

TYPE APPROVAL CERTIFICATE

This is to certify that the undernoted product(s) has/have been tested in accordance with the relevant requirements of the DNV GL Type Approval System.

Certificate No.	61 703 - 14 HH
Company	Schwer Fittings GmbH Hans-Schwer-Platz 1 78588 Denkingen, GERMANY
Product Description	Compression couplings
Type	u2 Twin Ferrule Fittings Metric and Fractional Tube Sizes
Environmental Category	None
Technical Data / Range of Application	Technical data The u2 twin ferrule fittings in the standard configuration are made of stainless steel 1.4401/ AISI 316 The fitting consist of the fitting body, a back and a front ferrule and coupling nuts with silvered thread Range of Application Range of application, size , pressure and temperature range according to the following pages LIMITATION Refer to page 3.
Test Standard	GL VI-7-8 Test Requirements for Components and Systems of Mechanical Engineering and Offshore Technology:2008, DNV TA Programme No. 5-792.20:2010
Documents	Refer to page 3 GL Approval Reference No.: 14-052446, 14-060873, 14-081713
Remarks	Refer to following pages

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Range of Application

The schwer u2 twin ferrule fitting system is type approved for application in piping systems as specified in the GL Rules I-1-2 Machinery Installation, Section 11- D, Table 11.14

Fitting types with rubber sealing shall not be used in systems/locations where a flame resistance test according to table 11.14 is required

Fitting types with rubber seals:

- Male connector MC_OR, MC_SAE, MCL_SAE,
- 45 Degree Male Elbow ME45_SAE,
- Male-Shaft Adaptor MAX_U_OR, MAX_SAE and further fittings with seal RS/MS.

Size and pressure range

Metric fittings acc. to tube diameter

OD [mm]	6	8	10	12,14,15	16,18,20	22,25	28
Nominal Pressure PN [bar]	700	520	450	390	360	270	320
Pipe tolerances according to EN10305							

Fractional fittings acc. to tube diameter

OD [inch]	1/8"	3/16", 1/4"	5/16"	3/8", 1/2"	5/8"	3/4"	7/8", 1"
Nominal Pressure PN [bar]	750	710	540	440	400	380	270
Pipe tolerances according to ASTM A213/269							

For selection of the fittings and tube dimensions for the specific application the maximum allowable service pressures and tube qualities specified in the u2 assembly instruction brochure are to be observed. (www.schwer.com)

Assembling of the fittings shall be carried out according manufacturer assembly instructions.

Temperature range with metallic seal

-55°C up to +300°C

Temperature range with rubber seal

Elastomer sealing Buna-N: -30°C up to +100°C
 Elastomer sealing FKM: -20°C up to +200°C

For service temperatures above 50°C the pressure reduction factors specified by the manufacturer are to be observed.

Fitting material

-4 = 1.4401 / AISI316	-C22 = 2.4602 Hastelloy	-DX = 1.4462 Duplex
-4L = 1.4404 / AISI 316L	-C6 = 2.4819 Hastelloy	-SDX = 1.4410 Superduplex
-7 = 1.4571 / AISI 316Ti		
-5 = 1.4435 / AISI 316L		
-39 = 1.4539		

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Fitting types

This type approval includes the fitting types as specified in the u2 catalogue issue date 08/2013, except needle valves, check valves and ball valves

TUBE TO TUBE

U Union
 RU Reducing Union
 BU Bulkhead Male Connector
 RBU Reducing Bulkhead MC
 E Union Elbow
 T Union Tee
 RT Reducing Union Tee
 C Union Cross

TUBE TO MALE PIPE

MC_NPT, MC_R, MC_G_ES, MC_G_RS, MC_G_CS, MC_OR, MC_SAE, MCL_SAE, MCJ_JIC Male Connector
 BMC_NPT, BMCJ_JIC Bulkhead Male Connector, ME45_NPT, ME45_SAE 45 Degree Male Elbow
 ME_NPT, ME_R, ME_G_OR, ME_SAE Male Elbow
 MRT_NPT, MRT_G_OR, MRT_SAE Male Run Tee, MBT_NPT, MBT_G_OR, MBT_SAE Male Branch Tee

TUBE TO FEMALE PIPE

FC_NPT, FC_R, FC_G Female Connector, GC_G Gauge Connector
 BFC_NPT Bulkhead Female Connector (refer to limitations)
 FE_NPT Female Elbow, FRT_NPT Female Run Tee, FBT_NPT Female Branch Tee

TUBE TO WELDED PORTS

WPC Weld Pipe Connector
 SWC Socket Weld Connector
 WPE Weld Pipe Elbow
 SWE Socket Weld Elbow

TUBE TO SHAFT

RUS Union with Shaft
 RUSL Union with long Shaft
 BUS Bulkhead Union with Shaft
 EUS Union Elbow with Shaft
 TUBS
 TURS
 TU2S Union Tee with Shaft

ADDITIONAL COMPONENTS

TC Tube Cap Union

LIMITATIONS

Screwed socket tube fittings

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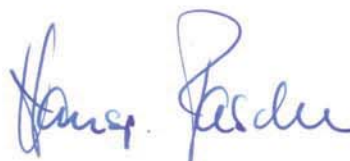
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For application of the following screwed socket tube fittings the limitations as stipulated in the Rules I-1-2 Machinery Installation, Section 11 – D.2.4 are to be observed:

- Male Connector: MC-NPT, MC-R, MCT
- Female Connector FC-NPT, FC-R, FC-G
- Male Elbow ME-NPT, ME-R
- Female Elbow FE
- 45 Degree Male Elbow ME45
- Male Run Tee MRT-NPT
- Male-Shaft Adaptor MAX-R

Bulkhead fittings

The fittings of type BU and RBU are not approved through tank walls and watertight deck and bulkheads.

Documents

Test report IMA Dresden K056/14

Test scope

- Tightness Test, Pressure Test, Burst Test, Vacuum Test
- Combined Pressure Pulsation and Vibration Test
- Pull-out Test
- Repeated Assembly Test

Audit report dated 2013-11-12

Drawings of test specimens

- According to GL Approval Reference 14-052446, 14-060873 and 14-081713

Product catalogue, August 2013

Assembly instruction brochure, February 2015

Marking of product

For traceability to this Type Approval Certificate each product is to be marked with:

- Manufacturer's name or trade mark.
- Type designation

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