



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 Hoses
Description	Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings Designations: Biotrans BT1
Trade Name	Biotrans Hose
Application	For use on ships and offshore installations classed with Lloyd's Register, as short lengths in systems of water, hydraulic oil, compressed air, fuel and lubricating oil.

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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 DN 25 Maximum Working Pressure: 50 bar (Refer to appendix) Service Temperature: -40°C to +135°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 SEATASS235 and its supplementary Type Approval Terms and Conditions form part of this Certificate.



Appendix

RATINGS

BIOTRANS BT1	DN (mm)	Max. Pressure (bar)
BT14	6	50
BT15	8	50
BT16	10	50
BT18	12	50
BT110	16	50
BT112	19	50
BT116	25	50
Temperature Range:		
Ethanol blends (15% max. ethanol)		-40°C to +80°C
Water, Water emulsions		-°C to +80°C
Petroleum-based hydraulic fluids		-40°C to +135°C
Engine Oils, Lubricating Oils		-40°C to +121°C
Gasoline/Petrol		-20°C to +80°C
Air (hose cover requires perforation)		-°C to +70°C
Diesel, JP8		-20°C to +100°C
Biodiesel		-40°C to +100°C

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