

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pipe Couplings, Bite and Compression Type**with type designation(s)
SR-500Z

Issued to

Schwer Fittings GmbH
Denkingen, Baden-Württemberg, Germany

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints**

Application :**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.****Temperature range:** Refer to certificate**Max. working press.:** 630 bar**Sizes:** 6mm up to 42mmIssued at **Hamburg** on **2021-09-02**This Certificate is valid until **2026-09-01**.DNV local station: **Augsburg**for **DNV**Approval Engineer: **Hagen Markus**

Olaf Drews
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

The SR500 Z compression coupling bite type system (cutting ring type) consist of pipe couplings with metallic sealing made of stainless steel 1.4571, designed in accordance with DIN 3861 / ISO 8434-1, -4.

Reference: Schwer fittings catalogue "Hydraulic / Pneumatic Stainless-Steel Connectors"

Scope of type approval¹

This type approval certificate includes the following stainless steel coupling types:

Component	Type designation
Straight Couplings, Elbows, Tees, Crosses	SR-505, SR-506, SR-507, SR-508
Twin Bite Cutting Ring (Twin Cut SUPRA)	SR-500Z
Nut, , Male Tube Screws	SR-501, SR-504
Male Stud Couplings	
With Metal Sealing Edge	SR-510G
With Soft Seal parallel BSP thread and captive seal	SR-512G, SR-513M, SR-515U (UNF),
Sealing in the thread NPT, tapered DIN/ISO 158, parallel metric thread to DIN13, tapered BSP	SR-514N, SR-511Mc, SR-511M, SR-510R
Male Stud Elbows, Run Tees, Branch Tees	
Sealing in the thread NPT, BSP, tapered DIN	SR-524N, SR-523Mc, SR-522R, SR-521N, SR-520Mc, SR-519R, SR-518N, SR-517Mc, SR-516R
Metal Sealing Edge	SR-523M, SR-522G, SR-520M, SR-519G, SR-517M, SR-516G
Elbow Weld Nipple, Straight Weld Nipple	SR-529W, SR-529
Adjustable Standpipe Elbows, Run Tees, Branch Tees	
Pipe to pipe couplings	SR-564, SR-567, SR-570
Coupling with Metal Sealing Edge	SR-565G, SR-566M, SR-568G, SR-569M, SR-571G, SR-572M
Non and adjustable Male Stud Standpipe	
Soft Seal	SR-574G, SR-577M
Metal Sealing Edge	SR-573G, SR-575M
Sealing in the thread NPT	SR-576N
Compression Standpipe Reducer	SR-540
Reducing Coupling, Tee	SR-539, SR-537
Female Stud Couplings	SR-530G, SR-531M, SR-532N
Bulkhead couplings	
Straight Weld Bulkhead Coupling	SR-528
Straight – and Elbow Bulkhead Coupling (screwed)	SR-526, SR-527
Various	
Lock Nuts for Bulkhead Couplings SR-526, SR-527	SR-502
Adjustable Pressure Gauge Connection Couplings	SR-533G, SR-534G, SR-535N, SR-536N
Hexagonal Reducing Bush with BSP thread inside/outside and Soft Seal	SR-543G
Hexagonal Reducing Bush with BSP thread inside/outside and Metal Sealing Edge	SR-542G
Hexagon Nipple (metallic sealing edge)	SR-505G, SR-505G-ES
Blanking plug for ports, caps, plugs, Hexagonal nuts	SR-589, SR-589m, SR-594, SR-599M, SR-592,
Reinforcing sleeves	SR-595
Sealing ring	SR-597

Note

¹ Excluded from type approval are Banjo and rotary couplings

For the following coupling types limitations as specified in the Rules Pt.4, Ch.6 are to be observed:

Bulkhead and Deck pipe penetrations

Screwed Bulkhead Couplings are not approved through tank walls, watertight decks and bulkheads. For application through fire divisions a separate type approval is required.

Weld Bulkhead Couplings are approved through tank walls, watertight decks and bulkheads. Through fire divisions the coupling and connected pipe is to be provided with same insulation material as used for the divisions. Total insulation length of 450mm.

Pipe connectors where pressure -tight joints are made on the threads are limited in the application as follows:

Pipe connector design	Range of application ¹	
..with tapered or parallel thread	not approved for toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur	
..with parallel thread	approved for pipe class III	up to outside diameter 60.3mm
..with tapered thread	approved for pipe class I	up to outside diameter 33.7mm
	approved for pipe class II, III	up to outside diameter 60.3mm

Note

¹ Refer to DNVGL Rules, Pt.4, Ch.6 – Section 9 – 5.2.6.

Overview of threaded pipe couplings with limitations

Type	Type
514N, SR-511Mc, SR-511M, SR-510R	Male Stud Couplings
SR-524N, SR-523Mc, SR-522R, SR-521N, SR-520Mc, SR-519R, SR-518N, SR-517Mc, SR-516R	Male Stud Elbows, Run Tees, Branch Tees
SR-577M, SR-576N	Adjustable Male Stud Standpipe

All other fittings with thread connection not listed in the above table may be used without limitations.

Application/Limitation

The SR500 Z compression coupling bite type system is type approved for application in pipe class I, II and III-piping systems, as specified in DNV GL Ship Rules Pt. 4, Ch. 6, Sec. 9 Table 9 and 10 - compression couplings, metallic sealing.

Pipe fittings are in general not approved for installation in high pressure fuel injection systems of combustion engines.

Pipe couplings with soft sealing are not approved in piping systems conveying flammable liquids arranged in machinery spaces of category A and further locations as defined in Pt.4 Ch.6, Section 9 - Table 9 Application of mechanical joints.

Sea water application

The standard stainless-steel material 1.4571 is not approved for application in sea water systems or unprotected installation on the open deck.

It shall be noted that the selection of the materials considers the intended service condition and installation area of the piping system. In particular, the resistance to corrosion, erosion, oxidation and other deterioration which may occur during intended service life.

Reference is made to DNVGL Rules Pt.4, Ch.6 – Section 2 – Materials.

Service Pressure range¹

The couplings are type approved for the following nominal pressures PN.

Series	Tube OD mm	PN bar
L - series	6 to 18	315
	22 to 42	160
S - series	6 to 14	630
	16 to 30	400
	38	315

Note

¹ Individual pressure ratings of the fittings as specified in the Schwer fittings catalogue "Hydraulic / Pneumatic Stainless-Steel Connectors" are to be observed.

Tubes

For the selection of the tubes the instructions specified in the Schwer fittings catalogue "Hydraulic / Pneumatic Stainless-Steel Connectors" are to be observed.

In addition, DNV GL Ship Rules Pt.4, Ch.6:

Section 9, Tables 2 and 3: Minimum Tube wall thickness.

Section 2, Table 3: Material certificates

It shall be noted that the wall thickness of the pipes shall be selected according to the nominal pressure range of the applicable coupling series.

Temperature range

Temperature range for pipe coupling and sealing material:

Couplings	Temperature range
Stainless Steel 1.4571	- 55°C up to + 400°C ¹

Sealings	Temperature range °C
NBR (Standard)	- 30°C up to + 100°C
EPDM	- 50°C up to + 150°C
FKM, FPM	- 20°C up to + 200°C
PTFE	- 200°C up to +230°C
POM	-40°C up to +80°C

Notes

¹ For service temperatures above 50°C the appropriate pressure derating factors according to Schwer Fittings catalogue "Hydraulic / Pneumatic Stainless-Steel connectors" are to be observed.

The service temperature range applicable depends on the sealing material selected.

In addition, temperature limits with regard to seal durability with hydraulic fluids is to be observed.

Temperature range examples

Stainless steel pipe coupling with NBR sealing	- 30°C up to +100°C
Stainless steel pipe coupling with PTFE sealing	-55°C up to +230°C

Assembling and Installation

To ensure the performance of the mechanical joint connection the assembly instructions specified in Schwer Fittings catalogue "Hydraulic / Pneumatic Stainless-Steel Connectors" are to be observed.

Tube connections are to be made of tube couplings manufactured by Schwer Fittings solely.

Type Approval documentation

Miscellaneous documents

- Material certificates test specimen burst pressure tests
- Schwer fittings catalogue "Hydraulic / Pneumatic Stainless-Steel Connectors, Version H11"

Type Tests carried out

Visual inspection, Repeated assembly test, Leakage test, Burst pressure test, Combined pressure impulse and Vibration test, Pull out test, Vacuum test

Marking of product

Component	Example
Nut	
Manufacturer code	
Size – Supplier code	18L – 21-0196S
Material grade	1.4571
Pipe coupling	
Manufacturer code	
Size, series	38S, 42L
Supplier code	S24
Material grade	4571

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with. Refer to the Class Programme DNVGL-CP-0338, Section 4.

To check the validity of this certificate, please look it up in <https://approvalfinder.dnvgl.com>

End of certificate