

**DRAFT**  
**GUIDELINE for Regulation No. 110**

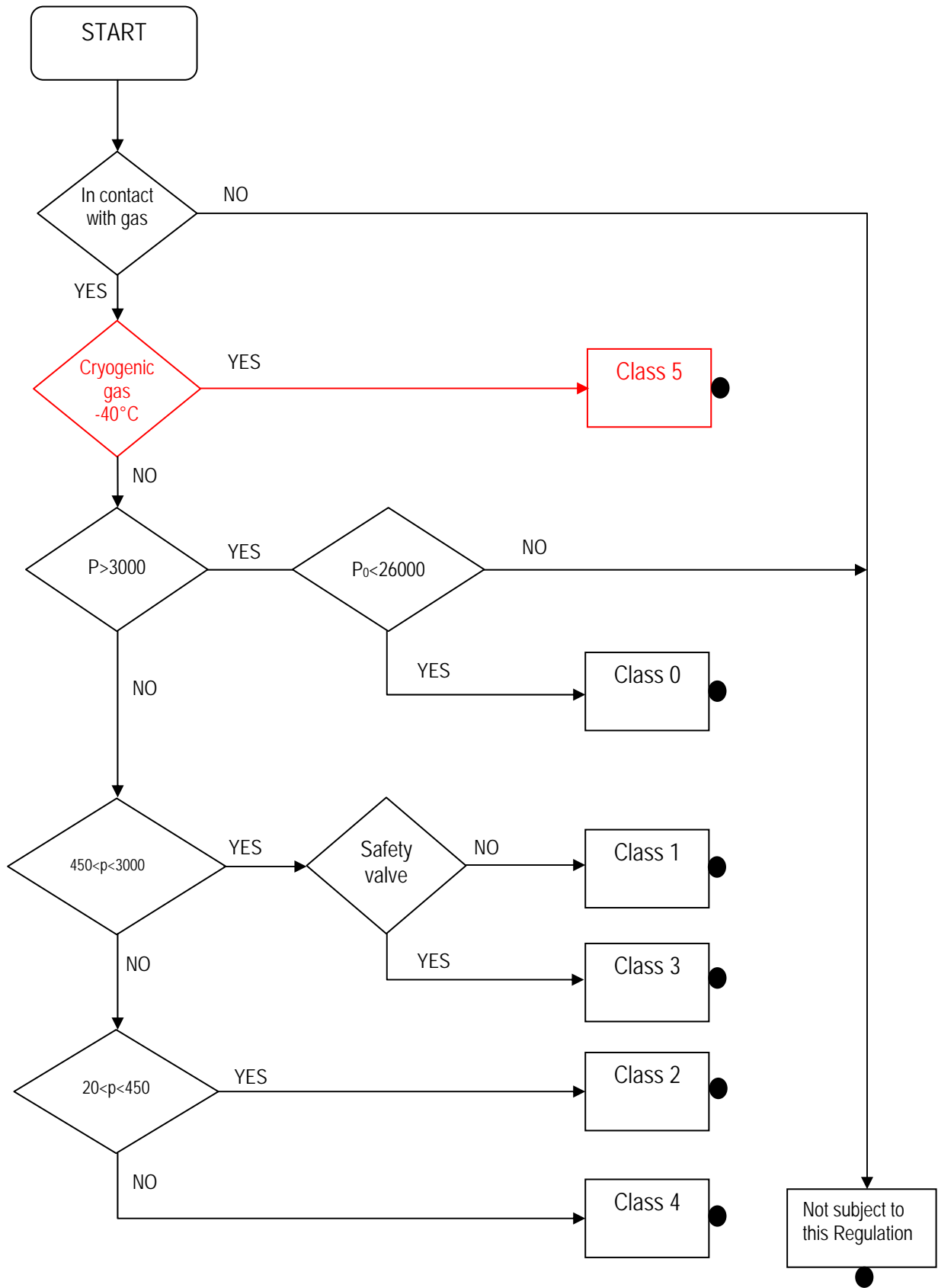
**UNIFORM PROVISIONS CONCERNING THE APPROVAL OF:**

- I. APPROVAL OF SPECIFIC COMPONENTS OF MOTOR VEHICLES USING **CNG/LNG /2.** IN THEIR PROPULSION SYSTEM;**
  
- II. APPROVAL OF VEHICLES WITH REGARD TO THE INSTALLATION OF SPECIFIC COMPONENTS OF AN APPROVED TYPE FOR THE USE OF **CNG/LNG /2.** IN THEIR PROPULSION SYSTEM**

## CONTENTS

### REGULATION

1. Scope (CNG/LNG /2.)
2. Definition and classification of CNG/LNG /2. components
- 2.3 CNG components definitions
- 2.30 LNG components definitions



**Fig. 1-1 Flow scheme for CNG and LNG components classification (Pressure in KPa)**

Performance Test	Over-pressure Strength Test	Leakage Test (external)	Leakage Test (internal)	Continued Operation Durability Test	Corrosion Resistance	Ozone Ageing	CNG Compatibility	Vibration Resistance	Dry - Heat Resistance	Low Temperature test (-40°C)
	Annex 5A	Annex 5B	Annex 5C	Annex 5L	Annex 5E	Annex 5G	Annex 5D	Annex 5N	Annex 5F	Annex 5P
Class 0	X	X	A	A	X	X	X	X	X	O
Class 1	X	X	A	A	X	X	X	X	X	O
Class 2	X	X	A	A	X	A	X	X	A	O
Class 3	X	X	A	A	X	X	X	X	X	O
Class 4	O	O	O	O	X	A	X	O	A	O
Class 5	X	X	X	X	X	X	X	X	X	X

X = Applicable  
 O = Not applicable  
 A = As applicable

**Fig. 1-2 - Tests applicable to specific classes of components (excluding CNG cylinders and LNG cryogenic tank)**

## **PART I**

3.	Application for approval.....	14
4.	Markings.....	14
5.	Approval.....	15
6.	Specifications regarding CNG components .....	16
7.	Modifications of a type of CNG component and extension of approval.....	18
8.	Specifications regarding LNG components.....	18
8.1	Modifications of a type of LNG components and extension of approval.....	18
9.	Conformity of production.....	19
10.	Penalties for non-conformity of production .....	19
11.	(Not allocated).....	19
12.	Production definitely discontinued.....	19
13.	Names and addresses of Technical Services responsible for conducting approval tests, and of Administrative Departments.....	20

## **PART II**

14.	Definitions .....	21
15.	Application for approval.....	21
16.	Approval.....	22
17.	Requirements for the installation of specific components for the use of compressed natural gas (CNG) in the propulsion system of a vehicle .....	24
17.1	Requirements for the installation of specific components for the use of liquefied natural gas (LNG) in the propulsion system of a vehicle .....	24
18.	Conformity of production.....	30
19.	Penalties for non-conformity of production .....	30
20.	Modification and extension of approval of a vehicle type.....	30

/2. Strike out what does not apply

21. Production definitely discontinued.....	31
22. Names and addresses of Technical Services responsible for conducting approval tests, and of Administrative Departments .....	31

## **ANNEXES**

- Annex 1A - Essential characteristics of the **CNG/LNG /2.** component
- Annex 1B - Essential characteristics of the vehicle, engine and **CNG/LNG /2.** -related system
- Annex 2A - Arrangement of the **CNG/LNG /2.** component type-approval mark
- Annex 2B - Communication concerning the approval or extension or refusal or withdrawal of approval or production definitely discontinued of a type of **CNG/LNG /2.** component pursuant to Regulation No. 110  
  
Addendum - Additional information concerning the type-approval of a type of **CNG/LNG /2.** components pursuant to Regulation No. 110
- Annex 2C - **CNG/LNG /2.** arrangement of approval marks
- Annex 2D - Communication concerning the approval or extension or refusal or withdrawal of approval or production definitely discontinued of a vehicle type with regard to the installation of **CNG/LNG /2.** system pursuant to Regulation No. 110
- Annex 3 - Gas cylinders - High pressure cylinder for the on-board storage of natural gas as a fuel for automotive vehicles
- Annex 3A - **Cryogenic tanks for the on board storage of liquefied natural gas (LNG) as a fuel automotive vehicles, including their accessories**
- Annex 4A - Automatic valve, non-return valve, the pressure relief valve, pressure relief device and the excess flow valve, **only for CNG applications**
- Annex 4B - Flexible fuel lines or hoses
- Annex 4C - CNG filter
- Annex 4D - **CNG** Pressure regulator
- Annex 4E - **CNG** Pressure and temperature sensors
- Annex 4F - **CNG** Filling unit
- Annex 4G - **CNG** Gas flow adjuster and gas/air mixer or gas injector

*/2. Strike out what does not apply*

- Annex 4H - CNG/LNG /2. Electronic control unit
- Annex 4I - LNG vaporizer
- Annex 4L - LNG Filling unit
- Annex 5 - Test procedures
- Annex 5A - CNG Overpressure test (Strength test)
- Annex 5B - CNG External leakage test
- Annex 5C - CNG Internal leakage test
- Annex 5D - NG compatibility test
- Annex 5E - CNG Corrosion resistance test
- Annex 5F - CNG Resistance to dry heat
- Annex 5G - CNG Ozone ageing
- Annex 5H - CNG Temperature cycle test
- Annex 5I - Pressure cycle test applicable only to cylinders (see Annex 3)
- Annex 5L - CNG Durability test (Continued operation)
- Annex 5M - Burst/destructive test applicable only to cylinders (see Annex 3)
- Annex 5N - CNG Vibration resistance test
- Annex 5O - Ambient operating temperatures
- Annex 5P - LNG - low temperature test (-40°C)
- Annex 6 - Identification mark for public service CNG
- Annex 7 - Identification mark for public service LNG