

APPLICATION FOR APPROVAL OF VALVES AND FITTINGS

Applicant HEROSE GmbH AAR No. E149501
 Description of Device CRYOGENIC GATE VALVE
DN 25 (1") TO DN 100 (4")
 Applicant No. _____ Device Ident. No. 09340 Date 2013-02-05

1. Manufacturer HEROSE GmbH
 Address ELLY-HEUSS-KNAPP-STR. 12 City BAD OLDENSLOE State Germany Zip 23843
 2. Test facility TUV NORD SYSTEMS GmbH Address Große Bahnstraße 31, 22525 Hamburg
 3. Test date 2009-11-14 4. Observer S. KORN
 5. Weight or mass of device 7.3-48 lb. (3.3-21.8kg)

TEST PROCEDURE:

6. Description of prototype testing: acc. to DIN EN 1626 and DIN EN 12567
 7. Description of production testing: hydrostatic test 1.5 x PN⁵⁰ and peak tightness test acc. to DIN EN 12266

8. Cycles	Min. Temp.	@ Pressure	Cycles	Max. Temp.	@ Pressure	Test Medium	Remarks
<u>2000</u>	<u>-320 °F</u> <u>-196 °C</u>	<u>725 psi</u> <u>5000 kPa</u>	_____	<u>+248 °F</u> <u>+120 °C</u>	_____ psi _____ kPa	<u>Liquide nitrogen</u>	_____
Cycles	Min. Temp. °F _____ °C	@ Pressure psi _____ kPa	Cycles	Max. Temp. °F _____ °C	@ Pressure psi _____ kPa	Test Medium	Remarks

9. Cycles	Min. Pressure	@ Temp.	Cycles	Max. Pressure	@ Temp.	Test Medium	Remarks
_____	_____ psi _____ kPa	_____ °F _____ °C	_____	_____ psi _____ kPa	_____ °F _____ °C	_____	_____
Cycles	Min. Pressure psi _____ kPa	@ Temp. °F _____ °C	Cycles	Max. Pressure psi _____ kPa	@ Temp. °F _____ °C	Test Medium	Remarks

10. Initial commodity (or commodity type) CRYOGENIC 11. Flow rate (if applicable) N/A gpm (_____ L/min)
Liquid gas
LNG, ETHYLEN

Applicable drawings	Material	Drawing Number latest revision	Precedent	
			Drawing Number	Application/Certificate
12. Device application	<u>Stainless steel (see list of drawings)</u>	_____	_____	_____
13. Device assembly		_____	_____	_____
14. Device details		_____	_____	_____

15. Quality control statement: According to PED 97/23/EC
DIN EN ISO 9001:2008

REVISIONS: 1

CERTIFICATION: The above data is correct and conforms with AAR Specifications for Tank Cars, Appendix A. The devices tested conform with drawings listed above.

By MARC ZAUBITZER Title QUALITY MANAGEMENT

APPROVAL AAR Tank Car Committee

Date Approved SEP 30 2015

 (Signature) on behalf of Tank Car Committee

* pressure nominal