



TYPE APPROVAL CERTIFICATE
No. **MAC322723XG**

This is to certify that the product identified below is in compliance with the regulations herewith specified.

<i>Description</i>	Valves
<i>Type</i>	Check Valves Globe Valves Safety Valves Gate Valves Strainers Changeover Valves Pressure Regulators, (including double wall arrangement)
<i>Applicant</i>	HEROSE GMBH Armaturen und Metalle - HEROSE GMBH ELLY-HEUSS-KNAPP-STRASSE 12 23843 BAD OLDESLOE GERMANY
<i>Manufacturer</i>	HEROSE GMBH Armaturen und Metalle - HEROSE GMBH
<i>Place of manufacture</i>	ELLY-HEUSS-KNAPP-STRASSE 12 23843 BAD OLDESLOE GERMANY
<i>Reference standards</i>	Part C, Chapter 1, Section 10 of RINA Rules

Issued in **HAMBURG** on **February 20, 2024**. *This Certificate is valid until* **April 29, 2029**

RINA Services S.p.A.
Giuseppe Russo

This certificate consists of this page and 1 enclosure

TYPE APPROVAL CERTIFICATE

No. **MAC322723XG**

Enclosure - Page 1 of 7

Check Valves

Globe Valves

Safety Valves

Gate Valves

Strainers

Changeover Valves

Pressure Regulators,

(including double wall arrangement)

Product Description

The products are globe valves, check valves, strainers, gate valves, divertor valves, safety valves and pressure-regulator, including double wall , for cryogenic application on board of liquefied gas carrier and gas fuel propelled ships.

Strainers, check valves and globe valves with stainless steel bushing are suitable for ammonia application; They are designed and tested according the AD2000 and EN1626, as applicable.

Reference documents

Assembly Drawings booklet approved with RINA no. HMMC-7419

Valves Catalogue booklet filed with RINA no. HMMC-7976

Actuators Catalogue booklet filed with RINA no. HMMC-8351

Operating & Maintenance Instructions booklet filed with RINA no. HMMC-7977

Cryogenic Test Reports booklet filed with RINA no. HMMC-7978

Fire Test Reports booklet filed with RINA no. HMMC-8352

Double Wall DN10-150 H=370, HMMC/13328

Check Valves booklet - HMMC/24805

Globe Valves booklet - HMMC/24806

Safety Valves booklet - HMMC/24807

Strainer booklet - HMMC/24808

Materials/Components

Valves Body on Stainless steel or bronze according to the following standards:

EN 1.4308 (ASTM A 351 CF8), EN 1.4409 (ASTM 351 CF3M), EN CC491K (ASTM B 62 UNS C83600).

11C01 (FullX): Body Material 1.4571 (316Ti)

For material details reference shall be made to assembly drawings and catalogues above mentioned.

TYPE APPROVAL CERTIFICATE

No. **MAC322723XG**

Enclosure - Page 2 of 7

Technical Characteristics

Valves

Type	Dimension (DN)	Pressure Rating (PN)	Working temperature	Connection
<i>Globe Valve</i>				
01252	10 - 50	PN 50	-196°C up to +120°C	Welding end (Butt and Socket weld)
01272	10 - 50	PN 50	-255°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
		DN150 PN40		
01341	10 - 200	DN200 PN25	-196°C up to +120°C	Welding end (Butt and Socket weld)
01342	15 - 50	PN 50	-196°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
		DN150 PN40		
01343	10 - 200	DN200 PN25	-196°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
01351	10-150	DN150 PN40	-196°C up to +120°C	Welding end (Butt and Socket weld)
01353	20 - 80	PN 50	-196°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
01420	10-100	DN100 PN40	-196°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
01423	10-100	DN100 PN40	-196°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
01470	10-100	DN100 PN40	-255°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
01473	10-100	DN100 PN40	-255°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
		DN150 PN40		
01641	10 - 200	DN200 PN25	-196°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
		DN150 PN40		
01643	10 - 200	DN200 PN25	-196°C up to +120°C	Welding end (Butt and Socket weld)
01651	10 - 100	PN 50	-196°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
		DN150 PN40		
01741	10 - 200	DN200 PN25	-255°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
		DN150 PN40		
01743	10 - 200	DN200 PN25	-255°C up to +120°C	Welding end (Butt and Socket weld)
01751	10 - 100	PN 50	-255°C up to +120°C	Welding end (Butt and Socket weld)
01753	20 - 80	PN 50	-255°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
		DN150 PN40		
01841	10 - 200	DN200 PN25	-255°C up to +120°C	Welding end (Butt and Socket weld)
		PN 50		
		DN150 PN40		
01843	10 - 200	DN200 PN25	-255°C up to +120°C	Welding end (Butt and Socket weld)
01851	10 - 100	PN 50	-255°C up to +120°C	Welding end (Butt and Socket weld)
03252	15-50	PN 40	-196°C up to +120°C	Flanged
		PN 40		
03341	15-200	DN200 PN 20	-196°C up to +120°C	Flanged
		PN 40		
03343	15-200	DN200 PN 20	-196°C up to +120°C	Flanged
03351	15-150	PN40 / Class300	-196°C up to +120°C	Flanged

TYPE APPROVAL CERTIFICATE

No. **MAC322723XG**

Enclosure - Page 3 of 7

Valves

Type	Dimension (DN)	Pressure Rating (PN)	Working temperature	Connection
<i>Globe Valves</i>				
		PN 40		
03641	15-200	DN200 PN 20	-196°C up to +120°C	Flanged
03651	15-150	PN40 / Class300	-196°C up to +120°C	Flanged
		PN 40		
03741	15-200	DN200 PN 20	-255°C up to +120°C	Flanged
		PN 40		
03743	15-200	DN200 PN 20	-255°C up to +120°C	Flanged
03751	15-150	PN40 / Class300	-255°C up to +120°C	Flanged
		PN 40		
03841	15 - 200	DN200 PN 20	-255°C up to +120°C	Flanged
		PN 40		
03843	15-200	DN200 PN 20	-255°C up to +120°C	Flanged
03851	15-150	PN 40	-255°C up to +120°C	Flanged
11C01	10-50	PN 63	-269°C up to +80°C	Welding end (Butt weld)
<i>Check Valve</i>				
		PN 50		
		DN150 PN40		
05414	10-200	DN200 PN25	-196°C up to +120°C	Welding end (Butt and Socket weld)
05417	10 - 50	PN 50	-196°C up to +120°C	Threaded
05419	15 - 150	PN40 / Class300	-196°C up to +120°C	Flanged
05714	10 - 150	PN 50	-255°C up to +120°C	Welding end (Butt and Socket weld)
05717	10 - 50	PN 50	-255°C up to +120°C	Threaded
05719	15 - 150	PN40 / Class300	-255°C up to +120°C	Flanged
<i>Strainers</i>				
08416	10 - 50	PN 50	-196°C up to +120°C	Threaded
		PN 50		
		DN150 PN40		
08417	10-200	DN200 PN25	-196°C up to +120°C	Welding end (Butt and Socket weld)
08432	15 - 150	PN40 / Class300	-196°C up to +120°C	Flanged
08717	10 - 150	PN 50	-255°C up to +120°C	Welding end (Butt and Socket weld)
<i>Gate Valves</i>				
09340	25 - 100	PN 50	-196°C up to +120°C	Welding end (Butt and Socket weld)
09343	25-100	PN 50	-196°C up to +120°C	Welding end (Butt and Socket weld)



TYPE APPROVAL CERTIFICATE

No. **MAC322723XG**

Enclosure - Page 4 of 7

Safety Valves				
Type	Size / Thread	d0 [mm]	Pressure Range [bar]	Connection
06011	(inlet)	6	5-55	
	3/8	6	5-55	male thread
	1/4	6	5-55	
06012	1/2	6	1-55	
	1/4	6	1-55	male thread
	3/8	6	1-55	
06016	3/8	6	1-55	
	1/4	6	1-55	like 06012, with lifting device
	1/2	6	1-55	
06383	1/2	7	3,3-50	
	3/4	7	3,3-50	
	1/2	10,5	2,9-50	
	3/4	10,5	2,9-50	
	1	15	2,9-50	male thread
	1-1/4	23	2-50	
	1-1/2	23	2-50	
	2	23	2-50	
	06388	1/2	7	3,3-50
3/4		7	3,3-50	
1/2		10,5	2,9-50	
3/4		10,5	2,9-50	
1		15	2,9-50	male thread
1-1/4		23	2-50	
1-1/2		23	2-50	
2		23	2-50	
06413		1/2	7	3,3-50
	3/4	7	3,3-50	
	1/2	10,5	2,9-50	
	3/4	10,5	2,9-50	
	1	15	2,9-50	male thread, with lifting device
	1-1/4	23	2-50	
	1-1/2	23	2-50	
	2	23	2-50	
	06418	1/2	7	3,3-50
3/4		7	3,3-50	
1/2		10,5	2,9-50	
3/4		10,5	2,9-50	
1		15	2,9-50	male thread, with lifting device
1-1/4		23	2-50	
1-1/2		23	2-50	
2		23	2-50	

TYPE APPROVAL CERTIFICATE

No. **MAC322723XG**

Enclosure - Page 5 of 7

06420	1/2	7	0,4-50	
	3/4	7	0,4-50	
	1/2	10,5	0,4-50	
	3/4	10,5	0,4-50	
	3/4	14	0,4-40	male thread
	1	14	0,4-40	
	1	18	0,4-40	
	1-1/4	18	0,4-40	
	1-1/4	23	0,4-10	
06421	1/2	7	0,4-50	
	1/2	10,5	0,4-50	
	3/4	14	0,4-40	female thread
	1	18	0,4-40	
	1 1/4	23	0,4-10	
06425	1/2	7	0,4-50	
	3/4	7	0,4-50	
	1/2	10,5	0,4-50	
	3/4	10,5	0,4-50	
	3/4	14	0,4-40	male thread, with liftig device
	1	14	0,4-40	
	1	18	0,4-40	
	1-1/4	18	0,4-40	
	1-1/4	23	0,4-10	
06426	1/2	7	0,4-50	
	1/2	10,5	0,4-50	
	3/4	14	0,4-40	female thread, with liftig device
	1	18	0,4-40	
	1-1/4	23	0,4-10	
06440	1/2	7	0,4-50	
	3/4	7	0,4-50	
	1/2	10,5	0,4-50	
	3/4	10,5	0,4-50	
	3/4	14	0,4-40	male thread
	1	14	0,4-40	
	1	18	0,4-40	
	1-1/4	18	0,4-40	
	1-1/4	23	0,4-10	
06441	1/2	7	0,4-50	
	1/2	10,5	0,4-50	
	3/4	14	0,4-40	female thread
	1	18	0,4-40	
	1-1/4	23	0,4-10	

TYPE APPROVAL CERTIFICATE

No. **MAC322723XG**

Enclosure - Page 6 of 7

06445	1/2	7	0,4-50	
	3/4	7	0,4-50	
	1/2	10,5	0,4-50	
	3/4	10,5	0,4-50	
	3/4	14	0,4-40	male thread, with liftig device
	1	14	0,4-40	
	1	18	0,4-40	
	1-1/4	18	0,4-40	
	1-1/4	23	0,4-10	
06446	1/2	7	0,4-50	
	1/2	10,5	0,4-50	
	3/4	14	0,4-40	female thread, with liftig device
	1	18	0,4-40	
	1-1/4	23	0,4-10	
06474	1/4	6	0,4-55	
	3/8	6	0,4-55	male thread
	1/2	6	0,4-55	
	3/4	6	0,4-55	
06478	1/4	6	0,4-55	
	3/8	6	0,4-55	male thread, with liftig device
	1/2	6	0,4-55	
	3/4	6	0,4-55	
06800	1/2	12,5	3-25	
	1/2	15	3-25	female thread
	3/4	20	3-25	
	1	23	3-25	
06801	1/2	12,5	3-25	
	3/4	15	3-25	male thread
	1	20	3-25	
	1	23	3-25	
06805	1/2	12,5	3-25	
	1/2	15	3-25	
	3/4	15	3-25	female thread, with liftig device
	3/4	20	3-25	
	1	23	3-25	
06806	1/2	12,5	3-25	
	3/4	15	3-25	male thread, with liftig device
	1	20	3-25	
	1	23	3-25	

TYPE APPROVAL CERTIFICATE
No. **MAC322723XG**
Enclosure - Page 7 of 7

Field of Application

The valves can be used for LNG application such as cargo lines of liquified gas carriers, gas fuel and bunkering system of LNG propelled ships.

Suitable for ammonia: All strainers and check valves and all globe valves with stainless steel bushing.

Acceptance Conditions

For gas fuelled ships the following IGF Code (IMO Resolution MSC.391(95)) and RINA Rules Pt C, Ch 1, App 7 requirements are applicable:

- the valves connection to piping in accordance with 7.3.6.4.1 (IGF Code) for direct connections and 7.3.6.4.2 (IGF Code) for flanged connections.
- Material testing in accordance with Table 7.4 (IGF Code)
- Welding procedure tests in accordance with 15.3.4 (RINA Rules)
- Testing regulation as per 15.7 (RINA Rules)

For liquefied gas carrier the following IGC code (as last amended by IMO Resolution MSC.377(93)) and RINA Rules requirements are applicable:

- The valves connection to piping in accordance with 5.2.10
- Material Testing in accordance with Table 6.4
- Welding procedure tests in accordance with 6.3.5
- Production Test in accordance with Part E Chapter 9 Section 9 par. 3.1.2 of RINA Rules.

The valves used for pressure relieving system of liquefied gas fuel tanks shall be sized according to Part C Chapter 1 Appendix 7 par. 6.7 of RINA Rules.

Material Certification According to Tab 36 Pt C, Ch 1 Sec 10 of RINA Rules:

for Class I if $DN \geq 50$ mm and for Class II if $DN \geq 100$ mm ,class certificate is required.
(applicable for both inner and double piping)

Reference Standards

Part C, Chapter 1, Section 10 of RINA Rules
Part C, Chapter 1, Appendix 7 (Gas fuelled Ship) RINA Rules
Part E Chapter 9 (Liquefied Gas Carrier) RINA Rules
IGF Code as per IMO MSC.391(95);
IGC Code as latest amended by IMO MSC.377(93)
AD2000

Remarks

The maximum working pressure is to be reduced as per the Manufacturer's instructions .
Final acceptance of valves is subject to satisfactory outcome of testing as per RINA Rules.

HAMBURG January 24, 2024

