

CERTIFICATE

on Conformity Assessment

Number of registration: 241/16_121-1

The Certification Body for Lifts and their Safety Components
at TÜV Rheinland Industrie Service GmbH
herewith confirms for the company

VOSS Fluid GmbH
Lüdenscheider Strasse 52-52
D-51688 Wipperfürth
Germany

the close conformity of the product

Type:	Tube coupling
Functional designation:	Hydraulic tube joints between the cylinder and its safety device
Type designation:	VOSSForm^{SQR}
Design variants:	Series: L 6 to L 42 and S 6 to S 38

satisfies the safety requirements of the harmonised standards listed below:

- EN 81-20: 2014; Safety rules for the construction and installation of lifts – Part 20: Passenger and goods passenger lifts;
- EN 81-50: 2014; Safety rules for the construction and installation of lifts – Part 50: Design rules, calculations, examinations and tests of lift components;
- EN 280: 2013+A1:2015; Mobile elevating work platforms
- EN 1493: 2010; Vehicle lifts
- EN 1570-1:2011+A1:2014; Safety requirements for lifting tables – Part 1: Lifting tables serving up to two fixed landings

The verification was proved by verification of conformity, Test-Report- No.: 16_121-1 from 2017-02-08 and is valid only duly considering the requirements mentioned in this document.

This certificate is valid until 2022-02-28

Certification Body
The certifier



Dipl.-Ing. Dirk Laenger

Cologne, 2017-02-28

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1. Accomplishing the tube coupling

The *VOSSForm^{SQR}* tube coupling is a special type of coupling designed to join hydraulic tubes having properties contributing to safety.

The *VOSSForm^{SQR}* tube coupling is of union-type design. The cone supporting the union nut and at the same time forming the nipple is adapted to the tube end by means of special pre-assembly equipment. The end is formed with the tube in cold condition.

2. Scope of application

The *VOSSForm^{SQR}* tube coupling may also be used as coupling of hydraulic tubes between the cylinder and its safety device, such as tube rupture valve, shut-off valve or restrictor valve.

3. Bases of testing

- EU Lift Direktive 2014/33/EU
- EC Machinery Direktive 2006/42/EG
- EN 81-20: 2014
- EN 81-50: 2014
- EN 280: 2013+A1:2015
- EN 1493: 2010
- EN 1570-1: 2011+A1:2014
- TRA 200: 1998
- Accident Prevention Regulation VBG 14: 1997

4. Test result

As stipulated in EN 81-20, Clause 5.3.3.3 / 5.6.4.3 and in EN 280, Clause 5.10.2. only welded, flanged or screwed tube connections are permitted to be used between the load-bearing cylinder and its safety device. Other types of connections, such as compression ring, conical ring or flanged unions are not allowed to be used there.

The *VOSSForm^{SQR}* tube coupling was subjected to special tests. These tests proved that the *VOSSForm^{SQR}* tube coupling is as safe as hydraulic tubes without any connections are provided the following conditions are met.

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5. Conditions

5.1 Maximum permissible static pressure at rated load.

Size of the coupling	Rated pressure of the coupling, PN [bar]	Pipe dimension		Maximum permissible static pressure specified for the construction of lifts, according to EN 81-20/50 tube material: steel E235 material no. 1.0308 [bar]	Maximum permissible static pressure specified for elevating platforms, according to EN 280, 1493, 1570-1, tube material steel E235 material no. 1.0308 [bar]
		Outside-diameter [mm]	Wall thickness [mm]		
6 L/S	500 / 800	6	1 1,5 2	200	261
8 L/S	500 / 800	8	1 1,5 2 2,5	225	293
10 L	500	10	1 1,5 2	120	156
10 S	800	10	1,5 2 2,5	180	235
12 L	400	12	1 1,5 2	100	130
12 S	630	12	1,5 2 2,5 3	200	261
14 S	630	14	1,5 2 2,5 3	171	223
15 L	400	15	1,5 2 2,5	120	156
16 S	630	16	1,5 2 2,5 3 4	150	195
18 L	400	18	1,5 2 2,5 3	133	174
20 S	420	20	2 2,5 3 3,5 4	180	235
22 L	250	22	1,5 2 2,5 3	109	142
25 S	420	25	2 2,5 3 4	144	188
28 L	250	28	2 2,5 3	85	111
30 S	420	30	2 2,5 3 4 5 6	160	208
35 L	250	35	2 2,5 3 4	103	134
38 S	420	38	2,5 3 4 5 6 7	126	164
42 L	250	42	2 2,5 3 4	85	111

5.2 The hydraulic tubes shall be calculated in compliance with the relevant rules of engineering, i.e. where lifts are concerned e.g. in accordance with EN 81-50:2014, Clause 5.13 and where elevating work platforms are concerned e.g. in accordance with DIN 2413: 1993.

5.3 The tubes that be recommended for used are seamless, cold drawn, normalized, precision steel tubes as per EN 10305-4 with the material numbers 1.0308 or 1.0580. Or seamless, cold drawn, solution-annealed, scale-free stainless steel tubes as per EN 10216-5 with the material number 1.4571.

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- 5.4 The maximum permissible static pressure of the tube connection between the cylinder and its safety device shall be dimensioned to suit the actual wall thickness or, as a maximum, in accordance with the values stated in Table 5.1.
- 5.5 Solely the type 100 VOSS pre-assembly equipment shall be used to make the VOSSForm^{SQR} tube coupling.
- 5.6 The contour at the formed tube end shall meet the check criteria set out in the Assembly Instructions, Section 5.
- 5.7 The tube coupling must not be exposed to external forces. The connection between the cylinder and the safety device shall be fastened securely to withstand external forces.
- 5.8 In case the cylinder moves in service, the tube between the cylinder and the safety device shall be attached to the cylinder.
- 5.9 The tube coupling shall be installed as detailed in the Assembly Instructions. The tightening torques to be complied with and the tools to be used are listed in Sections 6., 7. and 8. of the Assembly Instructions.
- 5.10 The tightening torques and the tools used for assembly of the tube coupling between the cylinder and its safety device shall be confirmed in writing or be documented by the installer.

6. Documents

The technical documentation of each lift or elevating work platform in which the VOSSForm^{SQR} tube coupling is used as connection between the cylinder and its safety device shall be accompanied, as a minimum, by:

- The description and entry in the hydraulic circuit diagram showing the places where the VOSSForm^{SQR} tube couplings have been installed.
- The Assembly Instructions of the VOSSForm^{SQR} tube couplings.
- The certificate of assembly of the VOSSForm^{SQR} tube couplings.
- This certificate and the attachment.

Cologne, 2017-02-28

End of entries

Certification Body



Dipl.-Ing. Dirk Laenger