



Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	MANULI RYCO Hydraulics Sdn. Bhd.
Address	Plot 207, Kuala Ketil Industrial Estate, Kuala Ketil, Kedah, 09300, Malaysia
Place of Production	MANULI RYCO Hydraulics Sdn. Bhd. Plot 207, Kuala Ketil Industrial Estate, Kuala Ketil, Kedah, 09300, Malaysia
Place of Production	Manuli Ryco Hydraulics (Dalian) Co., Ltd. 38 Ying Ri Road, Ying Cheng Zi Industrial Zone, Gan Jing Zi District, Dalian, Liaoning, 116036, China
Place of Production	Manuli Hydraulics (Suzhou) Co., Ltd. No. 85, Xinglin Street, Suzhou Industrial Park, Suzhou, Jiangsu, 215021, China
Type	Flexible Pipe Couplings And Hoses
Description	Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings. Designations: Diehard T2D Icebreaker T2C Diehard TXA2D Slider T2S Survivor RQP2 Diehard Dinfex DF2D Diehard DK2D Slider DK2S

9 North Buona Vista Drive, #02-01, Metropolis
Tower 1, 138588, Singapore

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Engineering Piping - Senior Specialist to
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A member of the Lloyd's Register group

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Trade Name	SAE100R2
Application	For use on ships and offshore installations classed with Lloyd's Register, as short lengths in systems of fresh and seawater, water based hydraulics, hydraulic oil, pneumatics, fuel and lube oil.
Specified Standard	Part 5, Chapter 12 of Lloyd's Register's Rules and Regulations for the Classification of Ships (July,2013) Part 5, Chapter 10 of Lloyd's Register's Rules and Regulations for the Classification of Mobile Offshore Units (September 1996 plus Notices Nos. 1, 2, 3, 4, 5 & 6 as applicable) Fire Resistant Testing according to ISO 15540/15541
Ratings	Sizes: DN 6 to DN76 Maximum Working Pressure: 70 to 450 bar (refer to appendix) Service Temperature: -50°C to +150°C (refer to appendix) Coupling Material: Carbon Steel AISI/ Stainless Steel (Option) Electroplated Fe/Zn12c acc. to AS1789
Other Conditions	Where synthetic rubber hoses are used for oil fuel supply to burners, the hoses are to have external wire braid protection in addition to the integral wire braid. Carbon steel couplings are to be normalized for temperatures below-10°C. In all cases the hoses are to be installed in accordance with the manufacturer's instructions and tested to the satisfaction of the attending surveyor.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Singapore Pte Ltd of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document SEATASS231 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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Appendix

RATINGS

DIEHARD T2D	DN (mm)	Max. Pressure (bar)
T24D	6	420
T25D	8	350
T26D	10	350
T28D	12	350
T210D	16	250
T212D	19	215
T216D	25	175
T220D	31	140
T224D	38	100
T232D	51	90
T240D	63	70
T248D	76	70
Temperature Range: -40°C to +100°C		

ICEBREAKER T2C	DN (mm)	Max. Pressure (bar)
T24C	6	420
T25C	8	350
T26C	10	350
T28C	12	350
T210C	16	250
T212C	19	215
T216C	25	175
T220C	31	140
T224C	38	100
T232C	51	90
Temperature Range: -60°C to +100°C		

DIEHARD TXA2D	DN (mm)	Max. Pressure (bar)
TXA28D	12	375
TXA210D	16	350
TXA212D	19	313

TXA216D	25	225
Temperature Range: -40°C to +100°C		

SLIDER T2S	DN (mm)	Max. Pressure (bar)
T24S	6	420
T25S	8	350
T26S	10	350
T28S	12	350
T210S	16	250
T212S	19	215
T216S	25	175
T220S	31	140
T224S	38	100
T232S	51	90
Temperature Range: -40°C to +100°C		

SURVIVOR RQP2	DN (mm)	Max. Pressure (bar)
RQP24	6	400
RQP25	8	350
RQP26	10	350
RQP28	12	300
RQP210	16	250
RQP212	19	215
RQP216	25	167
RQP220	31	150
RQP224	38	100
RQP232	51	90
Temperature Range: Petroleum-base fluids: -40°C to +150°C Water: 0°C to +121°C Water in oil emulsions: -40°C to +121°C Diesel Fuel: -40°C to +100°C Air: -40 to +121°C		

DINFLEX DF2D	DN (mm)	Max. Pressure (bar)
DF24D	6	420
DF25D	8	350
DF26D	10	350
DF28D	12	295
DF210D	16	250
DF212D	19	215
DF216D	25	167
Temperature Range: -40°C to +100°C		

DIEHARD DK2D	DN (mm)	Max. Pressure (bar)
DK24D	6	450
DK25D	8	420
DK26D	10	385
DK28D	12	345
DK210D	16	290
DK212D	19	280
DK216D	25	200
DK220D	31	175
Temperature Range: -40°C to +100°C		

DIEHARD DK2S	DN (mm)	Max. Pressure (bar)
DK24S	6	450
DK25S	8	420
DK26S	10	385
DK28S	12	345
DK210S	16	290
DK212S	19	280
DK216S	25	200
DK220S	31	175
Temperature Range: -40°C to +100°C		



Page 4 of 4
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