECORDING:
[ATTACH]

8. OPERATORS

8.1. Driver:

8.2. Analyst:

8.3. Sealed chamber analyst:

8.4. Responsible for test:

9. EXHAUST GAS EMISSION TEST RESULTS

Test Number:													**Final Average**
Date:													
Phase				**Average**				**Average**				**Average**	
Time:													
Distance Covered (km):													
Room Temperature (ºC):													
Barometric Pressure (mm Hg):													
Relative Humidity (%):													
Comb. Mass (g) or Volume (L):													
Measured Autonomy (km/l):													
Stoichiometric Autonomy (km/l):													

CO Emission (g/ km):													
CO_2 Emission (g/ km):													
NOx Emission (g/ km):													
HC Emission (g/ km):													
M.P. Emission (g/ km):													
Aldehyde Emission (g/km):													
CO Emission at Idle Speed (%):													
CO Emission at Idle Speed (%):													
Engine Idle Speed (rpm):													

10. EVAPORATIVE EMISSION TEST RESULTS

Test Number:										**Final Average**
Date:										
Phase	1	2	**Total**	1	2	**Total**	1	2	**Total**	
Starting Time:										
Starting Temperature (ºC):										
Final Temperature (ºC):										
Barometric Pressure (kPa):										

Attachment C2 (model)

GAS, SOOTH, PARTICULATE AND SMOKE BENCH TEST CONDITIONS AND RESULTS

1. ENGINE CONFIGURATION

1.1. Manufacturer: [Full corporate name and address]

1.2. Importer: [Full corporate name and address]

1.3. Model: [Manufacturer's full trade name if other than the above]

1.4. Fuel type:

1.5. Volumetric displacement (cm3):

1.6. Suction type: [Natural / supercharged]

1.7. CONAMA Resolution 8/93 compliance phase:

1.8. Manufacturing year:

1.9. Engine number:

2. EMISSION LABORATORY

2.1. Full Corporate Name and address:

2.2. Laboratory altitude (m):

2.3. Itemization of equipment units

2.3.1. Dynamometer:

2.3.2. Analyzers:

2.3.3. Particulate sampler:

2.3.4. Particulate mass weighing scale:

2.3.5. Load test opacity meter:

2.3.6. Free acceleration test opacity meter:

2.3.7. Consumption meter:

3. OPERATING CHARACTERISTICS

3.1. Engine idle speed (rpm): [*]

3.2. Load cutoff speed (rpm): [*]

3.3. No-load cutoff speed (rpm): [*]

3.4. Intermediate engine speed (rpm): [*]

3.5. Lubricating oil operating temperatures (º C):

3.6. Maximum allowable depression at intake (kPa):

3.7. Maximum exhaust counter-pressure (kPa):

3.8. Maximum net effective torque (Nm/rpm): [Per ISO 1585 Standard]

3.9. Maximum net effective power (kW/rpm): [Per ISO 1585 Standard]

3.10. Operating temperature stabilization procedure: [Describe]

4. INJECTION SYSTEM

4.1. Injection pump or equivalent

4.1.1. Make, type and designation: [Correlate with item 3 where electronic type]

4.1.2. Injection control function code:

4.2. Regulator or equivalent

4.2.1. Make, type and designation:

4.3. Injection control module make, type and designation: [Including mapping code if other than code appearing on the part]

5. FUEL

5.1. Type:

5.2. Specific mass (kg/l) at (ºC):

6. STANDARDS EMPLOYED

6.1. Exhaust gas emissions:

6.2. Sooth emission at constant rate:

6.3. Fuel consumption:

6.4. Particulate emission:

6.5. Smoke emission at free acceleration:

7. OPERATORS

7.1. Analyst:

7.2. Responsible for test:

8. EXHAUST GAS EMISSION TEST DATA

TEST No.:			DATE:										
POINTS	1	2	3	4	5	6	7	8	9	10	11	12	13
Angular velocity (rpm)													
Load observed (Nm)													
Barometric pressure (kPa)													
Dry bulb temperature (ºC)													
Wet bulb temperature (ºC)													
Intake air temperature (Cº)													
Burette fuel temperature (ºC)													
Depression at intake (kPa)													
Intake air flow rate (m3/h)													
Fuel consumption (kg/min)													
Exhaust counter-pressure (kPa)													
CO concentration metered (ppm)													
CO_2 concentration metered (%)													
HC concentration metered (ppm)													
NOx concentration metered (ppm)													

9. PARTICULATE TEST DATA

Initial main filter mass (g):	Initial secondary filter mass (g):
Final main filter mass (g):	Final secondary filter mass (g):
Total M.P. mass (g):	

10. EXHAUST GAS AND PARTICULAR EMISSION TEST RESULTS

Specific “CO” emission	(g/kW.h):
Specific “HC” emission	(g/kW.h):
Specific “NOx” emission	(g/kW.h):
Specific “M.P.” emission	(g/kW.h):

11. CONSTANT RATE SOOTH TEST RESULTS

Point	Speed (rpm)	Opacity (*)	Opacity (m^{-1}) (*)	Opacity –1 (*)	Average Opacity- (m^{-1}) (*)	Opacity Limit (m^{-1}) (*)
1 2 3 4 5						

Note: (*) The opacity measurements may be carried out in “UB” too.

12. RESULTS OF THE SMOKE EMISSION TEST AT FREE ACCELERATION

Pressure (kPa):					**Temperature (ºC):**			**Humidity (%):**				
Series	M.L.	1	2	3	4	5	6	7	8	9	10	Average

Note: indicate the 4 measurements considered for determining the average.

Attachment C3 (model)

CONDITIONS AND RESULTS OF TESTS FOR EMISSION OF SMOKE AT FREE ACCELERATION ON VEHICLE

1. VEHICLE CONFIGURATION

1.1. Manufacturer: [Full corporate name and address]
1.2. Importer: [Full corporate name and address]
1.3. Make / Model / Version: [according to RENAVAM registration]
1.4. Fuel type:
1.5. Engine used: [Per Item 1.3 "Model" of attachment A1/A2]
1.6. Manufacturing year / model year:
1.7. Chassis number: [VIN]
1.8. Odometer:
1.9. License plate:
1.10. Transmission: [manual /automatic]

2. TESTING CONDITION

2.1. Standard employed:
2.2. Opacity meter:
2.3. Analyst:
2.4. Responsible for test:

3. TEST RESULTS

Place:					Date:			Altitude (m):				
Pressure (kPa):					Temperature (ºC):			Humidity (%):				
M.L. Speed (rpm):					Cutoff Speed (rpm):							
Exhaust System: [Pos. / Form. / Dia.]												
Serie	M.L.	1	2	3	4	5	6	7	8	9	10	Average

Note: indicate the 4 measurements considered for determining the average.

Regulates the securing of LCVM for small quantities of vehicles (Official Gazette (D.O.U.)) of 10/25/2006.

THE HEAD OF THE BRAZILIAN INSTITUTE FOR THE ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, vested in the authority conferred upon him under article 26 (V) and (VIII) of Attachment I to the Government Agency Bylaws as approved by Decree No. 5.718 of March 13th, 2006, and article 95 (VI) of the Government Agency Internal Regulation as approved by GM/MMA Administrative Order No. 230 of May 14th, 2002.

Whereas, Law No. 8.723 of October 28th, 1993, which sets provisions on the decrease of emission of pollutants by automotive vehicles as an integral part of the National Environment Policy;

Whereas, the provisions in the Program for Air Pollution Control Program by Motor Vehicles (PROCONVE) created by the National Environment Council under CONAMA Resolution No. 18 dated May 6th, 1986, and all other supplementary resolutions;

Whereas, the need for ongoing update of the PROCONVE and supplementation of its performance procedures as well; and

Whereas, the propositions presented by the Environmental Quality Board (DIQUA) in IBAMA File No. 02001.001357/2006-24; resolve:

Art. 1. The following Paragraph shall be added to Article 2 of IBAMA Ordinance No. 167 dated December 26th, 1997:

“Art. 2. .....

§ 4. In the case of tests carried out abroad, recognition of laboratory cells shall be effective for 2 years, during which period the tests thus performed and not witnessed by IBAMA or by the partner technical agent may be accepted.”

Art. 2. The following Paragraph shall be added to article 3 of IBAMA Ordinance No. 167 of December 26th, 1997:

"Art.3. .....

Sole Paragraph. For an annual volume of sales within the domestic market of up to two (2) units of vehicles of the same make/model, IBAMA may exempt the individual or body corporate manufacturer/importer from the requirements contemplated in articles 1 and 2 of this Ordinance, as well as from the noise limits according to the following paragraphs:

I – For no more than 20 vehicles/year per manufacturer/importer, irrespective of make/model;

II – The exemption shall not apply to the light Diesel engine passenger cars;

III – The exemption referred to in this Paragraph shall not exempt the manufacturer/importer from applying for the respective Vehicle or Engine Configuration Use License – LCVM with IBAMA."

Art. 3. This Ordinance shall become operative on the date of its publication.

Marcus Luiz Barroso Barros

IBAMA ORDINANCE No. 29/2008

Submits to public inquiry, for a term of ninety (90) days from the date of publication of this Ordinance, the automotive NOx liquid reducer agent specification – ARLA. Official Gazette (D.O.U.) of 12/02/2008.

THE ACTING HEAD OF THE BRAZILIAN INSTITUTE FOR THE ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, vested in the authority conferred upon him under article 22 (V) of Attachment I to the Government Agency Structure as approved by Decree No. 6.099 dated 4/26/2007, published in the Official Gazette (D.O.U.) of the next day, resolve:

Art. 1. To submit to public inquiry, for a term of ninety (90) days from the date of publication of this Ordinance, the automotive NOx liquid reducer agent – ARLA 32 specified in attachment I to this ordinance in compliance with CONAMA Resolution No. 403 of November 11th, 2008, art. 11 § 3.

Art. 2. The specification proposal will be available during the inquiry period at website www.ibama.gov.br, at the Public Inquiry link, and the interested parties may forward suggestions and critical comments (which may be either accepted or not) in writing to the following address: IBAMA/ DIQUA – Diretoria de Qualidade Ambiental, SCEN Trecho 2 Edifício Sede do Ibama, Bloco C – CEP: 70818-900 – Brasília/DF, or over email PROCONVE.sede@ibama.gov.br.

Sebastião Custódio Pires

IBAMA ORDINANCE No. 08/2009

Authorizes the sale of in-transition inventories of light vehicles, mopeds and the like of every applicant company holding LVCM and LCM effective for the PROCONVE L4 and PROMOT II phases Official Gazette (D.O.U.) of 4/28/2009

THE HEAD OF THE BRAZILIAN INSTITUTE FOR THE ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, vested in the authority conferred upon him under Art. 22(V) of Decree No. 6.099, which approves of Ibama's Regulatory Structure, published in the Official Gazette (D.O.U.) of April 27th, 2007;

Whereas, Law No. 8.723 of October 28th, 1993 and CONAMA Resolutions No. 297 of February 26th, 2002 and No. 315 of October 29th, 2002;

Whereas, Governments's directions towards implementing actions that minimize the losses caused by the international financial crisis to the Brazilian production system;

Whereas, the large demand on the part of the industry brought to this IBAMA requesting for an extension of the period for selling the transition inventory of vehicles of PROCONVE L4 and PROMOT II phases owing to failure to sell the same by reason of lack of credit in the financial market;

Whereas, the terms of File 02001.002201/2009-11 and Order from the acting PFE National Chief Attorney resolved:

Art. 1. – To authorize the sale of the in-transition inventories of light vehicles, mopeds and the like of every applicant company holding LVCM and LCM effective for the PROCONVE L4 and PROMOT III phases.

§ 1. – The authorization referred to in the head of this article shall be effective only for vehicles produced or imported up to March 31st, 2009;

§ 2. – The manufacturers and importers shall forward to IBAMA, by May 5th, 2009, a report in electronic spreadsheet format (Attachment I) of this ordinance, containing the number of vehicles by make/model/version, VIN number, corresponding LCVM/LCM and, in the case of imported vehicles,

number of the respective Import License (LI), and another report with the same contents upon completion of sale of the entire inventory.

Art 2. – Production/importation of vehicles certified for the PROCONVE L4 and PROMOT II phases will not be allowed after March 31st, 2009.

§ 1 – On no grounds whatsoever will the term of Import Licenses validated by IBAMA until March 31st, 2009 be extended;

§ 2 – Completion of the importation process for automotive vehicles kept under the bonded warehousing system on this date will be authorized by IBAMA for completion of the importation process only upon documentary evidence of such condition.

Art. 3. – This ordinance shall become operative on the date of its publication.

Roberto Messias Franco

Attachment I

Company:

Make/Model/ Version	LCVM/LCM	LI	VIN
		Sub-Total (by M/M/V)	
		Total Company	

IBAMA DIRECTIVE No. 13/2002

Creates the Technical Agent Qualification Reference Statement for performing demonstration of conformity before PROCONVE Official Gazette (D.O.U.) of 7/24/2002

THE HEAD OF THE BRAZILIAN INSTITUTE FOR THE ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, appointed by Decree dated May 13th, 2002, vested in the authority conferred upon him under article 24 of Attachment I to Decree No. 3.833 of June 5th, 2001, and the provisions in article 95(VI) of IBAMA's Internal Regulation as approved by Ordinance GM/MMA No. 230 of May 14th, 2002, all of which have been published in the Official Gazette of the next succeeding date;

Whereas, Law No. 8.723 of October 28th, 1993, which sets provisions on the decrease of emission of pollutants by automotive vehicles as an integral part of the National Environmental Policy;

Whereas, the provisions in the Air Pollution Control Program by Motor Vehicles (PROCONVE) created by the National Environment Council under CONAMA Resolution No. 18 dated May 6th, 1986, and all other applicable Resolutions; and

Whereas, the need for consistently updating the PROCONVE and supplement its implementation procedures as well; resolve:

Art. 1. To establish the "REFERENCE STATEMENT FOR QUALIFICATION OF TECHNICAL AGENT WITH PROCONVE", contained in the Attachment to this Directive, for the purpose of selecting a Partner Technical Agent – ATC for performing the conformity demonstration services under PROCONVE.

Art. 2. The review of and approval to the ATC qualification documentation referred to in article 1 of this Directive shall rest at IBAMA's discretion on exclusive basis.

Art. 3. This Directive shall become operative on the date of its publication.

Rômulo José Fenandes Barreto Mello
Head of IBAMA

Attachment

REFERENCE STATEMENT FOR QUALIFICATION OF TECHNICAL AGENT WITH PROCONVE

1. SCOPE

This Reference Statement sets the conditions for qualification of Partner Technical Agent by means of Agreement with IBAMA for purposes of technical review designed to demonstrate conformity of a vehicle project/prototype or engine with PROCONVE.

2. DEFINITIONS

The following definitions are adopted for the purposes of this Reference Statement:

a) Partner Technical Agent (ATC) – non-profit public, private or mixed-economy institution lawfully established by a third party, which meets the requirements set in this Reference Statement;

b) Vehicle Emission Laboratory (LEV) – laboratory having facilities that are appropriate for measuring vehicle emissions, owned by public, private or mixed-economy institution, which must be accredited with the NATIONAL STANDARDIZATION, METROLOGY AND QUALITY INSTITUTE (INMETRO), or recognized by IBAMA;

c) Technical Opinion (PT) – document issued by ATC to IBAMA after verification of conformity of the vehicle project/prototype, or engine, with PROCONVE, upon compliance with the regulations, technical standards and procedures established by CONAMA and/or IBAMA;

d) Homologation – Issue by IBAMA of a Vehicle or Engine Configuration Use License (LCVM) based on PT;

e) Interested Party – individual or body corporate having an interest in securing the LCVM and that is answerable for all obligations arising out of the LCVM issued.

3. ATC QUALIFICATION REQUIREMENTS

a) To be registered with IBAMA's Federal Technical File on Environmental Defense Activities and Tools;

b) to allow IBAMA to carry out inspections at any time, by bearing the costs arising out thereof;

c) not to have any connections with vehicle assemblers, vehicle or engine manufacturers, legal representative of vehicle or engine assembler or manufacturer headquartered abroad;

d) to have its ATC-related activities strictly limited to the technical review of the conformity demonstration process regarding the vehicle prototype or engine under PROCONVE;

e) to structure the LEV with at least one dynamometer cell;

f) to make available to IBAMA a computerized database containing all information related to the demonstration processes;

g) to ensure the traceability of all demonstration processes;

h) to ensure through a Statement of Commitment, the confidentiality and protection of documents and information provided by the interested party;

i) to implement a quality policy through the establishment of a management system;

j) to possess proven technical qualification, technical staff certified for appraising vehicle emission control instruments and vehicle emission metering;

k) to specifically train and update its personnel;

l) to establish clear and fully described operating procedures and systems;

m) to keep updated quality records;

n) to establish a policy of independence against outside influences and pressures.

3.1 ATC Assignments

a) To strictly carry out the technical analyses necessary for demonstration of conformity of vehicle prototypes or engines regarding requirements and maximum vehicle emission levels pursuant to PROCONVE's regulations, technical standards and procedures, all as established by CONAMA and/or IBAMA;
b) request from and provide information to the interested parties on the conformity demonstration process;

c) to perform or witness on its own LEV or that of third parties the tests required for demonstration of conformity of vehicle prototypes or engines;

d) to perform the review of applications for extension of LCVM pursuant to the regulations and technical standards established for that purpose;

e) to issue PT to IBAMA within the periods established, after verification of conformity or not of vehicle prototypes or engines;

f) to charge the interested party for the service rendered;

g) to pass on to IBAMA the rates established under agreement related to the amount charged by ATC for the services provided by it;

h) whenever requested to do so, to provide support to IBAMA regarding solution of technical issues;

i) to investigate the vehicle emission jointly with or by IBAMA's formal order;

j) to implement all of IBAMA's decisions.

4. MISCELLANEOUS PROVISIONS

a) The ATC decisions shall be contemplated in and grounded on the technical standards and procedures established by CONAMA and/or IBAMA;

b) Any and every case not contemplated in the conformity process shall be submitted to IBAMA.

IBAMA DIRECTIVE No. 15/2002

Sets provisions on the process of securing the Conformity Certification for Natural Gas System Component Set, either domestic or imported, under the Air Pollution Control Program by Motor Vehicles (PROCONVE) Official Gazette (D.O.U.) de 26.08.2002.

THE HEAD OF THE BRAZILIAN INSTITUTE FOR THE ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, appointed by Decree of May 13th, 2002, published in the Official Gazette of the next succeeding day, vested in the authority conferred upon him by article 24 of Attachment I to Decree No. 3.833 of June 5th, 2001, which approved of IBAMA's Internal Regulation Structure published in the D.O.U of June 6th, 2001, and Art. 95(VI) of the Internal Regulation as approved by Ordinance GM/MMA No. 230 of May 14th, 2002, republished in the Official Gazette (D.O.U.) of June 21st, 2002;

Whereas, the provisions in CONAMA Resolution No. 291 of October 25th, 2001, published in the Official Gazette of April 25th, 2002, which regulates the set of components for converting vehicles to use natural gas and sets other provisions; resolve:

To enact this Directive for the purpose of establishing administrative procedures for implementation of the actions contemplated in the above Resolution:

I – HOMOLOGATION AND CERTIFICATION OF NATURAL GAS SYSTEM COMPONENT SET

Art. 1. For purposes of securing the conformity certification for the domestic or imported natural gas system component set with the Air Pollution Control Program by Motor Vehicles (PROCONVE), the interested parties shall forward a request to IBAMA's Partner Technical Agent along with the duly completed 'BIO-FUEL CONVERSION SYSTEM CHARACTERISTICS' FORM, Attachment I to this Directive.

Sole Paragraph. The conformity certification service will be directly charged to the interested party by IBAMA's partner technical agent.

Art. 2. For conformity certification homologation purposes, the concerned parties shall submit to IBAMA an application for the Environmental Certification for Use of Natural Gas on Automotive Vehicles (CAGN).

§ 1. Upon verification of conformity, IBAMA will issue the CAGN on behalf of applicant for each configuration.

§ 2. The amount specified in IBAMA's service price schedule will be charged for every CAGN issued.

§ 3. The rights and duties of a CAGN may be extended to lawfully established branches upon request by the main office holding such certification.

Art. 3. For configuration conformity certification purposes, the emission tests may be performed in Brazil at a laboratory of the interested party itself or a third party laboratory, witnessed by IBAMA or by the partner technical agent where deemed necessary.

§ 1. The laboratories referred to in the head of this article shall be inspected by IBAMA or accredited by INMETRO, pursuant to CONAM Resolution No. 291/01, article 6, NBR 6601 Standard.

§ 2. The manufacturers or importers shall communicate at least thirty (30) days in advance the date of availability of the vehicles/set for the tests to be carried out.

§ 3. In those cases where the lack of local conditions shall demonstrably require the tests to be performed abroad, approval to the test timeframe, place and vehicles/sets to be tested shall rest on IBAMA, which will inform the interested party of its staff that will witness the tests, to be made up of no more than three technicians.

§ 4. The costs in connection with any conformity demonstration test carried out in Brazil or abroad shall be borne by the manufacturer or importer.

Art. 4. IBAMA may request at its discretion for a sample of the lots of the Natural Gas System Component Set produced or imported for sale in the country, for purposes of substantiation of compliance

with PROCONVE requirements, upon performance of emission tests.

§ 1. Verification of failure to comply with the legislation requirements on the part of the manufacturer or importer will entail rejection of the application for issue of the CAGN; in such event the manufacturer or importer will be precluded from selling the Natural Gas System Component Set allover the national territory.

§ 2. Verification of failure to meet the legislation requirements after the CAGN has been secured shall entail cancellation of the CAGN and recall of the lots involved for repair by manufacturer or importer and subsequent demonstration to IBAMA that the current legislation requirements had been met, thus ensuring the efficacy of the corrections made.

Art. 5. The manufacturer or importer shall forward to IBAMA on semiannual basis a report on the volume of sale of models and configurations of Natural Gas System Component Sets marketed by it within the country.

II – COMPLIANCE WITH THE INSPECTION AND MAINTENANCE PROGRAMS (I/M)

Art. 6. The Natural Gas System Component Set manufacturer or importer or technical responsible for installation of such sets homologated by PROCONVE are responsible for performance of the converted vehicle in view of the requirements contained in the specific legislation governing the inspection and maintenance (I/M) programs for vehicles being used.

III – FINAL AND TRANSITORY PROVISIONS

Art. 7. For purposes of compliance with CONAMA Resolution No. 291/01, article 1, § 2, as of October 1st, 2002, at the time of registration of a converted vehicle, the State traffic departments shall require presentation of the Vehicle Safety Certificate – CSV in substitution for the CAGN, issued by the Inspection Body – OI accredited by INMETRO, and cause the wording "this GNV system meets CONAMA Resolution No. 291/01" to appear in the "Remarks" field.

Art. 8. The November 30th, 2002 is set as deadline for purposes of compliance with the provisions in CONAMA Resolution No. 291/01, article 2 item II, the Natural Gas System Component Set manufacturer or importer to present to IBAMA a statement on typical emission-related figures of its sets, by implementing the following procedures:

Normative Instruction IBAMA nº 15/2002

I – the tests for purposes of the typical Natural Gas System Component Set emission figures shall be carried out pursuant to NBR 6601 Standard;

II – the vehicle selected for performance of the test shall comply with the provisions in the NBR 6601 Standard, meet PROCONVE's PHASE III conditions and be typical of application of the Natural Gas System Component Set being tested;

III – one test with the original vehicle and fuel, two tests with the Natural Gas System Component Set installed on it and running on GNV fuel, and one test with the set installed but running on the original fuel shall be carried out.

Art. 9. Until such time as IBAMA's Environmental Licensing and Quality Committee shall otherwise determine, tests performed without having been witnessed by its technical staff and at laboratory without IBAMA's previous accreditation and selected by the manufacturer or importer shall be accepted for conformity certification purposes, always in compliance with article 6 of CONAME Resolution No. 291/01.

Art. 10. Those cases not contemplated herein shall be reviewed and decided by IBAMA's Environmental Licensing and Quality Committee. .

Art. 11. This Directive shall become operative on the date of its publication.

Rômulo José Fenandes Barreto Mello
Head of IBAMA

Attachment I

BIO-FUEL CONVERSION SYSTEM CHARACTERISTICS
OTTO-CYCLE ENGINES

1. CONVERSION SYSTEM (SET) MANUFACTURER/IMPORTER
1.1. Corporate Name, CNPJ, State Registration
1.2. Technical Responsible with CREA

2. TECHNOLOGICAL SYSTEM CONFIGURATION
2.1. PROCONVE PHASE I
2.2. PROCONVE PHASE II
2.3. PROCONVE PHASE III

3. ENGINE DESCRIPTION
3.1. Manufacturer
3.2. Model
3.3. Equipped vehicle Year/Model
3.4. Volumetric displacement (cm3)
3.5. Fuels employed

4. OPERATING CHARACTERISTICS FOR EACH FUEL
4.1. Engine idle speed (rpm)
4.2. Carbon monoxide concentration (% v) at idle speed and at 2,500 rpm
4.3. Hydrocarbon concentration (ppm C) at idle speed and at 2,500 rpm
4.4. Maximum actual net torque
4.5. Maximum actual net power output

5. INTAKE SYSTEM
5.1. Inform changes to the vehicle's original system, if any.

6. AIR-FUEL CHARGE FORMATION
6.1. By carburetor

6.1.1. NG supply metering system, accompanied by detailed illustrative scheme and summarized operation description

6.1.2. Type (mixer or injection nozzle)

6.1.3. Mixer or injection nozzle location

6.2. By fuel injection

6.2.1. NG supply metering system, accompanied by detailed illustration and summarized operation description

6.2.2. Type (mixer or injection nozzle)

6.2.3. Mixer location

6.2.4. Injection nozzle manufacturer

6.2.5. Injection nozzle type (code/specification)

7. IGNITION SYSTEM

7.1. On vehicles fitted with carburetor

7.1.1. Advance variator, along with a summarized description of the operation and original advance with original fuel and with NG

7.2. On vehicles with fuel injection

7.2.1. Control unit capabilities and input and output parameters

7.2.2. System description (describe changes/substitutions)

7.2.3. Initial advance specification

7.2.4. Spark plug electrode gap

7.2.5. Advance variator (describe operation, original advance with original fuel and with NG)

8. LIST OF NG SYSTEM COMPONENTS

8.1. Pressure reducer (quantity, manufacturer, part code)

8.2. Stepper motor assembly (ditto)

8.3. Stepper motor assembly for idle speed (ditto)

8.4. Electronic control unit (ditto)

8.5. Venturi/charger set (ditto)

8.6. Advance variator (ditto)

8.7. Closed loop system control unit (oxygen sensor signal management) (ditto)

8.8. Metering valve (ditto)

8.9. Set of “Signal Simulators” emulators (injector, oxygen sensor, map – “Manifold Pressure Metering Unit” and other) along with respective connecting cables (ditto)

9. PROCEDURES FOR CARRYING OUT CONVERSION (itemize)

IBAMA DIRECTIVE No. 17/2002

Sets provisions for securing with PROMOT the License for Use of Motorcycle Configuration for domestic or imported mopeds, scooters and similar vehicles Legislation date: Official Gazette (D.O.U.) of 8/29/2002

THE HEAD OF THE BRAZILIAN INSTITUTE FOR THE ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, appointed by Decree on May 13th, 2002, published in the Official Gazette of the next succeeding day, vested in the authority conferred upon him under article 24 of Attachment I to Decree No. 3.833 of June 5th, 2001, which approved of IBAMA's Bylaws Structure, published in the Official Gazette (D.O.U.) of June 6th, 2001, and article 95(VI) of the Internal Regulation approved by Ordinance GM/MMA No. 230 dated May 14th, 2002, republished in the Official Gazette (D.O.U.) of June 21st, 2002:

Whereas, CONAMA Resolution No. 297 of February 26th, 2002, published in the Official Gazette of March 15th, 2002, which creates the Program for Control of Air Pollution by Motorcycles and Similar Vehicles (PROMOT);

Whereas, the need for establishing administrative procedures for implementation of the actions contemplated in the said Resolution; resolve:

To enact this Directive for the purpose of setting administrative procedures for implementation of the actions contemplated in the above-mentioned Resolution:

I – CONFIGURATION HOMOLOGATION AND CERTIFICATION

Art. 1. For purposes of securing conformity certification for domestic or imported mopeds, scooters and similar vehicles under PROMOT, the interested parties shall forward an application to IBAMA and to their partner technical agent, accompanied by the duly completed VEHICLE CHARACTERISTICS FORM, Attachment I to this Directive.

Sole paragraph. The conformity certification service will be charged directly to the interested party by the technical agent accredited by IBAMA.

Art. 2. For purposes of conformity certification approval, the interested parties must submit License application for Using Mopeds, Motorcycles and the Like (LCM) to IBAMA.

§ 1 – Upon verification of compliance, IBAMA shall issue on behalf the applicant the LCM for each configuration.

§ 2 – For each LCM issued, the same value contained in IBAMA Service Price List shall be charged regarding the License for Using the Vehicle or Engine Configuration (LCVM)

§ 3 - The rights and duties of an LCM may be extended to legally constituted subsidiaries upon request by its matrix holder.

Art. 3. The emission tests for configuration certification purposes shall be carried out in Brazil by an IBAMA-inspected laboratory or INMETRO-accredited laboratory, belonging to the interested party or third parties, according to the CONAMA Resolution No. 297/02, Art. 5 and followed by IBAMA or its accredited technical agent, as deemed necessary.

§ 1 – The manufacturers or importers shall inform with at least thirty (30) days in advance, the vehicles/engines availability date to perform the tests.

§ 2 - Where there is evidence that the lack of local conditions requires testing abroad, it shall be at IBAMA's discretion to approve the tests schedule, location and vehicles to be tested by informing its monitoring team, which will consist of a maximum of three technicians.

§ 3 – The costs of any conformity proof tests, carried out in Brazil or abroad, shall be borne by the manufacturer or importer.

II – EXEMPT OF LCM

Art. 4. IBAMA, through LCM Exempt Certificate, shall exempt the importer from the obligations contained in the Art. 1, upon request, according to the model contained in Attachment II of this Normative Instruction.

§ 1 – The provisions set forth in *caput* of this Article applies to the following cases:

a) the vehicles or engines imported to be used as prototypes for emission tests and adaptation tests;

b) economic feasibility tests, adapted for use by disabled people, objects of donation to philanthropic entities;

c) use of holder of privileges and diplomatic or consular immunities;

d) old vehicle's collection;

e) for special applications that cannot be used for urban and/or road transport.

§ 2 – All vehicles mentioned in the previous Article may only be sold after obtaining the LCM on behalf of their importer for the respective model, except those of use by the holders of privileges and diplomatic or consular immunities, according to the provisions of Vienna Convention on Diplomatic and Consular Relations, promulgated by Decrees No. 56435 of June 8th, 1965 and No. 61078 of June 26th, 1967, respectively.

Art. 5. IBAMA, at its discretion, may require a sample of vehicles batches which were produced or imported to be sold in the country, for PROMOT requirements compliance proof purposes by conducting emission tests.

§ 1 – Any irregularities found in the compliance of the legislation requirements by the manufacturer or importer shall imply the rejection of the LCM issuance application, and they will be unable to sell the vehicle object of the application throughout the national territory.

§ 2 - The finding of noncompliance with the requirements of legislation, after receiving the LCM, implies in the cancellation thereof, as well as in the collection of the batches involved for repair by the manufacturer or importer, and subsequent evidence of compliance before IBAMA, according to the requirements of current legislation, ensuring the effectiveness of the corrections made.

Art. 6. The manufacturer or importer shall semiannually submit to IBAMA and to the accredited technical agent, sales volume report of the vehicles or engines models and configurations sold in the country through them.

III – MODIFIED VEHICLES

Art. 7. In order to obtain LCM for modified vehicles from original approved configuration, the responsible for the modification shall file the application contained in Attachment III of this Normative Instruction to IBAMA regarding the performed modification, being exempt from the conformity certification process.

Sole paragraph. The procedure contained in *caput* hereof only applies to the configuration of modified vehicles which have not undergone any components and/or systems' change that influence the emission values of gases, particulate matter, smoke and noise already declared and approved by their original manufacturers/importers.

Art. 8. When the modification implies in components and/or systems change that alters the emission values of gases, particulate matter, smoke and noise already declared and approved by the original manufacturer or importer, the responsible for the modification is required to approve such configurations according to the procedures foreseen in PROMOT.

Art. 9. The manufacturer of special motor vehicle, considered as replica of classic or sports vehicle, of original production discontinued for more than thirty (30) years now and with estimated production limited to thirty (3) units/year, may request IBAMA the exemption from meeting the legal limits of exhaust gas emission currently in force at PROMOT.

COMPLIANCE WITH THE INSPECTION AND MAINTENANCE PROGRAMS (I/M)

Art. 10. The company or the technician responsible for vehicles configuration modification approved before PROMOT, or the manufacturer of special vehicle (replica) is responsible for the performance of modified vehicle before the specific legislation requirements of the inspection and maintenance programs (I/M) for vehicles in use.

V - TRANSITORY PROVISIONS

Art. 11. For CONAMA Resolution No. 297/02 compliance purposes, the Art. 4. and its sole paragraph, the presentation of typical emission values to IBAMA for all vehicles' configurations in production shall take place in the conformity certification process.

Art. 12. Until the IBAMA's Environmental Licensing and Quality Board determines otherwise, the tests performed without testimony of its technical staff and in laboratory without IBAMA's prior recognition chosen by the manufacturer or importer, always in accordance with CONAMA Resolution No. 297/02, Art. 5, shall be accepted for conformity certification purposes.

Art. 13. The omitted cases shall be evaluated and resolved by the Environmental Licensing and Quality Board.

Art. 14. This Normative Instruction becomes effective on the date of its publication.

Rômulo José Fenandes Barreto Mello
President of IBAMA

Attachment I

VEHICLE'S CHARACTERISTICS FORM

A – ENGINE'S CHARACTERISTICS

1. Engine description
1.1. Manufacturer: _____
1.2. Type: _____
1.3. Engine cycle: ( ) 4 strokes ( ) 2 strokes
1.4. Cylinders number and arrangement: _____
1.5. Cylinder(s) diameter: _____(mm)
1.6. Piston(s) path: (mm)
1.7. Volumetric displacement: (cm^3)
1.8. Compression rate:
1.9. Design of the combustion chamber and piston, including rings
1.10. Cooling system
1.11. Supercharging use: _____ (describe system)
1.12. Design of the air filter(s) or manufacturer and type
1.13. Lubricating system (2-stroke engines)

2. Additional pollution control systems

2.1. Description and diagrams

3. Air and fuel feeding system
3.1. Description and diagrams of the air admission system
3.2. Fuel feeding system
3.2.1.By carburetor _____Part code: _____
3.2.1.1. Manufacturer: _____
3.2.1.2. Type/model: _____
3.2.1.3. Specifications
3.2.1.3.1. Injectors: _____
3.2.1.3.2. Venturi: _____
3.2.1.3.3. Bowel level: _____
3.2.1.3.4. Float weight: _____
3.2.1.3.5. Float needle valve: _____
3.2.1.4. Choke: ( ) manual ( ) automatic
3.2.1.5. Feeding pump pressure: (or characteristic diagram)
3.2.2. Per injection system
3.2.2.1. Feeding pump
3.2.2.1.1. Manufacturer: _____
3.2.2.1.2. Type/model: _____
3.2.2.1.3. Injected volume: __ mm3 per cycle in the rpm _____ rotation
3.2.2.2. Nozzles
3.2.2.2.1. Manufacturer:
3.2.2.2.2. Type/model:
3.2.2.2.3. Opening pressure: _____ (MPa)

4. Valves triggering
4.1. Valves triggering by mechanical means
4.1.1. Maximum elevation and opening and closing angles
4.1.2. Valve lash
4.2. Distribution per window (2T)
4.2.1. Crankcase volume with piston in bottom dead center

4.2.2. Description of the reed valves, if any (display drawings)
4.2.3. Description of the head (with drawing) and valves diagrams

5. Ignition system
5.1. Per distributor
5.1.1. Manufacturer;
5.1.2. Type/model:
5.1.3. Ignition advance curve
5.1.4. Initial ignition advance;
5.1.5. Contact lash:

6. Exhaust system
6.1. Description and diagrams

7. Additional information on the test conditions
7.1. Lubricant used
7.1.1. Manufacturer:
7.1.2. Type:
7.1.3. Percentage of addition to the fuel: (% vol.)
7.2. Ignition spark plugs
7.2.1. Manufacturer: _____
7.2.2. Type: _____
7.2.3. Opening _____ (mm)
7.3. Ignition coil
7.3.1. Manufacturer: _____
7.3.2. Type: _____
7.4. Ignition condenser
7.4.1. Manufacturer: _____
7.4.2. Type: _____
7.5. Idle speed system. Describe the operation and regulation, cold start.
7.6. Carbon monoxides contents in idle speed: (% vol.)

8. Engine performance data
8.1. Idle speed revolutions: _____(rpm)

8.2. Maximum power revolutions: _____ (rpm)
8.3. Maximum power: _____ kW:

B – VEHICLE DESCRIPTION

1. Manufacturer: _____
2. Importer: _____
3. Make/Model/Version: _____
4. Fuel: _____
5. Engine used: _____
6. Mass in running order: _____ (kg)
7. Vehicle mass for test: _____ (kg)
8. Roll resistive load: _____ (kW)
9. Transmission: ( ) manual ( ) automatic
10. Number of shifts: _____
11. Transmission relations
12. Final transmission relation
13. Tires
14. Type: _____
15. Measure: _____
16. Dynamic radius: _____ (mm)

C – SUPPLEMENTARY DATA:

1 – Name, address and business phone number(s) of the representative(s) constituted by the manufacturer, responsible(s) and date;

2 – Signature of the manufacturer or importer legal representative.

3 – Vehicle owner's manual or recommendations and procedures for the vehicles maintenance.

4 – Estimate of the number of vehicles to be sold per year.

5 – Statement by the manufacturer that vehicles produced from the date of elaboration of the Characterization Term reflects the descriptions and specifications of that term.

Attachment II

LCM EXEMPTION CERTIFICATE
APPLICATION MODELS

A – FOR DIPLOMATIC USE

"LCM EXEMPT CERTIFICATE APPLICATION
Place and date
To
IBAMA/Environmental Licensing and Quality Board

Attn. PROMOT Coordination, _____,
CNPJ/CPF No. _____,
resident/established at_____,
comes through this to apply for the exemption mentioned in the Art. 4 of IBAMA Normative Instruction No. _____, of _____ , 2002 for the release of Traffic Legislation Adequacy Certificate (CAT) with the National Traffic Department and of customs clearance with the Department of Revenue (DpRF), concerning the vehicle import described below:

VEHICLE CHARACTERISTICS
» Make/Model/Version:
» Type of fuel:
» VIN Number (vehicle chassis with 17 digits):
» Vehicle origin (country where the vehicle is coming from):
» Importer's name:
» Importer's CPF/CNPJ:

EXEMPT CONDITION
(x) vehicle for diplomatic use.
I hereby declare to be aware of the content of the Art. 6 of Law No. 8723/93, being of my entire and exclusive responsibility the cost and consequences of any irregular condition found in that vehicle by competent authorities.

Thus
Submitted
Name and signature"

Note: Use the Diplomatic Representation letterhead and attach approval document from Itamaraty.

B – SPECIAL VEHICLES

"LCM EXEMPT CERTIFICATE APPLICATION

Place and date
To
IBAMA/Environmental Licensing and Quality Board

Attn. PROMOT Coordination,_____CNPJ/CPF No._____, resident/established at_____, comes through this to apply for the exemption mentioned in the Art. 4of IBAMA Normative Instruction No_____, of _____ , 2002 for the release of Traffic Legislation Adequacy Certificate (CAT) with the National Traffic Department and of Import License (LI) with the Department of Foreign Trade Operations (DECEX) and the customs clearance with the Department of Revenue (DpRF), concerning the vehicle import described below:

VEHICLE CHARACTERISTICS

a) Make/Model/Version:

b) Type of vehicle:

c) Type of fuel:

d) VIN Number:

e) Vehicle origin (country where the vehicle is coming from):

f) Importer's name:

g) Importer's CPF/CNPJ:

EXEMPT CONDITION

(x) Vehicles for special applications that cannot be used for urban and/or road transport.

I hereby declare to be aware about the impossibility of selling this(these) vehicle(s) before obtaining the respective LCM (which can only be obtained in accordance with the procedures set forth by CONAMA), according to CONAMA Resolution No. 297 of February 26th, 2002, Art. 2, § 1, being of

my entire and exclusive responsibility the cost and consequences of any irregular condition found in that vehicle by the competent authorities.

Thus
Submitted
Name and signature"

Note: Use the company's letterhead, attach brochure and photos of the vehicle for analysis.

C – OTHER CASES

"LCM EXEMPT CERTIFICATE APPLICATION

Place and date
To
IBAMA/Environmental Licensing and Quality Board

Attn. PROMOT Coordination_____, CNPJ/CPF No. _____, resident/established at_____, comes through this to apply for the exemption mentioned in the Art. 4of IBAMA Normative Instruction No._____, of _____ , 2002 for the release of Traffic Legislation Adequacy Certificate (CAT) with the National Traffic Department and of Import License (LI) with the Department of Foreign Trade Operations (DECEX) and the customs clearance with the Department of Revenue (DpRF), concerning the vehicle import described below:

VEHICLE CHARACTERISTICS

a) Make/Model/Version:

b) Type of fuel:

c) VIN Number (vehicle chassis with 17 digits):

d) Vehicle origin (country where the vehicle is coming from):

e) Importer's name:

f) Importer's CPF/CNPJ:

EXEMPT CONDITION

( ) Prototypes for emission tests and adaptation tests;
( ) For economic feasibility tests;

( ) Adapted for use by disabled people;
( ) Donation to philanthropic entities; or
( ) Old vehicle's collection.

I hereby declare to be aware about the impossibility of selling this(these) vehicle(s) before obtaining the respective LCM (which can only be obtained in accordance with the procedures set forth by CONAMA), according to CONAMA Resolution No. 297 of February 26th, 2002, Art. 2, § 1, being of my entire and exclusive responsibility the cost and consequences of any irregular condition found in that vehicle by competent authorities.

Thus
Submitted
Name and signature"

Note: Use the company's letterhead, attach brochure and photos of the vehicle for analysis.

Attachment III

LCM application template for modified configuration "LCM APPLICATION FOR MODIFIED CONFIGURATION TO IBAMA/Environmental Licensing and Quality Board

Attn. PROMOT Coordination, _____, CGC/CPF No._____, established at _____, comes through this to apply for the License for the Use of Mopeds, Motorcycles and the Like (LCM) Configuration, for the configuration detailed below, modified by this company, from the original configuration (make/model/version), stating for all due purposes that such modification does not undergo any change of components and/or systems that influence negatively in the equipment and noise emission values already approved/declared by the original manufacturer/importer.

VEHICLE CHARACTERISTICS

a) Make/ model / version of configuration (original)

b) Make/ model / version of the new configuration (modified)

c) Type of fuel (NBR 6067 and 6601)

d) Gross weight of the original vehicle

e) Gross weight of the modified vehicle

We hereby guarantee that vehicles modified by this company and as described above shall meet the legal requirements of the inspection and maintenance programs for vehicles in use (I/M), in force in the country, undertaking responsibility for any corrections to the project(s), component(s) or specification(s) in the event of failures of this(these) vehicle(s) in future inspections, being of our sole responsibility the cost and consequences of any irregular condition found in any vehicle(s) modified according to this application.

Thus
Submitted
Place and date

Name, CPF and signature of the company's responsible.

Name, CPF, CREA and signature of the technician responsible for the modification"

Note: Use the company's letterhead; attach brochure and photos of the vehicle for analysis.

IBAMA NORMATIVE INSTRUCTION No. 25/2002

Establishes PROCONVE/PROMOT Approval Seal for compliance by the manufacturers and importers of motor vehicles. Official Gazette (D.O.U.) of 11.13.2002.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), appointed by Decree dated May 13th, 2002, published in the Official Daily Government Newspaper the day after, exercising the powers conferred to him/her by the Art. 24. of Attachment I, Decree No. 3833 of June 5th, 2001, that approves IBAMA's Regimental Structure, published in Official Gazette (D.O.U.) of June 6th, 2001, and item VI of the Art. 95. of Bylaws approved by GM/MMA Ordinance No. 230 of May 14th, 2002, republished in Official Gazette (D.O.U.) of June 21st, 2002; and

Whereas Law No. 8.723 of October 28th, 1993, which provides for the reduction of pollutants by motor vehicles as integral part of the National Environment Policy;

Whereas the prescriptions of the Air Pollution Control Program by Motor Vehicles (PROCONVE) and of the Air Pollution Control Program for Mopeds and Similar Vehicles (PROMOT), established by the National Environment Council (CONAMA) and by Resolution No. 18 of May 6th, 1986 and Resolution No. 297 of February 26th, 2002, respectively, and the other supplementary regulations;

Whereas the need for continuous updating of the procedures as well as the completion of its implementation procedures, resolves:

Art. 1. Establish PROCONVE/PROMOT Approval Seal, according to Attachment I, for compliance by motor vehicles' manufacturers and importers of CONAMA Resolution No. 18 of May 6th, 1986, item VIII, sub item 3.10 and CONAMA Resolution No. 297 of February 26th, 2002, Art. 17.

§ 1 – The seal can also be used individually in all vehicles produced or imported, whose configuration has the License for Use of Vehicle or Engine Configuration (LCVM) or License for Use of Mopeds, Motorcycles and the Like (LCM) Configuration.

§ 2 – Its use must comply with the following criteria:

a) The seal must have a minimum height of twelve millimeters (12 mm), considering the due proportions;

b) Color and font patterns must always be observed;

c) Be used strictly for configurations approved by IBAMA.

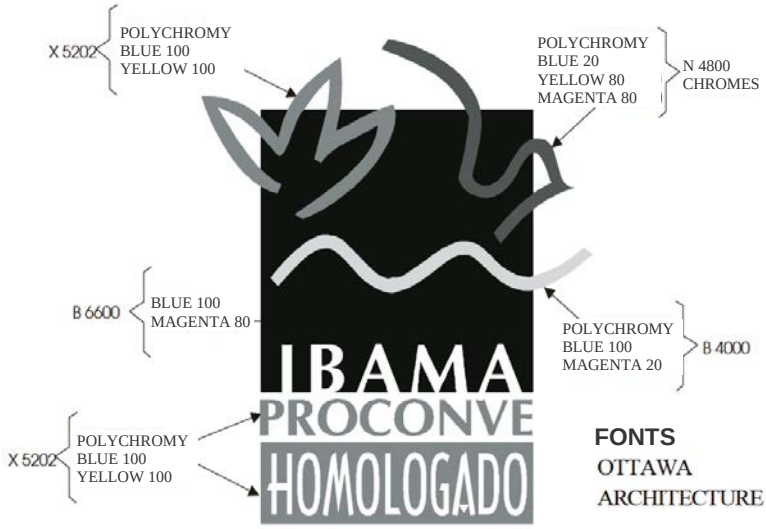
§ 3 – File on magnetic media containing the Seal template is available for LCVM or LCM holders at IBAMA Environmental Licensing and Quality Board, PROCONVE/PROMOT Coordination.

§ 4 – The manufacturers and importers of motor vehicles, holders of LCVM or LCM, shall have a period of 180 days, from the date of this NI publication, to adopt the use of the seal.

Art. 2. Normative Instruction No. 6 of December 7th, 1999, published by the Official Daily Government Newspaper on December 8th, 1999 is revoked.

Art. 3. This Normative Instruction becomes effective on the date of its publication.

Rômulo José Fenandes Barreto Mello
President of IBAMA


X 5202
POLYCHROMY
BLUE 100
YELLOW 100
POLYCHROMY
BLUE 20
YELLOW 80
MAGENTA 80
N 4800
CHROMES
B 6600
BLUE 100
MAGENTA 80
POLYCHROMY
BLUE 100
MAGENTA 20
B 4000
IBAMA
PROCONVE
HOMOLOGADO
X 5202
POLYCHROMY
BLUE 100
YELLOW 100
FONTS
OTTAWA
ARCHITECTURE


IBAMA
PROCONVE
HOMOLOGADO


IBAMA
PROCONVE
HOMOLOGADO

IBAMA NORMATIVE INSTRUCTION No. 28/2002

Establishes procedures for carrying out emission tests for approval purposes of vehicles powered by Gasoline/Alcohol. Official Gazette (D.O.U.) of 22.11.2004.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), appointed by Decree dated May 13th, 2002, published in the Official Daily Government Newspaper the day after, exercising the powers conferred to him/her by the Art. 24. of Attachment I, Decree No. 3833 of June 5th, 2001, which approved IBAMA's Regimental Structure, published in Official Gazette (D.O.U.) of June 6th, 2001, and item VI of the Art. 95. of Bylaws approved by GM/MMA Ordinance No. 230 of May 14th, 2002, republished in Official Gazette (D.O.U.) on June 21st, 2002; and

Whereas Law No. 8.723 of October 29th, 1993, which provides for the reduction of pollutants by motor vehicles as integral part of the National Environment Policy;

Whereas the prescriptions of the Air Pollution Control Program by Motor Vehicles (PROCONVE) instituted by the National Council for Environment through Resolution CONAMA nº 18, of May 6th, 1986, and further supplementary resolutions;

Whereas the need for continuous updating of PROCONVE as well as the completion of its implementation procedures, resolves:

Art. 1. Establish emission test procedures for approval purposes, determination of the emission deterioration factors (FDE) and preparation of Production Emission Values Reports (RVEP) on road motor vehicles powered any mix percentage of Ethanol (AEHC) and Gasoline "C".

Art. 2. For issuing purposes of technical opinion and of License for Use of Vehicle or Engine Configuration – LCVM, the procedures contained in the paragraphs hereof shall be adopted.

§ 1 - In the documentation sent for approval, specifically in "C"-type Attachments, two exhaust and evaporative emission tests carried out with standard AEHC, two exhaust and evaporative emission tests carried out with standard E-22 gasoline (mixture of 78% standard gasoline and 22% anhydrous ethanol) (V/V) and two exhaust and evaporative emission tests carried out with mixture consisting of 50% standard E-22 gasoline and 50% standard AEHC (V/V) shall be submitted.

§ 2 – The exhaust and evaporative emission tests, witnessed for approval purposes, shall be carried out with one of the fuels mentioned in the § 1 hereof, which will be defined by the accredited technical agent with 48 hours in advance.

§ 3 - In the Attachments A1, B1, B2 and B3 of IBAMA Ordinance No. 167 of December 26th, 1997, technical characteristics specific for standard E-22 gasoline and standard AEHC shall be indicated.

§ 4 – For noise measurement purposes, according to CONAMA Resolution No. 272 of December 14th, 2000, the power to be used shall be greatest of those indicated in the § 3 hereof.

Art. 3. For Emission Deterioration Factors (FDE) determination purposes, the procedures contained in the paragraphs hereof shall be adopted.

§ 1 – When the annual sales forecast is less than 15,000 units on the emissions results obtained, according to the § 1 of the Art. 2, and validated for approval, the FDE values set forth by CONAMA Resolution No. 14 of December 13th, 1995 shall be applied.

§ 2 – When the annual sales forecast is above 15,000 units on the emissions results obtained, according to the § 1 of the Art. 2, and validated for approval, the FDE values obtained as prescribed in the § 3 hereof shall be applied.

§ 3 – Mileage accumulation of 80,000 km, according to NBR 14.008, shall be performed with commercial "C" gasoline.

§ 4 – The Emission Deterioration Factors (FDE) shall be determined during the mileage accumulation, according to NBR 14.008, for each of the fuels detailed in the § 1 of the Art. 2.

Art. 4. For RVEP preparation purposes, as prescribed in CONAMA Resolution No. 299 of October 25th, 2001, the procedures contained in the paragraphs hereof shall be adopted.

§ 1 – The manufacturer or importer shall present test results carried out with standard E-22 gasoline or standard AEHC, at its discretion.

§ 2 – Additionally, the manufacturer or importer shall present at least three test results carried out with fuel not used in the § 1 hereof.

Art. 5. This Normative Instruction shall be reviewed within 24 months from the date of its publication in the Official Daily Government Newspaper.

Art. 6. This Normative Instruction shall be effective on the date of its publication in the Official Daily Government Newspaper.

Rômulo José Fernandes Barreto Mello
President

IBAMA NORMATIVE INSTRUCTION No. 53/2004

Complements the regulation of PROCONVE/ PROMOT approval seal usage. Official Gazette (D.O.U.) of 11.22.2004.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), exercising the powers conferred to him by the Art. 24., Attachment I of Regimental Structure, approved by Decree No. 4756 of June 20th, 2003, and the Art. 95., item VI of Bylaws approved by GM/MMA Ordinance No. 230 of May 14th, 2002;

Whereas the Normative Instruction No. 25 of November 7th,
2002 which establishes PROCONVE/PROMOT approval seal for compliance by the manufacturers and importers of motor vehicles;

Whereas the need of continuous updating of PROCONVE/PROMOT, as well as the complementation of its execution administrative procedures; and,

Whereas the propositions contained in the Process No. 02001005913/1999-13, approved by Environment Licensing and Quality Board - DILIQ, resolves:

Art. 1. Add the § 2 of the Art. 1. of Normative Instruction No. 25 of November 7th, 2002, the following sections:

Art. 2. .....

d) the seal use must always comply with its technical specifications, such as: color pattern of the letters and backgrounds, font sizes and types, and be applied on the ad background without transparencies or contours;

e) the seal must always be used in billboards, banners, stands, booths, web pages and gigantographies with image, promoting an approved product and always satisfying the proportionality to the minimum size regulated in relation to A4 size paper;

f) are exempt from using the seal:

1. the advertising materials characterized as gifts, as listed below: T-shirt, cap, pen, calendar, mini-poster, bags, lighter, model miniatures, key chains and similar;

2. newsletters, institutional publications, corporate journalistic articles and corporative videos;

3. retail ads, video or printed, produced by the utility companies when it concerns sales or institutional temporary promotions.

g) the seal use is forbidden:

1. by sports team and their derivatives sponsored by the holder of LCVM, LCM or CAGN;

2. in advertising material of used or overhauled products;

3. in institutional advertising material;

h) the seal must remain at least three seconds visible on television films;

i) the seal must be used on the last page:

1) in advertisement with several pages in sequence of a single product;

2) in advertisement with a whole line of products.

j) on web pages, the seal must be used in the product technical specification page;

l) in films and retail ads produced by utility companies, the use of seal is optional and may be used only when the technical characteristics of a new approved product is informed.

Art. 2. This Normative Instruction shall be effective on the date of its publication.

Marcus Luiz Barroso Barros
President

IBAMA NORMATIVE INSTRUCTION No. 54/2004

Regulates NMHC measurement. Official Gazette (D.O.U.) of 22.11.2004.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), exercising the powers conferred to him by the Art. 24., Attachment I of Regimental Structure, approved by Decree No. 4756 of June 20th, 2003, and the Art. 95., item VI of Bylaws approved by GM/MMA Ordinance No. 230 of May 14th, 2002;

Whereas the prescriptions of the new stages of the Air Pollution Control Program by Motor Vehicles – PROCONVE, established by the National Environment Council, through CONAMA Resolution No. 315 of October 29th, 2002, in particular the Articles 3, 5 and 7, which present emission limit for non-methane hydrocarbons pollutants (NMHC);

Whereas the need to establish procedures for the measurement of non-methane hydrocarbons pollutant (NMHC), at various stages of light road motor vehicles emission control mentioned in CONAMA Resolution No. 315/02, for new model approval, production emission values report, determination of deterioration factors of LCVM emissions and revalidations; and

Whereas the period of time needed to establish in the country the minimum infrastructure for measuring this pollutant in terms of specific analyzers acquisition and full mastery of its collection and measurement procedures;

Whereas the propositions contained in the Process No. 02001005913/1999-13, approved by Environment Licensing and Quality Board - DILIQ, resolves:

Art. 1 . The light and new road motor vehicles shall until 12.31.2005, present existing emission test reports to prove the compliance with the limits in force and to obtain the LCVM.

Sole paragraph. NMHC emission results presentation shall be exempted when the total hydrocarbons emission results (THC) in the existing emission tests are below the NMHC limit in force in the 3rd, 5th and Art. 7 of CONAMA Resolution No. 315/02.

Art. 2 The light road motor vehicles, duly approved according to CONAMA Resolutions No. 18/86 and 15/95, may have their LCVM revalidated for the next calendar year, following the schedule of stages defined in the Art. 12 of CONAMA Resolution No. 315/02, provided that they already show total hydrocarbons emission below the limit for NMHC set forth by the Articles 3, 5 and 7, of CONAMA Resolution No. 315/02 and that the emission of the other regulated pollutants meet the respective emission limits in force.

Art. 3. The delivery schedule of the production emission values reports, according to CONAMA Resolution No. 299/01 for light road motor vehicles, covering this pollutant, becomes from the report regarding the 1st half of 2007.

Art. 4. For engine grouping families with sales above 15,000 units/year, it is allowed the use of deterioration factors obtained earlier for the total hydrocarbons pollutant as the representatives for the NMHC emission deterioration factor.

Art. 5. For engine grouping families with sales up to 15,000 units/year, the same deterioration factor associated to hydrocarbons pollutants total and equal to 20%, contained in CONAMA Resolution No. 315/02, Art. 33, which refers to CONAMA Resolution No. 14/95, Art. 4 shall be considered for NMHC.

Art. 6. In the NMHC emission determination of light road motor vehicles, when powered by hydrated alcohol, it is allowed to deduct the non-burnt alcohol emission portion, measured according to CONAMA Resolution No. 9/94 or by other analytical method of similar efficiency, approved by IBAMA and/or its accredited technical agent.

Art. 7 This Normative Instruction shall be effective on the date of its publication.

Marcus Luiz Barroso Barros
President

IBAMA NORMATIVE INSTRUCTION No. 55/2004

Regulates the application of ESC and ELR cycles for approval of Diesel cycle engines. Official Gazette (D.O.U.) of 11.24.2004.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT (IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), exercising the powers conferred to him by the Art. 24., Attachment I of Regimental Structure, approved by Decree No. 4756 of June 20th, 2003, and the Art. 95., item VI of Bylaws approved by GM/MMA Ordinance No. 230 of May 14th, 2002;

Whereas the provisions of CONAMA Resolution No. 299 of October 25th, 2001, which establishes procedures for the preparation of value reports for the emission control of new vehicles produced and/or imported;

Whereas CONAMA Resolution No. 315 of October 29th,
2002, published in the Official Daily Government Newspaper on November 20th, 2002, which provides for new stages of the Air Pollution Control Program by Motor Vehicles – PROCONVE;

Whereas Law No. 8.723 of October 28th, 1993, which provides for the reduction of pollutants by motor vehicles as integral part of the National Environment Policy;

Whereas the need to establish supplementary technical criteria and procedures for the test and measuring methods of heavy road motor vehicle emissions of Diesel cycle and of Otto cycle, the latter when using natural gas, execution and validation of ESC, ELR tests; and,

Whereas the propositions contained in the Process No. 02001005913/1999-13, approved by Environment Licensing and Quality Board - DILIQ, resolves:

Art. 1. Use the following values for the emission test, ESC test cycle, mentioned in the Art. 15. of CONAMA Resolution No. 315/02, during the determination of A, B and C rotations:

I – when the engine-measured rotations are between ± approximately 3% of the values declared by the manufacturer, the values declared for the emission test shall be used;

II – when such tolerance is exceeded in relation to any of the rotations, the rotation values effectively measured to perform the emission test shall be used.

§ 1 – In implementing the ESC test procedure, at the manufacturer or importer's request, a preliminary test may be carried out in order to condition the engine and the exhaust system before starting the emission measurement.

§ 2 – The verification of NOx emission within the control zone shall be performed after the completion of item 13, by measuring up to three random points inside it, and conditioning the engine to mode 13 during a period of three minutes before the beginning of the random points measurements for two minutes each.

§ 3 – For Diesel cycle engines, the nitrogen oxides emission measured in the random test points, within the ESC test control zone, should not exceed more than ten percent (10%) the interpolated values from the adjacent test modes.

§ 4 – IBAMA may also request an additional test of the engine to determine the nitrogen oxide (NOx) emission, through an ETC test mentioned in the Art. 15. of CONAMA Resolution No. 315/02, which may be performed, during or after the approval stage, in the production control.

§ 5 – In measuring hydrocarbons emitted by diesel oil or natural gas powered engines, the manufacturer or importer may measure the total hydrocarbon (THC) mass through ETC test instead of measuring non-methane hydrocarbon mass, case in which the limit for THC mass is that indicated in Table 2 of the Art. 15. of CONAMA Resolution No. 315/02 for non-methane hydrocarbons.

Art. 2 IBAMA may request the opacity measurement at a random point in the ELR test, defined by a rotation comprised within the control zone and a torque comprised between 10% and 100%, after performing the opacity measurement sequence in the three load levels of the three engine rotations A, B and C.

§ 1 – To validate ELR cycle, mentioned in the Art. 15 of CONAMA Resolution No. 315/02, the standard deviations related to the opacity's mean values in each test rotation A, B and C, must be less than 15% of the corresponding mean value or than 10% of the limit value, whichever is higher.

§ 2 – If the criteria defined in the previous paragraph are not met, the test equipment, engine and calculation system may be checked; correct the problem, provided that it does not change the characteristics declared for the engine and the emission calculation methodology, and repeat the test for, at most, twice for its validations following the criteria described early.

§ 3 – For Diesel cycle engines, the opacity measurement obtained with random rotation value in ELR test should not exceed by more than 20% the higher opacity measurement of two adjacent rotations, or by more than 5% the limit value, whichever is higher.

§ 4 – The approval tests shall only be valid if the opacimeter zero deviation value, after the test, does not exceed approximately 5% the limit in force.

Art. 3. The Production Emission Values Report (RVEP), provided in CONAMA Resolution No. 299/01, shall be made according to CONAMA Resolution No. 315/02, following the standards specified below:

§ 1 – The engine emission tests for diesel oil powered heavy duty vehicles, rated according to CONAMA Resolution No. 15/95, as well as the other classifications that may be tested as such and approved according to the emission limits set forth in the Art. 15., Table 1, Line 1 (P5) of CONAMA Resolution No. 315/02, are carried out according to the ESC test procedures established in Directive 1999/96/CE of European Parliament and Council of December 13th, 1999 until the publication of an equivalent Brazilian Standard; NBR 7027 – "Exhaust gas emitted by Diesel engines – Determination of soot content in steady state – Test method"; NBR 13037 – "Exhaust gas emitted by Diesel engine in free acceleration – Determination of opacity – Test method, including its updated or alternate versions, provided they are approved by IBAMA.

§ 2 – The engine emission tests for gaseous fuel powered heavy duty vehicles, rated according to CONAMA Resolution

nº 15/95, as further classifications which may be tested in this way, and homologated according to Article 15, Table 2, Line 1 (P5) of Resolution CONAMA nº 315/02, will be performed according to the ETC testing procedures established in Directives 1999/96/CE, of the European Parliament and Council of December 13th, 1999 and 2001/27/CE, of the Commission of April 10th, 2001, until the publication of an equivalent Brazilian Standard, including its updated or replacement versions provided they are approved by IBAMA.

§ 3 The engines designed for heavy duty vehicles capable of meeting emission P5 tested according to the ETC testing cycle could carry out their emission production control through the ESC testing cycle, covering the engines homologated according to chapter 4 of the article of Resolution CONAMA nº 315/02 15.

Art. 4 The installation of Diesel cycle engines in the vehicle should be according to the following requirements with relation to homologation:

I – Depression in the intake, exhaust back-pressure, and the power absorbed by auxiliary equipment required for the engine should not exceed the values specified in the homologation;

II – The geometrical volume of the exhaust system should not differ in more than 40% of the value specified for the homologated engine.

Art. 5 The shape of the spreadsheets and tables for the presentation of the emission tests referred to in this regulation, is hereinafter established according to the provisions of Attachment I.

Art. 6 - This Normative Instruction becomes effective on the date of its publication.

Marcus Luiz Barroso Barros
President

Attachment I

LOGO / COMPANY IDENTIFICATION

CONDITIONS RESULTING FROM GAS, SOOT, PARTICULATE MATERIAL, AND SMOKE EMISSION TESTS CONDUCTED IN TEST BENCH

1. Engine Description
1.1. Manufacturer:
1.2. Importer:
1.3. Model:
1.4. Type of fuel:
1.5. Volumetric displacement (cm3):
1.6. Type of aspiration:
1.7. Phase of compliance with Resolution CONAMA nº 315 / 02:
1.8. Manufacturing year:
1.9. Engine number:

2. Emission Laboratory:
2.1. Company name and complete address:
2.2. Laboratory altitude (m):
2.3. Equipment characterization
2.4. Dynamometer:
2.5. Analyzers:
2.6. Particulate material sampler:
2.7. Analytical balance for the weighting of particulate material:
2.8. Opacimeter for loaded test:
2.9. Opacimeter for freewheel acceleration:
2.10. Consumption meter:

3. Engine Operation Characteristics
3.1. Idle rotation (rpm):
3.2. Loaded cut rotation (rpm):
3.3. Unloaded cut rotation (rpm):

3.4. Intermediate rotation (rpm):
3.5. Lubricant oil working temperature (ºC):
3.6. Maximum allowable intake depression (Absolute scale – kPa):
3.7. Maximum exhaust back-pressure (Absolute scale – kPa):
3.8. Maximum effective liquid bending moment (NBR ISO 1585 – Nm / rpm):
3.9. Maximum effective liquid power (NBR ISO 1585 kW / rpm)
3.10. Procedure for the stabilization of the working temperature:

4. Injection System:
4.1. Injection pump or equivalent
4.1.1. Make:
4.1.2. Type:
4.1.3. Denomination:
4.1.4. Injection control function code:
4.2. Regulator or equivalent
4.2.1. Make:
4.2.2. Type:
4.2.3. Denomination:
4.3. Electronic management
4.3.1. Make:
4.3.2. Type:
4.3.3. Injection control module denomination:
4.3.4. Mapping code, if different from the part:

5. Fuel
5.1. Type:
5.2. Specific mass (kg / l) to (oC):

6. Standards Used
6.1. Exhaust gas emission:
6.2. Constant soot emission rate:
6.3. Fuel consumption:
6.4. Emission of particulate material:
6.5. Emission of freewheel acceleration smoke:

7. Operators

7.1. Analyst:

7.2. Person in charge of the test:

Attachment II

COMPANY LOGO/IDENTIFICATION

Exhaust emission test data ESC CYCLE:
Engine: (kW)
Displacement: (liters)

	Sheet:	Number	ESC Cycle – 13 Points													Control Points		
	Date:	xx/xx/xx														Optional		
1	Points		1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3
2	Engine Rotation	[min-1]																
3	Torque	[Nm]																
4	Barometric pressure	[kPa]																
5	Relative Humidity	[%]																
6	Dry bulb temperature	[ºC]																
7	Wet bulb temperature	[ºC]																
8	Air intake temperature	[ºC]																

9	Measuring comb. equipment temp.	[ºC]																
10	Measuring comb. equipment density.	[kg/m³]																
11	Air intake restriction	[kPa]																
12	Air intake consumption	[kg/h]																
13	Air intake consumption	[m³/h]																
14	Fuel consumption	[kg/h]																
15	Fuel consumption	[l/min]																
16	Exhaust back-pressure	[kPa]																

17	Dry CO concentration measured	[ppm]															
18	CO_2 concentration measured	[% v/v]															
19	HC concentration measured	[ppm]															
20	Dry NOx concentration measured	[ppm]															

Particulate material test data

1	Initial main filter mass	[mg]	
2	Final main filter mass	[mg]	
3	Total M.P. mass	[mg]	
4	Initial secondary filter mass	[mg]	
5	Final secondary filter mass	[mg]	

Result of the exhaust gas and particulate material emission

Emissions			Test bench
1	Specific “CO” emission	[g/kWh]	
2	Specific “HC” emission	[g/kWh]	
3	Specific “NOx” emission	[g/kWh]	
4	Specific “M.P.” emission	[g/kWh]	

Result of ESC test control points xxxxxxxxxxxxxxxxxxxxxxxxxxx x xx x x x x xx

Control points – ESC Cycle	Point 1	Point 2	Point 3
NOx calculation [g/kWh]			
NOx measurement [g/kWh]			
CONAMA P-5 / Euro III limits			

ELR test result

Rotation A		[m-1]
Rotation B		[m-1]
Rotation C		[m-1]
Rotation D		[m-1]

Data	Rotation A	Rotation B	Rotation C	Rotation D
1st Peak [m-1]				
2nd Peak [m-1]				
3rd Peak [m-1]				
Average [m-1]				
Max difference				
Standard deviation				
Opacimeter zero deviation				
SV		(m-1)	Limit	
Verification point D		(m-1)	Limit	

*Note: SV = (0.43*Average A) + (0.56*Average B) + (0.01*Average C)*

Result of soot tests under constant rate

Point	Rotation (rpm)	Opac. (m-1)	Opac. (m-1)	Opac. (m-1)	Opac. (m-1)	Opac. Average [m-1]	Opac. Limit (m-1)
1							
2							
3							
4							
5							

Note: The opacity measurement could be performed in "UB".

Results of smoke emission test in free acceleration

Pressure [kPa]:				Temperature [ºC]:					Relative humidity [%]:			
Series	M.L.	1	2	3	4	5	6	7	8	9	10	Average
		–	–	–	x	x	x	x				

Note: (x) – Indicate with an X the 4 measurements considered to obtain the average

NORMATIVE INSTRUCTION IBAMA No. 126/2006

Establishes the criteria for the verification of the device/system operation for on board diagnosis OBDBr-1, either directly or indirectly. Official Gazette (D.O.U.) of 10.25.2010.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF THE ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, appointed by Decree of May 13th, 2002, published in the Diário Oficial da União (Official Gazette) of the following day, pursuant to the authority vested in him under article 26, paragraphs V and VIII, of Attachment I, of the Regimental Structure approved by Decree nº 5.718, of March 13th, 2006, and Art. 95, item VI of the Rules of Procedure approved by GM/MMA nº 230, of May 14th, 2002;

Whereas the prescriptions of the new phases of the Air Pollution Control Program by Motor Vehicles (PROCONVE) instituted by the National Council for Environment through Resolution CONAMA nº 315 of October 29th, 2002, specially in article 10;

Whereas it is necessary to establish procedures and technical criteria to enable an adequate monitoring of the main control parameters in the operation of engines and auxiliary systems, facilitating the development of actions applicable to the inspection and maintenance of engines and emission control systems;

Whereas Resolution CONAMA no 354/2004, that sets forth the requirements for the adoption of devices and On Board Diagnosis (OBDBr-1) systems in light passenger vehicles equipped with Otto cycle engines;

Whereas there are international standards that rule this technology;

Whereas it is necessary to prepare and provide the suitability for the network responsible for vehicle technical assistances, and the development of systems, tools, and devices that enable to diagnose and repair failures, anticipating the future implementation steps of the OBD Br-2 system; and,

Whereas the propositions shown by the Board of Directors of the Environment Quality (DIQUA), IBAMA Process nº 02001.000878/2006-64, decides the following:

Art. 1 – To establish criteria that enable to check the operation of the devices/systems for on board OBDBr-1 system diagnoses, directly (electric continuity) or indirectly, according to international standards ISO 15031, parts 3, 4, 5 and 6, and ISO 2575.

Sole paragraph. For the compliance with the determinations of this Normative Instruction the international ISO standards mentioned above will be used until there are equivalent national normative instruments established.

Art. 2 – For the compliance with the determination included in Resolution CONAMA nº 354, of December 13th, 2004, the vehicles should be equipped with Malfunction Indicator Lamp (LIM).

§ 1 – The LIM should be installed in a location of easy visibility for the driver;

§ 2 – The red color for the LIM is vetoed;

§ 3 - The LIM should go ON when the vehicle engine control system is switched on, and should go OFF after the engine starts running, when no abnormalities are found; and

4 - The LIM could be also checked by the on board OBDBr-1 diagnosis devices/systems.

Art. 3 – To establish the configuration for on board OBDBr-1 diagnosis devices/systems, as prescribed in Art.1, § 1 of Resolution CONAMA nº 354, of December 13th, 2004.

§ 1 – The connector used to interconnect the diagnosis tool to the vehicle electronic control module should be in compliance with standard ISO 15031-3;

§ 2 – The diagnosis tool and the communication protocol should meet ISO 15031-4 standard;

§ 3 – At least the following diagnosis commands (services) should be in accordance with ISO 15031-5, to read the failure codes and their respective clearance:

a) service $03;

b) service $04; and

c) PID $00 and PID $01 of service $01.

§ 4 – The failure codes should be in accordance with ISO 15031-6 standard (Attachment I); and it is necessary the submittal of at least one code referring to each of the components of Art. 1, § 1 - Resolution CONAMA nº 354, of December 13th, 2004;

§ 5 – the vehicles could not be equipped with more than one LIM for the purpose of reporting problems related to the emission of pollutants; and,

§ 6 – Different luminous indicator will be accepted for specific purposes (wheel locking system, safety belts, oil pressure, and others).

Art. 4 - The LIM should be activated whenever the engine control system confirms a non-electric continuity in the on board OBDBr-1 diagnosis devices/systems, as prescribed in Art. 1, § 1 - Resolution CONAMA nº 354, of December 13th, 2004;

Art. 5 - The LIM should be represented by a symbol as defined in ISO 2575 standard, line 01, column F, and should not be used for other purposes other than informing failures in monitored systems or devices that affect the emission of vehicle pollutants with the engine running.

Sole paragraph. Imported vehicles whose batches contain up to one hundred (100) units /year per configuration, including their extensions, could indicate failures in an alternated manner.

Art. 6 – The OBDBr-1 system could erase the failure code (abnormality) if it does not reoccur in at least 40 periods of engine heating time.

Art. 7º For the purpose of understanding the terms mentioned in this Normative instruction, the following definitions should apply:

I – Driving period: it is the action of starting the engine, putting it to run, and driving the vehicle, following a random course during which abnormalities possibly present could be detected, and;

II – Heating period: It consists of a vehicle engine operation period sufficient for the coolant temperature to increase at least 22 K with relation to the referred to fluid temperature at the time of the engine start until reaching a minimum temperature of 343 K (70 °C).

Art. 8 – In order to obtain a certification of compliance for vehicles provided with on board OBDBr-1 diagnosis system, the interested party should fill in, additionally to the provisions already established in Administrative Rule IBAMA nº 167, of December 26th, 1997, the form included in Attachment I of this Normative Instruction, so as to record the characteristics of the on board diagnosis system/device.

Art. 9 – The costs coming from homologation, verifications and/or tests for the confirmation of the operation of the OBDBr-1 system are under the responsibility of the vehicle manufacturer or importer.

Art. 10 - This Normative Instruction becomes effective on the date of its publication.

Marcus Luiz Barroso Barros
President

Attachment I

CARACHTERISTICS OF THE CONFIGURATION OF THE ON BOARD DIAGNOSIS DEVICE/SYSTEM (OBDBr-1)

1. ON BOARD DIAGNOSIS DEVICE/SYSTEM (OBDBr-1)

Description of the basic operation characteristics for the detection of failures in the ignition and fuel injection systems according to the prescriptions of Resolution CONAMA nº 354, of December 13th, 2004, Art. 1, §1, according to the suggested table below, and the manufacturer could complete it with any information deemed necessary.

Componen- t / System	Failure code checked through the scan-tool	Detection method - direct (D) or indirect (I)	Simplified description for each failure detection	Diagnostic enabling conditions	Driving time required to light the LIM	Nº of driving periods to switch on the LIM	Nº of driving periods to switch off the LIM

2. LIST OF THE COMPONENTS MENTIONED IN THE PREVIOUS ITEM

Components	Quantity	Manufacturer	Code

Note: In the list of components the code should be that stamped onto the part or enabled to identify it.

NORMATIVE INSTRUCTION IBAMA No. 127/2006

Regulates the publication in the Computer World Network of values related to noise in the stopped condition, and the smoke rate in free acceleration. Official Gazette (D.O.U.) of 10.25.2010.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, in the use of the attributions vested in him under Art. 26, items V and VIII, of the Regimental Structure approved by Decree nº 5.718, of March 13th, 2006, and item VI of the Internal Rules of Procedure approved by Administrative Rule GM/MMA No. 230, or May 14th, 2002.

Whereas Law nº 8.723, of October 28th, 1993, that provides the reduction of the emission of pollutants by automotive vehicles as an integral part of the Environment National Policy;

Whereas the prescriptions of the Air Pollution Control Program by Motor Vehicles (PROCONVE) and the Program for Control of Air Pollution from Motorcycles ands Similar Vehicles (PROMOT), instituted by the National Council for Environment through Resolution CONAMA nº 18, of May 6th, 1986, and by Resolution CONAMA nº. 297, of February 26th, 2002, respectively, and further supplementary resolutions;

Whereas it is necessary to have a continuous update of the PROCONVE and PROMOT, as well as the complementation of their execution procedures; and

Whereas the propositions shown by the Board of Directors of the Environment Quality (DIQUA), IBAMA Process nº 02001.001357/2006-24, decides to:

Art. 1 – Confirm the limits of natural gas engine emission as prescribed by Resolution CONAMA nº 315, of October 29th, 2002, Art. 15, § 5, to become effective as of January 1st, 2007, including the conditions for testing of Table 2, § 12;

Art. 2 – Motorcycles, scooters, motorized bicycles and similar vehicles should show null crankcase gas emission, according to CONAMA nº 297/2002, and supplementary resolutions, before being licensed.

Art. 3 – For the purposes of vehicle inspection and maintenance programs, the vehicle manufacturers/importers included in the requirements of PROCONVE and PROMOT, should provide within the term of 90 days as from the publication of this Normative Instruction on its official pages, in the Computer World Network, the noise values stated in the stopped condition and the smoke rate in free acceleration, to the extent applicable.

§ 1 – The values to be published refer to the configurations of each make/model produced or imported, as from the date when this requirement was stipulated, according to Resolutions CONAMA nº 1/93, 2/93 and 272/2000, for noise, and nº 16, of December 13th, 1995, for the smoke emission, and submitted according to Table 1 of attachment B; and,

§ 2 – The manufacturer/importer of vehicles licensed according to Resolution CONAMA nº 297/2002, Articles 10 and 11, and Administrative Rule IBAMA nº 167/1997, Art. 3 is exempted from the requirements defined in the head of this article.

Art. 5 - This Normative Instruction becomes effective on the date of its publication.

Marcus Luiz Barroso Barros
President

Attachment B

Make/Model	Noise limit in stopped condition dB(A)	Acceleration smoke rate (m–1)	
		Altitudes up to 350 m	Altitudes above 350 m

NORMATIVE INSTRUCTION IBAMA No. 23/2009

Provides Automotive NOx Liquid Reducer Agent specifications for the application to Diesel Cycle motorization vehicles. Official Gazette (D.O.U.) of 08.12.2009.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, in the use of the attributions vested in him under item VIII, of Article 22, of Attachment I of Decree nº 6.099, of April 26th, 2007, that approves IBAMA Regimental Structure, published in the Diário Oficial da União (Official Gazette) of April 27th, 2007.

Whereas the determinations of Resolution CONAMA nº 403, of November 2008, Art. 11, §3;

Whereas the prescriptions of the Air Pollution Control Program by Motor Vehicles (PROCONVE) instituted by the National Council for Environment through Resolution CONAMA nº 18, of May 6th, 1986, and further supplementary resolutions, decides the following;

Art. 1 – To establish for the "Automotive NOx Liquid Reducer Agent" to be used in Diesel cycle automotive vehicles the ARLA 32.

Art. 2 - ARLA 32 is a solution composed of water and urea to an industrial degree with traces of biuret, a limited presence of aldehydes, and other substances.

Art. 3º to establish the specifications for the ARLA 32, according to Attachment I of this Normative Instruction.

Sole paragraph. DIN 70071 or ISO 22241-2 standards will be used as the test methodology for the characterization of ARLA-32, until a compatible Brazilian standard is available.

Art. 4 - This Normative Instruction becomes effective on the date of its publication.

Roberto Messias Franco

Attachment I

O ARLA-32 is an aqueous solution with an urea content of 32.5% by weight.

1. General information

Chemical composition: Urea in water

CAS (ureia) number:57-13-6 (CAS: Chemical Abstracts Service)

Molecular formula (ureia): (NH2)2CO ou CH4N2O

Most common synonyms (ureia): Carbamide, Carbonyldiamine, Carbon Acid Diamide.

Denomination in other languages:

German: *Harnstoff*;

Spanish: *Urea*

French: *Urée*

Latin: *Carbamidum*, *Urea pura*, *Ureum*

2. Physical properties

Water solubility: Unlimited

Aspect: Clear and colorless

Smell: no smell or a slight smell of ammonia

Crystallization point: – 11.5 °C approx.

Viscosity (at 25°C): 1.4 mPa s approx.

Thermal conductivity (at 25°C): 0.570 W/m K approx.

Specific heat (at 25°C): 3.40 kJ/kg K approx.

Min. surface tension 65 mN/m

3. Specifications

Ureia: 31.8 – 33.2 % by weight

Alkalinity as NH3: Maximum 0.2 % by weight

Biuret: Maximum 0.3 % by weight

Insolubles: Maximum 20 mg/kg

Aldehyde: Maximum 5 mg/kg

Phosphate (PO -3): Maximum 0.5 mg/kg

Aluminum: Máximo 0.5 mg/kg:Calcium:Maximum 0.5 mg/kg
Iron: Maximum 0.5 mg/kg
Copper: Maximum 0.2 mg/kg
Zinc: Maximum 0.2 mg/kg
Chromium: Maximum 0.2 mg/kg
Nickel: Maximum 0.2 mg/kg
Magnesium: Maximum 0.5 mg/kg
Sodium: Maximum 0.5 mg/kg
Potassium: Maximum 0.5 mg/kg
Density at 20°C: 1087.0 – 1093.0 kg/m³
Refractive index at 20°C: 1.3814 – 1.3843 (–)

NORMATIVE INSTRUCTION IBAMA No. 24/2009

Establishes specifications and criteria for the verification and certification of OBDBr-2 systems, in addition to Articles 1 and 5 of Resolution CONAMA nº 354, of December 13th, 2004, and Normative Instruction IBAMA nº 126, of October 24th, 2006 (OBDBr-1). Official Gazette (D.O.U.) of 08/31/2009

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, in the use of the attributions vested in him under item VIII, of Article 22, of Attachment I of Decree nº 6.099, of April 26th, 2007, that approves IBAMA Regimental Structure;

Whereas Law nº 8.723, of October 28th, 1993, that provides the reduction of the emission of pollutants by automotive vehicles as an integral part of the Environment National Policy;

Whereas the prescriptions of the Air Pollution Control Program by Motor Vehicles (PROCONVE) instituted by the National Council for Environment through Resolution CONAMA nº 18, of May 6th, 1986, and further supplementary resolutions;

Whereas the change of vehicle characteristics resulting from use contributes to the malfunction of the emission control systems, and increases the levels of atmospheric pollutant emission;

Whereas the On Board Diagnosis System - OBD instituted by Resolution CONAMA nº 354, of December 13th, 2004, constitutes a proven action technology for the identification of malfunction in emission control systems, enabling to anticipate the application of remedy actions, and, consequently, the prevention of the increase of atmospheric pollutants;

Whereas the adoption of the OBDBr-2 system in vehicles represents an expressive technological advance that enables the user to prevent the occurrence of severe damages to the emission control systems, contributing to an environmental quality improvement , and thereby, safekeeping the interests of the consumer and the society in general;

Whereas it is necessary to have a continuous update of the PROCONVE and the **Program** for **Control** of **Air Pollution** from Motorcycles and Similar Vehicles (PROMOT), as well as the complementation of their execution procedures; and

Considering the propositions shown by the Board of Directors of the Environment Quality (DIQUA), IBAMA Process nº 02001.001995/20097-98, decides to:

Art. 1 - Establish specifications and criteria for the verification and certification of OBDBr-2 systems, in addition to articles 1 and 5 of Resolution CONAMA nº 354, of December 13th, 2004, and Normative Instruction IBAMA nº 126, of October 24th, 2006 (OBDBr-1).

Art. 2 – The following makes up an integral part of the Normative Instruction: I – Attachment I – Definitions;
II – Attachment II – OBDBr-2 System Requirements;

III – Attachment III – OBDBr-2 System Exception Treatment;

IV – Attachment IV – System Operation Verificaion Tests
OBDBr-2 and Access Requirements;

V – Attachment V – Certification Documents – characteristics of the configuration for the On Board (OBDBr-2) Diagnosis Device/System; and

VI – Attachment VI – Guidelines on the homologation of the OBDBr-2 system.

Art. 3 – The approval conceived to a type of vehicle with regard to the OBDBr-2 system, it could be extended to different vehicles according to the OBD family definition.

Art. 4 – The OBDBr-2 system should identify and inform, at least, the items described in item2.1 of Attachment II of this Normative Instruction.

Art. 5 – As of January 1st, 2010, and according to Attachments II, III, and IV of this Normative Instruction, for vehicles tested according to NBR 6601, the OBDBr-2 system should indicated, by means of the Malfunction Indicator Lamp (LIM) the existence of a failure in the components or system related to the emission control that could result in values above the following limits:

Category	THC(1) (g/km)	NMHC(2) (g/km)	CO (g/km)	NOx (g/km)
VLP	0,75	0,30	4,11	0,75
VNC ≤ 1700 kg(3)	0,75	0,30	4,11	0,75
VNC ≤ 1700 kg(3)	1,25	0,50	8,22	1,50
Where: *VLP – Light Passenger Vehicle* *VLC – Light Commercial Vehicle < 3856 kg* *(1) For GNV vehicle only* *(2) for Otto vehicle only, except for GNV (discount for unburned alcool is allowed at the discretion of the manufacturer)* *(3) Vehicle mass for emission tests*				

Art. 6 – The conformity of an OBD family production, when requested by a comptent agency, should be confirmed by means of the test of a vehicle picked up randonly from production, and submitted to the tests prescribed in Attachment IV of this Normative Instruction.

§ 1 - The conformity of the production is accepted in case the vehicle meets the requirements of this Normative Instruction.

§ 2 – If the vehicle fails to meet the requirements of this Normative Instruction, another four (4) vehicles should be chosen, and they will be allowed to have a run in period corresponding to a kilometrage lower than ten thousand (10,000) km, which will also be submitted to the tests prescribed in the head of this article.

§ 3 – The production will be considered in conformity if at least three (3) of these vehicles meet the requirements of this Normative Instruction;

§ 4 – To establish possible causes of deterioration which could not be imputed to the manufacturer itself (for example, the use of contaminated fuel before the test) it will be authorized to conduct tests, even to a destructive nature, for the vehicles with emission levels above the limit.

§ 5 – When the results of the verifications provided in § 4 of this article confirm cases of deterioration not imputable to the manufacturer itself, the vehicle will be replaced in the production conformity verification process.

Art. 7 - The interfaces, communication protocol, connectors, diagnosis tools, and failure codes should be in accordance with the international standards described in Attachment IV, of this Normative Instruction, until the establishment of equivalent Brazilian standards.

Art. 8 – For certification purposes, as to the vehicles provided with on boad OBDBr-2, the manufacturer or importer should fill in, in addition to what is already established by the Administrative Rules of IBAMA nº 167, of December 26th, 1997, the Attachment V of this Normative Instruction, so as to record the characteristics of this system.

§ 1 – The OBDBr-2 system supporting tests could occur in a period after the certification, since the development of the OBDBr-2 system is completed after the emission calibration.

§ 2 – The manufacturer should ensure that the implementation of the OBDBr-2 system is completed and documented, according to Attachment V of this Normative Instruction, and the reports referring to the supporting tests are available for inquiry by the homolgating agent, upon request, before the vehicle commercialization.

§ 3 - If the homologating agent chooses to witness the tests, he/she should indicate the failures to be simulated according to item 4.3 of Attachment IV of this Normative Instruction, the respective type of fuel, according to item 3.2 of Attachment IV of this Normative Instruction, and the term for performing the tests, regardless of the beginning of vehicle commercialization.

Art. 9 – For the homologation of the OBDBr-2 system of imported vehicles whose batches add up to one thousand (1,000) units per half year, and per configuration, including their extensions, the homologation certificates for on board diagnosis system will be accepted when they are in accordance the legislation in force in the EUA or in the European Union, issued by one of their official agency, or an agency from the vehicle country of origin.

§ 1 – The vehicle configuration is defined by item 4, Attachment 1 of Resolution CONAMA nº 18, of May 6th, 1986, and NBR 8833.

§ 2 – The manufacturer is allowed to adjust the OBD system operation so as to make it suitable for the local legislation conditions.

§ 3 – The homologating agent, in case of doubts, could require operation confirmation tests for the on board diagnosis system to be performed in the country or abroad as well as the technical documentation referring to the homologation process performed abroad.

Art. 10. For the homologation of the OBDBr-2 system the manufacturer or vehicle importer should follow the guidelines included in Attachment VI of this Normative Instruction.

Art. 11. It is not necessary that the diagnosis system used for the emission control evaluates the components during the appearance of a failure if such a failure could compromise the safety conditions or cause a component collapse.

Art. 12. All costs relative to the application of this Normative Instruction, including possible follow up of tests provided in § 3 of Art. 9, should be born by the manufacturer, importer or person in charge of the import or commercialization of the vehicles in the country.

Art. 13. All other provisions prescribed otherwise are revoked.

Art. 14. This Normative Instruction becomes effective on the date of its publication.

Roberto Messias Franco
President

Attachment I – Definitions

These definitions are specifically applicable to this Normative Instruction

1) *OBD System* – It is the on board diagnosis system used in the control of emissions, and capable of identifying the probable origin of failures checked by means of failure codes stored in the engine control module memory.

2) OBDBr-2 System – The OBD System that meets the requirements of this Normative Instruction.

3) ***Access*** **–** It means the availability of the OBDBr-2 system data related to the emissions, through the diagnosis serial interface.

4) ***On Board Diagnosis*** **–** It is the evaluation continuously performed by the engine management system. It is carried out by means of monitoring signals emitted by sensor used for specific angular speed, temperature, tension, pressure, etc. with capacity for correcting operation deviations, integrating the entire system and identifying the malfunction of components as well as protecting them against risks resulting from defects found, emitting preventive alarms for maintenance, and fixing standard conditions for the engine operation under emergency situations.

5) ***Test cycle*** **–** It means the cycle for measuring the emissions, according to NBR 6601.

6) ***Conduction cycle*** **–** It consists of the period between the start and stop of the engine, during which the vehicle operation mode enables the execution and finalization of all monitors.

7) ***Preconditioning cycle*** **–** It consists of the preparation of the vehicle for the execution of a test cycle.

8) ***Heating period*** **–** It means the vehicle operation period sufficient for the coolant temperature to raise at least 22 oC (or 22 K) with relation to the temperature at the time of the engine start, and reaching a minimum temperature of 70 oC (or 343 K).

9) ***Misfire*** – It means lack of fuel in the engine cylinder due to deficiencies in the ignition system, inappropriate air-fuel mixture, pressure, low temperatures, etc., and it is indicated by a percentage of combustion failures over a total of consecutive combustions that result in emission levels above the limits prescribed by this Normative Instruction, or the percentage capable of causing early aging or overheat of the catalytic converter with irreversible damages.

10) *OBD family* – The OBD family may be defined according to the basic conception parameters common to all vehicles of the family in question. In some cases interactions may occur between some parameters. These defects should be taken into consideration to ensure that only vehicles with similar exhaust gas emission characteristics are included in the same OBD family.

a) Based on this purpose, the vehicle models considered belonging to the same combination "engine - emission control system – OBD system" are those whose parameters enumerated below are identical:

Engine:

» combustion process (for example: spark ignition, two strokes, four strokes, etc.);

» engine feed method (for example, carburetor, or injection).

Emission control system:

» type of catalytic converter (for example: oxidation, trivalent, heated, others);

» secondary air injection (with or without);

» recirculation of exhaust gas (with or without).

OBD system parts and operation:

» method used by the OBD system for the functional monitoring, detection of malfunction, and indication of failures detected and indicated to the vehicle driver.

b) The manufacturer may define new grouping provided the previous criteria are observed.

11) *QIP (Instantaneous Parameter Chart) or Freeze Frame* – it means the set of meaningful information and parameters that characterize the engine operation conditions, present at the time of a malfunction and which should be stored in the engine control module memory.

12) *Diagnosis Tool or Scan Tool* – it is the equipment that, by means of serial communication and protocols in compliance with items 4.4.2.2 and

4.4.2.3 of Attachment IV, performs the data acquisition and fault codes stored in the module engine management, emissions-related items.

13) ***LIM (Malfunction indication lamp)*** **– it** means the visible medium that clearly informs the vehicle driver about a malfunction of the emission control system.

14) ***Malfunction*** **- it** means a component failure of the emissions control system that results in emissions above the levels prescribed for the OBDBr-2 or if the OBD system is unable to complete basic monitoring requirements of this Normative Instruction. At the discretion of the manufacturer, plausibility faults could be included.

15) ***Plausibility Fault:*** **–** condition in which the output signal of a particular sensor is not consistent with the current operating condition or when the physical state of a given actuator is not consistent with the value commanded by the engine control module.

16) ***Degraded emergency or limp-home mode*** – limitation of the operating mode of the vehicle (usually by means of intervention on vehicle speed or engine speed) in order to guarantee minimum conditions and safe operation in the event of certain failures of components or power-train system.

17) ***Sensors*** **–** these are devices that measure the primary variables of the engine control (speed, temperature, pressure, oxygen in the exhaust gas etc.) and transmit them to the engine control module.

18) ***Emission control system*** **– it** means the set of components including the electronic engine control management, and any component related to fuel supply, ignition, intake, exhaust or evaporative emissions control that sends or receives signals from this module with main function of controlling the emissions of pollutants.

19) ***Open loop*** **–** control system with no feedback.

20) ***Closed loop:*** **–** control system with feedback.

21) ***Unwanted action items*** **–** any parts, components, devices, systems, software, lubricants, additives, fuels and operating procedures that reduce or might reduce the effectiveness of controlling the emission of noise and air pollutants from motor vehicles, or produce unwanted or discontinuous variations in emissions in conditions that can be expected during operation in normal use on the streets. In addition, devices that can recognize standardized test procedures and modify the behavior of the vehicle relative to normal use on the streets (according to Resolution CONAMA No. 230/97).

22) ***Phase of recognizing and learning the fuel type*** – it means the time required for the fuel recognition when refueling occurs.

23) ***Fuel fine tuning*** – these are additional minor adjustments to the basic calibration during normal operation of the vehicle engine due to the change in fuel quality or changes in fuel combustion due to wear of components.

24) ***Power intake*** **– it** means a unit driven from a mechanical transmission tap whose function is to drive auxiliary equipment assembled in the vehicle.

25) ***Unrestricted***

» An independent access of a password obtained only through the manufacturer or a similar device, or

» Access allowing the exploitation of data collected without decoding, unless such information is standardized.

26) ***Deficiency*** **- it** means that separate components or systems contain operating characteristics temporary or permanent that harm to efficiently monitor those components or systems or do not meet all other requirements for the system OBDBr-2.

27) ***E100*** **–** 100% Hydrated Alcohol Fuel (AEHC). Automotive fuel, which when free of hydrocarbons, has alcohol content ranging from 92.6 ° to 93.8 ° INPM (established by Ordinance ANP No. 36/05). Used in Otto cycle engines, specifically in the trucking industry.

28) ***AEAC*** – Anhydrous ethyl alcohol fuel. Automotive fuel, which when free of hydrocarbons, has minimum alcohol content of 99.3 ° INPM (established by Ordinance ANP No. 36/05). AEAC is used for blending with gasoline A, specified by ANP Ordinance No. 309/01, for the production of gasoline type C. The alcohol content in gasoline is set by presidential decree or by determination of ANP.

29) ***E19*** - mixture of pure gasoline (E0) with AEAC to total percentage of 81% pure gasoline.

30) ***E30*** – mixture of standard gasoline (E22) with AEHC to total percentage of 70% pure gasoline.

31) ***E90:*** – mixture of standard gasoline (E22) with AEHC to total percentage of 10% pure gasoline.

32) ***Dual-fuel vehicle*** - vehicle with two separate tanks for different fuels, excluding the auxiliary tank of startup.

33) ***Flex-fuel vehicle*** – vehicle that can work with gasoline or hydrated ethanol fuel or any mixture of these two fuels in a same tank.

34) ***Readiness Status*** – it indicates that the diagnosis of all monitored systems and components has been completed.

35) ***Fuel supply system:*** – set of electrical and mechanical components responsible for supplying fuel to the engine. Composed of the fuel pump, piping, filter (s), regulator (s) and pressure injector (s), except the auxiliary cold start system.

Attachment II – Requirements of the OBDBR-2 System

1. – Vehicle

1.1. Vehicles must be equipped with OBDBr-2 system designed, built and installed so that making possible to identify the various types of faults and deteriorations that may manifest throughout the life of the vehicle, the requirements of this Attachment.

1.2. Access to the OBDBr-2 system necessary for inspection, diagnosis, or maintenance of the vehicle must be unrestricted and standardized. Fault codes must be compatible with item 4.4.2.4 of Attachment IV.

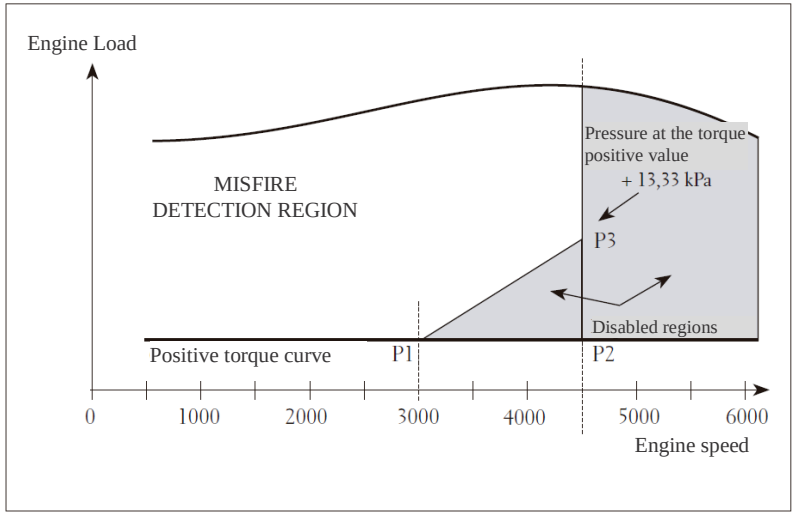
2. – System

2.1. The OBDBr-2 system shall monitor, at minimum:

2.1.1. The reduction to efficiency of catalyst converter (s) and the conversion of THC for CNG vehicles, and NMHC for other fuels. For vehicles equipped with more than one catalyst, the system can monitor the first catalyst alone or its combination with others. Should be considered malfunctioning when the emissions exceed the limits of THC or NMHC defined in Article 5. At the discretion of the manufacturer, could be considered in malfunction if emissions do not exceed the limits of Article 5 of this Normative Instruction.

2.1.2. Combustion engine failures in the area bounded by the following conditions:

Figure 1



a) **n1 Point**: maximum speed equal to 4500 rpm, 1000 rpm or above the maximum speed achieved on a test cycle, whichever is lower.

b) The positive torque curve obtained throughout the rpm range, with the transmission idle speed (or neutral "N" in the case of automatic transmission).

c) The line plotted between points P1 and P3. The point P1 corresponds to the engine positive torque value at 3,000 rpm and point P3 to P2 + 13,33 kPa pressure. P2 is the pressure observed in the positive torque curve at the speed defined in point “n1”.

2.1.2.1. The manufacturer shall inform the competent authority and prove through technical documentation that, in specific conditions of load and engine speed, combustion fault detection is unreliable, it would be adopted, as an alternative criterion, a percentage of combustion faults higher than that used in demonstration tests of the combustion fault monitor.

2.1.2.2. The manufacturer shall inform the competent authority and prove through technical documentation that, if the detection of higher percentages of combustion faults does not improve its reliability, or that such combustion faults cannot be distinguished from effects such as, for example, roads with uneven paving, gear shifts, engine starting etc., monitoring would be disabled while those conditions remain present.

2.1.3. The deterioration of oxygen sensor(s) upstream the first catalyst;

2.1.4. The continuity of the electric circuit of the electronic device to control the purging of evaporative emissions.

2.1.5. The electrical continuity of the components of the engine control system, if they are active in the selected fuel, whose failures raise emissions above the limits of the table of Article 5 of this Normative Instruction. Alternatively, functional monitoring could be done.

2.1.6. The electrical continuity of the components of the engine control system, if they are active in the selected fuel, which are required to perform monitoring functions of the OB-DBR-2 system. Alternatively, functional monitoring could be done.

2.1.7. At the discretion of the manufacturer, the plausibility of components of the engine control system.

2.2. Monitoring the deterioration or mechanical failure of the fuel supply system components is not mandatory.

2.3. Temporary deactivation of the OBDBr-2 system

I - The manufacturer can put the system OBDBr-2 out of service in the following situations:

2.3.1. When the volume of fuel in the tank is less than 20% of its rated capacity;

2.3.2. When the environment temperature at the time of starting the engine, is below 266 K (–7 ºC);

2.3.3. At altitudes over 2,500 meters above sea level;

2.3.4. When the power intake is active, for models equipped with this device;

2.3.5. Other situations possible of demonstration by the manufacturer to the competent authority when the monitoring the system or components is not effective, while those conditions persist.

II – The manufacturer may also:

2.3.6. Disable the efficiency monitors of catalyst (s) and of decay of oxygen sensor (s) when the flex-fuel vehicle is using fuel out of the following alcohol concentration ranges, once the phase of recognition and learning the type of fuel is stabilized:

I) E19 to E30;

II) E90 to E100;

2.3.7. Disable the diagnoses of sensors of oxygen, catalyst and combustion fault during the evaporation phase of fuel contaminating lube oil, and during the phase of recognition and learning the type of fuel.

3. – Monitoring Conditions

All monitoring should be started next to each driving cycle, to be defined by the manufacturer, and completed at least once during this cycle, provided that the correct test conditions are met. For certification purposes, the requirements of § 4 of Attachment IV must be obeyed.

4. LIM (Malfunction indication lamp)

4.1. The OBDBr-2 system should incorporate a LIM into the panel, and possibly also an audible indication, readily perceived by the driver of the vehicle.

4.2. The LIM should be visible in all lighting conditions (day or night).

4.3. The LIM may not be red and must display a symbol in accordance with the ISO 2575 standard "Road Vehicles - Symbols for controls, indicators and tell-tales" – symbol No. 4.36.

4.4. A vehicle may not be equipped with more than one LIM with the purpose of reporting issues related to emissions.

4.5. In order to verify the integrity of the LIM, it should light up when the control system of the engine is started and should be deleted after the engine starts running if no fault has been detected previously. This information must be detailed in Attachment V.

4.6. With the engine running, the LIM must be used solely to alert the driver of the vehicle on faults detected by the OBDBr-2 system, or indication of running in the degraded mode of emergency.

4.7. The LIM should work in a different mode (for example, intermittent light signal) when combustion faults occur in the engine in proportion capable of damaging the catalyst, as specified by the manufacturer.

4.8. For strategies requiring more than two cycles of preconditioning for activation of the LIM, the manufacturer must provide the data needed to assessment by the homologating agent, which adequately demonstrate the efficiency of the system to detect the deterioration of components.

Strategies requiring more than ten driving cycles for activation of LIM would not be accepted.

4.9. The OBDBr-2 system must indicate through the LIM:

4.9.1. Faults (minimally of electric continuity) of components listed in Article 1, § 1 of CONAMA Resolution No. 354 of December 13th, 2004 and in accordance with Normative Instruction No. 126.

4.9.2. For faults detected according to the monitoring criteria defined in paragraphs 2.1.1, 2.1.2, 2.1.3 and 2.1.5 of Attachment II, resulting in exhaust emissions values above the limits set out in Article 5 hereof.

4.9.3. Faults detected according to the monitoring criteria defined in items 2.1.4 and 2.1.6 of Attachment II.

4.9.4. Removal or ineffectiveness of the catalytic converter monitored.

5. – Fault codes storage

5.1. The OBDBr-2 system shall record the readiness status of monitors of the emission control system as described in 5.6 hereafter.

5.2. If the LIM is activated due to deterioration or malfunction or to move into the emergency degraded mode, a fault code should be stored to identify the type of malfunction.

5.3. A fault code must also be stored under the conditions referred to in paragraphs 2.1.5, 2.1.6 and 2.1.7 of this Attachment.

5.4. The distance traveled by the vehicle from the moment that the LIM was activated must be available at any time from the serial connector of the OBDBr-2. This information must be contained in PID $21 of Service $01, as described in ISO 15031-5 standard.

5.4.1. The record of the failure code is optional, as well as the distance traveled, in the event of LIM-specific fault.

5.5. It is not necessary to identify the cylinder where combustion faults occur, provided that a different fault code is recorded for one or multiple cylinders.

5.6. Readiness status: – The engine control module must indicate from the readiness status that the diagnosis of all monitored systems and components has been completed, at least since the last time the fault codes were deleted from the memory of the control module, either by means of a diagnostic tool or by interrupting the power supply system. This information must be contained in PID $01 of Service $01, as described in ISO 15031-5 standard.

6. – LIM Deactivation

6.1. Once the LIM is activated in a different mode (for example: intermittent light signal), it can return to the previous state of activation during the first driving period in which the combustion fault was detected, if faults have not already occur at levels likely to cause catalyst damage (according to manufacturer's specifications), or move the engine to operate in speed and load conditions in which the combustion fault level is no longer likely to cause catalyst damage. If the LIM is switched to the previous state of activation, the corresponding fault codes and conditions stored in the QIP relating to this event can be deleted.

6.2. For all other conditions of malfunction, the LIM can be deactivated after three consecutive driving periods in which the monitoring system responsible for activating it stops detecting the fault and no other failure that can independently activate the LIM has been identified.

7. – Deleting a Fault Code

7.1. The OBD system may erase a fault code, distance traveled and the corresponding QIP, if the fault is not re-recorded in at least 40 heating periods (consecutive) with the engine diagnosis on.

8. – Dual-fuel Vehicles Running on Gas

8.1. For dual-fuel vehicles running on gas, the procedures:

» LIM activation (see item 4 of this Attachment),

» fault codes storage (see item 5 of this Attachment),

» LIM deactivation (see item 6 of this Attachment),

» clearing a fault code (see item 7 of this Attachment) must be done independently from each other when the vehicle runs on gasoline / alcohol or gas. When the vehicle runs on gasoline / alcohol, the result from any of the above procedures should not be affected when the vehicle runs on gas. When the vehicle runs on gas, the result from any of the above procedures should not be affected when the vehicle runs on gasoline/alcohol.

Notwithstanding this requirement, the state of readiness must indicate the full assessment of control systems for all types of fuel (gasoline / alcohol and gas), when having gone through the full assessment of control systems for one of the fuel types.

9. – Updating the System Authorized Network and Action Items Unwanted

9.1. The manufacturer may authorize modifications and upgrades to existing OBDBr-2 systems, duly homologated by IBAMA, if those are necessary for the diagnosis or improved engine management system, during repairs, inspections, or technological upgrading of the vehicle, provided that free of action items unwanted, according to CONAMA Resolution 230/97.

Attachment III

TREATMENT OF THE OBDBR-2 SYSTEM EXCEPTIONS

1. Deficiencies of the OBDBr-2 system

1.1. By consent of the homologating agent, the homologation of a OBDBr-2 system is permitted even if it contains one or more deficiencies that can not comply with all specific requirements of this Normative Instruction except for the following cases:

1.1.1. Deficiencies that cause a complete lack of monitoring of the diagnosis required.

1.1.2. Deficiencies that cause non-compliance with the limits of OBDBr-2 contained in Article 5 of this Instruction.

1.1.3. Deficiencies relating to non-compliance with item 4.4 of Attachment IV,

except for item 4.4.2.4. This does not apply to dual-fuel vehicles running on gas.

1.2. Other deficiencies relating to the discontinued production of engines, vehicles or engine control modules will be reviewed by the homologating agent.

2. – Dual-fuel Vehicles Running on Gas

2.1. Notwithstanding the requirements of item 8.1 of Attachment II and whenever requested by the manufacturer, the homologating agent would accept the following deficiencies to be in compliance with the requirements of this Attachment for the approval of dual-fuel vehicles running on gas:

» Clearing codes, distance and corresponding QIP information after 40 consecutive warm-up periods of the engine regardless of fuel used,

» Activation of LIM in both types of fuel (gasoline / alcohol and gas) after detecting a fault in one type of fuel,

» Deactivation of LIM made after three consecutive driving cycles without fault, regardless of fuel used,

» Using two readiness status codes, one for each fuel type.

The manufacturer may request further options which granted at the discretion of the homologating agent.

2.2. Notwithstanding the requirements of item 4.5 of Attachment IV and whenever requested by the manufacturer, the homologating agent would accept the following deficiencies to be in compliance with the requirements of this Attachment for the effects of assessment and transmission of diagnose signals:

» Transmission of diagnose signals for the fuel used in a single source address,

» Assessment a set of diagnostic signals for both fuel types (corresponding to the assessment of mono-fuel gas vehicles, and whatever the fuel used)

» Selection a set of diagnostic signals (associated with one of two types of fuel) by the position of a fuel switch,

» Assessment and transmission of a set of diagnostic signals for both types of fuel in the control module for liquid fuel, regardless of the fuel being used. In this case, the control module that controls the gas supply system must conform to the communication protocols of the control system of liquid fuel in order to facilitate the transmission of information via the latter.

The manufacturer may request further options which granted at the discretion of the homologating agent.

3. Period authorized for keeping a deficiency

3.1. A deficiency may be kept for a period of up to two years after the date of approval of the vehicle. If possible to be adequately demonstrated that substantial changes would be required to the vehicle equipment to correct such deficiency, an additional period of time exceeding two years may be requested, but the deficiency can not be kept for a period exceeding three years.

3.2. In the case of a dual-fuel vehicle running on gas, a deficiency authorized in accordance with the provisions of section 2 may be kept for a period of three years after the date of homologation of the vehicle model. If possible to be adequately demonstrated that substantial changes would be required to the vehicle equipment to correct such deficiency, an additional period of time exceeding three years may be requested, but the deficiency may not be kept for a period exceeding four years.

3.3. A manufacturer may request the homologating agent to authorize afterwards a deficiency if it is detected after the granting of initial homologation. In this case, the deficiency may be kept for a period of two years after the date of notification to the homologating agent, unless it can be adequately demonstrated that substantial changes would be required to the vehicle equipment and an additional period of time longer than two years to correct it. In this case, the deficiency may be kept for a period not exceeding three years.

3.4. The homologating agent shall notify its decision to accept or not the application for the above items.

3.5. In the event of changes to the OBDBr-2 system, emissions control system or power-train after the homologation thereof, the manufacturer would be allowed to submit updated documentation (Attachment V) plus technical justification to prove the adequacy of the system to the requirements of OBDBr- 2.

Attachment IV

TESTS FOR CHECKING THE OBDBR-2 SYSTEM OPERATION AND ACCESS REQUIREMENTS

1. Introduction

This Attachment describes the method to be used to check the operation of an on-board diagnostic system (OBDBr-2) installed to a vehicle, which method is based on a simulation of anomalous operation of certain subsystems of the engine management system, or control of emissions.

The manufacturer shall provide the fault simulator devices and / or defective components to be used in the demonstration of combustion fault monitors, efficiency of catalyst converter (s) catalyst and deterioration of oxygen sensor(s). When measured through the NBR 6601 test cycle, such defective components or devices must not cause the vehicle's emissions to exceed the limits set forth in Article 5 by more than 20%.

When the vehicle is tested with the devices or defective components installed, the OBDBr-2 system will be approved if the LIM is enabled, even if the exhaust emissions are below the limits of the table in Article 5.

2. Test description

2.1. The OBDBr-2 systems test comprises the following phases:

» Simulation of a fault to a component of the engine management system or emissions control,

» Pre-conditioning of the vehicle with the fault simulated according to the procedure specified in items 4.2.1 or 4.2.2 of this Attachment,

» Driving the vehicle, with the simulated fault, according to NBR 6601 test cycle and measurement of emissions produced,

» Assessment of the OBDBr-2 system reaction to the simulated fault, checking also whether this is conveniently indicated to the driver of the vehicle.

The homologating agent may, at its discretion, access the information described in section 4.4 using a standardized diagnostic tool.

2.2. Alternatively, at the request of the manufacturer, fault could be electronically simulated for one or more components, as provided in item 4 of this Attachment.

2.3. If possible to demonstrate to the homologating agent that monitoring in conditions set forth for the NBR 6601 test cycle would have a restrictive character in relation to the vehicle in normal operating mode, the manufacturer may request that such monitoring is done by taking as base the NBR 6601 test cycle with some modifications, if approved by the homologating agent.

3. Vehicle and Fuel used with tests

3.1. Vehicle - The vehicle used in the tests shall meet the following requirements:

3.1.1. It should be run-in at the manufacturer's discretion, in good mechanical condition and have components (catalyst (s) and oxygen sensors) aged and representative of a vehicle that has completed the emissions durability test (according to ABNT NBR 14008).

3.1.2. The exhaust system shall not leak likely to reduce the amount of gas collected, which should be that coming out from the engine.

3.1.3. The admission system must not have accidental intake of air.

3.2. Fuel - for tests, use the reference standard fuel for emissions (E22 or E100 or CNG) according to regulation in force set by the regulatory agency.

3.2.1. The type of fuel for the witnessed proving demonstration of faults will be selected by the homologating agent and should not be changed during any phase of testing.

3.2.2. In the case of using alcohol as fuel is permissible that the engine starts operation with the help of gasoline.

3.2.3. In the case of using CNG as fuel is permissible that the engine starts operation with liquid fuel, is automatically switched to CNG, and in possible situations of engine load, use liquid fuel automatically without driver intervention.

4. Procedure for testing the OBDBr-2 System

4.1. The operating cycle on the dynamometric bank must meet the requirements of NBR 6601.

4.2. Vehicle pre-conditioning

4.2.1. After introducing one of the fault modes described in the Sections 4.3.2 to 4.3.6 below, the vehicle must be preconditioned by performing at least one cycle of preconditioning.

4.2.2. The manufacturer may use other methods of preconditioning to be described in Attachment V.

4.3. Demonstration test of the OBDBr-2 system

4.3.1. After pre-conditioning as provided in Section 4.2, the vehicle is subjected to a test according to NBR 6601. The LIM must activate before the end of the test in any of the conditions set out in items 4.3.2 to 4.3.5 below. The homologating agent may replace those conditions with others in accordance with paragraph 4.3.6 of this Attachment. However, for purposes of approval, the total number of faults simulated must not exceed four.

4.3.2. Replacing the catalyst with a deteriorated or defective catalyst, which results in hydrocarbons emission level above the limit set forth in Article 5 of this Normative Instruction.

4.3.3. Combustion faults induced under conditions similar to those for the monitoring of combustion faults in item 2.1.2 of Attachment II, or simulation of this type of fault with the aid of external devices that result in emissions that exceed one or more of the limits set forth in Article 5 of this Normative Instruction.

4.3.4. Replacing the oxygen sensor with a deteriorated or defective one, or electronic simulation of the same with the help of external device, resulting in emission levels that exceed one or more of the limits set forth in Article 5 of this Normative Instruction.

4.3.5. Electrical disconnect of the purge control device of evaporative emissions (if the vehicle is equipped with this type of device and if it is enabled for the selected fuel type). For this specific fault mode, it is necessary to proceed with the test according to NBR 6601.

4.3.6. Electrical disconnect of any other components of the power-train related to emissions control, belonging to the control system of the engine, resulting in emission levels that exceed one or more of the limits set forth in Article 5 of this Normative Instruction (if enabled for the type of fuel selected).

4.4. Diagnose signals

4.4.1. Information

4.4.1.1. Upon detection of the first fault of a component or system, the QIP corresponding to the engine conditions at the time must be stored in the memory of the engine control module. If, subsequently, combustion fault would occur, the QIP previously stored must be replaced by that related to the of the combustion fault conditions in question.

The engine operation conditions stored at the time of fault shall include: the fault code that triggered the storage of data, the calculated load value, engine speed and temperature of the coolant, and if available, the following conditions: the value(s) of the fuel fine tuning, the fuel pressure, the vehicle speed, the pressure in the admission manifold and the operation with or without feedback signal.

The QIP stored must match the set of conditions chosen by the manufacturer as the most appropriate with a view to an effective remedy. Only one data QIP is required. Manufacturers may elect to store more data QIP, since at least the required QIP can be read by a generic diagnostic tool meeting the specifications of the items 4.4.2.2 and 4.4.2.3 below.

If the fault code that triggered the storage of the conditions in question is deleted in the circumstances set out in item 7 of Attachment II, the stored engine conditions may also be deleted.

4.4.1.2. In addition to the conditions stored in the QIP, the engine control module shall transmit, upon request, through the serial port connector of the standardized data link, if available, the following information: Fault diagnosis codes, temperature of coolant of the engine, fuel control system status (open loop, closed loop or other), fine tuning of the fuel, ignition advance, intake air temperature, air pressure in the manifold, air flow rate, engine speed, output signal from the throttle position sensor, secondary air status (ascending, descending or atmosphere), calculated load value, vehicle speed and fuel pressure.

The signals must be provided in standard units based on the specifications of the item 4.4.2 below. The effective signals must be clearly identified separately from preset values (default) or signals of degraded emergency mode.

4.4.1.3. The results from more recent tests of diagnoses of combustion and electrical faults must be represented by some indication, for example: "OK / not OK, pass/fail" and made available through the connector of the standard serial communications port, according to the specifications of item 4.4.2 below. Diagnoses more specific as those of catalytic converter(s) and oxygen sensor (s), shall have the numerical results from their tests as well as the limits to which the system is compared and likewise be made available through the standard connector of the serial communication port.

4.4.1.4. As provided in section 4.4.2.3 below, the OBDBr-2 system requirements based on which the vehicle is homologated and the main emission control systems monitored by the OBDBr-2 system shall be accessible through the standard connector serial communication port according to the specifications of item 4.4.2 below.

4.4.1.5. The identification code of the calibration and the VIN shall be made available through the connector of the standard serial communication port and must be provided in accordance with ISO 15031-5 (at least the PID $ 01, $ 02, $ 03 and $ 04 $ 09 Service).

4.4.2. Access to diagnostic system used for the control of emissions must be unrestricted and standardized, and in addition, the system must comply with ISO standards listed below:

4.4.2.1. The communication links between on-board equipment and external equipment must comply with the requirements of ISO 15031-4 standard «Road Vehicles – Communication between vehicle and external test equipment for emissions-related diagnostics – External test equipment».

4.4.2.2. Testing equipment and diagnostic instruments needed to communicate with OBDBr-2 systems must meet the functional specifications of the ISO 15031-4 standard - "Road Vehicles – Communication between vehicle and external test equipment for emissions-related diagnostics – External test equipment".

4.4.2.3. The basic data of diagnosis (specified in section 4.4.1 above) and information from bi-directional control should be provided in the format and units set forth in the ISO 15031-5 standard - "Road Vehicles – Communication between vehicle and external test equipment for emissions-related diagnostics – Emissions-related diagnostic services", and should be accessible through a diagnostic instrument that meets the requirements of ISO 15031-4 standard.

4.4.2.3.1. The vehicle manufacturer shall provide the homologating agent, by means of Attachment V, with details of any data related to the diagnosis of emissions relating to this Instruction: for example, PID; OBD monitor ID; ID of Tests not specified in ISO 15031-5.

4.4.2.4. The manufacturer shall identify the faults stored using a code as specified in the standard ISO 15031-6 "Road Vehicles – Communication between vehicle and external test equipment for emissions-related diagnostics – Diagnostic trouble code definitions". The fault codes must be fully accessible by means of a standardized diagnostic equipment that meets the requirements of item 4.4.2.2.

4.4.2.5. The connection interface between the vehicle and test equipment of diagnosis system must be standardized and must meet all requirements of ISO 15031-3 standard - "Road Vehicles – Communication between vehicle and external test equipment for emissions-related diagnostics – Diagnostic connector and related electrical circuits: specification and use".

The mounting position should be easily accessible to service personnel but protected from accidental damage during normal use.

4.5. Specific requirements regarding the transmission of signals for diagnosis of dual-fuel vehicles running on gas (CNG).

4.5.1. For dual-fuel vehicles running on gas (CNG), in which the specific signals for diagnosis of different fuel systems are registered in the same engine control module, the diagnostic signals for operation with liquid fuel and operation with gas must be evaluated and transmitted independently from each other.

4.5.2. For dual-fuel vehicles running on gas, in which the specific signals of different fuel systems are registered in different engine control modules, the diagnostic signals for operation with liquid fuel and operation with gas must be evaluated and transmitted from the fuel-specific engine control module.

4.5.3. When prompted by a diagnostic tool, diagnostic information for a vehicle powered by liquid fuel shall be transmitted to a source address and signals of diagnosis of gas-powered vehicle must be transmitted to another source address when the control is performed by different modules. The utilization of source addresses is described in the ISO 15031-5 standard - "Road Vehicles – Communication between vehicle and external test equipment for emissions-related diagnostics – External test equipment".

Attachment V

DOCUMENTS FOR CERTIFICATION – SETUP CHARACTERISTICS OF ON-BOARD DIAGNOSIS DEVICE / SYSTEM (OBDBR-2)

1. OBD family identification

2. LIM location and symbol

3. List and description of all components controlled by the OBDBr-2 system.

Component1	Quantity	Manufacturer	Code2

Note:
1 – In the list of components, the code shall be that stamped on the part or that identifying it.
2 – In case of the engine control module, it is also necessary to inform the calibration identification code.

4. Description of the general operation principles of the system of:

4.1. Catalyst(s) monitoring

4.2. Ignition faults detection

4.3. Oxygen sensor(s) monitoring

5. Description of services supported and respective PIDs, OBD monitors ID,

ID of tests not specified in ISO 15031-5

6. Description of the basic characteristics of operation for fault detection of ignition and fuel injection systems via table, such as the following example, where what appears here in line must be informed in columns, and the manufacturer may supplement with information deemed necessary.

On-board diagnosis Device / System

Component / System	Catalyst
Fault Code	P 0420
Monitoring Strategy	Signals from pre and post-catalyst sensors
Fault Detection Criterion	Difference between signals from pre and post-catalyst sensors
LIM Activation Criterion	2 pre-conditioning cycles plus 1 test cycle

Secondary parameters for diagnosis enabling	Engine speed, volumetric load or efficiency, fuel control in open loop or closed loop, catalyst temperature
Pre-conditioning cycle (*)	B
Demonstration Test	NBR 6601 (see also item 2.3 of Attachment IV)
(*) the cycles listed are examples and may be used to fill the column "preconditioning cycle", leaving it to the manufacturer's complete and exemplify the driving cycle used.	

Pre-conditioning cycle	Driving cycle to perform
A	3 driving cycles in the following order: 1st – one ABNT NBR 6601 “cold” test (parts 1 and 2) 2nd – one ABNT NBR 6601 “cold” test (parts 1 and 2) 3rd – one ABNT NBR 6601 “cold” test (parts 1 and 2)
B	3 driving cycles in the following order: 1st – one ABNT NBR 6601 “cold” or "hot" test (parts 1 and 2) 2nd – one ABNT NBR 6601 “cold” or "hot" test (parts 1 and 2) 3rd – one ABNT NBR 6601 “cold” test (parts 1 and 2)
C	1 driving cycle in the following order: 1st – one ABNT NBR 6601 “cold” test (parts 1 and 2)
D	other combinations (describe)

7. Safety Notes: (information the manufacturer deems necessary to assure the integrity of vehicle, driver, etc.).

Attachment VI

SCHEDULES FOR HOMOLOGATION OF THE OBDBR-2 SYSTEM

The applicant should schedule time with the Covenant Technical Agent (ATC) for delivery of documentation (Tuesdays and Thursdays, from 2:00 PM to

4:30 PM), where the documentation would be received and previously reviewed by a qualified officer.

Case 1: OBDBr-2 System activation, without changing the exhaust emissions or noise in passing

1) The documentation to be submitted is Attachment V, plus further explanation, that the applicant deems necessary, along with official letter from the company stating that there is no change in calibration of emissions, only activation of OBDBr-2 system. Please take into account that:

a. It is necessary to identify the OBDBr-2 to which the proceedings refer

b. It is recommended that the letter references the vehicles and engines, the Technical Reports and LCVM that will be part of the family.

2) Once submitted the documentation, it is necessary to check with the ATC the possibility to monitor the verification tests of the system operation made by the manufacturer.

3) It is the prerogative of the ATC to monitor these tests, which may not always be possible by the schedule

4) If the ATC would not be able to monitor them during the time of analysis of the documentation submitted, they may be scheduled later. These monitored tests could be carried out after issuing new LCVM.

5) within approximately 2 months, the ATC will issue a letter (or Technical Opinion) to IBAMA approving or disapproving the system.

6) IBAMA will issue a new LCVM based on that already existing and on the ATC document, including the system homologation. The current LCVM will continue valid for production, importation and sale until a new LCVM is issued by IBAMA.

7) The OBD system verification tests carried out by the manufacturer must all be available prior to commencing the vehicle(s) sales.

Case 2: OBDBr-2 System activation, with changing the exhaust emissions or noise in passing

1) Submit the Attachment V, the additional explanations that the applicant deems necessary, new attachment (s) C1 + A1 + B1 and official letter from the applicant requesting new LCVM. Please take into account that:

a. It is necessary to identify the OBDBr-2 to which the proceedings refer

b. It is recommended that the letter references the vehicles and engines, the Technical Reports and LCVM that will be part of the family.

2) The emission tests should follow the flow normally used, scheduling with the ATC a date for the monitored testing to take place. 3) It is the prerogative of the ATC to monitor the tests, which may not always be possible by the schedule

3) Once submitted the documentation, it is necessary to check with the ATC the possibility to monitor the verification tests of the system operation made by the manufacturer. 3) It is the prerogative of the ATC to monitor these tests, which may not always be possible by the schedule.

4) If the ATC would not be able to monitor them during the time of analysis of the documentation, they may be scheduled later. These monitored tests could be carried out after issuing new LCVM.

5) Within the current term analysis to obtain the LCVM, the ATC will issue new Technical Opinion approving or disapproving the system, which will be forwarded to IBAMA.

6) IBAMA, based on the new Technical Opinion issued by the ATC, will issue a new LCVM including the system homologation.

7) The OBD system verification tests must all be available prior to commencing the vehicle(s) sales.

It establishes technical and homologation requirements for ON-BOARD SELF-DIAGNOSTIC systems (OBD) to be installed in all new heavy-duty Diesel vehicles homologated in phase P-7 of the Air Pollution Control Program by Motor Vehicles – PROCONVE. Union Official Journal of May 13th, 2010.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF THE ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, using the powers conferred upon him by Item VIII of Article 22 of Attachment I to Decree No. 6099 of April 26th, 2007, approving the Statutory Structure of IBAMA;

Whereas Law nº 8.723, of October 28th, 1993, that prescribes the reduction of the emission of pollutants by automotive vehicles, is an integral part of the Environment National Policy;

Whereas the provisions of the Air Pollution Control Program by Motor Vehicles (PROCONVE) established by the National Environment Council via CONAMA Resolution No. 18 of May 6th, 1986, and other complementary resolutions;

Whereas the requirements established by the National Environment Council from CONAMA Resolution No. 403 of November 11th, 2008, which deals with the establishment of compulsory incorporation of devices or systems for self diagnosis on-board (OBD) in new Diesel heavy duty vehicles homologated in PROCONVE-P7 phase;

Whereas the need for introducing provisions applicable to On-board self-diagnosis systems (OBD), in order to facilitate the immediate detection of any deterioration or fault of the equipment controlling emissions from heavy duty Diesel cycle engines;

Whereas the need for continuous PROCONVE updates well as the complementation to execution procedures thereof; and

Whereas the propositions presented by the Environmental Quality Directorate (DIQUA), in Proceedings IBAMA No. 02001.001252/2010-51, resolves:

Article 1: To establish technical and homologation requirements for OBD systems (to be installed in all new heavy-duty Diesel vehicles homologated in phase P-7 of the Air Pollution Control Program by Motor Vehicles (PROCONVE).

Sole paragraph. The requirements given in the caption of this article can be found in Attachments to this Instruction.

Article 2: The following Attachments are part of this Normative Instruction:

ATTACHMENT I – DEFINITIONS AND ABBREVIATIONS, SPECIFICATIONS AND TESTS;

ATTACHMENT II: – INFORMATION RELATED TO THE OBD FOR HOMOLOGATION;

ATTACHMENT III – ON-BOARD SELF-DIAGNOSIS SYSTEMS (OBD);

ATTACHMENT IV: - HOMOLOGATION FOR ON-BOARD SELF-DIAGNOSIS SYSTEMS (OBD).

Article 3: The approval granted to a type of vehicle or engine, with respect to the OBD system may be extended to a number of engine families as defined in ATTACHMENT I, item 4 of this Normative Instruction.

Article 4: Limits are defined in NOx emissions to meet the provisions of Resolution CONAMA 403 of November 11th, 2008, Article 2.

NOx Emissions	**Phase P-7 of PROCONVE**
According to cycles ESC, ETC	NOx Emissions Limit(g/kWh)
Torque limit activation	7.0
LIM activation	3.5
Limit value for homologation	2.0

Sole paragraph. The limits given in the caption of this article correspond to maximum values consistent with the provisions in Section 3.2.8.1.4. of ATTACHMENT I to this Normative Instruction.

Art. 5º When the torque limiter is activated, the engine torque should not exceed in any case, a maximum value of:

I – for vehicles with MTMI up to 16 ton. (inclusive): 75% of the maximum engine torque (that is, a reduction of 25% of the maximum torque);

II – for vehicles with MTMI above 16 ton.: 60% of the maximum engine torque (that is, a reduction of 40% of the maximum torque);

§ 1 The torque limiter should be activated under the following conditions:

I – with a waiting period of forty eight hours of engine operation, for all failures related to the exhaust control system that are not repaired, which generate NOx levels above 7,0 g/kWh, in a safe manner for the vehicle operation, as defined by the "operation sequence".

II – Without waiting period:

a) in the lack of reagent as defined by the "operation sequence";

b) with NOx levels above 7.0 g/kWh, without detecting a failure, as defined by the "operation sequence".

§ 2 The torque limiter does not apply to the engines or vehicles used by the army, rescue services or fire department, and ambulance services. The permanent deactivation can only be made by the engine or vehicle manufacturer, and a special type of engine within the engine family should be designated according to ISO 16185, for an adequate identification.

Art. 6 This Normative Instruction is applicable to the OBD systems of all vehicles equipped with compression ignition engines, except for the vehicles with maximum total mass authorized (MTMA) lower than or equal to 3.856 kg, and engines running with ethanol, natural gas, or LPG, or any of its combinations.

Art. 7 For the purpose of the certification of vehicles provided with OBD system, the manufacturer or importer should provided in addition to what is already established in Administrative Rule IBAMA nº 167, of December 27th, 1997, the information defined in Attachment IV of this Normative Instruction so as to record the characteristics of this system.

§ 1 The OBD system supporting tests could take place in a period following the certification since the development of the OBD system is completed after the emission calibration, however, the manufacturer should ensure that the implementation of the OBD system is completed and documented according to ATTACHMENT IV of this Normative Instruction, and the reports referring to the supporting tests are available for inquiries of the homologating agent, upon request, before the beginning of the commercialization.

§ 2 If the homologating agent chooses to witness the tests, he/she should indicate the failures to be simulated according to ATTACHMENT IV, item 6.3.1.1 of this Normative Instruction, and the term for performing the tests, regardless of the beginning of vehicle commercialization.

Art. 8 The interfaces, communication protocol, connectors, diagnosis tools, and failure codes should be in accordance with the international standards described in Attachment III, including the establishment of the equivalent Brazilian standards.

Art. 9 Until December 31st, 2013, the vehicles or engines belonging to an OBD engine family, as defined in item 4.2. of ATTACHMENT I of this Normative Instruction whose production or import is up to 50 units per year, per manufacturer or importer, regardless of the make/model, can be ratified based on the requirements of this normative instruction, where the engine is monitored only with regard to the continuity of the circuits, and the post-treatment system concerning possible important operational deficiencies according to ATTACHMENT III, Item 3.3 of the Normative Instruction.

Art. 10. In agreement with the provision of ATTACHMENT I, item 3.1.3.1., of this Normative Instruction, the following use conditions are applicable under this engine operation conditions in a stationary or transient state with:

I – altitude not above 1,600 meters;

II – environment temperature in the order of –7 °C to 35 °C;

III – engine coolant temperature above 70 °C.

Sole paragraph. This article is not applicable in case of activation of the monitoring for the reservoir reagent level where the monitoring should be carried out under all use conditions, including the provisions of ATTACHMENT I, Item 3.2.6 of this Normative Instruction.

Art. 11. This Normative Instruction becomes effective on the date of its publication.

Abelardo Bayma
President

Attachment I

DEFINITIONS AND ABBREVIATIONS, INSPECTION AND TESTS

1. DEFINITIONS

1.1. For the purposes of the provisions included in the present Normative Instruction, the definitions of Standard ABNT NBR 15634 are adopted, and the following definitions are added:

"Homologation of an engine (engine family)": According to ISO 16185 or a corresponding Brazilian standard. The homologation of a type of engine (engine family) with regard to the emission of gases and particulate material.

"Auxiliary emission control strategy (AECS)": An emission control strategy that becomes active or changes the base emission control strategy according to specific purpose(s) and in response to a specific set of environmental conditions and/or operation, namely, vehicle speed, engine angular speed, admission air temperature, admission air pressure.

"Basic emission control strategy (BECS)": An emission control strategy that is kept active during the entire operational range of engine speed and load, except when an AECS is activated. Among the BECS examples, the following can be included (this is not about an exhaustive enumeration):

» Injection control maps.

» EGR control maps.

» Catalytic reagent dosage control map.

"combined NOx elimination system with particulate material filter", post-treatment system for the exhaust gasses conceived to reduce the current emission of nitrogen oxides (NOx), and particulate material (PT).

"Continuous regeneration", the continuous regeneration of a system after the post-treatment of the exhaust gases that occurs permanently or, at least once at each ABNT standard test.

This regeneration process does not require a special testing procedure.

"Manipulative strategy":

» An AECS that reduces the efficiency of the control of emissions relative to the BECS under conditions susceptible to be checked during the operation and use of the vehicle,

» a BECS that distinguishes the operation of a normalized homologation test from other types of operation, and provides a lower level of control of emissions under conditions not substantially included in the applicable homologation test procedures, or

» an OBD system or a monitoring strategy for the control of emissions that distinguish the operation in a normalized homologation test from other types of operation, and provides a smaller capacity of monitoring (in terms of time and accuracy) under conditions not substantially included in the applicable homologation test procedures.;

"Reduction NOx system", an exhaust gas post-treatment system conceived to reduce the emission of nitrogen oxide (NOx) for example, at present there are lean mixture active and passive NOx catalysts to absorb NOx, and selective catalytic reduction systems – SCR systems).

"Design element" relative to a vehicle or an engine:

» any control system, including *software* for computers, electronic control systems and computer logic systems;

» any control system calibration;

» the result of system interaction;

» any *hardware* article.

“Emission-related deficiency”, deficiency or deviation related to normal production tolerances in the design, materials or in the execution of a device, system or set capable of affecting any parameter in the specifications or components belonging to an emission control system. One missing component may be considered a deficiency related to the emissions”.

“Emission-control strategies (ECS)”, an element or a set of design elements incorporated into the global design of an engine system or vehicle to control the emissions of exhaust gases that includes a BECS and a set of AECS.

“Emission-control system” the exhaust gas post-treatment system, the electronic control responsible for the engine system management, and any engine system component related to the exhaust emission that provides or receive information to/from these controls, and, when applicable, the communication interface (*hardware* and messages) between the engine system electronic control unit(s) (ECU) and any other group of traction or control unit of the vehicle related to emission management.

“Family of post-treatment engine-system”, a grouping, defined by the manufacturer, of engines in accordance with the definition of the engine family, but grouped by exhaust gas treatment systems.

“Engine System”, the engine, the emission control system and the communication interface (*hardware* and messages) between the engine system electronic control unit(s) (ECU) and any other propulsion engine group or vehicle control unit.

“Engine tuning”, a specific engine/vehicle configuration that includes the emission control strategy (ECS), one single engine output (the full ratified load) and, if used, a set of torque limiters.

“Exhaust gas post-treatment system” a catalyst (oxidation or three-way) particulate material filter, NOx reduction system,

Combined NOx elimination system with a particulate material filter or any other type of device capable of reducing the emission and installed at downstream of the engine. This definition includes the recirculation of exhaust gases that, when installed is considered an integrate portion of the engine system.

“Pollutant gases”, the carbon monoxide, hydrocarbons (non-methane hydrocarbons – NMHC), methane and nitrogen oxides, the latter expressed in nitrogen dioxide (NO2).

“Important functional deficiencies”, any temporary or permanent failure of an exhaust gas post-treatment system whose result can be anticipated as to become an immediate increase or delay of gassy emissions or particulate material from the engine system, and which can not be properly evaluated by the ODB system.

In case of an engine equipped with NOx reduction system, the examples of monitoring of important functional deficiencies are:

» the complete removal of the system or its replacement for a dummy system (both, important functional deficiencies of intentional nature);

» lack of the reagent required by a NOx reduction system;

» failure of any SCR electrical component;

» any electrical failure of a component (Ex. in the sensors, activation devices and dosage control unit) of a NOx reduction system, including, if applicable, the reagent heating system;

» reagent dosage system failure (Ex. air supply failure, piping obstruction, and dosing pump failure).

“Failure” means:

» Any deterioration or failure, including electrical failures, of the emission control system, susceptible of having as a result emissions above the OBD system limit values, or, if applicable, an impossibility of reaching exhaust gas post-treatment system output range by which the emission of any regulated pollutant would exceed the OBD limit values;

» any case in which the OBD system has no capacity to meet the monitoring requirements anticipated by the present standard.

The manufacturer could, nonetheless, consider as a failure any deterioration or failure that may result in emissions that do not exceed the OBD system limit values.

“Multiple setting engine”, an engine that enables more than one setting.

“OBD”, On Board Diagnosis system used in the control of emissions with the capacity of detecting the occurrence of a failure and identifying the probable location of the failure checked through failure codes stored in the memory of a computer.

“OBD engine family”, a set of engine systems grouped by the manufacturer for the purpose of OBD system homologation based on common OBD system design parameters and in accordance with item 4.2 of the present attachment.

“Particulate material post-treatment device”, an exhaust gas post-treatment system designed to reduce the emissions of the particulate material (PT) through the mechanical, aerodynamics, separation, by diffusion or inertia.

“Pre-established working mode” an activated AECS in case of ECS failure detected by the OBD system that activates the LIM, and does not require any system signal from the component in which the failure is.

“Power pack unit" a device activated by the engine whose function is to power the auxiliary equipment mounted in the vehicle.

“Reagent”, any substance stored on board of the vehicle inside a reservoir and supplied to the exhaust gas post-treatment system (if required) upon request of the emission control system.

“Self-adaptability”, any engine device capable of keeping a consistent air/fuel ratio.

“Smoke”, particulate material composed of particulates suspended in the current of a diesel engine exhaust gases that absorb, reflect, or refract light.

"Torque limiter", a device that temporary limits the maximum engine torque.

"Emission control monitoring system", the system that ensures the correct operation of the NOx control measurements implemented in the engine system according to the provisions of Attachment I, item 3.2.

"Heating cycle" is the engine working period sufficient for the coolant to reach a minimum temperature of 343 K (70 °C), or as specified by the manufacturer.

"Access" is the availability of all OBD system data related to emissions, including all failure codes required for inspection, diagnosis, maintenance, or repair of the vehicle parts related to emissions, through the normalized diagnosis connector activation interface.

"Deteriorated components/systems" is an engine or an exhaust gas post-treatment component/system that was deteriorated intentionally, in a controlled manner, by the manufacturer for the purpose of conducting an OBD system homologation.

"OBD test cycle" is a version of the ESC test as described in the ABNT NBR 15634 standard, but in which the duration of each of the modes is reduced to 60 seconds.

"Operation sequence" is the one used to determine the LIM activation or deactivation condition, or the torque limiter, consisting of the engine start, followed by a period of operation, in the engine disconnection and time elapsed up to the next start with the OBD monitoring in operation, what would enable to detect a possible failure, according to the strategy adopted by the manufacturer.

"Preconditioning cycle" is the achievement of at least three OBD consecutive tests, or emission test cycles for the purpose of reaching the engine operation stability, the emission control system, and the preparation of the OBD control system to be put into service.

"Repair information" is any information required for the diagnosis, maintenance, inspection, periodic monitoring, or engine repair and provided by the manufacturers to shops or their authorized representatives. If necessary, the information should include maintenance manuals or technical manuals, diagnosis information (for example, minimum or maximum theoretical measurement values), connection diagrams,

calibration identification number for logical support applicable to a type of engine, information that enables the update of electronic system logical support according to the specifications provided by the vehicle manufacturer, instructions for individual and special cases, information relative to tools and equipment, information on record of data and two-way monitoring and test data.

The manufacturer is not obliged to provide information covered by intellectual property rights or which may constitute a specific know-how of the manufacturers and/or suppliers of original equipment; in this case the technical information necessary is not improperly maintained.

"Normalized" is all OBD data related to emissions (that is, contained in the flow of information, in case a probe device is used) including all failure code used, this data should be exclusively produced according to industry standards – which, owing to its format having the allowable alternatives clearly defined, enables a maximum level of harmonization in the automotive industry – whose use is expressly authorized by the present normative document.

"*Limp-home*" is the protection that enables to operate an engine or ride a vehicle, even under malfunction of the injection system, however, with a reduced performance, depending on the degree of severity of the failure.

"Heavy duty vehicles" defined according to Resolution CONAMA n° 15, February 13th, 1995.

1.2. Symbols, abbreviations and international standards.

1.2.1. Symbols of testing parameters, chemical components, and abbreviations – the definitions of ABNT NBR 15634:2008 are adopted as premises.

1.2.2. Abbreviations

AECS Auxiliary emission control strategy

BECS Basic emission control strategy

ECS Emission control strategy

ECU Electronic control unit

EEPROM Electrically erasable programmable read-only memory

EGR Exhaust gas recirculation system

LIM malfunction indicating lamp

OBD On board self-diagnosis system

MTMA Maximum total authorized mass

MTMI maximum total indicated mass

SCR Selective catalytic reduction system

1.2.3. Legislation and Normative Instructions that the present document uses as reference

ISO 15031-1 → ISO 15031-1: 2001: "Road vehicles – Communication between vehicle and external equipment for emissions related diagnostics – Part 1: General information".

ISO 15031-2 → ISO/PRF TR 15031-2: 2004: "Road vehicles – Communication between vehicle and external equipment for emissions related diagnostics – Part 2: Terms, definitions, abbreviations, and acronyms".

ISO 15031-3 → ISO 15031-3: 2004: "Road vehicles – Communication between vehicle and external equipment for emissions related diagnostics – Part 3: Diagnostic connector and related electrical circuits, specification and use".

SAE J1939-13 → SAE J1939-13: "Off-Board Diagnostic Connector".

ISO 15031-4 → ISO DIS 15031-4.3: 2004: "Road vehicles – Communication between vehicle and external equipment for emissions related diagnostics – Part 4: External test equipment".

SAE J1939-73 → SAE J1939-73: "Application Layer – Diagnostics".

ISO 15031-5 → ISO DIS 15031-5.4: 2004: "Road vehicles – Communication between vehicle and external equipment for emissions related diagnostics – Part 5: Emissions-related diagnostic services".

ISO 15031-6 → ISO DIS 15031-6.4: 2004: "Road vehicles – Communication between vehicle and external equipment for emissions related diagnostics – Part 6: Diagnostic trouble code definitions".

SAE J2012 → SAE J2012: "Diagnostic Trouble Code Definitions", equivalent to ISO/DIS 15031-6, April 30th, 2002.

ISO 15031-7 → ISO 15031-7: 2001: "Road vehicles – Communication between vehicle and external equipment for emissions related diagnostics – Part 7: Data link security".

SAE J2186v → SAE J2186: "E/E Data Link Security", of October 1996.

ISO 15765-4 → ISO 15765-4: 2001: "Road vehicles – Diagnostics on Controller Area Network (CAN) – Part 4: Requirements for emissions-related systems".

SAE J1939 → SAE J1939: "Recommended Practice for a Serial Control and Communications Vehicle Network."

ISO 16185 → ISO 16185: "2000 Road vehicles – engine family for homologation".

ISO 2575 → ISO 2575: "2000 Road vehicles – Symbols for controls, indicators and tell-tales".

ISO 16183 → ISO 16183: 2002: "Heavy duty engines – Measurement of gaseous emissions from raw exhaust gas and of particulate emissions using partial flow dilution systems under transient test conditions".

ABNT NBR 15634 → ABNT NBR 15634: Highway automotive vehicles – Analysis and determination of the exhaust gas according to ETC, ESC, ELR cycles.

Resolution CONAMA nº 15/1995 → Establishes a new classification of automotive vehicles for the control of vehicular gas emission, particulate and evaporative material, considering imported vehicles".

Resolution CONAMA nº 230/1997 → Forbids the use of equipment which may reduce the efficiency of the control of the emission of pollutants and noise.

Resolution CONAMA nº 315/2002 → Provides stipulations on the new phases of the Vehicular Emission Control Program - PROCONVE.

Resolution CONAMA nº 403/2008 → Provides stipulations on the new phases of requirements for the Automotive Vehicular Air Pollution Control Program - (PROCONVE) for new heavy duty vehicles (Phase P7) and other stipulations.

Ordinance IBAMA nº 167/97 → General procedures of PROCONVE
Ordinance IBAMA nº 29/2008 → Urea Specification – ARLA32

ANP 40/2008 → Resolution nº 40/2008 of ANP, which establishes reference fuel for homologation tests.

2. OBD HOMOLOGATION REQUEST

The OBD System Homologation request could be made together with the certification of the engine that represents the OBD Engine Family, or separately.

3. SPECIFICATIONS AND TESTS

3.1. Generalities

3.1.1. Emission control equipment

3.1.1.1. Components capable of affecting, if applicable, the emission of gases and particulate material from diesel and gas engines should be conceived, built, mounted, and installed in a manner so as to enable the engine to meet, under normal use, the provisions of the present standard.

3.1.2. The use of manipulative strategies is forbidden.

3.1.3. Requirements relative to auxiliary emission control strategies

3.1.3.1. An auxiliary emission control strategy (AECS) may be installed in an engine or vehicle, under the condition that this AECS works only when the use conditions specified in item 3.1.3.4. can not be observed to the effects mentioned in item 3.1.3.5., and not for a time longer than the necessary to reach that effect.

3.1.3.2. An auxiliary emission control strategy (AECS) that works under the conditions specified in item 3.1.3.4., and that results in the use of a different or changed emission control strategy (ECS) with regard to the one normally used during the applicable test and emission cycles,

is allowed if, in accordance with the requirements of item 3.1.4., it is fully confirmed that the measurement does not reduce permanently the efficiency of the emission control system. In all other cases, such a strategy should be considered a manipulative strategy.

3.1.3.3. An auxiliary emission control strategy (AECS) that works only under conditions other than those specified in item 3.1.3.4. is allowed if, in agreement with the requirements of item 3.1.4., it is fully proved that this measurement corresponds to the minimum strategy required to the effects of item 3.1.3.6. with regard to the environmental protection and other technical aspects. In all other cases, such a strategy should be considered a manipulative strategy.

3.1.3.4. An auxiliary emission control strategy (AECS) may be installed in an engine or vehicle provided the operation of this AECS includes the homologation test and it is activated in accordance with item 3.1.3.5.

3.1.3.5. An AECS is activated:

» only through on board signals provided for protecting the engine system (including the air treatment device) and/or the vehicle against any damage.

» for the purposes such as operation safety, preestablished mode for the emissions and limiting strategies (*limp-home*),

» for the purpose of preventing excessive emissions, cold start or engine heating,

» if used to reduce the control of a regulated pollutant under specific environmental or operating conditions in order to keep the control of all further regulated pollutants within the specific limit values applicable to the engine in question. The global effects of an AECS of this kind are the compensation of possible occurrence of natural phenomena, enabling an acceptable control of all emission constituents.

3.1.4. Special provisions for the electronic emission control systems as defined in PROCONVE P7 and ABNT NBR 15634 standard.

3.1.5. Electronic system safety provisions

3.1.5.1. Any vehicle equipped with an emission control unit should have characteristics capable of preventing any modification (according to Resolution CONAMA 230/1997) except when authorized by the manufacturer. The manufacturer should authorize changes if they are required for diagnosis, maintenance, inspection, adaptation, or vehicle repair purposes. All module reprogrammable functional codes or parameters should be resistant to any abusive intervention. Removable memory *chips* provided for calibration should be encapsulated and sealed in an airtight box or protected by electronic algorithm, and should not be replaced without using special tools and processes.

3.1.5.2. The engine working parameters coded in the module could not be changed without the use of special tools or procedures (for example, ECU components should be welded or wrapped in wax or resin, and the box should be sealed or welded).

3.1.5.3. The manufacturers should adapt the measurements required to protect the adjustment of the maximum fuel debt or the maximum torque from abusive changes while the vehicle is in running.

3.1.5.4. The manufacturers that use computerized programmable coding system, for example, Electrically-Erasable Programmable Read-Only Memory should prevent its non-authorized reprogramming. The manufacturers should include reinforced protection strategies against abusive interventions, and protection elements for the recorded data which require electronic access to an external computer in possession of the manufacturer. Alternative methods capable of providing an equivalent level of protection against abusive interventions may be homologated by the competent entity.

3.2. General provisions to ensure the correct operation NOx control measurements

3.2.1. Generalities

3.2.1.1. This item is applicable to the compression-ignition engine systems regardless of the technology used to meet the emission limit values indicated in the chart of Article 4 of the present IN.

3.2.1.2. Application date

The provisions included in items 3.2.3., 3.2.4., and 3.2.5. will be applicable according to the date established in Resolution CONAMA n°403/2008, PROCONVE (Phase P-7) and its replacements.

3.2.1.3. Without prejudice as to article 10, all engine systems covered by this item should keep its emission controlling function in all conditions normally effective in the Brazilian territory, specially at low and environment temperatures.

3.2.1.4. For homologation purposes, the manufacturer should demonstrate to the competent technical service that, for engine systems that require a reagent, no ammonia emission should exceed, during the applicable emission tests, the average value of 25 ppm.

3.2.2. Maintenance provisions

3.2.2.1. The manufacturer should provide or make arrangements so as to make shore that all owners of new heavy duty vehicles or new engines for heavy duty vehicles receive instructions, in writing, with information pointing out that if the control system does not work correctly, the driver will be alerted on the existence of a problem through the malfunctioning indicating lamp (LIM), showing the engine, consequently a reduced functional behavior/performance. The instructions should specify which consumption reagents should be supplied between the normal maintenance intervals, as well as the probable consumption rate of these reagents. These instructions should also inform obligatorily the correct consumption reagent specifications.

3.2.3. Engine system NOx control

3.2.3.1. The incorrect operation of the engine system as to the NOx emission control should be determined based on the NOx levels detected by the specific sensors located in the exhaust gases.

3.2.3.2. Deviations in the NOx level, that is, anything 1.5 g/kWh beyond the applicable limit value for PROCONVE (phase P-7), should have as consequence the activation of the LIM to alert the driver, such as referred to in Article 4 of the present IN.

3.2.3.3. A failure code not susceptible of being erased and capable of identifying the reason why the NOx exceed the levels specified in the chart of Article 4 of the present IN (Normative Instruction)

should be stored according to item 3.9 of Attachment III of this IN, for at least 400 days or 9,600 hours of engine operation.

The causes of NOx excess should be, at least, and when applicable, identified in the following cases: Empty reagent reservoir, interruption of reagent dosing activity, incorrect EGR flow, or EGR deactivation. In all other cases, the manufacturer is authorized to refer to a failure code not susceptible of being erased: “High NOx level – unknown reason”.

3.2.3.4. If the NOX levels exceed the OBD system limit values of 7 g/kWh, a torque limiter should reduce the engine performance, according with a device of item 3.2.5 so that the activation of such a system is clearly perceivable to the vehicle driver. Once the torque limiter is activated, the driver should continue to be alerted in accordance with the provision of 3.2.3.2., and a failure code not susceptible of being erased, should be stored according to item 3.2.3.3.

3.2.3.5. In case of engine systems that use EGR without any other exhaust gas post-treatment system for the control of NOx emissions, the manufacturer could use an alternate method other than that of item 3.2.3.1 to determine NOx level. At the time of the homologation, the manufacturer should demonstrate that the alternate method is equally fast and accurate in the determination of the NOx level when compared with the provision of item 3.2.3.1., and that has consequences identical to those provided in items 3.2.3.2., 3.2.3.3., and 3.2.3.4.

3.2.4. Reagent control

3.2.4.1. In case of vehicles that use a NOx reducing agent, the driver should be informed about the level of the reagent in the reservoir by means of a specific mechanical or electronic indication in the vehicle dashboard. It should include a warning signal indicating where the reagent level is at:
» below 10% of the reservoir capacity or at a higher percentage, at the discretion of the manufacturer.

3.2.4.2. The driver should be informed on the conformity with the provision of item 3.6.5. of Attachment III, in case the reagent reservoir is empty.

3.2.4.3. As soon as the reagent reservoir is empty the provisions included in item 3.2.5 are applicable, together with the provisions of item 3.2.4.2.

3.2.5. Inhibiting actions for the exhaust gas post-treatment abusive transformation.

3.2.5.1. All engine systems covered by the present item should include a torque limiter to alert the driver to the fact that the engine system is operating incorrectly or the vehicle is being used incorrectly, thereby encouraging the prompt repair of any failure.

3.2.5.2. The torque limiter should be activated after the conditions provided in items 3.2.3.4. and 3.2.4.3 are checked, and the "operation sequence" is fulfilled for the recognition of failures, according to the conditions described by the manufacturer, such as in item 1 of attachment II.

3.2.5.3. The requirements for the deactivation of the torque limiter are defined in items 3.2.5.4. and 3.2.5.5.

3.2.5.4. The torque limiter should be deactivated when the engine is idling, without any load, if the activation conditions no longer exist.

3.2.5.5. It should not be possible to deactivate the torque by means of a switch or a maintenance diagnosis tool.

3.2.6. Conditions of the emission control monitoring system operation.

3.2.6.1. The emission control monitoring system could be deactivated upon the activation of a limiting strategy (*limp-home*) that results in a torque limitation above the levels indicated in Article 5 of this IN, for the category of the vehicle in question.

3.2.6.2. If the injection system activates a replacement value for some variable, the emission control monitoring system should be kept operational.

3.2.6.3. The incorrect operation of NOx control measurements should be detected in the space of four cycles of OBD tests, as defined in item 6.1 of Attachment IV.

3.2.6.4. The algorithm used by the ECU to establish a correlation between NOx concentration and the specific NOx emission (in g/kWh) at the ETC should not be considered a manipulative strategy.

3.2.7. Failure in the emission control monitoring system:

3.2.7.1. The emission control monitoring system should be monitored with relation to electrical failures and to the removal or deactivation of any sensor that may block the diagnosis of an increase of emission, as required by items 3.2.3.2. and 3.2.3.4.

The sensors that affect the diagnosis capacity are, for example, those which measurement directly the NOx concentration, and those used to monitor the dosing activity, the reagent level, and the sensors that enable the calculation of the EGR percentage.

3.2.7.2. If a failure is confirmed in the emission control monitoring system, the driver should be alerted immediately by the activation of a warning signal, in accordance with the provisions
Of item 3.6.5. of Attachment III.

3.2.7.3. The torque limiter should be activated in accordance with the provisions of item 3.2.5., if the failure has not been corrected within 48 consecutive hours of engine operation.

3.2.7.4. When the emission control monitoring system has determined that the failure no longer exists, the corresponding code(s) to this failure may be erased from the memory, except for the cases mentioned in item 3.2.7.5., and the torque limiter, if applicable, should be deactivated according to item 3.2.5.4.

It should not be possible to erase the system memory, through any diagnosis device, the code(s) corresponding to an emission control monitoring system failure.

3.2.7.5. In case of removing or deactivating the emission control monitoring system elements, in conformity with item 3.2.7.1., a failure code not susceptible of being erased should be stored according to item 3.9 of Attachment III, for at least 400 days or 9,600 hours of engine operation.

3.2.8. Demonstration of an emission control monitoring system

3.2.8.1. The emission control monitoring system consists of the following three phases:

3.2.8.1.1. Selection:

An incorrect operation in the NOx control measurements or an emission control monitoring system failure is selected by the competent unit.

3.2.8.1.2. Qualification:

The influence of the incorrect operation is validated by measuring the NOx level during the ETC with the engine on the test bench.

3.2.8.1.3. Demonstration:

The system reaction (torque reduction, alert signal, etc.) should be demonstrated by running the engine during at most, four OBD test cycles.

The competent homologation entity should select at least two, and a maximum of three, incorrect operation among the NOx control measurements or the emission control monitoring system failures.

3.2.8.1.4. For the qualification phase, the NOx emissions should be measured during the ETC testing cycles. The ETC testing result should be used to determine which way the NOx control monitoring system is expected to react during the demonstration process (torque reduction and/or warning signal). The failure should be simulated so that the NOx level does not exceed anything over 1 g/kWh the limit values indicated in items 3.2.3.2. or 3.2.3.4.

The qualification of the emissions is not required in case of an empty reagent reservoir, not even to demonstrate an emission control monitoring system failure.

The torque limiter should be deactivated during the qualification phase.

3.2.8.1.5. For the demonstration phase, the engine should be running during four OBD testing cycle, maximum.

There should not be and any failure other than those which should be considered for demonstration purposes.

3.2.8.1.6. Before starting the test sequence referred to in item 3.2.8.1.5, the emission control monitoring system should be adjusted to a "no failure" status.

3.2.8.1.7. According to the NOx level selected, the system should activate a warning signal and, if applicable, the torque limiter at any given time before the end of the detection sequence. The detection sequence could be interrupted as soon as the NOx control monitoring system has reacted in an appropriate manner.

3.2.8.2. In case of an emission control monitoring system based mostly on the NOx level monitoring by means of sensors located in the exhaust gas current, the manufacturer could chose to monitor some system functionalities directly (for example, the interruption of the dosing activity, EGR valve closed) to determine the conformity.

In this case the functionality of the selected system should be demonstrated.

3.2.8.3. The torque reduction level required in Article 5 by the torque limiter should be homologated together with the homologation of the engine general functional behavior. For the demonstration process, the manufacturer should demonstrate to the homologating entity the correct torque limiter integration with the engine electronic control unit (ECU). During the demonstration the separate torque measurement is not required.

3.2.8.4. As an alternative to items 3.2.8.1.3. to 3.2.8.1.5., the demonstration of the emission control monitoring system and the torque limiter could be carried out by testing the vehicle. The vehicle should be ridden on a highway or test track with the incorrect operation or failures selected from the emission control monitoring system to demonstrate that the warning signal and the torque limiter activation operate according to the provisions of items 3.2.5.2. and 3.2.5.3.

3.2.8.5. If, to meet the provisions of item 3.2, it is necessary to store in the computer memory a failure code not susceptible of being erased, the following three conditions should be fulfilled at the end of the demonstration:

» It should be possible to confirm, by means of an OBD system diagnosis device, the presence, in the computer memory of this system, the appropriate failure code not susceptible of being erased, as mentioned in item 3.2.3.3., and a demonstration should carried out, in a satisfactory

manner, to show to the homologating entity that the diagnosis device could not erase it.

» it should be possible of confirming the time spent during the sequence of detection with the signal activated by means of reading a counter not susceptible of being erased, as referred to in item 3.9.2 of Attachment III, and a demonstration should carried out, in a satisfactory manner, to show to the homologating entity that the diagnosis device could not erase it.

» the homologating entity should have homologated the design elements capable of showing that this information not susceptible of being erased is stored in accordance with item 3.9.2 of Attachment III of the Standard, for at least 400 days or 9,600 hours of engine operation.

3.2.8.6. The tests for carbon monoxide, hydrocarbon, nitrogen oxide, and exhaust gas particulate material of engines made for heavy automotive Diesel cycle vehicles should be carried out according to the methods and procedures established for the ESC and ELR cycles of the ABNT NBR 15634 Brazilian Standard.

4. ENGINE FAMILIES AND OBD ENGINE FAMILIES

4.1. Parameters that define the engine family.

The engine family, as defined by the engine manufacturer, should meet the provisions of ISO 16185 standard or equivalent Brazilian standard.

4.2. Parameters that define the OBD engine family.

The OBD engine family could be defined by basic design parameters which should be common to the system of engines of the same family. For the engine systems to be considered of the same OBD engine family, the basic parameters indicated in the list below should be common to them:

» OBD system monitoring methods

» failure detection monitoring methods

Exception: Unless otherwise proven by the manufacturer through a pertinent demonstration of technical nature or other appropriate procedure that these methods are equivalent.

Note: The engines that do not belong to the same engine family could, nonetheless, belong to the same OBD engine family, provided the criteria indicated above are fulfilled

Attachment II

HOMOLOGATION OBD INFORMATION

1. The vehicle manufacturer should provide the following supplementary information to ensure the correct engine homologation.

1.1. A description of the type and number of preconditioning cycles used for the first engine homologation.

1.2. A description of the type of OBD demonstration cycle used for the first engine homologation relative to the component monitored by the OBD system.

1.3. A document should be delivered to the homologating entity, capable of describing the monitored components, with the strategy for the detection of failures and activation of the LIM (fixed number of test cycles or statistic method). This should also include a list of all OBD output formats and codes used (with a brief description of each one of them), associated with each component of the propulsion engine group related to the emissions and each components not related to the emissions, for the cases in which the monitoring of the components is used to determine the LIM activation.

1.3.1. The information requested in this item could be defined, for example, by the filling up a chart as the one shown below where what is shown here in lines should be informed in columns:

Components	SCR Catalyst
Failure code	Pxxxx
Control strategy	NOx sensor 1 and 2 signals
Failure detection criteria	Difference between sensor 1 and sensor 2 signals
LIM activation criteria	3rd Cycle
Preconditioning	Three OBD testing cycles (three brief ESC testing cycles)
Demonstration test	OBD testing cycle (Brief ESC cycle)

1.3.2. The information required by this attachment could be limited to the complete list of failure codes recorded by the OBD system. This information could be provided, for example, by filling up the two first columns of the chart of item 1.3.1 above.

Attachment III

ON BOARD SELF-DIAGNOSIS SYSTEMS (OBD)

1. INTRODUCTION

The present attachment includes the specific provisions applicable to the OBD systems used in the control of engine vehicle emissions.

2. REQUIREMENTS AND TESTS

2.1. General requirements

2.1.1. The OBD systems should be conceived, built, and installed in the vehicles so that they may permit to identify the various types of failure referring to the emissions susceptible of occurring along the engine service life.

2.1.2. A diagnosis control sequence takes place at each engine start and this sequence is completed at least once, provided the correct conditions for conducting the tests are together in place. The testing conditions should be selected so as to occur according to the provisions for the test defined in item 2 of Attachment IV.

2.1.2.1. The manufacturers are not obligated to activate a component/system exclusively to ensure the functional ODB control under normal vehicle operation when this component/system is not supposed to be normally activated (for example, activation of a reagent reservoir heating for a NOx reduction system or NOx reduction combined system with a particulate material filter when this system is not supposed to be normally activated).

2.1.3. The OBD system could involve devices that take measurements, are sensitive or respond to operation variables (for example, vehicle speed, engine rotation, recognition of gears, temperature, admission pressure, or any other parameter) provided for detecting failures and minimizing the risk of indication of false failures. These devices are not considered manipulative devices.

2.1.4. The OBD system access required for inspection, diagnosis, maintenance, or repair of the engine should be normalized. All failure codes related to the emissions should be compatible with those described in item 6.5.

3. Requirements applicable to the OBD:

3.1. The OBD systems of all diesel engines and all vehicles equipped with an engine of this type should indicate the failure of a component or system related to emissions whenever this failure could lead to an increase of the emissions to values beyond the applicable OBD limits, according to table 6.2.1. of ATTACHMENT I:

3.2. The OBD system should monitor:

3.2.1. The complete removal of a catalyst, if installed as a standalone unit, whether making or not an integral part of a NOx reduction system or a particulate material filter system;

3.2.2. The reduction of the NOx reduction system efficiency;

3.2.3. The reduction of the particulate material filter efficiency;

3.2.4. The reduction of the efficiency of a combined NOx reduction system with particulate material filter.

3.3. Important functional deficiencies

3.3.1. As an alternative to the monitoring process based on the applicable OBD limits, particularly with relation to items 3.2.1 to 3.2.4, the diesel engine OBD systems can monitor a possible occurrence of important functional deficiencies in the following components:

» In the catalyst, if installed as a standalone unit, whether making or not an integral part of a NOx reduction system or a particulate material filter system,

» in the NOx reduction system, if installed,

» in the particulate material filter, if installed,

» in the combined NOx reduction system with particulate material filter.

3.3.2. In case of an engine equipped with NOx reduction system, the monitoring examples of important functional deficiencies are the complete removal of the system or the replacement of it for a dummy system (both important functional deficiencies of intentional nature), lack of reagent required for a NOx reduction system, failure of any SCR electrical component, any component electrical failure. (for example, in the sensors, driving systems, and dosing control unit) of a NOx reduction system, including, if applicable, the reagent heating system, reagent dosing system failure (for example, air supply failure, piping obstruction, and dosing pump failure).

3.3.3. In case of an engine equipped with particulate material filter, the monitoring examples of important functional deficiencies are a significant fusion of the substrate or an obstruction of the particulate material filter leading to a differential pressure outside the range declared by the manufacturer. Any electrical failure of a component (for example, in the sensors, driving systems, and dosing control unit) of a particulate reduction system, including any possible failure, if applicable, in the reagent dosing system (for example, piping obstruction and dosing pump failure).

3.3.4. The manufacturers could demonstrate to the homologating entity that certain components or systems need not to be monitored when, in case of its possible removal or complete failure, the emissions do not

Exceed the applicable limit values indicated in the chart of Article 4 of the IN (Normative Instruction).

This provision is not applicable to an exhaust gas recirculation (EGR) device, NOx reduction system, particulate material filter system, NOx elimination system combined with a particulate material filter system, and nor to a component or system that is monitored for the detection of significant functional deficiencies.

3.4. OBD system monitoring.

3.4.1. The OBD system should monitor:

3.4.1.1. The electronic fuel injection system, the electronic actuator(s) for the regulation of both the fuel quantity and the injection of the fuel supply system with regard to the continuity of the circuits (that is, open circuits or short-circuits) and the total non-operation.

3.4.1.2. All other components, engine systems, or exhaust gas port-treatment system related to the emissions connected to a computer and whose failure would have as a result emissions above the OBD limit values indicated in the chart of Article 4 of this IN. The examples include, at least, the exhaust gas recirculation system (EGR), monitoring systems and components, and mass and air volume flow (and temperature) control system, the turbo-charge overpressure, and intake manifold pressure (and the sensors required for the performance of such functions), sensors, NOx reduction system driving devices, and sensors, electronically activated particulate filter system driving devices.

3.4.1.3. Any other engine component or system or exhaust gas post-treatment system related to emissions and connected to an electronic control unit has to be monitored for the detection of a possible electrical disconnection, except when this is controlled otherwise.

3.4.1.4. In case of engines equipped with exhaust gas post-treatment systems that use a consumable reagent, the OBD system should monitor the presence of this reagent.

3.5. OBD operation and temporary removal of certain OBD monitoring capabilities from service.

3.5.1. The OBD system should be conceived, built, and installed in the vehicle so that it may comply with the requirements of the present attachment under the normal conditions defined in Article 10 of this IN.

Other than these normal use conditions, the emission control system could show some OBD functional behavior degradation, through which the limit values indicated in the chart of Article 4 of this IN could be exceeded before the OBD system signals any deficiency to the vehicle driver. The ODB system should be placed out of service unless one or more of the following conditions is observed.

3.5.1.1. The affected OBD systems may be put out of service if its monitoring capacity is affected by low fuel levels. Due to this reason, to put the system out of service is allowed if the fuel level in the reservoir is lower than 20 % of the nominal reservoir capacity.

3.5.1.2. The affected OBD systems could be temporarily put out of service during the operation of an auxiliary emission control strategy, as described in item 3.1.3.1 of Attachment I.

3.5.1.3. The affected OBD monitoring systems could be put out of service temporarily when the functional or limitation safety strategies (*limp-home*) are activated.

3.5.1.4. In case of vehicles designed to be equipped with power take off, the affected OBD monitoring systems can be put out of service only with the power take off activated and when the vehicle is not running.

3.5.1.5. The affected OBD monitoring systems can put out of service temporarily during the periodic regeneration of a emission control system connected to the engine (for example, particulate material filters, NOx elimination systems or NOx elimination systems combined with particulate material filter systems).

3.5.1.6. The affected OBD monitoring systems can put out of service temporarily outside the normal use conditions defined in item 3.1.3.4 of Attachment I, when this deactivation is justified by an OBD monitoring capacity limitation.

3.5.2. It is not necessary that the OBD monitoring system evaluates the components during the appearance of a failure if this failure could compromise the safety conditions or cause a component collapse.

3.6. Activation of the failure indicating lamp (LIM):

3.6.1. The OBD system should incorporate a failure indicating (LIM) visible to the vehicle driver.

When activated it should show display accordance to standard ISO 2575 any of the symbols below (F01 or F02 or F22).

Symbol number	Symbol form/ shape	Symbol description / application	ISO/IEC registration number
F.01		Engine	Application of ISO 7000-0640

Or

Symbol number	Symbol form/ shape	Symbol description / application	ISO/IEC registration number
F.02		Engine failure	Application of ISO 7000-2423

Or

Symbol number	Symbol form/ shape	Symbol description / application	ISO/IEC registration number
F.22		Engine emission system failure Alternatively "failure" or "malfunction" may be indicate by the base symbol with an appropriate color code: i.e. red or amber/yellow	Application of ISO 7000-2596

3.6.2. The LIM could be used to indicate to the driver that it is necessary to perform an urgent maintenance task. This indication may be equally followed by the display of an appropriate message in the dashboard, that is, indicating that it is necessary to perform an urgent maintenance requirement.

3.6.3. For the strategies that require more than one preconditioning cycle for the activation of the LIM, the manufacturer should provide data and/or technical evaluation to conveniently demonstrates that the monitoring system detects component failure in a manner equally efficiently, and within the correct time. Strategies that require in average more than ten OBD cycles or emission test cycles for the activation of the LIM are not allowable.

3.6.4. The LIM should also go on whenever the engine control system changes to a permanent preestablished operating mode for the emissions. The LIM should also be activated if the OBD system is not capable of meeting the basic monitoring requirements specified in the present document.

3.6.5. Whenever there is a reference to this item the LIM should be activated and, additionally, a separate alert should be also activated (for example, the emission of a flashing luminous signal from the LIM or the activation of a symbol in conformity with ISO 2575 (1), additionally to the LIM activation.

3.6.6. On the other side, the LIM should go on when the vehicle ignition key is fitted in an “ON” position, and before the engine start, it should deactivate up to 10 minutes after the engine start, if any failure is detected.

3.7. Failure code storage

The OBD system should record the failure code(s) that indicate the emission control system status. The failure codes of any failure that was detected and found to trigger the LIM activation should be stored, and these codes should be able to identify the system or component with failures as distinctly as possible. A separate code should be stored indicating the LIM expected activation status – for example, LIM in "ON" position and LIM in OFF" position.

Different status code should be used to identify the emission control systems that work correctly and the emission control systems whose complete evaluation requires a longer vehicle operation. If the LIM is activated due to the occurrence of failures or to the switch to a preestablished operating mode permanent to the emissions, a failure code capable of identifying the probable area where the deficiency occurred should be stored. For the cases mentioned in items 3.4.1.1. and 3.4.1.3. of the present attachment, failure codes should also be stored.

3.7.1. If the monitoring has been put out of service for 10 riding cycles due to the continued vehicle operation under conditions according to those specified in item 3.5.1.2, the monitoring system could be adjusted to «ready to work» without the monitoring preconditioning cycle being completed.

3.7.2. The engine operating hours while the LIM is activated should be available upon request and at any time through the normalized activation connector, according to the specifications of item 6 of the present attachment.

3.8. LIM deactivation

3.8.1. The LIM could be deactivated after achieving up to three consecutive operating sequences, or 24 hours of operation (whichever occurs first), during which the monitoring system responsible for the LIM activation stops detecting the failure in question, and in case other failures capable of triggering separately the LIM activation are not identified.

3.8.2. In case of a LIM activation due to the lack of reagent for a NOx reduction system, or a| NOx elimination system combined with a particulate material filter system, or in the case of using a reagent not in accordance with the manufacturer indications, the LIM could be deactivated after filling up the reservoir.

3.9. Erasure of a failure code

As from the date when the PROCONVE, Phase P-7, becomes effective for new homologations, the OBD system should keep a failure code record with reference to the emission control and the engine operation during the LIM activation for a minimum period of 400 days or 9,600 hours of engine operation. Neither a failure code nor the corresponding engine operating hours during the LIM activation should be erased by the use of diagnosis tools.

4. OBD SYSTEM HOMOLOGATION REQUIREMENTS

for homologation purposes the OBD system should be tested in accordance with the procedures of ABNT NBR Standard. 15634, including the "OBD testing Cycle" as defined in Attachment I of this IN (Normative Instruction).

An engine that represents its engine family should be used for OBD demonstration tests or a report of tests of an OBD engine family previously homologated.

5. DIAGNOSIS INFORMATION

5.1. Upon the detection of the first failure of a component or system, the engine conditions at this time should be stored in the control module memory. The engine storage conditions should include, among others, the calculated torque value, the engine angular speed, the coolant temperature, the intake manifold pressure (if known), and the failure code that generated the data storage. The stored data set should correspond to the most adequate to the correction of the failure.

5.2. Only one data set is required. If the failure code used in the beginning of the storage with regard to the conditions in question is erased, in accordance with item 3.9., the engine storage conditions could also be erased.

5.3. The following enumerated information should be available through the normalized "data communication connector": Failure diagnosis codes, engine coolant temperature, injection control, intake air temperature, manifold air pressure, air flow, engine angular speed, accelerator position, calculated torque value, vehicle speed, and fuel pressure. The information should be provided in normalized units based on the specifications of item 6.6. Effective information should be identified in a clear and separate manner from the limitation strategy information (*limp-home*) and the permanent preestablished values.

5.4. The OBD system requirements based on which the vehicle is homologated, and the main emission control systems monitored by the ODB system according to item 6.4 should be accessible through the data series port of the data normalized activation connector, according to the specification of item 6.

6. DIAGNOSIS SYSTEM ACCESS

The access to the emission control diagnosis system should be normalized and according to Standards ISO 15765 or SAE J1939, as indicated in the following items:

6.1. The use of standards ISO 15765 or SAE J1939 is consistent in items 6.2. to 6.5.

6.2. The communication links between the on board equipment and the external equipment should follow ISO 15765-4 standard, or the clauses similar to the SAE J1939 standard series.

6.3. The test equipment and the diagnosis equipment required to communicate with the OBD systems should, at least, meet the functional specifications of ISO 15031-4 or SAE J1939-73 standards.

6.3.1. The use of an On-Board self-diagnosis system in the form of a video device mounted on the dashboard for OBD diagnosis information is allowed, but consisting of a means to complete the access to this information based on the normalized diagnosis connector.

6.4. The diagnosis data (specified in the present document) and the bidirectional control information should be provided in the format and unit as prescribed by ISO 15031-5 or SAE J1939-73 standard, and should be accessible through a diagnosis instrument capable of meeting ISO 15031-4 or SAE J1939-73 requirements. 15031-4 or SAE J1939-73.

6.5. When a failure is recorded, the manufacturer should indicate it by using the most adequate failure code compatible with the data indicated in item 6.3 of ISO 15031-6 standard, pertinent to emissions relative to diagnosis system failure codes. If such an indication is not possible, the manufacturer could use diagnosis failure codes in agreement with items 5.3. and 5.6. of ISO 15031-6 standard. The failure codes used should be fully accessible from a normalized diagnosis equipment capable of meeting the provisions of item 5.3. As an option, the manufacturer could indicate the failure by using the most adequate failure code and in accordance with those indicated in SAE J2012 or SAE J1939-73 standard.

6.6. The interface connection between the equipment and the diagnosis system test should be normalized, and meet all requirements of ISO 15031-3 or SAE J1939-13 standard. As an alternative to the connector location described in the standards above, and provided all other requirements of ISO 15031-3 standard are met, the connector could be located in an adequate position next to the driver seat, and in the cab floor inclusive.

Attachment IV

ON BOARD SELF-DIAGNOSIS (OBD)
SYSTEM HOMOLOGATION

1. INTRODUCTION

The OBD System Homologation request could be made together with the certification of the engine that represents the OBD Engine Family, or separately for the exclusive OBD System homologation.

The present attachment describes the procedure to be used to check the operation of the on board diagnosis OBD system installed in an engine; this procedure is based on the simulation of a failure of important systems related to the emissions within the engine management or emission control system.

1.1. Deteriorated components/systems

In order to demonstrate an efficient monitoring for an emission control system or component, whose failure would have as a result emissions above the OBD limit values, the manufacturer should provide defective devices and/or electrical components to be used in the simulation of failures. These defective devices or components should not permit the emissions to exceed 20% of the OBD limit values as referred to in the table of Article 4 of this IN.

1.1.1. If it is ascertained that the installation of a deteriorated component or device in an engine means the impossibility of establishing a comparison with the OBD limit values (for example, because the necessary statistic conditions for the validation of the ETC testing cycle are not filled in), the deficiency of this component or device may be considered admissible.

1.1.2. If the installation of a deteriorated component or device in an engine causes an impossibility of reaching the full load curve during the test, this deteriorated component or device may be considered admissible.

1.1.3. In very specific cases (for example, if a limitation strategy is activated, if the engine could not be tested, or in case of EGR valves with inappropriate opening, etc.) the use of deteriorated components or devices capable of causing the engine emissions to exceed in not more than 20% the OBD limit values, as referred to in the table of Article 4 of this IN, may not be required. This exception should be documented by the manufacturer.

1.2. Approval criterion

When the vehicle or engine is evaluated with the deteriorated component or device installed the OBD system is homologated if the LIM is activated. The OBD system is also homologated if the LIM is activated below the OBD limit values.

2. TEST DESCRIPTION

2.1. The OBD system test consists of the following phases:

» simulation of an engine management system component or an emission control system failure, as described in item 1.1.

» preconditioning of the OBD system with a failure simulated during the preconditioning cycle specified in item 6.2.

» run the engine with a simulated failure during the OBD test cycle referred to in item 6.1,

» determine whether the OBD system reacts to the simulated failure and indicates the adequate form.

2.1.1. If the functional behavior (for example, the power curve) of the engine is affected by the failure, the OBD cycle continues to be the abbreviated version of the ESC test cycle, keeping the partial loads as defined in the cycle without failure.

2.2. Optionally and upon request, it is possible to electronically simulate a failure of one or more components in the conditions anticipated in item 6.

2.3. If it is possible to demonstrate to the competent entity that the monitoring under the conditions checked during this OBD test cycle would impose restrictions to the monitoring conditions of the running vehicle, the manufacturers could request that such a monitoring is carried out outside the OBD test cycle referred to in item 6.1.

3. TEST ENGINE AND FUEL

3.1. Engine

The test engine should be in accordance with the prescriptions included in ABNT NBR 15634 standard or its revisions.

3.2. Fuel

The fuel to be used in the OBD system homologation tests is the adequate reference fuel prescribed in attachment II of Resolution CONAMA 403/2008, ANP 40/2008.

4. TEST CONDITIONS

The test conditions should meet the requirements of ABNT NBR standard 15634 or its revisions.

5. TEST EQUIPMENT

The test equipment should satisfy the requirements of ABNT NBR standard 15634 or its revisions.

6. OBD SYSTEM TEST CYCLE

6.1. The OBD test cycle is an abbreviated version of the ESC test cycle. The individual modes should be performed according to the same order as that of the ESC test cycle.

The engine should work for 60 seconds, maximum, in each mode, contemplating the changes of speed and engine load in the first 20 seconds. The specified rotation should be kept within a tolerance of ± 50 rpm, and the specified torque with a tolerance of ± 2 % of the maximum torque in each rotation.

6.2. Preconditioning cycle

6.2.1. After introducing a failure as anticipated in item 6.3, the engine and its OBD system should be preconditioned by performing a preconditioning cycle.

6.2.2. Upon the request of the manufacturer, and the approval of the homologating unit, a higher number of consecutive OBD test cycles could be performed up to a maximum of nine.

6.3. OBD system cycle

6.3.1. Diesel engines and vehicles equipped with diesel engine.

6.3.1.1. After being preconditioned as provided in item 6.2, the test engine is set up to the OBD test cycle described in item 6.1. The LIM should activate at the end of this test in any of the conditions prescribed in items 6.3.1.2. to 6.3.1.7. The homologating unit can replace this condition for others, according to item 6.3.1.7. For homologation purposes the total number of failures submitted to the test, in case of different systems or components, should not be higher than four.

If the test is conducted to homologate an OBD engine family composed of engines that do not belong to the same engine family, the homologating entity should increase the number of failures to be tested, up to a maximum of twice the number of engine families present in the OBD in question. The homologating family could decide to end the test at any time before completing the maximum number of failure tests.

6.3.1.2. In the homologation of an OBD system provided with NOx reduction system (SCR) or EGR, the LIM should be activated in any of the following conditions:

» the complete removal of the system or its replacement for a dummy system

» lack of the reagent required by a NOx reduction system;

» Any electrical failure of a component (for example, in the sensors, driving devices, and dosing control unit) of a NOx reduction system including, if applicable, the reagent heating system,

» failure of a reagent dosing system (for example, air supply failure, pipe obstruction, and dosing pump failure) of a NOx reduction system,

» severe system failure.

6.3.1.3. In the homologation of an OBD system provided with particulate material filter, the LIM should be activated in any of the following conditions:

» removal of the complete particulate material filter or the replacement of the system for a dummy system,

» significant fusion of the particulate material filter substrate,

» significant crack of the particulate material filter substrate,

» any electrical failure of a component (for example, in the sensors, driving devices, and dosing control unit) of a particulate material filter.

» if applicable, the failure of a reagent dosing system (for example, pipe obstruction, and dosing unit pump) of a particulate material filter,

Obstruction of the particulate material filter from which results a differential pressure outside the range stated by the manufacturer.

6.3.1.4. In the homologation of an OBD system provided with particulate material filter and NOx reducer (SCR) or EGR, the LIM should be activated in any of the following conditions:

» the complete removal of the system or its replacement for a dummy system,

» lack of any reagent required for a NOx elimination system combined with a particulate material filter,

» Any electrical failure of a component (for example, in the sensors, driving devices, and dosing control unit) of a NOx elimination system combined with a particulate material filter, including, if applicable, the reagent heating system,

» failure of a reagent dosing system (for example, air supply failure, pipe obstruction, and dosing pump failure) of a NOx elimination system combined with a particulate material filter system,

» severe failure of the NOx (NOx Trap) manifold system,

» significant fusion of the particulate material filter substrate,

» significant crack of the particulate material filter substrate,

Obstruction of the particulate material filter from which results a differential pressure outside the range stated by the manufacturer.

6.3.1.5. Electrical disconnection of all electronic actuators for the regulation of quantity of fuel, and injection of the fuel supply system, which could cause an emission level higher than the OBD limit values, as indicated in the chart of the table of Article 4 of this IN.

6.3.1.6. Electrical disconnection of any other engine component related to emissions and connected to the control module, which could cause an emission level higher than the OBD limit values, as indicated in the chart of the table of Article 4 of this IN.

6.3.1.7. When confirming the compliance with items 6.3.1.5. and 6.3.1.6., and upon approval of the homologating unit, the manufacturer could take the adequate measures to demonstrate that the OBD system will indicate the existence of a failure in the occurrence of a disconnection.

NORMATIVE INSTRUCTION IBAMA no. 06/2010

Establishes the technical requirement to regulate the procedures for the of the maintenance state of vehicles in use for Vehicular Inspection Programs evaluation. Official Gazette (D.O.U.) of 06.09.2010.

THE PRESIDENT OF THE BRAZILIAN INSTITUTE OF ENVIRONMENT AND RENEWABLE NATURAL RESOURCES – IBAMA, in the use of the attributions vested in him under item VIII, of Article 22, of Attachment I of Decree nº 6.099, of April 26th, 2007, that approves IBAMA Regimental Structure.

Whereas Law nº 8.723, of October 28th, 1993, that prescribes the reduction of the emission of pollutants by automotive vehicles, is an integral part of the Environment National Policy;

Whereas the prescriptions of the Program for Control of Air Pollution from Mobile Sources (PROCONVE) instituted by the National Council for Environment through Resolution CONAMA nº 18, of May 6th, 1986, and further supplementary resolutions;

Whereas the requirements established by the National Council for Environment through Resolution CONAMA nº 418, of November 25th, 2009, which requested Ibama to regulate the procedures for the evaluation of the maintenance state of the vehicles in use;

Whereas there is a continuous need of PROCONVE to update its provisions. as well as the complementation of its execution procedures decides to:

Article 1 - Establish the technical requirements to regulate the procedures for the evaluation of the maintenance state of vehicles in use.

Sole paragraph. The requirements mentioned above in the *head* of this article may be found in the Attachments of the present Normative Instruction.

Art. 2 – The following Attachments are an integral part of the present Normative Instruction:

1. ATTACHMENT I – DEFINITIONS.

2. ATTACHMENT II – PROCEDURE FOR THE INSPECTION OF DIESEL CYCLE VEHICLES IN THE I/M PROGRAM

3. ATTACHMENT III – PROCEDURE FOR THE INSPECTION OF OTTO CYCLE VEHICLES EXCEPT FOR MOTORCYCLES AND SIMILAR VEHICLES IN THE I/M PROGRAM

4. ATTACHMENT IV – PROCEDURE FOR THE INSPECTION OF MOTORCYCLES AND SIMILAR OTTO CYCLE VEHICLES IN THE I/M PROGRAM

5. ATTACHMENT V – PROCEDURES FOR THE MEASUREMENT OF NOISES

6. ATTACHMENT VI – INSPECTION CENTER CHARACTERISTICS

7. ATTACHMENT VII – INSPECTION REQUIRED INFORMATION TO BE PROVIDED BY THE MANUFATURERS OF VEHICLES AND ENGINES

Art. 3 – While performing the inspection, the vehicle driving and test procedures should be conducted by the vehicular emission inspector, properly qualified and trained.

Art. 4 – Vehicles equipped with two-stroke engines could be exempted from inspection as established in the definition of the program target fleet.

Art. 5 - This Normative Instruction becomes effective on the date of its publication.

Abelardo Bayma

Attachment I – Definitions

» Exhaust System Changes: Changes visually noticeable in the exhaust system (advanced state of deterioration, loose components, holes, false air slots, etc.) that disable or affect the measurement of exhaust gases or compromise the operation of the engine or the emission control system.

» Changes in the Emission Control Items: Changes visually noticeable (absence, non-compliance with the original specifications, non-operation or advanced state of deterioration) of emission components and control systems.

» Technical assistance: It is the worker that helps the inspector and provides an interface with the user, drives the vehicle and gives directions and explanations on the procedures and results. He neither participates in nor interferes with the tests, and is not accountable for the results.

» Inspection centers: Locations built and equipped for the exclusive purpose of inspecting the fleet of vehicles in circulation in a serial mode, with regard to the emission of pollutants, noise, and safety.

» CO: Carbon monoxide contained in the exhaust gases, measured in volume %.

» $CO_{corrected}$: It is the measured value of carbon monoxide, and corrected with regard to the dilution of sampled gases, according to the expression:

$$CO_{corrigido} = F_{diluição} \times CO_{medido}$$

» Intermediate acceleration condition: Conditions of use of a partial loaded engine whose specific power in kW/t (kilowatts per ton) should be evaluated through the measurement and acceleration of the vehicle, track inclination and typical vehicle moving resistance coefficients, mostly with regard to friction, aerodynamics, and inertia.

» Normal operating conditions: These are the operating conditions of the loaded vehicle under normal traffic, and at speeds compatible with the original vehicle specifications, commercial fuel, and when the propulsion system components and pollutant emission control systems show regular and acceptable operation with relation to the vehicle design standards and production.

» dB (A): Audible pressure level unit in decibels, weighed by the response curve at frequency A, for the noise level qualification.

» Oil crankcase decontamination: Procedure used so that the excess of the crankcase oil contaminating gases are recirculated through the crankcase gas recirculation system after being burned in the combustion chamber by the engine before the measurements.

» On board diagnosis: evaluation permanently performed by the engine management system through the monitoring of signals emitted by specific sensors, with capability for correcting operation deviations, integrating the system, and identifying the malfunction of components as well as

protecting them against risks resulting from defects found, triggering preventive maintenance alarms, and fixing the standard provisions for the engine operation under emergency conditions.

» Engine operation information devices: These are the vehicle instruments and indicators that provide information on its operation condition.

» Exhaust gas dilution factor: It is the volumetric dilution percentage of the exhaust gas sample due to the entry of air into the system, given by the expression below:

$$F_{dilution} = \frac{15}{(CO + CO_2)_{measured}},$$ for Ethanol fueled vehicles or gasoline

$$F_{dilution} = \frac{12}{(CO + CO_2)_{measured}},$$, for GNV (vehicular natural gas) fueled vehicles

» Blue smoke: Bluish naked eye visible combustion products, composed of carbon particulates, lubricating oil, and partially burned fuel, except for water vapor.

» Irregular engine operation: operation condition characterized by a clear instability of the idling rotation or the maximum Diesel freewheel engine RPM, or when the vehicle engine only operates upon the activation of the throttle or accelerator as well as when shows abnormal noises.

» Exhaust gas: Substances emitted to the atmosphere from any exhaust system pipe or opening.

» Crankcase gases: Substances emitted to the atmosphere, from any part of the lubrication or ventilation system of the engine crankcase.

» $HC_{corrected}$: it is the HC measured and corrected value for the dilution of sampled gases, according to the expression:

$$HC_{corrigido} = F_{diluição} \times HC_{medido}$$

» Hydrocarbons: Total organic substances, including fractions of unburned fuel and byproducts resulting from the combustion present in the exhaust gas and which are detected by the infrared detector for HC,

expressed as normal hexane in parts per million by volume – ppm.

» Vehicular emission inspector: it is the technician who performs the test, enters the data in the system, installs the equipment, accelerates de vehicle, issues the report, and records and pastes the vehicle seal.

» Emission control item: component or system developed specifically for the control of pollutants and/or noise. This includes the sensors required for the engine electronic control, catalytic converter (catalyst), particle filters (DPF), smoke limiter devices (LDA), crankcase gas recirculation system (PCV), exhaust gas recirculation system (EGR), the evaporative emission control system and others defined at the discretion of department responsible for the I/M Program.

» Undesirable action items: These are any parts, components, devices, systems, *software*, lubricants, additives, fuels, and operational procedures in disagreement with the vehicle homologation which reduce or may reduce the efficiency of the control of the emission of noise and atmospheric pollutants from automotive vehicles, or produce variations above the standards or discontinued with regard to these emissions under conditions which may be expected during engine operation in normal use.

» LIM (malfunction indicating lamp): It is a visible means that informs the vehicle driver about an emission control system malfunction.

» Idle: work operation in which the angular engine speed specified by the manufacturer should be kept during the engine operation without load, and with the fuel supply system controls, accelerator, and throttle in the idling (resting) position.

» Noise Level Meter: Equipment designed to measure the audible pressure caused by a noise source, and which provides sound level objective and reproducible measurements normally expressed in decibels (dB(A)).

» Motorcycle: any type of two-wheel automotive vehicle, including motorcycles, scooters, and mopeds.

» Two-stroke engines: an engine whose operating cycle involves two phases (combustion-exhaustion and intake-compression);

» Four-stroke engines: An engine whose operation cycle comprises four different phases (intake, compressions, combustion, and exhaustion);

» Diesel cycle engines: an engine that operates with the ignition-compression principle.

» Otto cycle engines: an engine that operates by means of spark ignition.

» Opacity: measurement of the absorption of light reached by a luminous beam when crossing an exhaust gas column, expressed in m–1, between the emergent and incident light rays.

» Opacimeter: a set that measures, in a continuous manner, the opacity of the exhaust gases emitted by vehicles.

» Total Gross Weight – PBT: The weight indicated by the manufacturer for the specific operation conditions, based on considerations such as strength of materials, capacity of tire load, etc. according to NBR 6070.

» Maximum power: maximum effective power, according to ABNT NBR 5484, expressed in kW (kilowatts).

» I/M Program: The purpose of the Program for Inspection and Maintenance of Motor Vehicles in Use is to perform in a systematic and standardized manner the emission of noise and atmospheric pollutants.

» Technician in charge: it is the person responsible for one or more Inspection Center, answerable for the procedures practiced, internal supervision, and internal proposition of solutions for specific cases.

» Sensors: these are devices that measure the primary engine control variables (rotation, temperature, pressures, oxygen in the exhaust gas, etc.), and transmit them to the engine control module.

» Emission control systems: It means the set of components, including the engine electronic management module, and any and all components relative to the fuel supply, ignition, intake, exhaustion or evaporative emission control systems

that sends or receives signals to/from this module with the main function of controlling the emission of pollutants.

» Exhaust system: set of components, including the exhaust manifold, exhaust pipe, expansion chamber(s), silencer, and, when applicable, the catalytic converter(s), particulate filter(s), and other gas exhaust and noise post-treatment systems. More than one exhaust pipe is considered when the exhaust gases from the combustion chambers are expelled by totally separate piping without any interconnection between them, and the result of the measurements should be considered based on whichever pipe shows a higher value.

» Noise reduction system: Devices employed for the purpose of reducing the noise emitted by the vehicle, could include acoustic barriers or insulation up to encapsulation of the vehicle propulsion, and electronic cancellation noise systems.

» OBD System: it is an on board diagnosis system used in the control of emissions, and capable of identifying the probable origin of failures checked by means of failure codes stored in the installed engine control module memory.

» Leaks: Engine fluid leaks from the fuel supply and exhaust gas systems.

» Biofuel vehicle: a vehicle with two separate tanks for different fuels, excluding the auxiliary start reservoir.

» Vehicles derivate from motorcycles: vehicles with three or more wheels having a propulsion system with characteristics similar to those of the motorcycles.

» Multifuel or flex vehicle: a vehicle that could operate with gasoline or hydrated ethylic alcohol or any mixture of these two fuels in the same tank.

» Rejected vehicle: A vehicle that shows unfavorable conditions for the accomplishment of emission tests.

» Failed to Pass vehicle: vehicles that show changes and irregularities in the visual, and/or gas, opacity, and noise inspections.

Attachment II

ATTACHMENT II – PROCEDURE FOR THE INSPECTION OF DIESEL CYCLE VEHICLES IN THE I/M PROGRAM

1. After the vehicle enters the Inspection Center it should be directed to an inspection line.

2. The inspector should register the license plate and check the vehicle registration information with the department of motor vehicles.

3. After that the inspector will record the vehicle kilometrage and make sure that the engine is under normal operation temperature.

4. The engine temperature may be checked by using one of the following methods:

a) information provided on the vehicle dashboard itself;

b) measurement of the engine oil temperature;

c) reading, by using a digital thermometer, of the external engine block temperature which should not be lower than 60 ºC, avoiding measurements in areas too close to the exhaust piping.

5. Proceed with a previous visual inspection, checking whether the vehicle is ready to be inspected for gas emission.

5.1 Check if the engine is type two- or four-strokes

5.2. Check if the vehicle shows:

a) Irregular engine operation;

b) Emission of bluish-white smoke or black smoke visibly intense;

c) Violation of the fuel supply system seal;

d) Apparent fluid leaks (dropping of oil, fuel, water, and other fluids);

e) Changes, defects, or advanced state of deterioration in the exhaust system (excessive corrosion, not original holes, lack of components) capable of causing leaks, false entry of air, or increasing the noise level.

Note: The exhaust system or part thereto that is not original, could be admitted, provided it does not affect the original performance standards;

f) Changes, defects, or advanced state of deterioration in the air intake system capable of causing leaks, false entry of air, or increasing the noise level;

g) Insufficiency of fuel to perform the measurement of emission

h) Non-existence of any abnormality which may pose risk of accidents, or damages to the measuring instruments, or to the vehicle during the inspection.

6. If any irregularity described above is found, the vehicle will be considered "REJECTED", the gas measuring procedures could not be started, and the Vehicle Inspection Report will be issued, ending the inspection.

7. In case the vehicle is not rejected in the visual pre-inspection, it will be submitted to a visual inspection of the gas emission and noise control items, originally anticipated to its make/model/version, and the engine operation information devices. All possible defects in the following items should be observed to the extent applicable, provided they are visible without any disassembly:

a) PCV (crankcase positive ventilation) system missing or damaged.

Note: All light vehicles with Diesel engine, and with natural air intake manufactured as from 01/01/1996, all city busses with Diesel engine, and natural air intake manufactured as from 01/01/1988, and all heavy duty vehicles with Diesel engine, and natural air intake manufactured as from 01/01/1994 should have a PCV system.

b) Attachments, connections, and hoses of the PVC system, irregular;

c) EGR (exhaust gas recirculation) system absent or damaged;

d) Attachments, connections, and hoses of the EGR system, irregular;

e) Presence, type of application, general state, content verification, and attachment of the exhaust gas treatment systems, irregular;

f) Presence, attachment, and electrical connection of sensors, irregular;

g) Existence of undesirable action devices, and alterations in the vehicle which could affect the emission control;

h) Fuel reservoir, and engine oil reservoir cover missing;

i) (LIM) lamp indicating engine malfunction;

j) Damages, absence or advanced state of deterioration of encapsulations, acoustic barriers and other components that affect directly the emission of vehicle noise anticipated to the vehicle make/model/version.

8. In case the vehicle shows at least one of the irregularities above, it will be considered FAILED TO PASS, but it should be submitted to the measurement of gas emission for the purpose of user guidance/directions.

9. During the pre-evaluation the inspector must decide whether the vehicle should be submitted to the measurement of noise, according to the procedure described in Attachment V. The computerized system could also select randomly some vehicles not indicated by the inspector for the control and audit of the inspection process.

10. Previously to the measurement of the smoke opacity, the inspector should check the number of independent exhaust pipe outputs, as well as the quantity of types of fuel used by the vehicle to determine the number of tests.

11. The inspector should identify the characteristics of the supply system for the correct selection of the limits applicable to the engine, that is, whether it is:

a) Naturally aspirated or turbo charged with LDA (smoke limiter);

b) Turbo charged;

c) For biofuel vehicles with fuel supply selectable modes, the inspector should perform the tests in each of the modes.

12. The measurements should be performed with opacimeter, capable of meeting NBR 12897 standard – Emprego do Opacímetro para Medição do Teor de Fuligem – Método de Absorção de Luz (Employment of the Opacimeter for the Measurement of the Content of Soot – Light

Absorption Method), provided it is correlatable to a sampling opacimeter with 0.43m in length, effective for the light path through the gas and certified by the National Institute of **Metrology**, Standardization and Industrial Quality (INMETRO).

13. For the execution of the smoke opacity, the inspector will follow the sequence shown below, which should be directed by the inspection management software installed in the equipment computer.

13.1. Install the angular speed meter

13.2. Inform the inspection management *software* about the idle and maximum freewheel (cut) angular speeds. In order to preserve the vehicle mechanical integrity accelerate the engine slowly and observe the angular speeds reached, making sure that it is in accordance with the manufacturer specifications.

13.3. For the verification, the engine should operate without load to enable the measurement and recording of value Ridle, up to the 10 seconds, and, following that the engine should be slowly accelerated from the idle rotation until reaching Rmaximum freewheel, making sure that its stabilization is within the ranges recommended by the manufacturer, with an additional tolerance of +100 rpm and –200 rpm on Rmaximum. freewheel , and ± 100 rpm, for the idle rotation;

13.4. If the maximum freewheel angular speed recorded does not meet the specified value, the vehicle will be considered "FAILED TO PASS";

13.5. If the value found for the idle speed is outside the specified range, the vehicle will be considered FAILED TO PASS, but it should be submitted to an opacity measurement;

13.6. If the idle and maximum freewheel angular speeds are not known, the inspection management software could proceed with its determination so as to make sure that the rotation limiter is operating properly, according to the engine characteristics. The values determined this way will be the base for defining the acceptable angular speed measuring ranges with a an additional tolerance of +100 rpm, with –200 rpm for Rmaximum freewheel, and ± 100 RPM for the idle rotation;

13.7. If any abnormality occurs during the engine acceleration the inspector should desaccelerate immediately the vehicle which will also be considered "REJECTED" due to irregular engine operation;

13.8. After confirming that the idle and cutting rotations are compliant, the vehicle will be ready to be inspected with relation to opacity and smoke;

13.9. Position the opacimeter probe by introducing it at least 300 mm into the vehicle exhaust pipe with the engine at RPMidle;

13.10. If the operator is observing that the engine shows an excessive amount of black smoke, before starting the complete measurement process he should accelerate the engine twice until the reaching RPM max. freewheel, insert the probe in the exhaust pipe, and accelerate around 75% of the cutting rotation up to 5 s, and check the maximum opacity value recorded. If this value is higher than 7.0 m–1, the measuring procedure will be interrupted, and the vehicle will be considered "FAILED TO PASS";

13.11. In order to carry out the complete opacity measurement procedure, the accelerator should be activated in a continuous and quick manner (1 s, maximum) without any stroke, until reaching its final course. The acceleration times between the upper idle rotation limit range and the lower maximum freewheel rotation limit range should de registered;

13.12. Keep the accelerator position as described in the previous item until the engine stabilizes within the maximum rotation range, remaining in this condition for a maximum time of 5 seconds. Desaccelerate the accelerator and wait for the engine to stabilize within the idle RPM, and the opacimeter returns to the original value obtained in this same condition. The maximum opacity value reached during this sequence of operations should be recorded as the opacity measured, together with the maximum rotation value obtained;

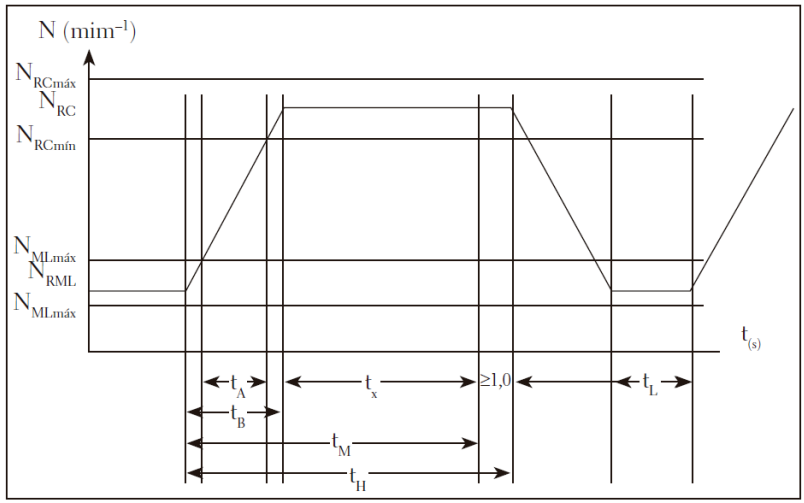
13.13. For the next reading, repeat the procedures described in items 13.11 and 13.12 reaccelerating, at most, 5 seconds after the last idle stabilization;

13.14. If at a given acceleration, the maximum rotation reached is below the cut rotation range specified with the respective tolerances, the maximum opacity value found would not be recorded and the operation will be disregarded and repeated;

13.15. If after three consecutive accelerations, the maximum rotation reached is below the cut rotation range specified with the respective tolerances the vehicle will be considered "FAILE TO PASS";

13.16. In each acceleration, if the recorded rotation elevation time from the upper idle rotation limit range to the lower freewheel rotation limit range exceeds 4.5 s, the acceleration will be disregarded and a new acceleration will be used to replace it. If this very same condition occurs for the third time during the free acceleration time, the test will be interrupted and the vehicle will be considered "REJECTED" due to irregular engine operation (represented in Figure 1);

Free Acceleration Procedure – Measuring Time



N_{ML}: Idle

N_{MLmin}: Minimum Idle

N_{MLmax}: Maximum Idle

N_{RC}: Maximum Free Rotation (Cut)

N_{RCmin}: Maximum Free Rotation (cut) Minimum

$N_{RCmáx}$: Maximum Free Rotation (Cut)Maximum

t_A: Recorded acceleration time

t_B: Acceleration time (the acceleration increase should be linear)

t_X: Measuring time after the free wheel rotation is reached (according to the engine manufacturer specification or 0.5 s tx 5.0 s)

t_M: Measuring time = t_B + t_X

t_H: Accelerator activated time = t_M + minimum 1 s

t_L: Time between accelerations = maximum 5 s after the stabilization of the opacity value in the idle operation mode.

13.17. The measuring procedure described in items 13.11 to 13.16 should be carried out 4 to 10 times and the calculation of the results should be worked out as follows;

a) After disregarding the first acceleration to eliminate the residues accumulated in the exhaust system, the opacity values obtained by three consecutive measurements, as from the second measurement inclusive, should be analyzed and could only be considered valid when the difference between the maximum and minimum value within this interval is not larger than 0,5 m–1;

b) The first group with three values capable of meeting the variation conditions determined in the subitem above is considered as a group of valid measurements, ending the test;

c) The test result is the arithmetic average of the three consecutive valid values selected as describe above.

14. If the vehicle is compliant with the emission and angular speed limits as prescribed for its make/model/model, and passed the visual inspection, it will be considered PASSED and a Vehicle Approval Certificate will be issued. Otherwise the vehicle will be considered FAILED TO PASS, and a Vehicle Inspection Report will be issued.

15. In addition to the Vehicle Approval Certificate the passed vehicles could receive, at the discretion of the department responsible for this process, an inspection approval seal.

16. The Vehicle Approval Certified should inform the limits and the values obtained in the measurements of rotations and opacity.

17. The Vehicle Inspection Report should inform the limits, and, when measured, the values obtained in the measurements, as well as failed to pass items

in the visual inspection in case of a FAILED TO PASS condition, and not compliant items in the visual pre-inspection in case of a REJECTION condition.

18. At the end of the test, with the probe disconnected from the exhaust system, the opacimeter should show zero, according to the prescription of its manufacturer.

19. The opacimeter should never, under any circumstance, be positioned in the direction of the exhaust smoke, even when zeroing out the scale.

Attachment III

ATTACHMENT III – PROCEDURE FOR THE INSPECTION OF OTTO CYCLE VEHICLES EXCEPT FOR MOTORCYCLES AND SIMILAR VEHICLES IN THE I/M PROGRAM

1. After the vehicle enters the Inspection Center it should be directed to an inspection line.

2. The inspector should register the license plate and check the vehicle registration information with the department of motor vehicles.

3. After that the inspector will record the vehicle kilometrage and make sure that the engine is under normal operation temperature.

4. The engine temperature may be checked by using one of the following methods:

a) Information provided on the vehicle dashboard itself;

b) Measurement of the engine oil temperature (minimum of de 45 °C for air cooled vehicles and 70 °C for further vehicles);

c) Reading, by using a digital thermometer, of the external engine block temperature which should not be lower than 60 ºC, avoiding measurements in areas too close to the exhaust piping.

5. Proceed with a previous visual inspection, checking whether the vehicle is ready to be inspected for gas emission.

5.1 Check if the engine is type two- or four-strokes

5.2. Check if the vehicle shows:

a) Irregular engine operation;

b) Emission of visible smoke, except for water vapor;

c) Apparent fluid leaks (dropping of oil, fuel, water, and other fluids);

d) Changes, defects, or advanced state of deterioration in the exhaust system (excessive corrosion, not original holes, lack of components) capable of causing leaks, false entry of air, or increase the noise level.

Note: The exhaust system or part thereto that is not original, could be admitted provided it does not affect the original performance standards;

e) Changes, defects, or advanced state of deterioration in the air intake system capable of causing leaks, false entry of air, or increasing the noise level;

f) Insufficiency of fuel to perform the measurement of emission.

g) Existence of any abnormality which may pose risk of accidents, or damages to the measuring instruments, or to the vehicle during the inspection.

6. If any irregularity described above is found, the vehicle will be considered "REJECTED", the gas measuring procedures could not be started, and the Vehicle Inspection Report will be issued, ending the inspection.

7. In case the vehicle is not rejected by the visual pre-inspection, it will be submitted to a visual inspections for the gas emission and noise control items, originally anticipated to its make/model/version, and the engine operation information devices. All possible defects in the following items should be observed to the extent applicable, provided they are visible without any disassembly:

a) PCV (crankcase positive ventilation) system missing or damaged.

Note: All light vehicles with Otto cycle engine manufactured as from 01/01/1978 and all heavy duty vehicles with Otto cycle engines

manufactured

as from 01/01/1989 should have the PCV system.

b) Attachments, connections, and hoses of the PVC system, irregular;

c) EGR (exhaust gas recirculation) system absent or damaged;

d) Attachments, connections, and hoses of the EGR system, irregular;

e) Canister missing or damaged;

f) Canister attachment, connections and hoses, irregular;

g) Presence, type of application, general state, content verification and catalyst attachment, irregular;

h) Presence, attachment and lambda probe electrical connection, irregular;

i) Secondary air injection system missing or damaged;

j) Attachment of the pump and/or connections of the secondary air injection, irregular;

k) Existence of undesirable action devices, and alteration in the vehicle which could certainly affect the emission control;

l) Cover missing (primary and secondary in the alcohol and flex engine vehicles) for the fuel reservoir and the engine oil reservoir;

m) (LIM) lamp indicating engine malfunction;

n) Damages, absence or advanced state of deterioration of encapsulations, acoustic barriers, and other components that affect directly the mission of vehicle noise anticipated to the vehicle make/model/version.

8. In case the vehicle shows at least one of the irregularities above, it will be considered FAILED TO PASS, but it should be submitted to the measurement of gas emission for the purpose of user guidance/directions.

9. During the pre-evaluation the inspector must decide whether the vehicle should be submitted to the measurement of noise, according to the procedure described in Attachment V. The computerized system could also select randomly some vehicles not indicated by the inspector for the control and audit of the inspection process.

10. Previously to the measurement of gases, the inspector should check the number of independent exhaust pipe outputs, as well as the quantity of types of fuel used by the vehicle to determine the number of tests.

11. For vehicles running with more than one fuel, the inspector should conduct the tests with each of the fuels. For that much, the vehicle should be submitted, between the inspection of each fuel, to a decontamination of 30 s at 2,500 +/- 200 RPM. Flex vehicles should be inspected with the fuel containing in the tank at the time of the inspection.

11.1 Vehicles with selectable GNV option should be tested first with GNV, and after that with the liquid fuel contained in the tank.

12. Before the gas emission measurement, the inspector should connect tachometer probe to the vehicle to confirm the value specified by the manufacturer and the idle rotation stabilization within a maximum variation range of 200 rpm. The verification of the engine angular speed should be carried out with an appropriate tachometer, without the need of disassembling any vehicle part. If the value found for the idle is outside the specified range, or not stabilized, the vehicle will be considered FAILED TO PASS, even though the test should be fully completed.

13. For the execution of the gas emission measurements the inspector should follow the sequence described below (Figure 1):

a. Position the probe into the vehicle exhaust system, introducing it at least 300 mm. To make sure that the probe is correctly in place, the gas inspector should interrupt the measurement is the CO_2 value measured is lower 3%.

b. Before starting the measurement of the exhaust gases, a decontamination of the crankcase oil should be carried out by accelerating the engine at a consistent angular speed of 2,500 ± 200 rpm, without load and throttle, when any, for a minimum period of 30 seconds.

c. After the 30 seconds decontamination, the gas analyzer equipment should start, automatically, the measurement of the concentrations levels of CO, HC and CO_2 at 2,500 rpm ± 200 rpm, without load, and send the results

to the inspection management computer which will record and calculate the vehicle exhaust gas dilution factor.

d. If the dilution factor result is above 2.5 the positioning of the sampling probe should be checked, and the test restarted. If the high value persists for the dilution, the vehicle should be considered as failed to pass the test.

e. For the purpose of correcting the CO and HC measured values, when the dilution factor result is a value lower than the humidity, it should be rounded to 1.0.

f. If the measured values meet the limits established, the engine should be desaccelerated, and new measurements should be performed under the idle operation mode. In case of compliance with the emission limits in the two operating modes, and after the vehicle being passed the visual inspection, and the idle rotation verification, it will be considered PASSED, and a Vehicle Approval Certificate will be issued. When the vehicle did not pass the visual and/or idle rotation verification, the test is ended, the vehicle is considered FAILED TO PASS, and a Vehicular Inspection Report is issued.

g. If the CO and/or HC measured values in the 2,500 ± 200 rpm operation mode after the 30 s decontamination, do not meet the established limits, the vehicle has passed the visual inspection and the idle rotation verification, and the HC emission is lower than 2000ppm, the engine should be kept within this rotation range for a total period of 180 seconds.

h. During this time the equipment should perform the successive measurements of CO, HC concentration levels, and dilution of the exhaust gases.

i. As soon as the equipment obtains a result that enables the approval of the vehicle during the 180 seconds limit, the engine should be desaccelerated, and new measurements should be performed in the idle operation mode.

j. In case of compliance with the emission limits, and having all further inspected items passed, the vehicle is considered PASSED, and a Vehicle Approval Certificate is issued. Otherwise the vehicle will be considered FAILED TO PASS, and a Vehicle Inspection Report is issued.

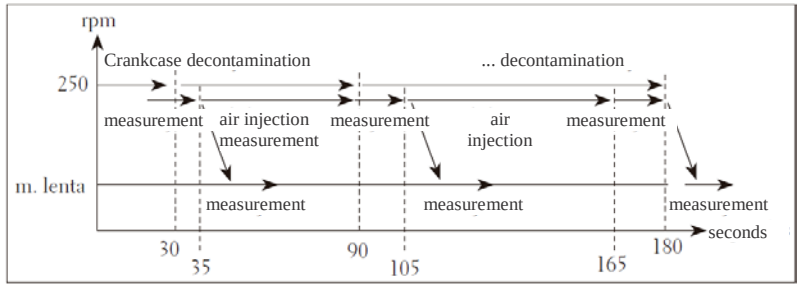
k. If, after elapsing the 180 s time, the measurement results are still above the limits, the engine should be desaccelerated, however the measurement in the idle

mode should still be performed, the vehicle would be considered FAILED TO PASS, and a Vehicle Inspection Report is issued.

l. If the CO and HC values measured in 2.500 ± 200 rpm operation mode, after the 30 s decontamination, do not meet the established limits, or the vehicle failed to pass the visual inspection or the idle rotation verification, or the dilution factor, it will be considered FAILED TO PASS, however, the idle mode of operation should still be measured.

m. In any step of the measurements, if the HC emission is higher than 2,000 ppm, the test will be stopped so as not to damage the analyzers, and the vehicle will be considered FAILED TO PASS.

Figure 1 – Graphic Illustration of the gas measurement sequence



14. The Vehicle Approval Certified should inform the limits and the values obtained in the measurements.

15. The Vehicle Inspection Report should inform the limits, and the values obtained in the measurements, as well as the items that failed to pass the visual pre-inspection, in case of a FAILED TO PASS condition and items not compliant with the visual pre-inspection in case of a REJECTION condition.

16. In addition to the Vehicle Approval Certificate the passed vehicles could receive, at the discretion of the department responsible for this process, an inspection approval seal.

17. Before the measurement, the gas analyzer should ensure HC residual concentrations lower than 20 rpm.

Attachment IV

ATTACHMENT IV – PROCEDURE FOR THE INSPECTION MOTORCYCLES AND SIMILAR OTTO CYCLE VEHICLES IN THE I/M PROGRAM

1. Before the inspection, the vehicle, after being received in the Inspection Center, should be taken to the motorcycle inspection line, where it will be directed to remain with the engine running to keep it hot during the time in the waiting line.

2. The inspector should register the license plate and check the vehicle registration information with the department of motor vehicles.

3. After that the inspector will record the vehicle kilometrage and make sure that the engine is under normal operation temperature

4. The engine temperature check could be made through two different ways:

a) Information provided on the vehicle dashboard itself, (when any);

b) Measurement of the engine oil temperature;

c) Reading, for example, by using a digital thermometer external to the engine block, and which should not be lower than 60 ºC. In this case, the thermometer should be pointed to the hot portion of the oil filter, on the external side of the engine block, or, if it is not possible to take reading in this location, the measurement should be taken at another point, next to the engine lubricating oil circulation gallery, or on the crankcase base, and measurements should be avoided in areas that involve exhaust piping.

5. Proceed with a previous visual inspection, checking whether the vehicle is ready to be inspected for gas emission.

5.1. Check that the engine is type two- or four-strokes.

5.2. Check is the vehicle nominal displacement is lower than 250 cm3 or is higher than or equal to 250 cm^3, for the selection of emission limits.

5.3. Check if the vehicle shows:

a) Irregular engine operation;

b) Emission of visible smoke, except for water vapor;

c) Apparent fluid leaks (dropping of oil, fuel, water, and other fluids);

d) Changes, defects, or advanced state of deterioration in the exhaust system (excessive corrosion, not original holes, lack of components) capable of causing leaks, false entry of air, or increase the noise level.

Note: The exhaust system or part thereto that is not original, could be admitted provided it does not affect the original performance standards;

e) Changes, defects, or advanced state of deterioration in the air intake system capable of causing leaks, false entry of air, or increasing the noise level;

f) Insufficiency of fuel to perform the measurement of emission.

g) Existence of any abnormality which may pose risk of accidents, or damages to the measuring instruments, or to the vehicle during the inspection.

6. If any irregularity described above is found, the vehicle will be considered "REJECTED", and, in this case, the gas measuring procedures could not be started, and the Vehicle Inspection Report will be issued, ending the inspection.

7. In case the vehicle is not rejected by the visual pre-inspection, it will be submitted to visual inspections for the gas emission and noise control items, originally anticipated to its make/model/version, and the engine operation information devices. To the extent applicable, possible defects should be checked in the following items, without any disassembly:

a) PCV (positive crankcase ventilation) system missing or damaged;b) Attachments, connections, and hoses of the PVC system, irregular;
c) EGR (exhaust gas recirculation) system absent or damaged;

d) Attachments, connections, and hoses of the EGR system, irregular;

e) Presence, type of application, general state, content verification and catalyst attachment, irregular;

f) Presence, attachment and lambda probe electrical connection, irregular;

g) Secondary air injection system missing or damaged;

h) Attachment of the pump (or PAIR valve) and/or connections of the secondary air injection, irregular;

i) Existence of undesirable action devices, and alteration in the vehicle which could certainly affect the emission control;

j) Fuel reservoir, and engine oil reservoir cover missing;

l) (LIM) lamp indicating engine malfunction;

l) Damages, absence or advanced state of deterioration of encapsulations, acoustic barriers and other components that affect directly the emission of vehicle noise anticipated to the vehicle make/model/version.

8. In case the vehicle shows at least one of the irregularities above, it will be considered FAILED TO PASS, but it should be submitted to the measurement of gas emission for the purpose of user guidance/directions.

9. During the pre-evaluation the inspector must decide whether the vehicle should be submitted to the measurement of noise, according to the procedure described in Attachment V. The computerized system could also select randomly some vehicles not indicated by the inspector for the control and audit of the inspection process.

10. Previously to the measurement of GASES, the inspector should check the number of independent exhaust pipe outputs, as well as the quantity of types of fuel used by the vehicle to determine the number of tests.

11. Before the gas emission measurement, the inspector should connect tachometer probe to the vehicle to confirm the value specified by the manufacturer and the idle rotation stabilization within a maximum variation range of 300 rpm. The verification of the engine angular speed should be carried out with an appropriate tachometer, without the need of disassembling any vehicle part.

12. If the idle operation mode is unstable, the engine could be accelerated quickly for three consecutive times and return to the idle mode again, when a new verification should be carried out.

13. If an instability may be still detected in the idle operation mode the vehicle will be considered FAILED TO PASS, however, even so it should be submitted to the measurement of the gas emissions for the purpose of user guidance/directions.

14. If the vehicle model does not enable to take the engine rotation by means of using devices, the inspector should check visually and audibly whether the idle rotation is stabilized. If so, the inspection should proceed without the need of recording the rotation. If the inspector finds out that the idle rotation is not stable the vehicle should be REJECTED due to "Irregular engine operation".

15. For the execution of the gas emission measurements the inspector should follow the sequence described below:

a) Install an adaptation device in the vehicle exhaust systems to enable the sample of air intake not to be affected by the external air intake, or by the engine gas exhaustion pulses, according to the models included in Figure I and III.

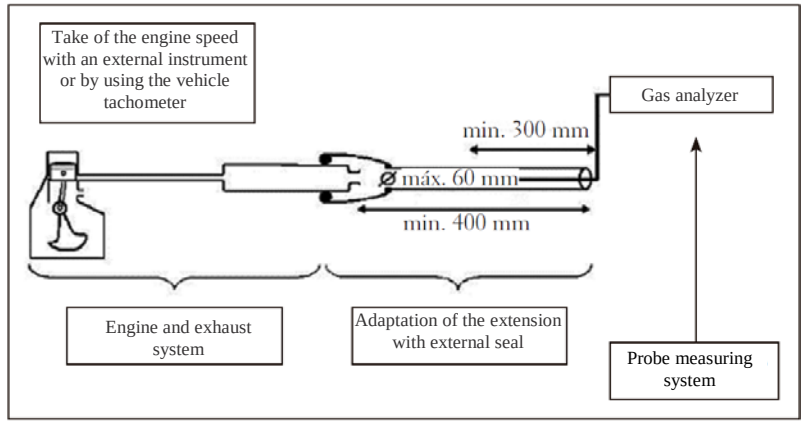


Figure I – External adapter with flexible hood.

The straight extension tube should have, at least, 400 mm in length, and a maximum diameter of 60 mm, where the sampling probe should be positioned, whether by the output end or incorporated in the extension. The extensor should be adjusted to the exhaust pipe end by means of a flexible coupling, capable of absorbing the muffler vibrations and gas pulses, and being airtight to prevent the penetration of external air.

Figure II shows an example of an external flexible adapter

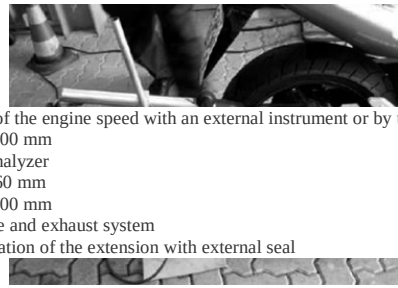


Figure II – Example of the extension with a moveable probe and flexible hood

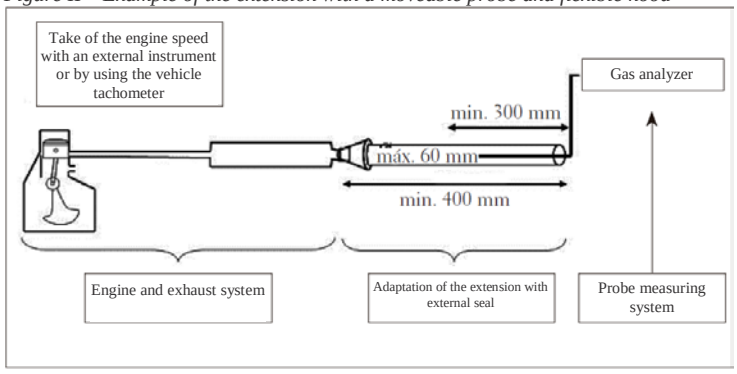


Figure III – Internal adapter.

Other configurations may be used, provided they enable to take representative samples and results equivalent to those obtained with the recommended configuration.

b) The vehicle should be positioned in a perpendicular manner with relation to the ground plane, with its wheels resting on the ground, and the engine idling.

c) Before starting to measure the gases the inspector should make sure that the vehicle is with the accelerator in its resting position.

d) After the probe is positioned in the gas pickup device described above, the gas analyzer equipment should measure the CO, CO_2 and HC in the idle operation mode while recording the average value of this rotation, and sending the results to the inspection management computer which will record them and calculate the dilution factor of the vehicle exhaust gases.

To ensure the correct probe position the gas analyzer should stop the measurement if the measured CO_2 values are lower than 3%.

e) If the value found for the idle rotation is outside the specified range, the vehicle will be considered FAILED TO PASS.

f) If the dilution factor result is above 2.5 the positioning of the sampling probe should be checked, and the test restarted. If the high value persists for the dilution, at the second try, the vehicle should be considered FAILED TO PASS, except for the cases specially authorized due to difficulties found in the adaptation of the probe in the exhaust pipe. For the purpose of correcting the CO and HC measured values, when the dilution factor result is a value lower than the humidity, it should be rounded to 1.0.

g) In any measurement phase, if the HC emission is above 5,000 ppm the test should be stopped so as not to contaminate the analyzers, and the vehicle will be considered FAILED TO PASS.

h) If corrected CO and HC values do not meet the emission standards established, the engine should be accelerated quickly for three consecutive times, and return to the idle mode again, when a new measurement should be carried out. If the new correct CO and HC values fail to meet the established limits, the vehicle will be considered FAILED TO PASS.

i) In case of compliance with the emission limits, and after the vehicle passing the visual inspection, and the idle rotation verification, it will be considered PASSED, and a Vehicle Approval Certificate will be issued. Otherwise the vehicle will be considered FAILED TO PASS, and a Vehicle Inspection Report is issued.

j) Vehicles derivate from motorcycles could have the emission of exhaust gases measured in a manner similar as the one established for the vehicles from which they derivate.

16. The Vehicle Approval Certified should inform the limits and the values obtained in the measurements.

17. The Vehicle Inspection Report should inform the limits, and the values obtained in the measurements, as well as the items that failed to pass the visual inspection, in case of a FAILED TO PASS condition and items not compliant with the visual pre-inspection in case of a REJECTION condition.

18. PASSED vehicles should receive a Vehicle Approval Certificate.

19. Before the measurement, the gas analyzer should ensure HC residual concentrations lower than 20 rpm.

Attachment V

PROCEDURE FOR THE MEASUREMENT OF NOISE IN INSPECTION CENTERS

1. Purpose:

1.1. The purpose of this procedure is to check the compliance of the vehicles in use with the noise levels established for vehicles in use, and to suit NBR 9714 standard to the working conditions existing in the Vehicle Inspection Centers for the measurement of noise emitted in the area near the exhaust system when the vehicle is stopped.

1.2. The method is for checking the noise level emitted by vehicles in use, taking into consideration the variations of noise emitted by its components, caused by:

a) wear, deterioration or change of components, adjustments outside the manufacturer specification;

b) partial or complete removal of devices that reduce the emission of noise.

1.3. These variations could be determined by comparing the results with reference to measurements taken under similar conditions at the time of the vehicle homologation.

2. Visual inspection and preanalysis

2.1. The inspection of the vehicle in use to determine its compliance with the noise control requirements, it should be started by a visual inspection so that the inspector may check whether there is any abnormality such as: the absence of components, parts that may be defective, corroded or nonoriginal and with characteristics non-applicable to the vehicle model or version.

2.2. After that, an additive preanalysis should be performed by a properly trained inspector to check that the vehicle shows noise tones and levels considered abnormal. If the inspector, during the additive preanalysis, finds out some abnormality, the vehicle should be submitted to the measurement of noise in the stopped condition to confirm the initial evaluation as to the non-compliance.

2.3. The test in the stopped condition will also be applicable, randomly, to non-selected vehicles, for the audit of the process and verification of the inspector ability.

3. Apparatus

3.1. The measuring instrument should be a sound level meter (MNS), or an equivalent measuring system whose characteristics should be in accordance with IEC 651, referent to type 1 (accuracy type) or IEC 61672:2003 referent to type 2, previously calibrated by the National Institute of **Metrology**, Standardization and Industrial Quality (INMETRO), or by laboratories associated with the Brazilian Calibration Network (RBC).

3.2. If a device to provide protection against the wind is used its effect on the accuracy of the measurement should be taken into consideration according to the manufacturer indications.

3.3. The MNS should operate in the weighting curve "A", and its dynamic characteristic should operate in the quick answer ("F") condition.

3.4. Before the first measurement of the day, and whenever the equipment is reactivated, or when there is a brusque change in the environment temperature, a new verification should be carried out in the MNS scale with calibrator fixed at 94 dB(A). The value found should be stored in the system as the "value before the last adjustment" and the MNS scale should be readjusted to 94 dB(A), according to the manufacturer instructions. The environmental department could request additional periodic verifications in case its need to ensure result accuracy is demonstrated statistically.

3.5. The measuring instrument should include electronic communication for the record of the noise measurements and their storage in real time simultaneously with the measurement of the engine rotation at the time determined by the equipment for the desacceleration as well as to store the data necessary to trace the test and its connection with the identification of the vehicle and inspector.

3.6. The complete equipment should be provided with *software* capable of conducting a directed-test to the inspector as to the proper times for the engine acceleration and desacceleration, indicating the engine rotation, minimizing the possibility of inspector interference in the test results.

3.7. The equipment software should also perform the statistical analysis of the audible levels measured in each condition for the validation of the test according to the prescriptions of items 6.2.4 and 6.2.5. and issue the final report with the characteristics required by the Inspection and Maintenance Program – I/M.

4. Test conditions and location

4.1. The test location should consist of a flat concrete, asphalt, or another equivalent paved area whose boundaries should be at least 1.0 m away from the ends of the vehicle, without any object nearby capable of affecting significantly the MNS reading.

4.2. During the exhaust noise measurement, the microphone should be at a distance longer than 1.0 m from the sidewalk curb or any other obstacle, and no observer should be standing at a distance shorter than 1 m from the microphone during the inspection.

4.3. The locations indicated for the execution of the tests should be acoustically suitable, what should be confirmed by means of comparison of vehicle measurements in this location and in another location free from interferences.

5. Atmospheric conditions and environment noise

5.1. Measurements should not be made under adverse weather conditions, and gusty winds should not affect the evaluation result.

5.2. It is recommended that the environment noise level should be at least 10 dB (A) smaller than the levels measured during the test. If this condition is not met, the result could be corrected according to item 6.2.8, when it is above the limit established.

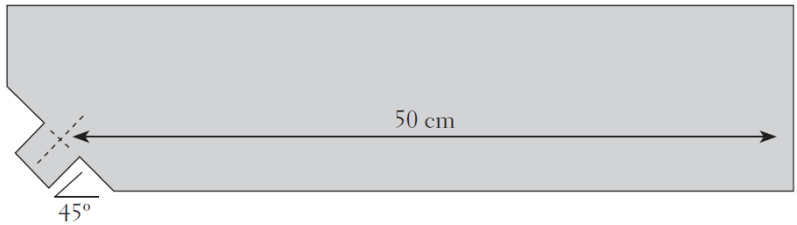
6. Test procedure

6.1. Position of the vehicle and microphone

6.1.1. The vehicle should be positioned in the testing area, with the engine at its normal working temperature, and the shift lever at the neutral position, and without clutch activation.

6.1.2. The noise analyzers should be positioned in the height of the exhaust pipe outlet (or at 20 cm, minimum, from the soil when this height is smaller), at 50 cm away from its ends, and at 45° ± 10° from the pipe axis, by using a template as shown in Figure 1.

Figure 1 – Template for the positioning of the microphone close to the exhaust pipe



6.1.3. Unless indicated by the manufacturer, the microphone reference axis for free field conditions (see IEC 651) should always be parallel to the surface of the testing location (inclusive in case of the height of the exhaust pipe is smaller than 0.2 m), and at an angle of 45° ± 10° with the vertical plane which contains the gas flow, and positioned as shown in Figure 2.

6.1.4. At the height of the microphone with relation to the ground and to further lengths a maximum error of 0.01 m is allowed (see Figure 2).

6.1.5. For the vehicles provided with one single silencer, and two or more outlets 0.3 m or less away from each other, only the microphone position referred to the outlet hole closest to the vehicle external side should be used, or when this could not be determined, the higher outlet hole from the location test surface should be selected;

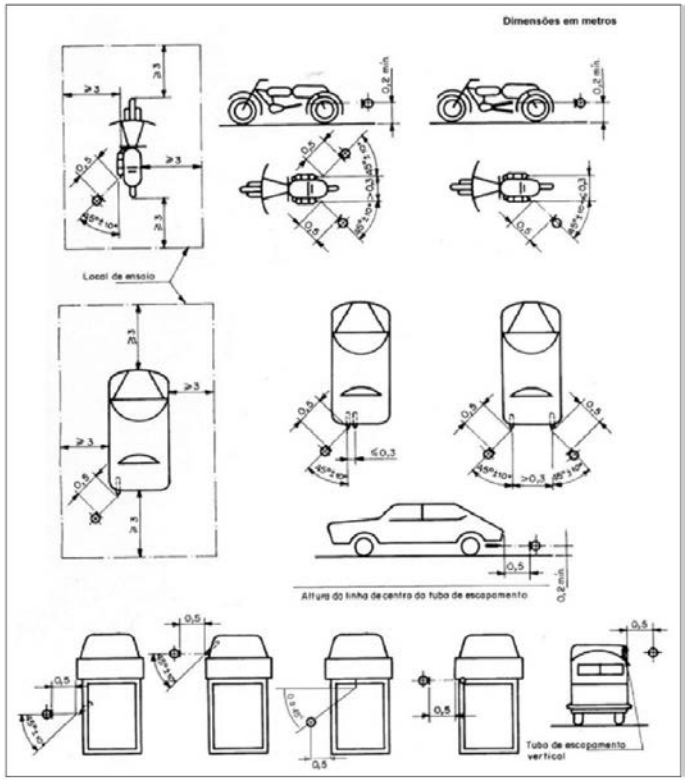
6.1.6. For vehicles with exhaust pipes connected to separate silencers, or to one single silencer, however 0.3 m away from each other, a test should be conducted for each outlet, as it was a single outlet, and the highest result should be considered.

6.1.7. For vehicles with vertical exhaust pipes, the microphone should be positioned at the height of the exhaust pipe outlet hole, directed to it with relation to its horizontal axis to a distance of 0.5 m from the vehicle side closest to the gas outlet hole.

6.1.8. When the microphone could not be positioned according to Figure 2, due to the presence or obstacles which are part of the vehicle, such as: spare wheel, oil reservoir, battery, etc. the microphone should be positioned to a distance smaller than 0.5 m from the nearest obstacle, and its reference axis, for the free field conditions, should be adjusted towards the direction of the exhaust pipe hole, at a point where the influence caused by obstacles mentioned above is as minimum as possible.

6.1.9.A Figure 2 shows configuration schemes for the testing location, and the microphone positioning for the measurement of the exhaust system noise.

Figure 2 –Testing location and microphone position for the measurement of the exhaust system noise



6.2. Engine operation conditions

6.2.1.O The engine should be stabilized in idle operation mode for the measurement of the noise in this condition (RML), and , after that, accelerated to the maximum testing rotation, as defined in item 6.2.2, and brusquely desaccelerated from this angular speed to the idling condition again. The measurement of the maximum noise level (Racel) should be started for a brief period during the maximum consistent angular speed condition, and continue for the entire desacceleration. Only the highest value should be recorded.

6.2.2. During the data survey period for the verification of the maximum limits established, the maximum engine angular speed for the test should be stabilized according to the following values, and a maximum variation tolerated is ±200 rpm.

a) For all automotive vehicles, the testing speed is ¾ of the maximum engine power angular speed, or that specified by the manufacturer for this test, except for those shown in letters “b”, “c”, “d” and “e”, as follows;

b) For the engine of motorcycle and similar engines with a maximum power angular speed above 5,000 rotations per minute, the testing speed is ½ the maximum engine power angular speed;

c) For vehicles that, according to its design, do not allow the stability of the speeds indicated in letters “a” and “b”, the maximum rotation capable of being stabilized should be used.

d) In case the maximum power angular speed is unknown, the noise test for Otto cycle engine vehicles could be performed under the following rotations:

i. 2,500 rpm and 3,500 rpm for light vehicles prior to 1997;

ii. 3,000 rpm and 4.000 rpm for motorcycles, as well as light vehicles from 1997 on;

e) In case the maximum power angular speed is unknown, the noise test for Diesel cycle engine vehicles could be performed under the following rotations ¾ of the maximum freewheel rotation, and the environment department responsible for the procedure could authorize other values between 60% and 75% of the maximum free rotation.

f) The environmental department should establish other values for the vehicle testing angular speed in the stopped position, provided they are technically justifiable.

6.2.3. The evaluation of a vehicle noise, in a location subject to external noise interferences to the testing place, at least six (6) measurements should be considered for the minimum noise level with the engine running in idle mode ("RML"), alternately with five (5) measurements of the maximum levels in the accelerated condition ("RAcel"), and 2 (two) noise level ("RAmb") measurements performed immediately before and after the test made with the engine stopped, and through a sampling of an equivalent noise level for a period of 10 seconds, as the sequence indicates: Ramb1 – RML1 – R_{Acel1} – R_{ML2} – R_{Acel2} – R_{ML3} – R_{Acel3} – R_{ML4} – R_{Acel4} – R_{ML5} – R_{Acel5} – R_{ML6} – R_{amb2}, illustrated in Figure 3.

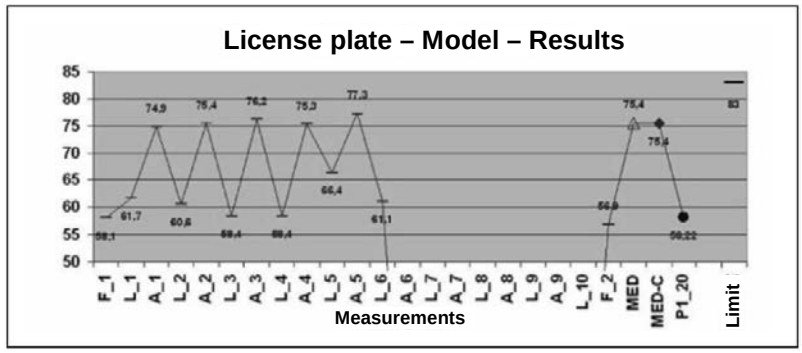
6.2.4. The test result is given by the median of the maximum values ("RAcel"), provided the levels measured immediately above and below the median do not differ in more than 2 dB(A), identifying and eliminating, this way, the readings affected by the external noise interferences;

6.2.5. When the variation above exceeds 2 dB(A), two or three supplementary measurements under both the acceleration and the corresponding idle mode could be added, until the levels measured immediately above and below the new median of all maximum values do not differ in more than 2 dB(A), so that the test could be considered valid.

If, after the four additional measurements there are no conditions for validating the test, it will be considered non-valid, and it should be repeated, except during the Program data survey phase.

6.2.6. The base environment noise level is defined as percentile of 20% (P20) of all minimum noise levels – 6 to 10 measured in idle ("RML") mode, together with the two levels measured with the engine stopped ("Ramb1" e "Ramb2") – , all of them measured in the same test sequence.

Figure 3 – Noise measurement sequence close to the exhaust system pipe and the results



6.2.7. If the difference between the maximum noise median and the environment noise base defined in 6.2.6. is lower than 10 dB(A), and higher than 3 dB(A) to this median, exceeds the applicable limit, the use of the formula below is permitted for the correction (also shown by the curve of Figure 4), subtracting the environment noise for the determination of the effective noise emission from the vehicle muffler.

This curve is generated from subtraction noise source formula:

$$R_v = 10 * \log(10^{(Rm / 10)} - 10^{(Ra / 10)})$$

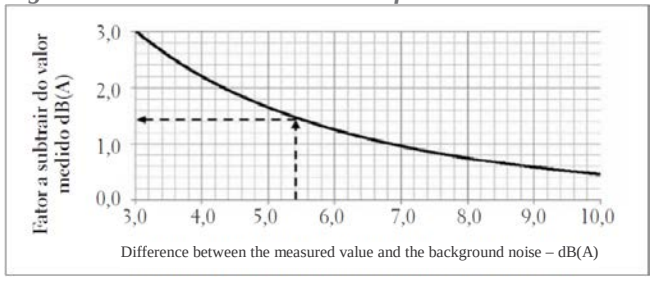
Where:

R_v: It is the actual noise of the vehicle intended to be evaluated

R_m: It is the total noise level measured (median that includes the source and background noise)

R_a: It is the environment noise level (without the presence of the vehicle under evaluation)

Figure 4 – Environment noise interference correction curve



6.2.8. For the survey of statistical data the exhaust gas outlet pipe position should be recorded considering the following alternates:

a) rear, horizontal, utility vehicle;

b) rear, horizontal, double;

c) rear, vertical with back engine;

d) rear, vertical with central engine;

e) rear, vertical, with front engine;

f) central, downwards;

g) central, to the left or right;

h) front, vertical, utility vehicle;

i) front, vertical, double;

j) other (specify)

7. Inspection Result

The test results of vehicle in use could be interpreted by comparing them with reference test results, in which vehicles still new are tested in the stopped condition.

The values obtained by this method do not represent the total noise emitted by the vehicle moving as measured according to other standards. These values should be used to make comparisons between the total noise emitted by different vehicles.

7.1. If any abnormality is found in the visual inspection, the vehicle will be considered REJECTED.

7.2. If the median determined in 6.2.4. and 6.2.5., or the median corrected according to 6.2.7. results in a value lower than the applicable value, and no abnormality is found in the inspection, the vehicle will be considered PASSED in the test.

7.3. If the test result is higher than the limit established, the vehicle will be considered REJECTED.

7.4. The report recorded by the measuring equipment should contain the following fields:

INITIAL IDENTIFICATION DATA		
YEAR_EXERCIZE	YEAR_EXERCIZE	YEAR _EXERCIZE ENGINE_POSITION
LICENSE PLATE	SOUND LEVEL METER _No.	VISUAL_INSP_NOISE_1
ENGINE TYPE INSPECTION DATE AND TIME	LAST VERIFICATION	VISUAL_INSP_NOISE_2
INSPECTION_CENTER	VALUE BEFORE THE LAST ADJUSTMENT	VISUAL_INSP_NOISE_3
INSPECTION_LINE	FABRICATION YEAR	Nº OF EXHAUST PIPE FOR MESUREMENT
INSPECTOR NAME	YEAR - MODEL	RES_EVAL_SUBJ_NOISE
SUPERVISOR_NAME	MAKE_ID	MAX_NOISE_INFO
INPECTION_DATE	MAKE_MODEL_ENGINE	RPM_SPECIFIED TEST
INSPECTION_STARTING _TIME	EVALUATION_WAIVED_ VEHICLE	
RESULTS FOR EACH EXHAUS PIPE OULET		
ENVIRONMENT_NOISE _1	ACCEL_NOISE_1_	rpm 1
IDLE_NOISE_1	ACCEL_NOISE_2_	rpm 2
IDLE_NOISE_2	ACCEL_NOISE_3_	rpm 3
IDLE_NOISE_3	ACCEL_NOISE_4_	rpm 4
IDLE_NOISE_4	ACCEL_NOISE_5_	rpm 5
IDLE_NOISE_5	ACCEL_NOISE_6_	rpm 6
IDLE_NOISE_6	ACCEL_NOISE_7_	rpm 7
IDLE_ NOISE_7	ACCEL_NOISE_8_	rpm 8
IDLE_NOISE_8	ACCEL_NOISE_9_	rpm 9
IDLE_NOISE_9	MEDIAN_NOISE	NOISE_RES
IDLE_NOISE_10	ACCEL_NOISE_5_	NOISE_REASON
ENVIRONMENT_ NOISE_2_	VARIATION AMONG THE BEST 3	
P1 _20	CORRECTED_MEDIAN	

7.5. In the first year of the I/M Program implementation, the noise inspection results could have a awareness and data survey nature, and should not constitute a reason for sanctions or blocking the vehicle licensing.

Attachment VI

ATTACHMENT VI – INSPECTION CENTER CHARACTERISTICS

1. The inspection centers should be built in locations properly chosen so that their operation do not cause traffic jams in the surrounding area. They should be provided with parking lot for employees and visitors, circulation and vehicle waiting area, roofed area for the general and administrative services, including installations for the safekeeping of equipment, materials, replacement parts, and calibration gases, when that is the case.

2. The inspection centers should be roofed, enabling the development of inspection activities, regardless of the climate conditions, and provided with adequate ventilation to enable the inspection of the vehicle with the engine stopped.

3. The inspection centers should have appropriate dimensions, and be provided with multiple inspection lines so as to avoid stooping the activities, and waiting lines with a maximum waiting time of 30 minutes.

4. The inspection centers should operate at times that enable the appropriate assistance to the users.

5. All data gathering activities, information records, execution of inspection procedures, comparison of inspection data with the established limits and issuance of certificates and reports should be performed through computerized systems.

5.1. The systems should enable the access, in real time, to inspection data for each line, as well as the control of daily actions by the Program supervision unit, which should be permanently interconnected with the inspection centers.

5.2. The systems should be designed and operated so as to prevent line operators from having access to controls that enable to change procedures or rejecting/passing/failing criteria.

5.3. Only the certified operators are allowed to access the inspection line operation system via individual code.

6. The inspection lines must be operated by personnel duly trained and certified for the development of inspection activities.

6.1. The operating institution of the I/M Program is responsible for the certification of inspectors and technical assistants of the inspection centers.

6.2. Inspectors and technical assistants must be trained and certified periodically for refreshment on new technologies used for controlling the pollutant emissions by vehicles and new inspection procedures.

7. No vehicle adjustment or repair services should be carried out at the inspection centers. Inspectors, technical assistants and supporting and supervision personnel are not allowed to recommend companies for providing the services.

8. The pieces of equipment used in the inspection of Otto-cycle light vehicles must provide the features below:

8.1. CO, HC and CO_2 analyzers must be of infrared non-dispersive type or of superior design, and must meet the specifications established in regulation BAR 90 of the Bureau of Automotive Repair of the State of California, USA, or in standards more technologically advanced, and must be suitable for the fuels used in the Brazilian territory and approved by the state environmental agency.

8.2. Gas analyzers must provide proper check system and automatic elimination of HC adherence in the sampling system.

8.3. The sound level meters used must meet the requirements established by the ABNT NBR 9714 standard – Noise Emitted by Automotive Vehicles in Stopped Condition – Test Method or in standards more technologically advanced. The microphones can be of type 1 or 2, and alternatively, the noise meter can use two microphones simultaneously for measuring the ambient and exhaust noise levels.

9. The pieces of equipment used for CO, HC, CO_2 and noise level measurement must be always calibrated, provide automatic operation and should not enable operator's interference in the record of measured values.

10. The inspection results must be printed on proper forms, indicating the

items inspected.

10.1. The CO and HC emission results must be registered under the "measured" and "corrected" forms, as well as CO_2 emission and dilution factor, for further audit.

11. The inspection centers must provide calibrated backup equipment and stock of replacement parts in order to assure that eventual equipment faults do not cause significant downtimes in the inspection line operation.

12. The I/M Program operating institution must carry out periodical checks for calibration and general maintenance of the pieces of equipment used at inspection centers, as well as develop equipment audit programs and procedures according to the criteria established by the managing body.

13. Inspections will be performed by professionals regularly qualified in specific certification courses for I/M Programs.

14. In order to work in a station, the vehicle emission inspector must meet the requirements below:

a. Hold a national driver's license;

b. Hold high school grade;

c. Attended a complete technical automotive or mechanic course, or hold proven experience of more than one year in a function in the automotive vehicle area, or worked at least during six (6) months as technical assistant of a vehicular emission inspector;

d. Completed preparation course for vehicular emission technical inspector, acknowledged by the program managing body;

e. Not be owner, partner or employee of repair, refurbishing or vehicle part Trade Company;

15. In all the cases, a technical qualification evaluation must be made by theoretical and hands-on knowledge exam, according to procedures established by the managing body, and to be applied by a renowned entity in this competence field.

16. The technical assistant must hold driver's license, minimum high school formation and specific training for acquiring the general concepts of the I/M Program in order to receive the user, drive his vehicle to the inspection line and deliver it again with the results and required directions to the customer.

Attachment VII

INFORMATION REQUIRED FOR INSPECTIONS TO BE PROVIDED BY THE VEHICLE AND ENGINE MANUFACTURERS

1. The manufacturer/importer of vehicles and/or engines must provide the specifications and parameters required for the vehicular inspection, for all the models produced, including the ones not required to meet PROCONVE/PROMOT limits, according to the format shown in the model charts below.

1.1. All the fields defined in these model charts must be obligatorily completed, by filling "n.a." when the item is not applicable for the vehicle model in question.

1.2. In addition to the defined fields, the manufacturer can complement the model charts with additional columns to add information it considers as necessary.

Chart 1 – Reference parameters for inspection of vehicles being used with Otto-cycle engines

Identification				**Angular speed (rpm)**		**Maximum specific**			**Vehicle emission control devices**							**OBD System**					
													Catalysts								
Vehicle type (a)	DENATRAN code	Brand/Model/Version	Engine brand/model	Idle speed	Maximum power	CO (%)	HC (ppm)	Noise (dB(A))	PCV	EGR	Air injection in exhaust tube	Oxygen sensor (quantity)	Quantity	Installation place (b)	Type	LM Lamp	Type	Connector and scan tool type	Connector installation place (c)	Plausibility indication	Other items to be checked during inspection
2				xxx ± yyy	xxxx	x.xx	x.xx	x.xx	(Y/N)	(Y/N)	(Y/N)	3	2	1/2	3 copies	(Y/N)	BR2	ISO	1d	(Y/N)	

Where:

(a) 1 – automobile or derived; 2 – commercial vehicle not derived from automobile; 3 – motorcycle

(b) 1 – closed coupled (directly coupled to the exhaust manifold); 2 – under floor

(c) 1 – engine compartment; 2 – inside vehicle under the panel; e – left side; d – right side; c – center; 3 – other (specify)

Chart 2 – Reference Parameters for Inspection of Vehicles being Used with Diesel cycle engines

Identification				**Angular speed (rpm)**			**Maximum specific**			**Vehicle emission control devices**							**OBD System**					
														Catalysts								
Vehicle type (a)	DENATRAN code	Brand/Model/Version	Engine brand/model	Idle speed	Maximum power	Maximum free (cut)	Opacity at sea level (m^{-1})	Opacity over 350-m altitude	Noise (dB(A))	PCV	EGR	SCR	NOx sensor (quantity)	Quantity	Installation place (b)	Type	LM Lamp	Type	Connector and scan tool type	Connector installation place (c)	Plausibility indication	Other items to be checked during inspection
2				xxx ± yyy	xxxx	xxx ± yyy	x.xx	x.xx	x.xx	(Y/N)	(Y/N)	(Y/N)					(Y/N)	BR2				

Where:

(a) 1 – automobile or derived; 2 – commercial vehicle not derived from automobile; 3 – motorcycle

(b) 1 – closed coupled; 2 – under floor; 3 – other (specify)

(c) 1 – engine compartment; 2 – inside vehicle under the panel; e – left side; d – right side; c – center; 3 – other (specify)

2. The parameters to be published refer to the configurations of each BRAND/MODEL, produced or imported, provided that each requirement has been established, according to CONAMA Resolutions No. 18/86, 01/93, 02/93, 06/93, 16/95, 272/2000, 297/2002 and 342/2003;

2.1. The "DENATRAN Code" refers to the model code that is usually found in the vehicle document to enable correct identification of the parameters upon inspection.

3. Automotive vehicle manufacturers and importing companies must, within 180 days from the publication date of this Resolution, provide procedures and infrastructure for systematic divulgation to the public in general, and to the repair network, of calibration recommendations and specifications, regulation and maintenance of engine, fuel feed, ignition, starting, cooling and exhaust systems, and whenever applicable, of the components of gas, particulates and noise emission control systems, as well as the required checking parameters of the OBD system, equipment and operating system.

3.1. For all the new vehicles sold from the year-model 2011 (inclusive), the disclosure of calibration, regulation and maintenance recommendations and specifications must be made whenever there is an introduction in the market of new models, new year-model versions of vehicles being already sold, and in case of year-model change.

3.2. For vehicles sold from the year-model 2003 (inclusive) to year-model 2011 vehicles, the compilation of calibration, regulation and maintenance recommendations and specifications must be available to the general public within 180 days from the publication date of this normative instruction.

3.3. For vehicles sold from the year-model 2002 down to year-model 1997 vehicles (inclusive), the compilation of calibration, regulation and maintenance recommendations and specifications must be available to the general public within 360 days from the publication date of this normative instruction.

3.4. For vehicles sold from the year-model 1996 down to year-model 1987 vehicles (inclusive), the compilation of calibration, regulation and maintenance recommendations and specifications must be available to the general public within 540 days from the publication date of this normative instruction.

3.5. For vehicles sold from the year-model 1986 down to year-model 1970 vehicles (inclusive), the compilation of calibration, regulation and maintenance recommendations and specifications must be available to the general public within 720 days from the publication date of this normative instruction.

4. All the information items to be disclosed according to item 1 of this Attachment must also be provided upon the request for License for using the Vehicle or Engine (LCVM) configuration of the manufacturer or importer for new vehicles.

4.1. The values recommended for vehicle maintenance (CO and HC emission and idle speed; opacity at free throttle and maximum free rpm; noise and maximum power rpm) must be provided on metal plate for all the vehicles, in a protected and easy to access place.

VIII. History: Major Regulations Revoked

CONAMA RESOLUTION No. 04/1988

This regulation sets forth provisions for the control of gas emissions by the crankcase of diesel-cycle vehicles. Official Gazette (D.O.U.) of 11.16.1988.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, based on assignments granted to it by item VI of Art. 89 of Law 6.938 of August 31st, 1981, item VIII of Art. 7 of Decree No. 88.351 of June 1st, 1983, with writing provided by Decree No. 91.305 of June 3rd, 1985, and considering the provisions in item 3.5 of Art. VI of CONAMA Resolution No. 018, of May 6th, 1986, and

Considering the current availability of simple gas circulation systems of the crankcase for diesel engines manufactured in the country, resolves to:

Art. 1 – It is established that diesel-cycle engines (natural air suction for vehicular application), manufactured and sold in the country, must have null emission of crankcase gases, assured by the utilization of gas recirculation devices, from July 1st, 1989.

Art. 2 – This Resolution enters in force on the date of its publication.

João Alves Filho

CONAMA RESOLUTION No. 10/1989

This Resolution sets forth provisions on Exhaust Gas Emission Control Mechanisms for vehicles with Otto-cycle engines. D.O.U of 12.18.1998

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, based on assignments granted to it by paragraph VI of Art. 8, of Law No. 6.938, of August 31st, 1981 and Art. 48, of Decree No. 88.351, of June 1st, 1983, and

Whereas the emission of carbon monoxide, hydrocarbons and nitrogen oxide by vehicles with Diesel-cycle engines contributes for ongoing air quality degradation;

Whereas vehicles with Diesel-cycle engines are one of the main sources of emission of nitrogen oxides to the atmosphere;

Whereas there are technical solutions, with proven utilization, which enable the control of exhaust gas emission;

Whereas the emission of hydrocarbons by the crankcase of turbocharged Diesel-cycle engines must also be controlled;

Whereas the need for providing a deadline for the technological adaptation of new engines to the control requirements;

Whereas the fuel characteristics influence the level of emissions from Diesel-cycle engines, resolves to:

Art. 1 – As from January 1st, 1993, the emission of exhaust gases by automotive vehicles with Diesel-cycle engines should not exceed the limits below:

» carbon monoxide: 11.20 grams per kilowatt-hour;

» hydrocarbons: 2.80 grams per kilowatt-hour;

» nitrogen oxides: 18.00 grams per kilowatt-hour;

Art. 2 – As from January 1st, 1995, the emission of exhaust gases by automotive vehicles with Diesel-cycle engines should not exceed the limits below:

» carbon monoxide: 11.20 grams per kilowatt-hour;

» hydrocarbons: 2.80 grams per kilowatt-hour;

» nitrogen oxides: 14.40 grams per kilowatt-hour;

Art. 3 – The emission limits defined in items 1 and 2 of this Resolution represent the same figures for pollutants per hour per net effective power unit, defined according to NBR 5484 – Alternative Internal Combustion Engines by Compression Ignition (Diesel) or Spark Ignition (Otto) of Variable Angular Speed – Test Method, February/1985, by maintaining other prescriptions by PROCONVE – Air Pollution Control Program by Motor Vehicles, PROVEM – National Program for Certification of Compliance of Automotive Vehicles – Emissions, as well as the complementary rules and decisions by CAP – Follow-up and Evaluation Commission of PROCONVE.

Art. 4 – Based on the data available, IBAMA (Brazilian Institute for the Environment and Renewable Natural Resources) must provide to CAP up to 12/31/1991, a proposal for the correction factor of the emission testing results, expressed in g/KWh, in function of the test conditions and references applicable to the country.

Art. 5 – As from January 1st, 1993, the emission of hydrocarbons through the crankcase vent of engines without the recirculation of these gases, must be incorporated to the emission of exhaust hydrocarbons for quantification purposes. The result thus obtained must meet the provisions established in items 1 and 2 of this Resolution.

Art. 6 – The procedure for quantification of the emission of hydrocarbons through the crankcase vent must be previously submitted to CAP's approval. In case this procedure is not available, this emission must be considered equal to 2% of the total HCs emitted by the exhaust tube.

Art. 7 – For compliance with Chapter VI, item 4.2 of CONAMA Resolution No. 18/86, related to the assurance of compliance with the emission limits defined in this Resolution, CNP (National Petroleum Council) must specify and inspect the total sulfur content in 0.5% of weight, as maximum value, as from January 1st, 1993.

Art. 8 – For the compliance with the maximum emission limits established in this Resolution, the National Petroleum Council must assure the availability of standard and commercial diesel oils according to the specifications provided in the attachments I and II.

§ 1 – As from the availability dates of these fuels, to be defined in specific protocol of intentions, such limits enter in force definitively.

§ 2 – Within the period before the dates of availability of such fuels, the emission limit figures established above must be considered as targets to be achieved, and the manufacturers of Diesel engines must annually prove to IBAMA, in the certification process, the technological innovations introduced in their products to achieve those figures.

Art. 9 – Recommend the settlement, up to 12/31/89, of a Protocol among CNP, PETROBRÁS, IBAMA and ANFAVEA – National Association of Automotive Vehicle Manufacturers, for establishing the specifications for standard and commercial diesel oil. It is mandatory that the standard Diesel oil available from the signature of the referred Protocol is representative of the commercial diesel oil, proposed for 1993, according to the Attachment I.

Art. 10 – This Resolution enters in force on the date of its publication.

Fernando César de Moreira Mesquita João Alves Filho

Attachment I

DIESEL OIL SPECIFICATIONS AS FROM JANUARY 1st, 1993 CHARACTERISTICS SPECIFICATIONS

Characteristics Specifications
Distillation, °C, 50% evaporated (Establish value defined by the Protocol Preparation Group)
Distillation, °C, 85% maximum evaporated 370
Viscosity at 37.8ºC, cSt 1.6 – 6.0
Carbon residue of the 10% final distilled, % weight, maximum 0.5
Sulfur, % weight, maximum 0.5
Flash point, °C – (1)
Ashes, % weight, maximum 0.02
Corrosiveness to copper, at 50°C, maximum 2
Water and sediments, % volume, maximum 0.05
Color ASTM, maximum 3.0
Mist point, °C, maximum 6 – 19(3)
Density at 20/4 .C 0.81- 0.85
(Visual) aspect Clear, free from suspended matter
Cetane number, minimum 40 (2)
Cetane index, minimum estimated 45 (2)

(1) *Specified only for diesel oil being used in marine engines, which minimum value is 60ºC.*

(2) *When CFR engine is not available, the cetane index calculated by ASTMD.976 method will be available as an approximate figure. In case of conflict, ASTM D.613 method should prevail.*

(3) *As specified in the Technical Reg. 01/80 of 01.22.80 for the regions, depending on the season, only changing 9º to 6ºC in South region, during winter.*

Attachment II

SPECIFICATIONS CHART
Standard Diesel Oil for Consumption and Emission Tests

CHARACTERISTICS	Units	Up to Dec/92	As from Jan/93	Methods
Distillation » P.I.E. » 10% » 50% » 90% » PFE	C	160-190 190-220 245-280 330-360 max. 390	160-190 190-220 245-280 330-360 max. 390	MB-45
Total sulfur	% mass	max. 0.7	0.2-0.5	MB-106
Flash point	C	min. 50	min. 55	MB-48
Viscosity at 37.8 degrees C	c St	2.0-4.0	2.5-3.5	MB-293
Ashes	% mass	max. 0.02	max.0.02	MB-47
Cetane index	—	48-58	48-54	ASTM D-976
Aromatic carbon	% V	15-25	15-25	ASTMD-3238
C.F.P.P.	C	max. -5	max.-5	EN 166 or IP 309
Density at 20/4 degrees	–	0.830-0.845	0.835- 0.845	MB-104
C				
Corrosiveness to copper 3 hours at 50 degrees C	–	max. 2	max. 2	MB-287
Carbon residue of 10% final distilled	% mass	max. 0.25	max. 0.25	MB-290
Water and sediments	% V	max. 0.05	max. 0.05	MB-38
ASTM color	–	max. 3.0	max. 3.0	MB-351
ASPECT	–	clear	clear	visual

CONAMA RESOLUTION No. 07/1993

Defines the basic guidelines and emission standards for the establishment of Inspection and Maintenance Programs for Vehicles being Used – I/M. Official Gazette (D.O.U.) of 12.31.1993

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by Law No. 6.938, of August 31st, 1981, as amended by Laws No. 7.804, of July 18th, 1989, and No. 8.028, of April 12th, 1990, regulated by the Decree No. 99.274, of June 6th, 1990, and considering the provisions in Law No. 8.490, of November 19th, 1992, as amended by the Provisional Executive Act No. 350, of September 14th, 1993, and in the Bylaws approved by CONAMA Resolution No. 025, of December 3rd, 1986,

Whereas the emission of pollutants by automotive vehicles contributes to the ongoing deterioration of air quality, especially in urban centers;

Whereas the misadjustment and change of the original characteristics of automotive vehicles contributes significantly for increasing the emission of pollutants;

Whereas, according to the international experience, the Inspection and Maintenance Programs for Vehicles being Used contribute effectively for the control of air pollution and fuel consumption savings;

Whereas CONAMA Resolution No. 18/86 included provisions for the implementation, by the state and municipal administrations, of Inspection and Maintenance Programs for Vehicles being Used;

Whereas the need for establishing emission patterns for vehicles being used and making uniform the procedures to be adopted in the implementation of the referred Programs, resolves:

To define the basic guidelines and emission standards for the establishment of Inspection and Maintenance Programs for Vehicles being Used – I/M.

Art. 1 The maximum CO, HC, dilution, engine angular speed and noise limits for vehicles with Otto-cycle engines, and the maximum limits for black smoke opacity and noise for Diesel-cycle engines, are established hereby as standard values for vehicles being currently used.

§ 1 The limits referred in this article are aimed to the evaluation of the maintenance status of vehicles being currently used, and to meet the I/M Programs.

§ 2 The maximum CO, HC, dilution and engine angular speed limits provided in Attachment I are established hereby for Otto-cycle light vehicles.

§ 3 Other maximum limits covered by this article will be established by CONAMA.

§ 4 The maximum limits established can be reviewed after the initial phase of the Program, aiming at its operational adequacy, and the proposed changes must be submitted, before their adoption, to CONAMA approval.

Art. 2 I/M Programs will be implemented as a priority, at discretion of the competent state and municipal bodies, in regions that have impaired air quality due to emission of pollutants by the fleet being used.

Art. 3 All the automotive vehicles equipped with internal combustion engines are subject to mandatory inspection, regardless the fuel type used, and observing the provisions established in the article 4 of this Resolution.

Sole paragraph. Vehicles designed exclusively for military, agricultural and racing purposes, and tractors, earthworks and paving machinery and other special vehicles, may be exempted from the mandatory inspection by the competent state and municipal bodies.

Art. 4 By considering the regional needs and options, the competent state and municipal administrative bodies will be in charge of defining the Program's target fleet, which may be only a portion of the fleet licensed in the interest region.

§ 1 The target fleet referred to in this Article can be expanded or restricted at discretion of the competent administrative bodies, in function of the experience and results achieved with the Program implementation and the regional options and needs.

§ 2 In the initial phase of the Program, the inspection of year-model 1989 and later vehicles must be prioritized.

§ 3 The competent state and municipal administrative bodies must permanently disclose the conditions for attendance of the target fleet in the Program, and the basic inspection-related information.

Art. 5 I/M Programs must be dimensioned by provisioning the construction of inspection lines for light and heavy duty vehicles, in the proportion suitable for the Program's target fleet.

Art. 6 The mandatory inspections must be carried out at inspection centers distributed throughout the Program coverage area.

§ 1 Inspection centers must provide the characteristics included in the Attachment II of this Resolution, in terms of their implementation and operation.

§ 2 The competent state and municipal administrative bodies may install or authorize the installation of moving inspection stations for the solution of specific problems or for local service of large dedicated fleets.

Art. 7 The inspection frequency will be defined by the competent state and municipal administrative bodies, and must be once a year at most, but a higher frequency may be provisioned in case of intensive use urban fleets.

Art. 8 The link between I/M Programs and the annual vehicle licensing system must be established by CONTRAN (National Traffic Council) in order to prevent vehicles not approved in the inspection from receiving authorization for circulation.

Sole paragraph. The competent administrative bodies, at their own discretion, are in charge of establishing Integrated I/M Programs in order that, in addition to the mandatory inspection of items related to the emission of pollutants and noise, they also include items related to the vehicular safety, according to specific regulation of the traffic managing bodies.

Art. 9 All the vehicles included in the target fleet defined by the competent administrative bodies must be inspected within 90 days from the limit date for their annual licensing.

Sole paragraph. Vehicles not inspected until the limit date for their licensing can be inspected after that date, but subject to rules and sanctions due to the extemporaneous licensing or the lack of it.

Art. 10 The rejection/approval/non-approval criterion for vehicles inspected in the I/M Programs must be established in such a way that the vehicle will be rejected/reproved in the inspection if it is not approved in a single item related to visual inspection, or to the measured parameters.

§ 1 The inspection procedures for Otto-cycle light vehicles must meet the minimum requirements established in the Attachment III of this Resolution.

§ 2 The inspection procedures included in the Attachment III can be reviewed after the initial phase of the Program, aiming at its operational adequacy, and the proposed changes must be submitted, before their adoption, to CONAMA's approval.

Art. 11 In case of approval, the Certificate of Vehicle Approval will be provided, indicating the inspected items and respective results.

Art. 12 In case of rejection/non-approval, the Vehicle Inspection Report will be provided, including the indication of item(s) reproved.

§ 1 Rejected/reproved vehicles must be submitted to the required repairs and return for re-inspection. They will be entitled, in the first re-inspection, to exemption of payment or reduction of the service values (if charged), within the deadlines and conditions established by the competent administrative bodies.

§ 2 In the initial Program phase, the competent administrative bodies may consider the option of mandatory inspection and voluntary compliance with the limits, aiming at disclosing its systematic procedures, making the public aware and making adjustments to the Program requirements.

§ 3 In case of need for operational adjustments in the Program, the competent administrative bodies may exempt the rejected/reproved vehicles from the second re-inspection, based on their own criteria, previously established for the initial phase of the Program.

§ 4 At their own discretion, the competent administrative bodies may establish specific procedures and limits for vehicles that provenly do not have conditions to meet the requirements of this Resolution.

Art. 13 At their own discretion, the competent administrative bodies may establish procedures and limits more restrictive than the ones established in this Resolution, provided that they are technically founded, and respecting the original emission characteristics of the vehicles, previously approved by CONAMA.

Art. 14 By complying with the relevant legislation and local regulations, the implementation and execution of I/M Programs can be performed by companies with proven experience in the area, which are specially accredited or contracted by the competent administrative bodies, and these bodies are in charge of the Program follow-up and control.

Art. 15 At their own discretion, the competent administrative bodies may establish, in compliance with the legislation in force, amounts to be charged for the vehicle inspection.

Art. 16 By meeting the conditions established in this Resolution, the competent state and municipal administrative bodies will be in charge of defining the criteria for implementation and execution of I/M Programs and for certification of line operators of the inspection centers, as well as the establishment of quality control procedures, audits and complementary regulations, by considering the local peculiarities.

Art. 17 The competent administrative bodies in charge of the I/M Programs must monitor the quality of fuels being distributed in the interest region and report periodically the results to the competent bodies in charge of inspecting their specifications.

Art. 18 The definitions provided in the Attachment IV of this Resolution are used for the purposes of this same Resolution.

Art. 19 This Resolution should enter in force on the date of its publication.

Attachment I

LIMITS FOR INSPECTION OF OTTO-CYCLE LIGHT VEHICLES

I.1. Corrected Carbon Monoxide-CO at Idle Speed and 2500 rpm

YEAR-MODEL	LIMIT (% VOL.)	
Until 1979	7.0 (*)	6.0
1980-1988	6.5 (*)	5.0
1989	6.0 (*)	4.0
1990-1991		3.5
1992-1996	5.0 (*)	3.1
as from 1997	1.5 (*)	1.0

I.2. Non-corrected non-burnt fuel – HC at Idle Speed – 2500 rpm.

	LIMITS	
Fuel	Gasoline / Mixtures (gasoline / alcohol/ fuel gas)	Alcohol / Ternary Mixture
Year-model	rpm	rpm
All	700	1100

I.3. Angular speed under Idle Speed regime – rpm 600 to 1200 rpm for all the vehicles

I.4. Minimum dilution –% ($CO + CO_2$) 6% for all the vehicles

Notes (*) Optional CO limits, valid only for the initial phase of the I/M Program.

Attachment II

INSPECTION CENTER CHARACTERISTICS

II.1. The inspection centers must be built in sites properly chosen in order that their operation does not impair the surrounding traffic. They must provide parking area for employees and visitors, vehicle circulation and wait areas, covered area for general and administrative services, and facilities for storage of materials, replacement parts and calibration gases.

II.2. The inspection centers must be covered, thus enabling the development of inspection activities regardless the weather conditions, and provide suitable ventilation for enabling vehicle inspections with engine running.

II.3. The inspection centers must be properly dimensioned and provide multiple inspection lines in order to prevent interruption of activities and queues with wait time over 30 minutes.

II.4. The inspection centers must operate in working periods that enable proper service to the users.

II.5. All the activities for data collection, information registration, execution of inspection procedures, matching of inspection data vs. established limits, and supply of certificates and reports must be performed by using computer systems.

II.5.1. The systems must enable real time access to the inspection data in each line, as well as the control of daily activities, by the Program supervision unit, which must be permanently interconnected to the inspection centers.

II.5.2. The systems must be designed and operated in order to prevent the line operators from accessing the controls that enable changing procedures or rejection/approving/reproving criteria.

II.5.3. Only the certified operators are allowed to access the inspection line operation system via individual code.

II.6. The inspection lines must be operated by personnel duly trained and certified for the development of inspection activities.

II.6.1. The administrative body or company in charge of the Program operation is responsible for the certification of line operators at the

inspection centers.

II.6.2. Line operators must be periodically certified for refreshment in the new technologies used for control of pollutant emissions by vehicles.

II.7. No vehicle adjustment or repair services should be carried out at the inspection centers. Line operators and supporting and supervision personnel are not allowed to recommend companies for providing the services.

II.8. The pieces of equipment used in the inspection of Otto-cycle light vehicles must provide the features below:

II.8.1. CO, HC and CO_2 analyzers must be of infrared non-dispersive type or of superior design, and must meet the specifications established in regulation BAR 90 of the Bureau of Automotive Repair of the State of California, USA, or in standards more technologically advanced, and must be suitable for the fuels used in the Brazilian territory and approved by the State environmental agency.

II.8.2. Gas analyzers must provide proper check system and automatic elimination of HC adherence in the sampling system.

II.8.3. The sound level meters used must meet the requirements established by the NBR-9714 standard – Noise Emitted by Automotive Vehicles in Stopped Condition – Test Method or in standards more technologically advanced.

II.9. Engine angular speed meters must provide maximum response time of 0.5 second and accuracy equal or less than ± 50 rpm.

II.10. The pieces of equipment used for CO, HC, CO_2, engine angular speed and noise level measurement must be always calibrated, provide automatic operation and should not enable operator's interference in the record of measured values.

II.11. The inspection results must be printed on proper forms, indicating the items inspected.

II.11.1. The CO emission results must be preferably registered as $CO_{measured}$ (not corrected) and $CO_{corrected}$.

II.12. The inspection centers must provide calibrated backup equipment and stock of replacement parts in order to assure that eventual equipment faults do not cause significant downtimes in the inspection line operation.

II.13. The administrative body or company in charge of the Program operation must carry out periodical checks of the calibration and general maintenance of the pieces of equipment used at the inspection centers, as well as develop audit programs for equipment and procedures, according to the criteria established by the competent bodies.

Attachment III

INSPECTION PROCEDURES FOR OTTO-CYCLE LIGHT VEHICLES

III.1. The vehicle identification documentation must be presented before the inspection for registration purposes.

III.2. Vehicles equipped to operate, at user's discretion, with more than one fuel, must be tested with all the fuel types used.

III.3. Once the vehicle data is entered in the system, the line operators must check whether the vehicle exhibits irregular engine functioning, emission of visible smoke (except water vapor), visible leaks and changes in the exhaust system. If any of such problems are found, the vehicle must be considered as rejected and the Vehicle Inspection Report must be provided.

III.4. If the vehicle is not rejected, it must be submitted to visual inspection of the emission control items.

III.5. Once completed the visual inspection, the noise level must be measured in stopped condition close to the exhaust tube, according to procedures established in the standard NBR-9714 Noise Emitted by Automotive Vehicles in Stopped Condition – Test Method.

III.6. Before proceeding with the exhaust gas measurement, the crankcase oil decontamination must be performed by accelerating with the vehicle stopped, at constant angular speed of approximately 2500 rpm, with no load and not using the choke, during at least 30 seconds.

III.7. Soon after the crankcase oil decontamination, it must be measured the CO and HC concentration levels, and exhaust gas dilution levels, of the vehicle at 2500 rpm ± 200 rpm with no load. Next, the CO, HC concentration and gas dilution levels are measured at idle speed and angular speed. In case of approval, the Certificate of Vehicle Approval will be issued. Otherwise, in case of not approval in any of the items inspected, except for CO and HC concentrations, the vehicle will be reproved and the Vehicle Inspection Report will be issued.

III.8. If the CO and HC values measured do not meet the limits established in Attachment I, the vehicle will be pre-conditioned by acceleration under constant angular speed of approximately 2500 rpm with no load and not using choke during 180 seconds, by doing new CO, HC and dilution

measurements at 2500 rpm ± 200 rpm with no load and at idle speed.

If the new values meet the limits established, the vehicle will be approved and the Vehicle Approval certificate will be issued. In case of non-approval, the Vehicle Inspection Report will be provided.

III.9. Alternative procedures to the crankcase oil decontamination procedure that prevent or minimize the interference of crankcase gases on the measurements may be adopted, provided that they are technically proven and operationally feasible.

Attachment IV

DEFINITIONS

Changes in the exhaust system: changes visually detected in the exhaust system (advanced deterioration conditions, loosen components etc.), which make unfeasible or affect the measurement of exhaust gases.

Changes in the emission control items: changes visually detected (absence, inoperative and advanced deterioration conditions) in components and emission control items.

Inspection Centers: sites constructed and equipped with the exclusive purpose of inspecting the fleet of vehicles in circulation, in a serial fashion, in terms of pollutant and noise emission and safety.

CO: carbon monoxide contained in the exhaust gases.

CO and HC $_{\text{corrected}}$: CO and HC $_{\text{corrected}}$ values according to the expression:

$$X_{\text{corrected}} = \frac{15}{(CO + CO_2)_{\text{measured}}} \cdot X_{\text{measured}}$$

where X = CO or HC

CO_2: carbon dioxide contained in the exhaust gases.

Crankcase oil decontamination: procedure used to re-circulate the contaminating gases of the crankcase oil through the crankcase gas recirculation system and to burn them into the combustion chamber.

Dilution: summation of carbon monoxide and carbon dioxide concentrations in the exhaust gases, in percentage of volume.

Initial program phase: period established by the competent state and municipal administrative bodies in charge of the I/M Program, for its operational adequacy and public awareness, characterized by a term usually not greater than 24 months from the effective inspection start date.

Visible smoke: combustion products, visible to the naked eye, and comprised by carbon particles, lubricant oil and partially-burnt fuel oil, excluding water vapor.

Irregular engine functioning: operation condition characterized by a clear unstable rotation at idle speed and/or when the vehicle engine operates only when the choke or accelerator is activated.

Fuel gas: gaseous fuel used in internal combustion engines, such as natural gas, liquefied petroleum gas or biogas.

Exhaust gas: substances emitted to the atmosphere and coming from any opening in the exhaust system.

HC: non-burnt fuel contained in the exhaust gases, formed by the total or organic substances, including fuel fractions and by-products resulting from the combustion and present in the exhaust gas.

I/M: Inspection and Maintenance Programs for Vehicles being Used, characterized by periodical inspection of atmospheric pollutant and noise emissions.

Integrated I/M: I/M Program that, in addition to the items related to the emission of atmospheric pollutants and noise, also inspects the ones related to vehicular safety.

Emission control item: component and system specifically developed for the control of pollutant and/or noise emission. This includes the catalyst, crankcase and exhaust gas recirculation systems, evaporative emission control system, and others, at discretion of the administrative body in charge of the Program.

Idle speed: operation regime in which the angular speed of the engine specified by the manufacturer must be kept during the engine operation with no load and with the fuel feed, accelerator and choke controls in the rest position.

Ternary mixture: fuel mixture formulated for replacing the hydrated ethanol, and comprised by 60% of hydrated ethanol, 33% of methanol and 7% of gasoline.

Opacity: light absorption suffered by a light beam when crossing an exhaust gas column, expressed as a percentage between the emergent and incident light flows.

Leaks: leaks of fluids in the engine and fuel feed system.

CONAMA RESOLUTION No. 15/1994

Links the implementation of Inspection and Maintenance Programs for Motor Vehicles in Use I/M to the preparation of the Pollution Control Plan for Vehicles in Use – PCPV by the state environmental agency.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by LAW No. 6.938, of August 31st, 1981, regulated by Decree No. 99.274, of June 6th,
1990, changed by Decree No. 1.205, of August 1, 1994 and its Attachment I, by considering the provisions in its Bylaws, and

Considering the provisions of CONAMA Resolution No. 7, of August 31, 1993;

Considering that the development of Inspection and Maintenance Programs for Automotive Vehicles being Used – I/M is of public interest within an integral regional planning that involves, in a harmonious way, the state and municipal administrations, resolves:

Art. 1 The implementation of I/M Programs could only be made after the preparation, by the state environmental body, of a Pollution Control Plan for Vehicles being Used – PCPV, which characterizes, in a clear and objective way, the control measures, regions prioritized and their technical and legal foundations.

Sole paragraph. The Plan referred to in the caption of this article must, in terms of I/M Programs, describe their conceptual and operational characteristics, geographical coverage, target fleet, preliminary implementation schedule, link mode with the state registration and licensing system for traffic of vehicles, financial analysis, and when applicable, integration with vehicular safety inspection programs and other similar programs.

Art. 2 The state environmental bodies will be in charge of defining in the PCPV the regions that exhibit metropolitan characteristics, or that involve more than one city, in order to integrate them in a single I/M Program.

Sole paragraph. The state environmental bodies will be in charge of the I/M Programs developed in the regions referred to in the caption of this article,

with the eventual attendance of the environmental bodies of the cities that comprise such regions in the administration of I/M Programs, in the terms and forms defined by the state environmental bodies, and respecting the relevant legislation.

Art. 3 In the regions comprised by a single city and so defined by the State Administration via PCPV, the development and supervision of I/M Programs can be carried out by the municipal environmental bodies, according to the terms and conditions defined by the state environmental bodies, and respecting the relevant legislation.

Art. 4 No type of commerce or service provision, except for vehicle inspection, should be developed by the inspection centers or moving inspection units.

Art. 5 All provisions in contrary shall be revoked.

Art. 6 This Resolution shall be effective on the date of its publication.

Henrique Brandão Cavalcanti
Chairman of the Board

Nilde Lago Pinheiro
Deputy Executive Secretary

CONAMA RESOLUTION No. 16/1994

It sets new deadlines for the compliance with the provisions of CONAMA Resolution No. 008/93, which complements Resolution No. 018/86 that establishes nationally the Air Pollution Control Program by Motor Vehicles – PROCONVE, setting maximum limits of pollutant emission for the engines aimed to new heavy duty vehicles, national and imported. Official Gazette (D.O.U.) of 09.29.1994.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, as amended by Law No. 8.028 of April 12th, 1990, regulated by Decree No. 99.274 of June 6th, 1990 and Law No. 8.746 of December 9th, 1993, considering the provision of Law No. 8.490 of November 19th, 1992, and taking into account the provision of its Bylaws, and

Considering the terms of CONAMA Resolution No. 08 of August 31st, 1993, which determines in its Article 8, §1, the presentation by IBAMA to CONAMA, "until June, 1994, and the deadlines, limits and factors regulation of altitude correction for the smoke rate under free acceleration for new engines";

Whereas the same Resolution, in its Article 17, states that "from July 1st, 1994, all vehicles with Diesel cycle engine should have attached to the engine compartment, in a protected location and of easy viewing, a sticker with the indications of smoke rate and slow motion and maximum free angular speeds, recommended by the manufacturer to ensure the correct engine adjustment";

Considering the proposal of CONAMA Executive-Secretariat, pointing the convenience to extend the deadlines mentioned, for not having been yet opportunely forwarded by CETESB to IBAMA the necessary information elements to the compliance of the same Resolution, RESOLVES to:

Art. 1 Define new deadlines for fulfillment of the following provisions of CONAMA Resolution No. 08, of August 31st, 1993, namely:

I – November 18th, 1994, for forwarding by IBAMA to CONAMA of the regulation proposal referred to in article 8, § 1.

II – January 1st, 1995, for the beginning of the mandatory affixation of the adhesive referred to in Article 17.

Art. 2 This Resolution enters in force on the date of its publication.

CONAMA RESOLUTION No. 18/1995

Determines that the implementation of Inspection and Maintenance Programs for Automotive Vehicles in Use – I/M – may be made only after preparing the Pollution Control Plan for Vehicles in use – PCPV – in conjunction by the state and local environmental bodies. Official Gazette (D.O.U.) of 12.29.1995.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by LAW No. 6.938, of August 31st, 1981, regulated by Decree No. 99.274, of June 6th, 1990, as amended by Decree No. 1.205, of August 1st, 1994 and its Attachment I, by considering the provisions in its Bylaws, and

Considering the provisions of CONAMA Resolution No. 7, of August 31st, 1993;

Considering that the development of Inspection and Maintenance Programs for Automotive Vehicles being Used – I/M is of public interest within an integral regional planning that involves, in a harmonious way, the state and municipal administrations, resolves:

Art. 1 The implementation of I/M Program could only be made after the preparation of a Pollution Control Plan for Vehicles being Used – PCPV, which characterizes, in a clear and objective way, the control measures, regions prioritized and their technical and legal foundations, jointly prepared by the state and municipal environmental bodies.

Sole paragraph. The Plan referred to in the caption of this article must, in terms of I/M Programs, describe their conceptual and operational characteristics, geographical coverage, target fleet, preliminary implementation schedule, link mode with the state registration and licensing system for traffic of vehicles, financial analysis, and when applicable, integration with vehicular safety inspection programs and other similar programs.

Art. 2 In metropolitan regions and urban agglomerates, the state environmental body will be in charge, by jointly working with the involved municipal environmental bodies, of defining the scope of PCPV.

Sole paragraph. It shall be assured to the state and municipal environmental bodies the attendance in the preparation of PCPVs developed in the regions referred to in the caption of this article and in the implementation of I/M Programs, addressed in this resolution.

Art. 3 No type of commerce or service provision, except for vehicle inspection, should be developed by the inspection centers or moving inspection units.

Art. 4 This Resolution shall be effective on the date of its publication, and all provisions in contrary shall be revoked.

Gustavo Krause
Chairman of the Board

Raul Jungman
Executive-Secretary

CONAMA RESOLUTION No. 20/1996

Defines the undesirable action items related to noise and atmospheric pollutants emission. Official Gazette (D.O.U.) of 11.07.1996.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers and competences conferred to it by Law No. 6.938 of August 31st, 1981, as amended by Law No. 8.028, of April 12th, 1990, regulated by Decree No. 99.274 of June 6th, 1990 and taking into account the provision of its Bylaws, and

Considering the requirements established in Law No. 8.723, of October 28th, 1993 for the control of atmospheric pollutants and noise emitted by automotive vehicles;

Whereas the compliance with the emission limits established is made according to standard procedures, conceived to reproduce typical and representative conditions of operation of automotive vehicles in normal use;

Whereas the automotive industry has as one of its major goals the optimization of its products, and in the realization of such goal it adopts technological solutions involving systems of any nature, fuels, lubricants, additives, parts, components, devices, software components and operational procedures that may be directly or indirectly related with the control of noise and atmospheric pollutant emission;

Whereas the presence of certain components, parts, devices, software components, systems, lubricants, additives, fuels and operational procedures in the vehicles, considered as an integral part of them, may adversely affect the control of noise and atmospheric pollutants of automotive vehicles, under normal use and operation conditions, also resulting in their lack of compliance, in the most extreme cases;

Whereas the standard procedures for checking the compliance with the emission limits may not, in several cases, be sufficiently sensitive to the action of parts, components, devices, software components, systems, lubricants, additives, fuels and operational procedures used, thus enabling the occurrence of results not representative of the conditions to be reproduced, invalidating the results, Resolves to:

Art. 1 Define as “undesirable action items” any parts, components, devices, systems, software components, lubricants, additives, fuels and operational procedures that reduce or may reduce the efficacy of control of noise and atmospheric pollutant emissions of automotive vehicles, or produce undesirable or discontinuous variations of such emissions, which may be expected during their normal operations.

Sole Paragraph – Also considered as “undesirable action items” are the ones described in the caption of this article, which enable the recognition of standard test procedures and cause changes in the engine or vehicle behavior, specifically under test cycle conditions, and that do not occur in the same way when the vehicle is under normal use in the streets.

Art. 2 Prohibit that vehicles are equipped with “undesirable action items”, as defined in article 1 of this Resolution.

Art. 3 Any vehicle that has its noise and atmospheric pollutant control systems fully or partially controlled by computer systems must provide security features that prevent intentional programming changes, especially the replacement of memory components, or even the access to the programming codes.

Art. 4 IBAMA may test or require the execution of tests in any vehicle, in a place it designates, aiming at investigating the eventual presence or action of "undesirable action items".

§ 1 Upon the execution of the tests mentioned in the caption of this article, IBAMA may use any test procedures and conditions that may be expected during normal operation of the automotive vehicle.

§ 2 When requested by IBAMA, the manufacturer must provide all the means required for the tests, such as: vehicle, instrumentation, computers, software components and interfaces for access to monitored data and electronic parameters, as well as all the other systems and components.

§ 3 IBAMA may request the responsible for vehicle production, import or design for providing detail information on the test programs and results, engineering evaluations, project specifications, calibrations, algorithms of the vehicle computers and project strategies incorporated in the operation, both in the standard conduction cycle and in normal use.

Art. 5 IBAMA may cumulatively suspend the issuance of new LCVMs for infringers of the provisions in this Resolution, and request the removal of

vehicles involved for repair or replacement of "undesirable action items", without prejudice to the sanctions provisioned in Law No. 6.938, of August 31st, 1981, with writing provided by Law No. 7.804, of July 18th, 1989, and other penalties provisioned in the legislation.

Art. 6 Cases omitted in this Resolution shall be decided by IBAMA.

Art. 7 This resolution becomes effective on the date of its publication.

CONAMA RESOLUTION No. 227/1997

Regulates the implementation of Inspection and Maintenance Program for Vehicles in Use I/M. Official Gazette (D.O.U.) of 08.25.1997.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by Law No. 6.938 of August 31st, 1981, regulated by Decree No. 99.274 of June 6th, 1990, considering the provisions in the Bylaws, and

Considering the need for providing more clearness to the requirements and assignments established in Resolution No. 7, of August 31st, 1993;

Considering the integration of Inspection and Maintenance Programs for Vehicles in Use – I/M, defined by the resolutions of the National Traffic Council – CONTRAN;

Whereas the CONAMA Resolutions No. 18, of May 6th, 1986, and No. 18, of December 13th, 1995, and Law No. 8.723, of October 28, 1993, include provisions for the implementation of Inspection and Maintenance Programs for Vehicles in Use by the state and municipal environmental bodies, resolves to:

Art. 1 Art. 2 and 8, § 3 of art. 12, art. 14 and 19 of CONAMA Resolution No. 7/93, are now in force with the writing below:

"Art. 2 I/M Programs for inspection of items related to the emission of pollutants and noise shall be implemented as a priority in regions that exhibit compromise of the air quality due to emissions of pollutants by the fleet in use, at discretion and responsibility of the state and municipal environmental bodies.

Art. 8 At their own discretion, the environmental bodies are in charge of defining the actions for implementation of inspections of the items related to the emissions of pollutants and noise, in an integrated and harmonic way, including the inspection of vehicular safety items.

Sole paragraph. The link between the I/M Program and the vehicle registration and licensing system shall be established according to Resolutions of the National Traffic Council – CONTRAN.

Art. 12 § 3 In case of need for operational adjustments in the Program, the environmental bodies may release for circulation the vehicles reproved in the second re-inspection, according to their own criteria technically justified, until the definition of new standards.

Art. 14 By complying with the relevant legislation and legal regulations, the implementation and execution of I/M Programs can be performed by companies or entities with proven experience in the area, which are specially contracted and accredited by the environmental bodies, and these bodies are in charge of the Program supervision, follow-up and control.

Art. 19 Vehicles that do not meet the requirements of this Resolution will be subject to the sanctions provisioned in the legislation in force."

Art. 20 The expressions: competent state and municipal bodies and competent bodies included in CONAMA Resolution No. 07/93 are replaced by: state and municipal environmental bodies and environmental bodies, respectively.

Art. 3 In Attachment IV – Definitions of CONAMA Resolution No. 07/93, the items related to CO and HC $_{corrected}$, and HC are now effective with the writing below:

"CO $_{corrected}$ = values of CO $_{corrected}$ according to the expression:

$$CO_{corrected} \frac{15}{(CO + CO_2)_{measured}} . CO_{measured}$$

where CO_2 – carbon dioxide contained in the exhaust gases.

HC = non-burnt fuel contained in the exhaust gases, formed by the total or organic substances, including fuel fractions and by-products resulting from the combustion and present in the exhaust gas, expressed in normal hexane.

Art. 4 § 2 of article 4 of CONAMA Resolution No. 7/93 is revoked.

Art. 5 This Resolution shall be effective on the date of its publication.

Gustavo Krause Gonçalves Sobrinho
Chairman of the Board

Raimundo Deusdará Filho
Executive-Secretary

CONAMA RESOLUTION No. 251/1999

Establishes criteria, procedures and maximum limits of exhaust emission opacity to assess the maintenance status of Diesel cycle motor vehicles. Official Gazette (D.O.U.) of 01.12.1999.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by LAW No. 6.938, of August 31st, 1981, regulated by Decree No. 99.274, of June 6th, 1990, and considering its Bylaws, whereas the emission of pollutants by Diesel-cycle automotive vehicles con tributes for the ongoing deterioration of the environmental quality, especially in urban centers;

Considering the need for implementation of measures for the effective reduction of pollutant emissions by Diesel-cycle automotive vehicles;

Whereas the high concentrations of inhaling particles in large urban centers result from the increase of the morbidity and mortality rates by respiratory diseases in the population exposed to them, especially among children and elderly people;

Whereas a large portion of the Diesel-cycle automotive vehicle fleet emits pollutants above the acceptable levels;

Considering the need for promoting the awareness of the population for the question of air pollution by automotive vehicles;

Whereas the proper maintenance of Diesel-cycle automotive vehicles contributes significantly for the reduction of smoke and pollutant emissions;

Considering the need for defining the procedures, pieces of equipment and maximum limits related to smoke emissions by Diesel-cycle automotive vehicles, supplementary to those provisioned in CONAMA Resolution No. 7, of August 31st, 1993, which defines the basic guidelines and standards of emission for the Inspection and Maintenance Programs for Vehicles in Use – I/M;

Whereas CONAMA Resolution No. 16, of December 13th, 1995, establishes procedures and limits for certification of Diesel-cycle automotive

vehicles, as well as for control of smoke emissions by these models throughout their lifetime;

Considering Art. 104 of Law No. 9.503, of December 23, 1997, which sets forth the Traffic Code, resolves to:

Art. 1 Establish the following criteria, procedures and maximum opacity limits for exhaust emissions in order to evaluate the maintenance status of Diesel-cycle automotive vehicles in use in the Brazilian Territory, to be used in I/M programs:

I – For Diesel-cycle automotive vehicles, made in Brazil or imported, which already meet the requirements of CONAMA Resolution No. 16/95, the maximum opacity levels are the values certified and exhibited on the label affixed on the right-hand front door pillar of the vehicles, valid for measurements made at locations up to 350 m of altitude.

II – In addition to the label referred in the previous paragraph, the owner and service manuals of vehicles covered by CONAMA Resolution No. 16/95 must indicate the maximum opacity limit valid for measurements at altitudes up to 350 m, the corrected value for altitudes above 350 m or its respective correction factor, as well as the values of angular rotation (rpm) at idle speed and maximum free engine speed.

Sole paragraph. For Diesel-cycle automotive vehicles, made in Brazil or imported, before the effective date of CONAMA Resolution No. 16/95, the maximum opacity limits of the table below are established:

Table – Maximum Opacity Limits at Free Throttle Related to vehicles not covered by Resolution No. 16/95

Altitude	Engine Type	
	Natural air suction or turbocharged with LDA (1)	Turbocharged
Up to 350 m	17.7 m^{-1}	2.1 m^{-1}
Above 350 m	2.5 m^{-1}	2.8 m^{-1}

(1) *LDA is the control device of the fuel injection pump for adequacy of its debit to the turbocharger pressure.*

Art. 2 The opacity measurement for Diesel-type automotive vehicles

submitted to periodical inspection should not be used for reproving vehicles during the first operation year of I/M Programs, and during such period the limit values provided in the sole paragraph of the previous article shall be used as reference for establishing the definitive limit values.

§ 1 The records of opacity measurement tests, angular speeds and visual inspection of items that directly influence the opacity values registered by the operating companies of I/M Programs shall be entered in a database to be quarterly provided and updated with the Brazilian Institute of Environment and Renewable Natural Resources – IBAMA, during the first operation year of these Programs, in order to enable IBAMA, after evaluation, to propose to CONAMA the confirmation or review of the limit values presented on the table described in the sole paragraph of the previous article.

§ 2º At IBAMA's discretion, the period defined in the caption of this article may be extended, as required.

§ 3 Once the definitive limit values are established by CONAMA, the failure in complying with these limits shall imply in reproving the vehicle in I/M Programs.

Art. 3 The vehicles are evaluated according to the Opacity Evaluation Procedure for Diesel-Cycle Automotive Vehicles in Use by using the Free Throttle Method, included in the attachment of this Resolution.

Art. 4 The tests for opacity measurement shall be carried out according the Brazilian Standard NBR-13037 – Exhaust Gas Emitted by Diesel Engine at Free Throttle Opacity Determination – Test Method, by using opacity meter certified by the National Institute of Metrology, Standardization and Industrial Quality – INMETRO.

§ 1 The opacity measurements must be performed by using partial flow opacity meter with maximum physical response time of 0.4 sec, total response time from 0.9 to 1.1 sec and measurement chamber with 430 mm of effective light path length through the gas.

§ 2º Once the definitive limit values are established by CONAMA, the procedures alternative to the ones provided in NBR-13037 may be adopted, aiming at optimizing the inspection tests, under prior approval from IBAMA, provided that their applicability and compatibility are technically proven with the same criteria used in the certification processes for new vehicles, established in CONAMA Resolution No. 16/95.

Art. 5 Vehicles conceived exclusively for military, agricultural and racing applications, tractors, earthworks and paving machines, and other vehicles for special applications, as well as the ones not usually employed for urban and/or road transportation should not be required to meet the requirements of this Resolution.

Art. 6 The opacity level control for Diesel-cycle automotive vehicles in use is under the responsibility of the environmental bodies of states and cities, and the bodies accredited by them, with no prejudice to their competences, once fulfilled the other requirements established by CONAMA, especially the ones in CONAMA Resolutions No. 07/93, 18, of December 13th, 1995, and 227, of August 20th, 1997.

Sole paragraph. The control actions referred to in the caption of this article shall be performed in a coordinated and harmonic way, being preceded by articulations and definitions expressed in the Pollution Control Plan for Vehicles in Use, according to the requirements of CONAMA Resolution No. 18/95.

Art. 7 This Resolution becomes effective on the date of its publication.

Art. 8 All provisions in contrary are revoked.

José Sarney Filho
Chairman of Conama

Raimundo Deusdará Filho
Executive-Secretary

Attachment

OPACITY EVALUATION PROCEDURE FOR DIESEL-CYCLE AUTOMOTIVE VEHICLES IN USE BY USING THE FREE THROTTLE METHOD

1. The inspector must check whether the vehicle exhibits irregular engine functioning, visible leaks, tampering of the injection pump seal, leaks and changes in the exhaust and air intake systems, and removal or change of the original vehicle components that directly influence on the smoke emissions, as well as check whether the vehicle exhibits emission of blue smoke. If the vehicle exhibits at least one of the irregularities described, it must be considered as rejected, and the inspection procedures should not be started.

2. Before starting the measurements, the operator must make sure that the vehicle is properly braked and the gear shift handle is in neutral position. All the devices that change the vehicle acceleration, such as air conditioning, engine braking, etc. must be switched off. The engine must be at normal operating temperature and under stabilized operation conditions, as specified by the manufacturer.

3. The inspector must identify the characteristics of the feed system for the correct application of the limits applicable for natural air suction, turbocharged or turbocharged with LDA engines.

4. After the visual inspection, the value of angular rotation at idle speed must be registered for the vehicle, which must be slowly accelerated until reaching the maximum free angular speed of the engine, by making sure of its stabilization. The maximum free angular speed must also be registered, and the records must be matched against the values specified within tolerance of ± 100 rpm. If the registered angular speed values do not meet the specified ones, the vehicle will be reproved. In case of occurring any abnormality during the engine throttling, the inspector must decelerate the vehicle immediately, which will be also reproved.

5. Run the tests for opacity measurement according to the Brazilian standard NBR-13037 – Exhaust Gas Emitted by Diesel Engine at Free Throttle Opacity Determination – Test Method.

6. If the test result is equal or less than the limits established, the vehicle will be approved and the Vehicle Approval Certificate must be issued. Otherwise, the vehicle will be reproved and the Vehicle Inspection Report must be issued by observing the requirements provisioned in art. 2 of this Resolution.

CONAMA RESOLUTION No. 252/1999

Establishes, for road motor vehicles, including assembled vehicles, complemented and modified, national or imported, maximum noise limits near the exhaust tube, for mandatory inspection purposes and surveillance of vehicles in use. Official Gazette (D.O.U.) of 02.01.1999.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by LAW No. 6.938, of August 31st, 1981, regulated by Decree No. 99.274, of June 6th, 1990, and taking into account the provision of its Bylaws,

Whereas the excessive noise causes damages to the physical and mental health and particularly affects hearing;

Considering the need for reducing the high sound pollution levels in the major urban centers in Brazil;

Whereas automotive road vehicles are the major sources of noise in the urban environment;

Whereas the automotive industry has been introducing technological improvements in its products for fulfillment of CONAMA Resolutions No. 1, of February 1st, 1993, No. 2, of June 15th, 1993, No. 8, of October 10th, 1993, and No. 17, of December 13th, 1995, which establish procedures and maximum limits for control and inspection of noise emissions by automotive vehicles in use;

Whereas the vehicles that exhibit deterioration problems and tampering of the exhaust system result in noise emission levels above the acceptable standards;

Whereas the proper maintenance of the exhaust system in vehicles prevents the noise emission from increasing;

Considering the need for making compatible the noise measurement procedures near the exhaust tube in Diesel-powered vehicles with the international practices in force.

Considering the need for complementing CONAMA Resolution No. 7, of August 31st, 1993, which defines the basic guidelines and emission standards for establishing inspection and maintenance programs for vehicles in use – I/M, including the mandatory checking of items related to noise emission;

Considering the need for harmonizing the pollution control actions by the state and municipal environmental bodies within the scope of CONAMA Resolution No. 18, of December 13th, 1995, which created the Pollution Control Plan for Vehicles in Use – PCPV;

Considering the need for establishing specific criteria for the inspection of noise emissions by vehicles that run on public paths, in order to assure their operation under the same conditions in which they were approved in the Mandatory Inspection Program, resolves to:

Art. 1 Establish, for road automotive vehicles, including assembled vehicles, complemented and modified, made in Brazil or imported, maximum noise limits near the exhaust tube, for mandatory inspection purposes and surveillance of vehicles in use.

§ 1 For Otto-cycle vehicles, made in Brazil or imported, which meet the maximum noise limits under acceleration established in the Resolutions No. 02/93 and 08/93 of the National Environment Council – CONAMA, the maximum noise limit for mandatory inspection and surveillance purposes is that emitted by automotive vehicles in stopped condition, stated by the manufacturer to Brazilian Institute of Environment and Renewable Natural Resources – IBAMA, according to Art. 20, § 6 of CONAMA Resolution No. 08/93 or Art. 1, § 6 of CONAMA Resolution No. 02/93, depending on the vehicle's category.

§ 2 For Diesel-cycle vehicles, made in Brazil or imported, the same requirements established in § 1 of this article are valid. However, they are applicable only for models produced from January 1st, 1999.

§ 3 For Otto-cycle vehicle models that do not meet the maximum noise limits under acceleration established by CONAMA Resolutions No. 02 and 08, of 1993, and for Diesel-cycle vehicle models produced up to December 31st, 1998, the maximum limits for noise emitted by automotive vehicles in stopped condition are established according to Table 1:

Table 1 – Maximum limits of noise emitted by automotive vehicles in stopped condition for inspection and surveillance purposes for automotive vehicle models in use, related to Otto-cycle vehicle models that do not meet the maximum limits of noise emitted by automotive vehicles under acceleration in CONAMA Resolutions No. 02 and 08, of 1993, and to Diesel-cycle vehicle models produced up to December 31st, 1998

Category		Engine position	Noise Level dB(A)
Passenger vehicle with up to nine seats and mixed use vehicles derived from automobile		Front	95
		Rear	103
Passenger vehicle with more than nine seats; goods or traction vehicles and mixed use vehicle not derived from automobile	TGW up to 2,000 kg	Front	95
		Rear	103
	TGW above 2,000 kg and up to 3,500 kg	Front	95
		Rear	103
Passenger or mixed use vehicle with more than 9 seats and TGW up to 3,500 kg	Maximum power equal or above 150 kW (204 HP)	Front	92
		Rear and inter-axle	98
Goods or traction vehicle with TGW above 3,500 kg	Maximum power under 75 kW (102 HP)	All	101
	Maximum power between 75 kW and 150 kW (102 to 204 HP)		
	Maximum power equal or above 150 kW (204 HP)		
Motorcycles, scooters, mopeds, bicycles with auxiliary engine, and similar vehicles		All	99

Notes:
1) Vehicle designations according to NBR-6067.
2) TGW: Total Gross Weight.
3) Power: Maximum net effective power according to NBR-ISO 1585.

§ 4 For mandatory inspection and surveillance purposes of vehicles in use, the noise level measurement tests shall be carried out according to the Brazilian Standard NBR-9714 Noise Emitted by Automotive Vehicles in Stopped Condition – Test Method, in terms of noise measurement near the exhaust tube, by using equipment previously calibrated by the National

Institute of Metrology, Standardization and Industrial Quality – INMETRO or in the laboratories belonging to the Brazilian Calibration Network – RBC, observing the following change in the engine angular speed, which shall be stabilized in the following values, where N is the maximum angular speed for maximum engine power, by accepting maximum variation of ± 100 rpm.

I – For all the automotive vehicles, except the ones included in paragraphs II and. III: ¾ N.

II – For motorcycles and similar vehicles:

a) ½ N if N = 5000 revolutions per minute, or

b) ¾ N if N < 5000 revolutions per minute.

III – For vehicles that do not enable stability at ¾ N by design:
maximum speed that can be stabilized.

§ 5 In order to facilitate the positioning of the microphone, the template provided in Attachment A can be used.

Art. 2º The limit values established in this Resolution shall be used as reference for mandatory inspection and surveillance purposes of vehicles in use in the initial phase of the programs, and the vehicles not compliant with these maximum limits should not be subject to be reproved and to the respective sanctions during this program phase.

§ 1 The records from tests of noise emitted by automotive vehicles in stopped condition, as well as the ones related to visual inspection of items that directly influence the external noise emission of vehicles, obtained by the I/M operators and provided to IBAMA, where they will be centralized in the initial phase of the mandatory inspection programs, shall be entered in a database to be used by CONAMA in the Table 1 review process.

§ 2 The expression “initial phase of inspection programs” herein means the period required for performing noise inspections on at least 200,000 Otto-cycle vehicles (except motorcycles and similar), 200,000 Diesel-cycle vehicles and 200,000 motorcycles and similar, or until the date considered as required by the competent environmental body, in order to assure a statistical dimensioning of record samples compatible with the reliability requirements of the new limits to be established.

§ 3 Once the definitive table is established by CONAMA, the non-compliance with the limits shall imply in vehicle reproving and the sanctions applicable and related to the inspection and surveillance programs for vehicles in use.

Art. 3º The requirements of this Resolution should not apply on horns, sirens, alarms and similar equipment used by vehicles in urban paths.

Art. 4 Vehicles conceived exclusively for military, agricultural and racing applications, tractors, earthworks and paving machines, and other vehicles for special applications, as well as the ones not usually employed for urban and/or road transportation, should not be required to meet the requirements of this Resolution.

Art. 5 Regardless the noise level measured, the engine, exhaust system, air intake system, encapsulations, acoustic barriers and other vehicle components that directly influence the noise emissions by the vehicle, should not exhibit damages or advanced deterioration conditions.

§ 1 The exhaust systems, or part of them, can be replaced by similar systems, provided that the new noise levels do not exceed the ones originally obtained and stated by the vehicle manufacturer, according to CONAMA Resolutions No. 01, 02 and 08, of 1993, and the ones established in Table 1.

§ 2 The vehicles submitted to mandatory inspection and/or surveillance, which do not meet the requirements provisioned in the caption of this article, shall be reproved and subject to the sanctions applicable, regardless the phase of these programs.

§ 3 During the data survey phase for revision of Table 1, included in art. 1, the number of vehicles for each category defined in art. § 2, may be changed, in order that 25% (twenty-five percent) of the vehicles, randomly selected, are tested, aiming at optimizing the program efficacy.

§ 4 CONAMA shall use the data and experience achieved in this phase to perform the reviews required in the test procedures and vehicle selection criteria.

Art. 6º The state and municipal environment bodies, and the bodies accredited by them, especially the traffic-related ones, are in charge of the inspection and surveillance at field of the noise emission levels in vehicles in use, with no prejudice to their competences, by meeting the other

requirements established by CONAMA and related to the Inspection and Surveillance Programs, especially the CONAMA Resolutions No. 7/93, 18/95 and 227, of August 20th, 1997.

Sole paragraph. The actions for inspection and surveillance of noise emitted by vehicles in use developed by states and municipalities shall be performed in a coordinated and harmonic way, by being preceded of articulations and definitions expressed in the Pollution Control Program for Vehicles in Use. – PCPV, according to the requirements of CONAMA Resolution No. 18/95.

Art. 7 As from January 1st, 1999, and aiming at complying with the prototype checking processes, according to CONAMA Resolutions No. 1, 2 and 8, of 1993, and No. 17, of 1995, the noise level measurement test in stopped condition shall be carried out according to the Brazilian standard NBR-9714 – Noise Emitted by Automotive Vehicles in Stopped Condition – Test Method, in terms of measuring the noise near the exhaust tube, observing the following change in terms of angular speed at maximum engine power, which shall be stabilized in the following values, where N is the maximum angular speed at maximum engine power, by accepting maximum variation of ± 100 rpm.

I – For all the automotive vehicles, except the ones included in paragraphs II and III: ¾ N.

II – For motorcycles and similar vehicles:

a) ½ N if N = 5000 revolutions per minute, or

b) ¾ N if N < 5000 revolutions per minute.

III – For vehicles that do not enable stability at ¾ N by design:
maximum speed that can be stabilized.

Art. 8º The manufacturers, importers, assemblers, changing and tuning performers of automotive vehicles must inform IBAMA, up to December 31st, 1998, the noise level value in stopped condition of all the models being produced, measured according to the Standard NBR-9714, included in the caption of this article, by observing Art. 4 of this Resolution.

Art. 9 For the purposes of this Resolution, the definitions provided in Attachment B are established herein.

Art. 10. This Resolution shall be effective on the date of its publication.

Art. 11. Provisions in contrary are revoked.

José Sarney Filho
Chairman of the Board

Raimundo Deusdará Filho
Executive-Secretary

Attachment A

TEMPLATE USE INSTRUCTIONS

1. The template for noise measurement is an auxiliary device to enable accurate positioning of the microphone according to ABNT NBR-9714. It consists of a triangle with two backboards (1), one for positioning with the exhaust tube and the other for placing the microphone. The third edge provides one alignment aid (5). The device also has two spirit levels (3).

2. Depending on the positioning of the exhaust system (left or right side), one of the backboards (1) shall be positioned near the exhaust gas outlet hole. The correct device leveling should be checked from the levels (3).

3. By using the alignment aid (5), the correct alignment of the backboard (1) with the gas flow must be visually made.

4. The microphone is positioned on the other backboard (1).

5. Depending on the exhaust tube diameter, the backboards may be greater than those shown in the figure.

6. The device should always be used at a height equal to or greater than 0.2 m from the ground.

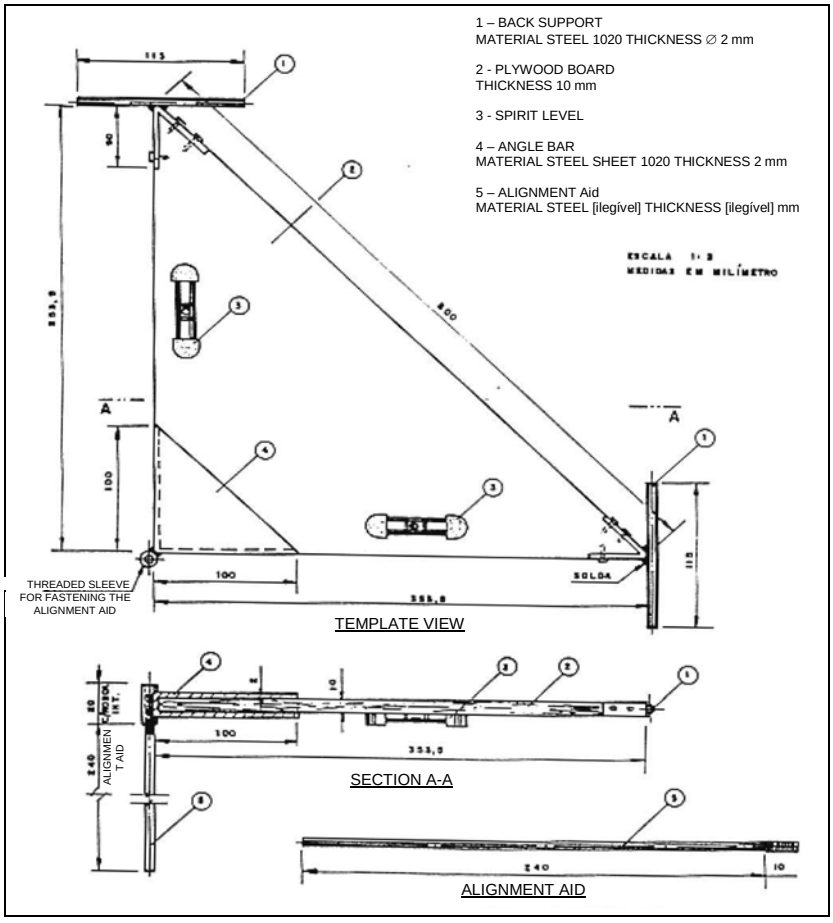
Attachment B

DEFINITIONS

dB(A): sound pressure level unit in decibel, weighed by the response curve (A) for the quantification of noise level.

Total Gross Weight – TGW: weight indicated by the manufacturer for specific operations conditions, based on considerations on the strength of materials, tire load capacity etc., according to NBR-6070.

Exhaust system: set of components including the exhaust manifold, exhaust tube, discharge tube, expansion chamber(s), muffler(s) and catalyst(s), when applicable.



CONAMA RESOLUTION No. 256/1999

Sets forth the rules and mechanisms for vehicle inspection in terms of pollutant and noise emissions, regulating the Art. 104 of the National Traffic Code. Official Gazette (D.O.U.) of 07.22.1999.

The NATIONAL ENVIRONMENT COUNCIL – CONAMA, exercising the powers conferred to it by Law No. 6.938, of August 31st, 1981, regulated by Decree No. 99.274, of June 6th, 1990, as amended by Decree No. 2.120, of January 13th, 1997, and considering its Bylaws, and

Whereas the emission of pollutants by automotive vehicles contributes to the ongoing deterioration of air quality, especially in urban centers;

Considering the need for implementation of measures for the effective reduction of pollutant emissions by automotive vehicles;

Whereas the high concentrations of pollutants – inhaling gases and particulates – in large urban centers result from the increase of the morbidity and mortality rates by respiratory diseases in the exposed population, especially among children and elderly people;

Whereas a large portion of vehicles of the circulating fleet emits pollutants above the acceptable levels;

Whereas the proper maintenance of automotive vehicles contributes significantly for the reduction of pollutant emissions – inhaling gases and particulates – as well as for noise pollution;

Whereas CONAMA Resolutions No. 1, of February 16th, 1993, No. 7, of August 31st, 1993, No. 8, of October 10th, 1993, No. 16, of December 13th, 1995, No. 18, of December 13th, 1995, No. 227, of December 19th, 1997, No. 251, of January 12th, 1999, and No. 252, of February 1st, 1999, establish emission standards for the Inspection and Maintenance Programs for Vehicles in Use – I/M, define competences for states and municipalities, as well as the performers of Pollution Control Plans for Vehicles in Use – PCPV, in addition to set forth the form and frequency of the pollutant and noise emission inspections;

Considering the guidelines established by the CONTRAN (National Traffic Council) Resolution No. 84, of November 19, 1998, for vehicular safety inspections;

Considering articles 104 and 131, among other instruments, of Law No.9.503, of September 23, 1997, which implements the Brazilian Traffic Code – CTB;

Whereas the I/M Programs must be implemented by the state and municipal environmental bodies as soon as possible from this date, resolves to:

Art. 1 The approval of pollutant and noise emission inspection provisioned in article No. 104 of Law No. 9.503, of September 23rd, 1997, which sets forth the Brazilian Traffic Code – CTB, is a requirement for the licensing of automotive vehicles in the cities addressed by the Pollution Control Plan for Vehicles in Use – PCPV, according to the terms of article 131, paragraph 3 of CTB.

Sole paragraph. Under the terms of such resolution, the state and municipal environmental bodies are responsible for implementing the required provisions for the conduction of inspections addressed in the caption of this article.

Art. 2 It is provisioned hereby a deadline of 18 months from the publication date of this Resolution in order that states and municipalities fulfill the resolutions of the National Environment Council – CONAMA, especially the ones with No. 7, of August 31st, 1993 and No. 18, of December 13th, 1995, for preparing, approving and publishing the respective PCPVs, and implementing the inspection and maintenance programs for vehicles in use – I/M defined in PCPV.

§ 1 In case that the governmental entity decides for indirect execution, it is established hereby an additional deadline of one (1) year, extendable for six additional months, for the effective implementation of the I/M Program.

§ 2 The Ministry of Environment, by the Brazilian Institute of Environment and Renewable Natural Resources – IBAMA, shall inspect the provision of the caption, in terms of fulfillment of the deadlines, by providing assistance to Regional and Local Bodies of the National Environment System – SISNAMA, in case they face technical, administrative or legal problems for

achieving the goals of this Resolution.

§ 3 Once expired the deadline established in the caption and in case of failure by the performer bodies to fulfill the goals, or before that, upon request from states and municipalities attending the PCPV studies, IBAMA shall assume the task of developing PCPV and/or implementing the I/M Program, by performing all the technical, administrative and legal actions and formalities required.

§ 4 IBAMA shall count on deadlines identical to the ones defined in the caption, as from the date on which it assumes the services described in the previous paragraph.

Art. 3 The SISNAMA bodies in charge of the I/M Programs may establish the charge of a percentage in the value up to fifteen percent (15%) of the tariffs charged by the indirect service providers, aimed at supporting funds or covering expenses for the environment preservation and protection and/or for covering costs effectively incurred as a result from this Resolution.

Sole paragraph. The percentage value provisioned in the caption shall be aimed, in equitable parts, to the state (fifty percent) and municipal (fifty percent) environmental bodies attending the program, by discounting eventual expenses agreed with third parties and related to I/M services and not covered by the contracted party, if applicable, according to the details of rights and obligations to be established between the parties.

Art. 4 The PCPVs shall establish the target fleets by the cities, under the terms of article 4 and the respective paragraphs of CONAMA Resolution No. 7, of 1993, based on the environmental commitment caused by the type of fleet.

§ 1 The vehicles included in the fleets of cities with I/M Programs must be inspected within the jurisdiction of the I/M Program which the city belongs to.

§ 2 The PCPVs may establish conditions for the circulation of bus and truck fleets coming from cities not included in the I/M Programs.

§ 3 CONAMA shall regulate, by complementary Resolution to this one, the circulation conditions for other vehicles, coming from cities not included in I/M Programs.

§ 4 The conditions provisioned in paragraph 2 of this article can only be

implemented when there are I/M inspection stations in the access paths to regions covered by I/M Programs in order to inspect the vehicles of such fleets, which vehicles approved in the inspections shall be released for circulation within any area covered by the I/M Program.

§ 5 The provision in paragraphs 2 and 3 of this article applies exclusively to vehicles licensed in cities where the I/M Program has not been implemented.

Art. 5 I/M Programs created and deployed to meet CONAMA resolutions shall be implemented in harmonic way and at a single competence level between the state and its municipalities, which is a principle that must also rule the preparation of PCPVs.

§ 1 In articulation with the municipal bodies involved, the state environmental body will be in charge of preparing the respective PCPVs;

§ 2 In articulation with the environmental bodies involved, as defined in the PCPV, the state environmental body will be in charge of performing the I/M Programs.

§ 3 The cities with total fleets equal or greater than three million vehicles may implement their own I/M programs under specific agreement with the State government.

Art. 6 The effective start date of pollutant and noise emission inspections shall be formally informed by the public power responsible for the executive state traffic body in order to adopt the measures provisioned in paragraphs 2 and 3 of article 131 of the Brazilian Traffic Code.

Sole paragraph. In order to enable the executive state traffic bodies to put into operation the procedures under their competence in the I/M Program, the performer environmental bodies must provide the information below:

I – environmental penalties applied to vehicles;

II – vehicles approved in the pollutant and noise emission inspections.
Art. 7 The inspections must be carried out by professionals regularly certified in specific qualification courses for I/M Programs.

Art. 8 In order to work in a station, the vehicle emission control inspector must meet the requirements below:

» Hold a national driver’s license;

» Hold high school grade;

» Attended a complete technical automotive or mechanic course, or hold proven experience in a function in the automotive vehicle area for more than one year;

» Completed preparation course for technical inspector of vehicular emissions;

» Not is owner, partner or employee of repair, refurbishing or vehicle part trade company;

Sole paragraph. The evaluation of the technical qualification will be carried out by exam and proof of theoretical and hands-on knowledge, according to the procedures established by the responsible public power.

Art. 9 The value of I/M inspection services will be charged as a public price charged by the responsible body, which will also define the readjustment and revision procedures.

Sole paragraph. Official vehicles shall be equally obliged to attend the inspection, and can be exempted from paying the inspection charge by the responsible public body.

Art. 10. The services may be contracted by the public power for indirect or direct service execution.

§ 1 In case of indirect execution, by concession or other form provisioned in the law, service subcontracting should not occur;

§ 2 In case of execution by direct administration, no service outsourcing should occur;

§ 3 In any case, subcontracting or outsourcing of the accessory services below are excluded:

I – civil construction and related facilities;

II – renewals and expansions;

III – corrective and preventive equipment maintenance;

IV – facilities;

V – quality control and administrative and financial audit;

VI – safety, cleaning and similar services;

VII – IT supporting services;

§ 4 In case of indirect execution, the partners of the concessionaire or any other contracting form provisioned in the law, both individuals and legal entities, should not hold any interest in car sale companies, maintenance service providers or replacement part vendors;

§ 5 The restrictions provisioned in the previous paragraph apply equally to the public administrators of the bodies in charge of performing the services, including their hierarchical heads.

Art. 11. The entire technical inspection process for pollutant and noise emissions shall be submitted to audit by renowned and qualified institutions.

Art. 12. The operation of inspection stations shall comply with the standards established in the CONAMA resolutions.

Art. 13. States and/or municipalities that have already granted or authorized the I/M Services shall adapt themselves, as applicable, to the terms of this Resolution, except for the consolidated legal situations.

Art. 14. By specific agreement and with the approval of all the stakeholders, state and municipal environmental bodies may sign agreements with the executive federal traffic body, National Traffic Department – DENATRAN, aiming at performing, under delegation, the inspections of pollutants and noise, by companies selected by them in bidding processes.

Art. 15. In the cities or regions where I/M Programs are implemented, the companies contracted, in case of indirect execution, or the Public Power shall pursue, with strong determination, the settlement of agreements with concessionaires of vehicular safety inspections, contracted under the regulation terms of the National Traffic Council— CONTRAN, for carrying out both inspections at the same site, by keeping the individual responsibilities of each performer.

Art. 16. This Resolution shall be effective on the date of its publication.

José Sarney Filho
Chairman of the Board

José Carlos Carvalho
Executive-Secretary

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Publicity quote reference:

IBAMA. **Air Pollution Control Program by Motor Vehicles – Proconve/Promot.**
3rd ed. Brasília: Ibama, 2011. 584 p. (Environment Collection. Guideline Series – Environmental Management, No. 3).

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