

EU RO Mutual Recognition Technical Requirements

VALVES FOR CARGO SYSTEMS	Version	0.0
	Adoption Date:	1 July 2016
	Application Date:	1 January 2017
	Tier	5
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1. PRODUCT DESCRIPTION

1.a General description of the product

Valves for cargo systems of Class III piping as defined by IACS UR P2.2 Rev.4 intended to stop or modify a cargo flow.

1.b Application limitations

a) These Technical Requirements apply to valves dedicated to cargo systems of crude oil or petroleum products having an absolute vapour pressure less than 0.28 MPa at 37.8°C or other liquid cargoes not toxic, not corrosive and less inflammable than that of crude oil and petroleum products or other flammable liquid cargoes not heated above the flash point;

b) These technical requirements are not applicable to:

- valves intended to be fitted on the ship's side; and valves intended to be fitted on the ship's collision bulkhead;
- hydraulically, electrically or pneumatically controlled devices for valves;
- plastic valves.

1.c Intended use

Piping systems for cargoes only belong to Class III.

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1.d System context

As per item 1.c

2. DESIGN EVALUATION

2.a Engineering evaluation requirements

2.a i. Technical Requirements

Design:

- a) Valves in piping systems shall be compatible with the pipes to which they are attached in respect of their strength and are to be suitable for effective operation at the maximum working pressure and rated flow that they will experience in service;
- b) Valves shall be designed and manufactured in accordance with recognized standards such as ISO standards, API specifications, etc.;
- c) Valves and accessories shall be designed so as to prevent the loosening of covers and glands when they are in use;
- d) Valves shall be designed so as to shut with a right-hand (clockwise) motion of the wheels;
- e) Valves shall be provided with local indicators showing whether they are open or shut, unless this is readily apparent. When the valves are designed for one way flow, the direction of flow shall be clearly and legibly marked on the valve. The direction may be cast into the valve housing, such as for screw-down and other non-return valves;
- f) Valves and cocks shall be fitted with nameplates to indicate their purpose(s). The casing of non-return valves shall be permanently marked with flow direction;
- g) Suitable positive means of securing the spindle shall be provided on valves where the spindle is turned between fully open and fully closed position. Manually operated butterfly valves, which are designed for throttling service, shall be equipped with a locking arrangement that holds the disc in any relevant position.

Materials:

- h) The materials to be used for the valves are to be suitable for the medium and service for which the piping is intended;

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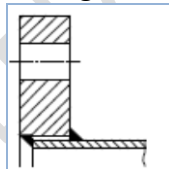
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- i) Carbon, carbon-manganese steel, bronze and other ductile materials may be used with cargo systems, provided that they have a specified minimum elongation not less than 12%. Spheroidal graphite cast iron may be used, provided that the minimum elongation is not less than 12% on a gauge length of $5,65 \times S^{0,5}$, where S is the actual cross-sectional area of the test piece;
- j) The use of asbestos is prohibited.

Type of connections:

- k) Butt welded, slip-on sleeve and socket welding joints shall be used in the connecting of valves;
- l) Metallic flange connections are permitted. Flange connection type, as shown in Figure 1, shall be permitted for design temperatures less than 150°C.;
- m) The dimensions of flanges and relative bolts shall be chosen in accordance with the relevant national standards. Flange attachments shall be in accordance with national or international standards that are relevant to the piping system and are to recognize the applicable boundary fluids, design pressure and temperature conditions, external or cyclic loading and location.

Fig. 1



2.a.ii. Technical documents to be submitted

IMPORTANT: The English Language shall be used for all submitted documents.

- a) The standard used by the manufacturer shall be clearly identified in the documentation submitted;
- b) Assembly drawings showing dimensions, internal parts (valve body and coupling flange, valve disc and rod, valve seat.), materials, type of connections shall be submitted for EU RO review;
- c) Product descriptions including intended services, installation locations, intended fluids, working medium, rated flow, design pressure, temperature range,

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certificates and reports of relevant tests previously carried out, instructions on operation, performance specification shall be submitted for EU RO review;

- d) Design calculations according to a recognised standard, or type test procedure according to a recognised standard.

2.b Type testing requirements

- a) Type tests shall be carried out as per referenced standard;
- b) The maximum turning torque of spindle shall be checked for remote control against the applicable design requirements;
- c) Test specimens shall be selected from the production line or 'at random' from stocks†.
- d) Where there are various sizes of the type of valve requiring approval, a minimum of three separate sizes representative of the range from each type of joints shall be subject to the hydrostatic test at the following value of pressure:

$$PH = 1,5P$$

Where PH = test pressure (MPa),

P = design pressure (MPa), or the pressure indicated by the referenced standard for valves, whichever is the largest but not less than 0.35 MPa.

- e) Hydrostatic tests shall be carried out in both the closed and open positions of the valve;
- f) Test for type approval shall be carried out in the presence of a RO surveyor. In cases where the tests are conducted at Nationally Accredited Laboratories, the presence of the EU RO surveyor may be omitted†.

† For further clarification of witnessing of tests and sampling the test specimen(s), refer to paragraphs 6, 7 and 8 of the EU RO "Design Evaluation Scheme" procedure (Appendix V of EU RO Framework Document for the Mutual Recognition of Type Approval found on <http://www.euromr.org/Guidance%20for%20Mutual%20Recognition>).

3. PRODUCTION REQUIREMENTS

- a) Refer to EU RO "Product Quality Assurance (PQA)" procedure (Appendix VI of EU RO Framework Document for the Mutual Recognition of Type Approval found on <http://www.euromr.org/Guidance%20for%20Mutual%20Recognition>).

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- b) All valve bodies having a design pressure greater than 0.1 MPa shall be subject to a hydrostatic test at the following value of pressure:

$$PH = 1,5P$$

Where PH = test pressure (MPa), P = design pressure (MPa) but not less than 0.35 MPa.

- c) After assembly, the valves shall be checked for leakage by a hydraulic pressure equal to 1.1 times the design pressure.

4. MARKING REQUIREMENTS

Manufacturers of the approved equipment are, in principle, to mark the product before shipment for identification of approved equipment as per referenced standard. In addition, and as a minimum, the following items to be marked at the suitable place:

- Manufacturer's name or equivalent;
- Type No. or symbol;
- Serial No. and date of manufacture;
- Particulars or ratings;
- Date of Manufacture;
- When the valves are designated for one way flow, the direction of flow shall be clearly and legibly marked on the valve. The direction may be cast into the valve housing.

5. TYPE APPROVAL CERTIFICATE CONTENT

The EU RO MR Type Approval Certificate shall contain the minimum information as defined in the EU RO Framework Document for the Mutual Recognition of Type Approval - see Appendix I of EU RO MR Type Approval Certificate Information.

6. APPROVAL DATE AND REVISION NUMBER

Date	Revision	Comment
2016-07-01	0.0	Approved by EU RO MR Advisory Board

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7. BACKGROUND INFORMATION / REFERENCES

- a) EU RO Framework Document for the Mutual Recognition of Type Approval;
- b) IACS UR P2 (Rev.2 Nov 2001) "Rules for piping design, construction and testing";
- c) ISO 5208:2008 "Industrial valves-Pressure testing of metallic valves";
- d) ISO 5209:1977 "General purpose industrial valves-marking".

8. MAINTENANCE / CLARIFICATION OF TECHNICAL REQUIREMENTS

Anyone wishing to propose changes to this document or request clarification of technical issues should contact the EU RO MR Group Secretariat in the first instance:
Secretariat@euromr.org.

Review and approval of change requests shall follow the EU RO MR Maintenance Process detailed in the EU RO Framework Document for the Mutual Recognition of Type Approval: <http://www.euromr.org/Guidance%20for%20Mutual%20Recognition>

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