



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14466**

This is to certify that the  
**Pipe Couplings, Bite and Compression Type**

with type designation(s)  
**Bite and Compression tube fittings**

Manufactured by  
**Arya Crafts & Engineering Pvt. Ltd.**  
**Mumbai Maharashtra, India**

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships**  
**Det Norske Veritas' Standards for Certification 2.9 No. 5-792.20**

Application

**May be used in systems for: Hydraulic-, fuel- and lubrication oil, compressed air, steam and condensate, fresh- and sea water, sanitary systems**

Type:	Temperature range:	Max. working press.:	Sizes:
<b>Bite and Compression tube fittings</b>	<b>Depending on material, see certificate</b>	<b>Depending on size, type and material, see certificate</b>	<b>4 mm to 42 mm</b>

This Certificate is valid until **2016-06-30**.

Issued at **Høvik** on **2013-07-29**

DNV local station: **Mumbai**

for **Det Norske Veritas AS**

Approval Engineer: **Tom Berg-Nielsen**

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**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

Fittings according to DIN 2353/DIN EN ISO 8434-1

Materials in fittings:  
SS316 / SS304  
Carbon steel S20C – S48C (DIN 3859)  
BRASS

Fitting type designation		Fitting type designation	
Union	U	Adapter	A
Union Elbow	UE	Swivel Adapter	SLA
Reducing Union	RU	Swivel Union	SLU
Union Tee	UT	Weld Connector	WC
Union Cross	UC	Port Weld Connector	PWC
Reducing Tee	RT	Reducing Port Weld Connector	RP – WC
Bulkhead Union	BU	Reducing Adapter	RA
Weld Bulkhead Union	WBU	Gusge Adapter	GA
Bulkhead Union Elbow	BUE	Blanking Plugs	BP
Male Connector	MC	Plugging Plugs	PP
Male Elbow	ME	Cap-Capping Tube End	CC
Male Run Tee	MRT	Tube Insert	TI
Female Connector	FC	Bulkhead Lock Nut	BN
Adjustable Elbow	AE	Sealing Ring	SR
Adjustable Branch Tee	ABT	ED-Ring	ED
Adjustable Run Tee	ART	O-Ring	OR
Swivel Adjustable Elbow	SLE	Nut	N
Swivel Branch Tee	SLBT	Single Ferrule	F
Swivel Run Tee	SLRT	Male Pipe Weld Connector	MPWC
Reducer - Standpipe	R-SP	Tube Socket Weld Union	TSWU
Reducer – Tube to stud	R-TS	Port Connector	PC
Swivel Reducing Adapter	SLRA	Hose to Port Connector	HPC
Male Branch Tee	MBT		

## Application/Limitation

Maximum operating pressure, imperial size range:

ISO/NPT				
Pipe size	Male		Female	
	psig	bar	psig	bar
1/16	11 000	758	6700	462
1/8	10 000	689	6500	448
1/4	8000	551	6600	455
3/8	7800	538	5300	365
1/2	7700	531	4900	338
3/4	7300	503	4600	317
1	5300	365	4400	303
1-1/4	6000	414	5000	345
1-1/2	5000	345	4600	317
2	3900	269	3900	269

Operating temperatures:

SS316: -196°C to +649°C  
SS304: -196°C to +649°C  
Brass: -60°C to +175°C

Metric size range:

LL (very light series)		L (light duty series)		S (heavy duty series)	
Tube O.D. (mm)	Nominal pressure (bar)	Tube O.D. (mm)	Nominal Pressure (bar)	Tube O.D. (mm)	Nominal Pressure (bar)
4	100	-	-	-	-
6	100	6	250	6	630
8	100	8	250	8	630
-	-	10	250	10	630
-	-	12	250	12	630
-	-	15	250	16	400
-	-	18	160	20	400
-	-	22	160	25	400
-	-	28	160	30	400
-	-	35	160	38	250
-	-	42	160	42	250

Carbon steel: Carbon steel couplings with a wall thickness of more than 6mm that are to be used at design temperatures below -10°C shall have acceptable impact properties. When the wall thickness is less than 6mm, the charpy testing may be waived provided that the material is normalized.

The maximum operating temperature for carbon steel is +426°C and brass +175°C

The maximum allowable working pressure shall be reduced with the following factors depending on temperature:

Temperature °F (°C)	SS304	SS316 and carbon steel
100 (37)	1.00	1.00
200 (93)	1.00	1.00
300 (148)	1.00	1.00
400 (204)	0.93	0.96
500 (260)	0.87	0.90
600 (315)	0.82	0.85
700 (370)	0.80	0.82
800 (426)	0.76	0.79
900 (480)	0.73	0.78
1000 (537)	0.69	0.76
1200 (649)	0.30	0.37

For brass the max allowable working pressure at +175°C will be reduced by 30%

Couplings used for low temperature gas may only be used for accessory lines and instrumentation lines with external diameters of 25 mm and less. (see DNV Rules Pt.5, Ch.5, Sec.6, 509 point 3.)

For other purposes than listed, an approval has to be obtained in each case.

The wall thickness and the material of the tubes are to be in accordance with the current Rules of Det Norske Veritas.

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer..

For use in sea water systems it is recommended not to use couplings with a high zinc content (>30%) due to the possibility of dezincification.

No product certificate will be required.

## **Type Approval documentation**

Manufacturer's catalogue Hydraulic Fittings DIN 2353

Type test reports from Arya, witnessed by DNV:

BST011, 12, 13, 14, 15, 10, 9

POT001, 2, 3, 4, 5, 6, 7

RA001, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

HDP036, 30, 29, 28, 27, 25, 26, 35, 34, 33, 32, 31, 1, 2, 4, 5, 8, 9, 11, 12, 13, 14, 15

Hydraulic proof pressure reports

Static gas pressure reports

Vacuum test reports

Pressure pulsation reports:

HDVB001, 2, 3, 4, 5, 6

VB004

## **Tests carried out**

Burst, leakage, static gas, repeated assembly, pull-out, pressure pulsation, vacuum

## **Marking of product**

For traceability to this type approval, each product is at least to be marked with:

- Manufacturer's name or trademark
- Type designation
- Material
- Pressure rating

## **Certificate Retention Survey**

For retention of the Type Approval, a DNV Surveyor shall perform a survey - every second year and before the expiry date of this certificate - to verify that the conditions for the type approval are complied with and to witness burst testing of samples of couplings selected at random from stock or from the running production.

END OF CERTIFICATE