



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14848**

This is to certify that the  
**Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings**

with type designation(s)  
**4ST, 4ST+, 6ST**

Issued to  
**INTERTRACO ITALIA SPA**  
**Suzzara MN, Italy**

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships**  
**Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment**  
**Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70**

Application  
**Ship & machinery piping systems onboard ships and mobile offshore units for hydraulic, fresh water, sea water, fuel and lubricate oil,**

Type:	Temperature range:	Max. working press.:	Sizes:
4ST	-40°C to +121°C	250-350 bar, size dependent	DN 16, 19, 25, 31, 38, 51
4ST+	-40°C to +121°C	420 bar	DN 10, 12, 16, 19, 25, 31,
6ST	-40°C to +121°C	420 bar	DN 31, 38, 51

This Certificate is valid until **2018-12-31**.

Issued at **Høvik** on **2014-07-08**

DNV local station: **Milan**

Approval Engineer: **Tom Berg-Nielsen**

for **Det Norske Veritas AS**

.....  
on behalf of **Marianne Spæren Marveng**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.  
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

## Product description

Flexible rubber hoses with permanently attached couplings.

### Type : 4 ST

#### Design :

Inner tube: synthetic rubber NBR based)  
 Reinforcement: 4 high tensile steel wire spirals  
 Cover: synthetic rubber fire resistant

### Type 4 ST+

#### Design:

Inner tube: synthetic rubber NBR based)  
 Reinforcement: 4 high tensile steel wire spirals  
 Cover: synthetic rubber fire resistant

### Type 6 ST

#### Design:

Inner tube: synthetic rubber NBR based)  
 Reinforcement: 6 high tensile steel wire spirals  
 Cover: synthetic rubber fire resistant

Couplings (fittings): INTERTRACO ITALIA S.P.A., see table

#### Materials:

Carbon steel fittings S355J2 UNI EN 10277-2, 36SMnPb14 UNI EN 10277-3, 11SMnPb37 UNI EN 10277-3, 11SMnPb30 UNI EN 10277-3, C45 UNI EN 10277-2  
 Stainless steel fittings X 2CrNiMo 17-12-2 EN 10088-3

Coupling manufacturer: INTERTRACO ITALIA S.P.A.

Hose manufacturer: BRIDGESTONE CORPORATION

## Applications

- This certificate is valid for the specific assembly of hose and coupling type as specified above, as a final product, complete and ready for service.
- The hoses may be used in Ship & machinery piping systems onboard ships and mobile offshore units for hydraulic, fresh water, sea water, fuel and lubricate oil, compressed air.
- All hose assemblies delivered under this type approval certificate shall be in compliance with an assembly procedure issued by the certificate holder.
- This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as manufacturer) of this certificate.
- The hose assemblies covered by this type approval may be assembled and delivered by other than the certificate holder under the conditions as listed in DNV Type approval programme 5-791.70.

### HOSE DATA AND APPLICABLE HOSE FITTINGS: HOSE TYPE 4ST:

Hose code	Hose size DN	O.DIA (mm)	Min. bend radius (mm)	Max w.p.		Intertraco Fittings			
				Bar / (psil)	Bar (psi)				
4ST 10	16 (5/8")	26,4	140	350 (5000)	1400 (20000)	B+S312T	B+S0420		J-10
4ST 12	19 (3/4")	29,0	170	350 (5000)	1400 (20000)	B+S312T	B+S0420		J-12
4ST 16	25 (1")	36,6	220	350 (5000)	1400 (20000)	B+S312T	B+S0420		J-16
4ST 20	31 (1 1/4")	45,0	380	350 (5000)	1400 (20000)	B+S312T	B+S0420	I+S004I	J-20
4ST 24	38 (1 1/2")	52,0	450	300 (4350)	1200 (17400)	B+S312T	B+S0420	I+S004I	J-24
4ST 32	51 (2")	66,5	500	250 (3600)	1000 (14400)	B+S312T	B+S0420	I+S004I	J-32

HOSE DATA AND APPLICABLE HOSE FITTINGS: HOSE TYPES 4ST, 4ST+, 6ST

Hose code	Hose size DN	O.Dia (mm)	Min. bend radius (mm)	Max w.p.	Burst pressure	Intertraco Fittings			
				Bar/ (psi)	Bar/ (psi)				
4ST+ 06	10 (3/8")	20,2	125	420 (6000)	1680 (24000)	B+S312T	B+S0420		J-06
4ST+ 08	12 (1/2")	22,2	110	420 (6000)	1680 (24000)	B+S312T	B+S0420		J-08
4ST+ 10	16 (5/8")	26,4	140	420 (6000)	1680 (24000)	B+S312T	B+S0420		J-10
4ST+ 12	19 (3/4")	30,1	170	420 (6000)	1680 (24000)	B+S312T	B+S0420	I+S004I	J-12
4ST+ 16	25 (1")	36,6	220	420 (6000)	1680 (24000)	B+S312T	B+S0420	I+S004I	J-16
4ST+ 20	31 (1 1/4")	45,0	380	420 (6000)	1680 (24000)	B+S312T	B+S0420	I+S004I	J-20
6ST 20	31 (1 1/4")	47,4	300	420 (6000)	1680 (24000)	H-20		I+S006I	X-20
6ST 24	38 (1 1/2")	55,5	350	420 (6000)	1680 (24000)	H-24		I+S006I	X-24
6ST 32	51 (2")	71,5	395	420 (6000)	1680 (24000)	H-32	HLZ-32	I+S006I	X-32 /XLZ-32

CONTINUOUS SERVICE TEMPERATURE RANGE: -40 °C / 121 °C

**Limitation**

- Flexible hoses are only to be used where it is necessary due to vibrations or flexible mounting of the machinery. The hoses shall not replace/be used where permanent piping is possible/required..
- The hoses must only be fitted in places where they are always accessible.
- The hoses are to be mounted in accordance with the manufacturer's instructions
- Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalised.
- It must be possible to shut off from the system all flexible hoses used in systems for lubrication oil and petroleum base hydraulic oil.

**Type Approval documentation**