BRE Global Ltd.

Technical Code for Quick Release Valve Assemblies for Use in Fire Protection Systems

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Foreword

This technical code has been prepared to meet the requirements of RID [1]/ ADR[1], clause 6.2.5 in the absence of a design code listed in clause 6.2.4.1 relevant to quick release valve assemblies for use in fire protection systems.

These quick release valve assemblies are used as part of a system to provide protection against fire risks for industrial applications. The assemblies are transported pressurised.

These quick release valve assemblies were approved using Article 3 of 1999/36/EC but since inclusion of these requirements in RID/ADR and ECE/TRANS/225 on 1st January 2013, there has been no mechanism to approve them.

[1] Regulations Concerning the International Carriage of Dangerous Goods by Rail.

[1] European Agreement Concerning the International Carriage of Dangerous Goods by Road.

1. Scope

This technical code specifies the requirements for the design, manufacture, testing and marking of quick release valve assemblies subject to the provisions of the RID/ADR.

Quick release valve assemblies are installed on cylinders and fitted with ancillary actuators and pressure gauges.

This technical code covers quick release valve assemblies when used in one of the following applications:

- with cylinder where the fill suppressant is either gas or wet chemicals and used for local application
- with pilot cylinders where the fill suppressant is used to actuate a second unit
- with cylinders where the fill suppressant is used in vehicles
- with cylinders where the valve type is not intended for installation requiring I.S. EN 12094-4 compliant valves.

Quick release valve assemblies are single actuation devices.

This code does not cover the approval of the cylinder or any pressure limiting devices.

2. Normative references

This technical code incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this technical code only when incorporated in it by amendment or revision.

- EN 10204 *Metallic materials. Types of inspection documents.*
- ADR *European Agreement concerning the International Carriage of Dangerous Goods by Road*.
- RID *Regulations concerning the International Carriage of Dangerous Goods by Rail*.

3. Terms and definitions

3.1. Batch

Quantity of assemblies manufactured from a single supply of material.

3.2. Material Certificate

Material documentation to EN10204:2004 Clause 3.1 for all pressure retaining materials.

3.3. Maximum working pressure

Pressure at the stated maximum operating or storage temperature, whichever is the greater; at the maximum fill ratio for the suppressant, where appropriate; as declared by the manufacturer.

3.4. Maximum operating temperature

The maximum operating temperature declared by the manufacturer, in ºC.

3.5. Maximum storage temperature

The maximum storage temperature declared by the manufacturer, in ºC.

3.6. Refurbishment

Replacement of one or more components within the pressure bearing envelope. This does not apply to the refilling of the assembly if all pressure bearing elements from the original valve head assembly remain.

3.7. Working pressure

Pressure defined by the manufacturer as the norminal operating pressure.

4. Symbols

1 bar = 0.1 MPa; 1 MPa = 1 N/mm^2

5. Assessment

5.1. Conformity assessment

Conformity shall be assessed in accordance with the relevant requirements of RID/ADR section 1.8.7 and subsection 6.2.3.6.

6. Materials

6.1. General

Non-metallic materials for pressure retaining parts are not permitted.

6.2. Material Compatibility

Materials used in the pressure retaining envelope of the quick release valve assembly shall be compatible with each other and the fire suppressant.

7. Requirements

7.1. Documentation

The manufacturer shall provide to the Notified Body fully dimensioned drawings of the products which shall include the specification of the components and materials used.

7.2. Material

The manufacturer shall provide as part of the design file:

- material specifications
- material certificates
- details of suppliers

7.3. Operating Conditions

The manufacturer shall declare:

- maximum and nominal working pressures
- maximum operating and storage temperatures.

The maximum operating and storage temperatures shall be not less than + 50 ^{o}C.

7.4. Pressure Limiting Devices

Where fitted, as part of the quick release valve assemblies for fire protection systems, these devices shall be designed to prevent the pressure within the assembly exceeding the maximum working pressure.

7.5. Valve protection

The quick release valve assembly shall be protected in accordance with the requirements of Clause 4.1.6.8 of the RID/ADR.

8. Type Tests

8.1. General Requirements

Type testing shall be carried out, for each new design, under the supervision of a Notified Body.

In addition, Type testing shall be undertaken when any of the following conditions apply:

- Change to manufacturing location, or
- Change to manufacturing process, or
- Material specifications are altered or
- Changes to the design or
- The working pressure is altered.

8.1.1. Technical Specifications

The manufacturer shall prepare a technical specification for each design, including documentation as detailed in clause 7 and any supporting calculations.

8.1.2. List of Verification Tests

The following tests shall be performed for all type testing:

- Connections
- Pressure

8.2. Description of Tests

8.2.1. Connection Threads

Container and discharge outlet connection threads shall comply with European/ International standards or standards recognised by the National Standards body in the country of approval (e.g. ISO 7-1 and EN ISO 228-1).

8.2.2. Pressure Test

The quick release valve assembly shall be tested without the pressure limiting device installed. The port shall be closed with a suitable pressure bearing plug. The quick release valve assembly shall not suffer any permanent deformation when tested.

The quick release valve assembly, in its closed position, shall be connected via the inlet to a suitable hydraulic inlet and the pressure shall be increased at a rate of 2 bar/s (+/- 1 bar/s)[2] up to 2 times the manufacturers declared maximum working pressure for the quick release valve assembly or 1.5 time the maximum test pressure of the cylinder, whichever is the greatest.

This pressure shall be maintained for 5 minutes (+5/-0 minutes)[3]. At the end of this period release the hydraulic pressure.

8.2.3. Marking

The marking shall be non-detachable, non-flammable, permanent and legible throughout its life. The marking shall not become damaged during normal handling in manufacture and use. The minimum font size shall be 2.5mm.

[2] Clause 5.5.2 (para 2) – I.S. EN 12094-4:2004 *Fixed firefighting systems. Components for gas extinguishing systems. Requirements and test methods for container valve assemblies and their actuators*
[3] Clause 5.5.2 (para 3) – I.S. EN 12094-4:2004 *Fixed firefighting systems. Components for gas extinguishing systems. Requirements and test methods for container valve assemblies and their actuators*

The marking shall include at least the following:

- Unique identifier or serial number for the complete valve head assembly
- Year and month of manufacture
- Mark or name of the manufacturer
- Mark of Notified Body
- Test pressure in bar, preceded by “PH” and followed by “BAR”.

9. Production Tests

9.1. General requirements

The manufacturer shall be technically competent and ensure that he has available the manufacturing means and processes suitable for fabricating the quick release valve assemblies in accordance with this technical code. The manufacturer shall operate an appropriate quality system approved by a Notified Body in accordance with clause 1.8.7 of RID/ADR. The manufacturer shall ensure that the materials and components used in the fabrication of the quick release valve assembly is free from any defect likely to impair its safe use.

9.2. Inspection and testing, during production

9.2.1. Production Pressure Testing

The manufacturer shall ensure that all quick release valve assemblies are tested hydraulically to 1.5 times the maximum working pressure for 5 minutes and meet the requirements of 8.2.2. The manufacturer shall retain records of all testing in accordance with clause 10.

9.2.2. Production Leakage Testing

The manufacturer shall ensure that all quick release valve assemblies do not leak and show no sign of damage which could impair proper function when pneumatically pressurised up to 1.5 times the working pressure. The manufacturer shall retain records of all testing in accordance with clause 10.

9.3. Traceability

9.3.1. Pressure retaining parts

The identification and the control of the materials for all pressure retaining parts shall be such as to ensure that the materials used in manufacture meets the specification of the design.

The serial numbers of all components used in the build-up of the pressure bearing envelope of the quick release valve assembly shall be recorded. For each complete assembly, a record of the component elements shall be maintained which records the parts/components together with the drawing references, material certificates and instructions. The pressure bearing components shall be covered by EN 10204 3.1 certificates.

9.3.2. Pressure Limiting Device

Where pressure limiting devices are used certificates of conformity shall be obtained and records of the serial numbers of the devices shall be maintained as part of the build-up records for each quick release valve assembly.

9.3.3. Refurbishment

The manufacturer shall test refurbished quick release valve assemblies to clause 9.2 and retain records in accordance with clause 10.

10. Records

Manufacturers shall comply with clause 1.8.7.1.5 of RID/ADR.