

## RID/ADR

Joint meeting of the RID Safety Committee and the Working Group on the Transport of Dangerous Goods  
(Bern, 25 to 28 March 2008)

### Chapter 6.8, subsection 6.8.3.2.3 Openings for filling and discharging

#### SUMMARY

**Explanatory summary:**

The proposal aims to amend the resolution from the joint meeting in March 2007

**Proposed amendment:**

Amendment of subsection 6.8.3.2.3 RID/ADR

**Corresponding documents:**

INF.16 from March 2007; minutes and resolutions from joint meeting in March and September 2007

#### Introduction

The joint meeting has decided, on the basis of the INF. document 16 from Belgium and the report from the Tank Working Group (INF. 49) from March 2007, that subsection 6.8.3.2.3 is to be amended. The objective is to clarify the use of non-return valves in pipes used for filling and discharging (new text in bold characters):

**"6.8.3.2.3 All filling and all discharge openings of tanks**

**with a capacity greater than 1 m<sup>3</sup>**

**intended for the carriage of liquefied flammable and/or toxic gases shall be equipped with an instant-closing internal safety device which closes automatically in the event of an unintended movement of the shell or of fire. It shall also be possible to operate the closing device by remote control.**

**A non-return valve may not be used as an internal safety device to fulfil the provisions of this paragraph."**

The publication of the existing RID/ADR 2009 documents revealed the scope of this "clarification" to the concerned parties. The new text, prohibiting the use of a non-return valve as an instant-closing internal safety device in a filling pipe, is for safety reasons considered to be without grounding and contradictory to the long-standing codes of approval practice in many ADR states. For this reason the following proposed amendment of the text should be put to discussion:

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## Proposal

The existing text is to remain unchanged. The following sentence is to be added at the end: "Openings for pipes intended only for filling of the tanks may be fitted with a non-return valve as long as they are also equipped with a spring load comparable to that of bottom valves."

### Explanatory statement

In many ADR states, where road tank-vehicles are used as distribution vehicles, the filling of these tanks is carried out using pipes that lead to the gas phase. This method, using a separate pipe for filling and a non-return valve as an instant-closing internal safety device, was introduced more than 30 years ago and has performed well in practice ever since.

This method of filling has clear advantages with respect to pressure load during filling and also because it avoids the necessity of vapour return.

A comparison to technical procedures where filling is carried out either via a bottom valve (liquid phase) or via a separate pipe with a non-return valve produced the following results:

With the bottom valve, the spring-loaded internal closing device is opened via a control device and is consequently held open by both the filling pressure and the control device. In the event of unintended movement of the tank, in case of fire or any other unforeseen incident, the control device must first of all be deactivated, either manually or, in the case of fire, via a safety fusible element. Only then the bottom valve's spring pressure can ensure that the tank is sealed safely. In any case, the bottom valve remains open as long as the pressure in the filling pipe is greater than the spring's reset force. Activating the control device can only close the tank when there is little or no persisting filling pressure.

With a non-return valve, the internal seal is only opened by the pressure in the filling pipe that has surmounted the spring pressure and internal tank pressure. The tank is sealed securely when, similar to a bottom valve, the filling pressure is lower than the internal pressure and the spring load. A control device is rendered unnecessary, since its main function is to open the internal seal for discharging.

In both cases, and regardless of the valves used, the necessary closing of the valves is only achieved when the filling pressure is lower than the internal tank pressure. Since all valves are spring-loaded and because the filling pressure normally exceeds the spring pressure, the valves are held open by force and gas is filled into the tank until the pressure is released.

As long as it corresponds to commonly used bottom valves in terms of the spring's reset force, a "non-return valve" as an internal shut-off device in the filling pipe is, for these reasons, an equivalent solution.

Attached is a description of the most commonly used valves.

#### Safety:

Same safety level or even higher

#### Feasibility:

Avoiding problems in retrofitting existing tanks; continuing current practices