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agenda item 4.)

PROPOSAL FOR DRAFT CORRIGENDUM 2 TO REGULATION No. 110

(Specific components for CNG)

Transmitted by the Expert from Italy

Note: The text reproduced below was prepared by the experts from Italy to correct an apparent error in the Regulation. It develops the proposal distributed by Italy without a symbol (informal document No. 4) during the forty-first session of GRPE (TRANS/WP.29/GRPE/41, paras. 21-26). Noting the urgency of the matter, the representative of Italy requested during the one-hundred-and-twenty-third session of WP.29 that its consideration be included in the agendas for June 2001, both for WP.29 and AC.1 (TRANS/WP.29/776, para. []).

Note: This document is distributed to the Experts on Pollution and Energy only.

GE.01-21002

A. PROPOSAL

Paragraph 17.6.1., correct to read (French only):

"17.6.1. Les tuyauteries rigides doivent être en acier sans soudure."

Annex 4A,

Paragraphs 5.5. and 5.6., correct to read:

"5.5. The excess flow valve shall cut-off at a pressure difference over the valve of 650 kPa.

5.6. When the excess flow valve is at cut-off position, the by-pass flow through the valve shall not exceed 0.05 normal m³/min at a differential pressure of 10,000 kPa."

* * *

B. JUSTIFICATION

Re. para. 5.5. of annex 4A:

The present text reads:

"5.5. The excess flow valve shall cut off at a pressure difference over the valve of 90 kPa. At this pressure difference the flow shall not exceed 8,000 cm³ per minute."

However, the 90 kPa value is the value which was selected for LPG supply systems and cannot be proposed also for CNG systems. LPG is stored, in the liquid phase, at a pressure of 3,000 kPa; CNG is stored as a gas, at 20,000 kPa. The value of 650 kPa across the "excess flow" valve was determined experimentally as the value which will close the valve if the flow exceeds the maximum flow required by the engine under normal operating conditions. There are no reasons to impose a given flow at the cut-off setting.

Re. para. 5.6. of annex 4A:

The present text reads:

"5.6. When the excess flow valve is at cut-off position, the flow through the by-pass shall not exceed 500 cm³/min. at a differential pressure of 700 kPa."

However, the values of 500 cm³/min and 700 kPa are the values which are prescribed for LPG supply systems. They must be modified to take into account the higher pressure at which CNG is stored (20,000 kPa). The maximum by-pass flow allowed was determined experimentally on safety considerations and the differential pressure at which it is measured is the mean value between the maximum and minimum pressures that can occur in the cylinder.

General comments

Paragraphs 5.5 and 5.6 of Annex 4A to Regulation No. 110, which deal with the requirements concerning the calibrations of the "excess flow" valve to be fitted on CNG cylinders, should be amended in order to correct an oversight in the present text.

CNG cylinders must be fitted with an "excess flow" valve, which is normally incorporated in the multi-valve that feeds the engine fuel supply system, in order to cut the gas flow if a leak develops in the high pressure feed lines.

The parameter, which is selected to calibrate when the "excess flow" valve must close, is the differential pressure across the valve itself. The valve must close when the differential pressure exceeds the value corresponding to the maximum flow, which is required by the engine under normal operating conditions (full power and when starting a transient phase).

Some manufacturers make provision for a limited by-pass flow when the "excess flow" valve is fully closed, however, the by-pass flow through the valve must be limited for safety reasons according to guidelines that are to be provided for by Regulation No. 110.

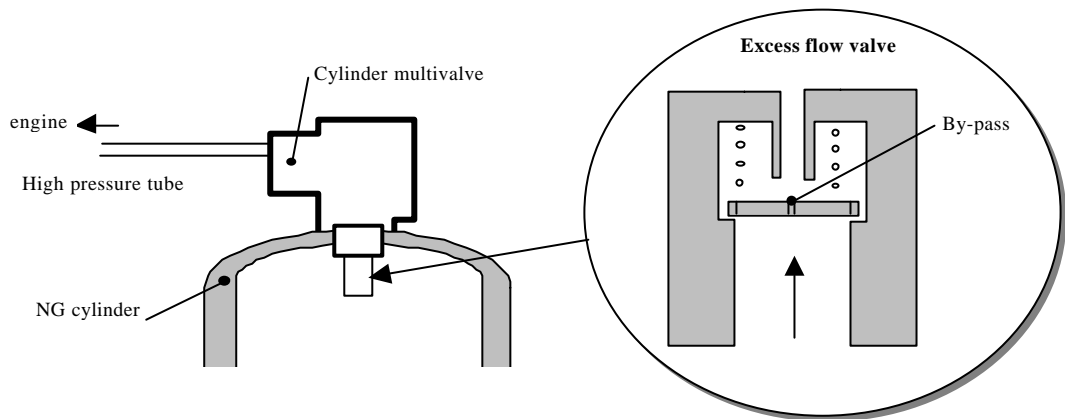


Fig. 1