

# ASSEMBLY INSTRUCTION

## Compression Fittings



MA-SR  
12.01.2023 Rev. 3

Focus in details®

**schwer**  
fittings



## Safety Instructions

### ■ General safety regulations

Please pay attention to **general safety regulations** when working with tools and machines. Wear protective clothing!

### ■ Pipeline and medium

Before assembly or disassembly make sure, the tube or pipeline **is not under pressure**. Take care **not to apply any additional tension or stress** to the coupling, when setting up the pipeline.

Do not exceed any **temperature or pressure limits**. Pay attention when using dangerous or harmful mediums. Respect the **temperature at the pipeline**.

### ■ Workplace

**Keep your workplace clean**. Make sure you have the all necessary material available before starting the assembly.

### ■ Wear Safety glasses

Some workers just remove chips from the tubes by using pressurized air. Dust and chips can harm your eyes, therefore **wear safety glasses**.

### ■ Foreign particles

Take care that the coupling is **free of dirt and foreign particles** before assembly. Contaminated parts may cause leakages.



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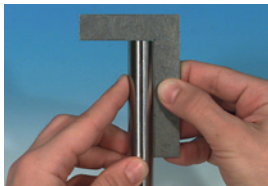
## Assembly Instruction



When mounting stainless steel pipes the pre-assembly is to be carried out exclusively in the hardened VOMO.

A direct assembly in the stainless steel must be avoided! The cones of the VOMOS are subject wear and must therefore be checked at regular intervals with a cone gauge.

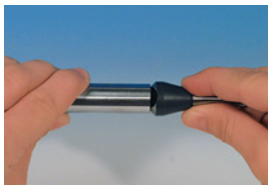
In order to prevent incorrect assembly from the outset, worn VOMOS should be replaced with new ones.



We recommend only seamless soft annealed stainless steel tubes made of material 1.4571 according to EN ISO 10216-5 or DIN EN ISO 1127 tolerance class D4/T3.

**Note:** no welded tubes!

Saw off the tubes at right angles in a jig, permissible angular deviation from the tube axis max  $0.5^\circ$ .



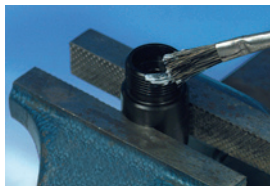
**Do not use a pipe cutter!**

Slightly deburr tubes inside and outside. Chamfer max.  $0.2 \times 45^\circ$  permissible.

For thin-walled tubes we recommend to use reinforcing sleeves!  
(see Main Catalog H11 chapter Tubes)



## Assembly Instruction



For the corresponding pipe, use the corresponding pre-assembly connecting piece in the vice.

**Note:** For dimensions over 16 mm, we recommend pre-assembly with an electro-hydraulic pre-assembly device.

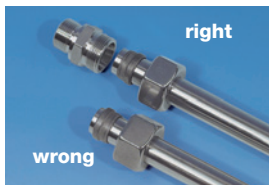
The pre-assembly connecting pieces (VOMO) must be regularly (after 60 pre-assemblies) with a be checked with a cone gauge.



Lubricate the 24° female cone and the male thread of the VOMO, as well as the entire.

Lubricate the entire inside of the coupling nut with SR-5GP lubricant.

If possible, screw the coupling nut the VOMO once loosely, so that the grease can be better can distribute.



Slide the union nut and cutting ring over the tube end.

**Attention:** Cutting edge always in direction of the connection cone.

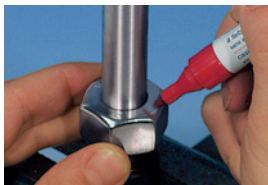


## Assembly Instruction



Push the unit tube, cutting ring and union nut into the VOMO. Tighten the union nut onto the VOMO by hand.

Press the tube against the stop in the base of the VOMOS.



A marking sign on the nut facilitates the observation of the required turns.



Tighten 1 – 1 1/4 turns with a wrench. Here the tube can be turned radially up to approx. 1/2 turn radially, after that it should not rotate.



## Check



Loosen the union nut.

Check the cut of the cutting edge. The throw-up covers part from the cutting ring face evenly around the entire circumference.

The cutting ring may be rotated radially but it must not be possible to move it forwards. Due to the tough material 1.4571, the cutting edge does not throw up in the same way as with steel tubes.



## Final assembly onto the body



After a positive result, insert the pre-assembled tube into the screwed connection piece. Tighten the union nut approx. 1/4 – 1/2 turn above the noticeable increase in force.

The connecting piece must be with a wrench.

For the larger dimensions extensions for the open-end wrenches are necessary.



## Reinforcing Rings SR-595



For cost reasons, thin-walled tubes are often used, which cannot withstand the pressure of the cutting ring during assembly.

In order to guarantee the function of the fitting, we recommend the use of our sf reinforcement sleeves.



### ■ Assembly:

The reinforcement sleeves can be easily inserted into the tube up to the knurl into the tube.



The knurled part is driven into the tube with a soft hammer.

An interference fit is created, whereby the tube is not expanded.



The reinforcing sleeve fits tightly and supports the tube against constriction during assembly.





# Certificate



Certificate No:  
TAP0002EA

## 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 42mm

Issued at Hamburg on 2021-09-02

This Certificate is valid until 2026-09-01.

DNV local station: Augsburg

Approval Engineer: Hagen Markus



for DNV

Digitally Signed By: Drews, Olaf  
Location: DNV GL SE Hamburg, Germany  
Signing Date: 2021-09-02

**Olaf Drews**  
Head of Section

This Certificate is subject to terms and conditions overlaid. 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.



Form code: TA 251

Revision: 2021-03

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## Hand-Pre-Assembly Machine Pace1Press

Compared to all other machines available on the market – the patented electrohydraulic pre-assembly tool, Pace1Press, from Schwer Fittings, is a technological revolution. Providing a flexible and portable solution, compared to a bench machine.

### Technical specifications:

Battery: 18 V  
Weight: 7 kg  
Pipe diameter: min. 6 mm, max. 42 mm

Designed for Compression Fittings to EN ISO 8434-1 (DIN 2353).  
Precision casting nose part.

The machine can be used for 6 - 42L (L-series) as well as 6 - 38S (S-series) steel and stainless steel.

- For consistent pre assembly quality
- Independent of any external power source
- Also for use in limited space
- Reduced assembly time saves money
- For steel and stainless steel
  
- Light but extremely strong
- Easy to handle
- Handy and easy to carry
- Revolutionary and patented engineering

**pace1**  
PRESS

18V 3.0Ah  
Lithium-Ion

**LIGHT  
COMPACT  
POWERFUL**

for steel and  
stainless steel



## Electro-hydraulic Pre-assembly Machine

**VARO**

**All-purpose:**

**for 24° bite-ring couplings according EN ISO 8434-1**

**for 37° Flare fittings**



MO-VMG380

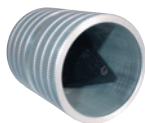
- **Compact and robust machine**
- **Manual adjusting of working pressure with digital display**
- **Short set-up and assembly time**
- **Clear tables for set-up**

Dimensions / weight: 515x660x265 mm / 66 kg



**Gliss  
Lubricant**

Tube 100 g: SR-5GP100  
Can 250 g: SR-5GP250  
Can 1000 g: SR-5GP1000



**Pipe  
Deburrer**

RE 10-56



**Pre-Assem-  
bly Stud**

SR-592 ...



**Pipe Cutting  
Tool**

AV 6-42



## Technical Information

### Pressure rating

#### Pressures

Series	Pipe OD	Nominal Pressure*
<b>LL</b> (very light)	4-8 mm	100 bar
<b>L</b> (light)	6-18 mm	315 bar
	22-42 mm	160 bar
<b>S</b> (heavy)	6-14 mm	630 bar
	16-30 mm	400 bar
	38 mm	315 bar

\* at 20° C. For higher temperatures, please refer to the pressure reduction table.

### DVGW assembly attachment

#### Assembly according to DVGW

Mounting Instruction of removable tube couplings for metal gas pipes

1. Solderless tube fittings with outside thread Form A, E and F may not be used in installations according to DVGW - TRGI and TRF.
2. DVGW-Mark of conformity: DG4502BM0334
3. Suitable for gases according to DVGW worksheet G 260

4. Nominal pressure:	<b>Series</b>	<b>Outer diameter of tube Ø</b>	<b>Nominal pressure PN bar</b>
	<b>L</b>	06, 08, 08, 10, 12, 15, 18	250
		22, 35, 42	100
	<b>S</b>	06, 08, 10, 12, 14, 16, 20, 25, 30, 38	250

5. Permissible service temperature: minus 20° C up to plus 70° C
6. Tubes to be according to EN ISO 1127 or DIN 2462
7. Axial force: tensile and push strength
8. Repeated usability: 10 times



## Technical Information

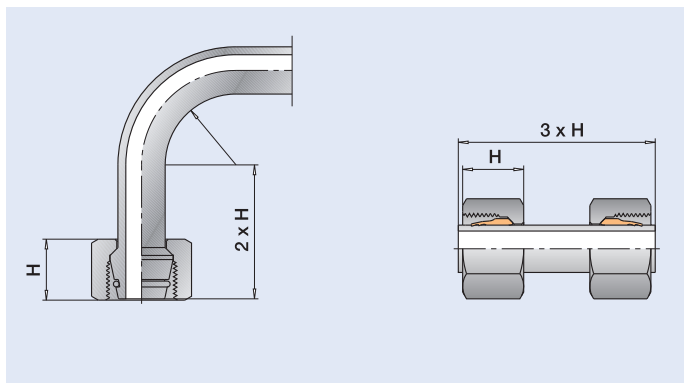
### Minimum wall thickness pipes

#### Pipes

Pipe diameter in mm                      Min. wall thickness in mm

6, 8	1,0
10, 12, 14, 15, 16	1,5
18, 20, 22, 25, 28	2,0
30, 35	2,5
38, 42	3,0

### Advice for elbows and short pieces

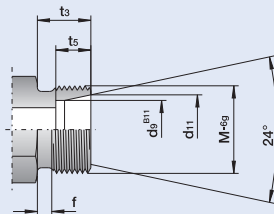


The minimum length of the straight end of an elbow should be equivalent to min.  $2 \times H$ , i.e. twice the thickness of the union nut. The minimum length of a straight pipe should be  $3 \times H$ .



# Technical Information

## Dimensions pipe connections



Series	Tube- outside-Ø	d9	M DIN 13	t5 <sup>+0,3</sup>	t3 <sup>±0,2</sup>	f <sup>+0,3</sup>	d11 <sup>+0,1</sup>
<b>LL</b>	4	4,14 <sup>+0,075</sup>	M 8 x 1,0	4,0	8	2	5,0
	6	6,14 <sup>+0,075</sup>	M 10 x 1,0	5,5	8	2	7,5
	8	8,15 <sup>+0,09</sup>	M 12 x 1,0	5,5	9	2	9,5
	10	10,15 <sup>+0,09</sup>	M 14 x 1,0	5,5	9	2	11,5
	12	12,15 <sup>+0,11</sup>	M 16 x 1,0	6,0	9	2	13,5
<b>L</b>	6	6,14 <sup>+0,075</sup>	M 12 x 1,5	7,0	10	3	8,1
	8	8,15 <sup>+0,09</sup>	M 14 x 1,5	7,0	10	3	10,1
	10	10,15 <sup>+0,09</sup>	M 16 x 1,5	7,0	11	3	12,3
	12	12,15 <sup>+0,11</sup>	M 18 x 1,5	7,0	11	3	14,3
	15	15,15 <sup>+0,11</sup>	M 22 x 1,5	7,0	12	3	17,3
	18	18,15 <sup>+0,11</sup>	M 26 x 1,5	7,5	12	3	20,3
	22	22,16 <sup>+0,13</sup>	M 30 x 2,0	7,5	14	4	24,3
	28	28,16 <sup>+0,13</sup>	M 36 x 2,0	7,5	14	4	30,3
	35	35,30 <sup>+0,1</sup>	M 45 x 2,0	10,5	16	4	38,0
	42	42,30 <sup>+0,1</sup>	M 52 x 2,0	11,0	16	4	45,0
<b>S</b>	6	6,14 <sup>+0,075</sup>	M 14 x 1,5	7,0	12	3	8,1
	8	8,15 <sup>+0,09</sup>	M 16 x 1,5	7,0	12	3	10,1
	10	10,15 <sup>+0,09</sup>	M 18 x 1,5	7,5	12	3	12,3
	12	12,15 <sup>+0,11</sup>	M 20 x 1,5	7,5	12	3	14,3
	14	14,15 <sup>+0,11</sup>	M 22 x 1,5	8,0	14	3	16,3
	16	16,15 <sup>+0,11</sup>	M 24 x 1,5	8,5	14	3	18,3
	20	20,16 <sup>+0,13</sup>	M 30 x 2,0	10,5	16	4	22,9
	25	25,16 <sup>+0,13</sup>	M 36 x 2,0	12,0	18	4	27,9
	30	30,16 <sup>+0,13</sup>	M 42 x 2,0	13,5	20	4	33,0
	38	38,30 <sup>+0,1</sup>	M 52 x 2,0	16,0	22	4	41,0

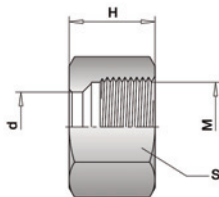


## Technical Information

### Nut dimension



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	PN	$\varnothing \approx d$	M	S	H	SR-No.
LL	100	4	M 8 x 1,0	10	11,0	SR-5014LL
LL	100	6	M 10 x 1,0	12	11,5	SR-5016LL
LL	100	8	M 12 x 1,0	14	12,0	SR-5018LL
L	315	6	M 12 x 1,5	14	14,5	SR-5016L
L	315	8	M 14 x 1,5	17	14,5	SR-5018L
L	315	10	M 16 x 1,5	19	15,5	SR-50110L
L	315	12	M 18 x 1,5	22	15,5	SR-50112L
L	315	15	M 22 x 1,5	27	17,0	SR-50115L
L	315	18	M 26 x 1,5	32	18,0	SR-50118L
L	160	22	M 30 x 2,0	36	20,0	SR-50122L
L	160	28	M 36 x 2,0	41	21,0	SR-50128L
L	160	35	M 45 x 2,0	50	24,0	SR-50135L
L	160	42	M 52 x 2,0	60	24,0	SR-50142L
S	630	6	M 14 x 1,5	17	16,5	SR-5016S
S	630	8	M 16 x 1,5	19	16,5	SR-5018S
S	630	10	M 18 x 1,5	22	17,5	SR-50110S
S	630	12	M 20 x 1,5	24	17,5	SR-50112S
S	630	14	M 22 x 1,5	27	20,5	SR-50114S
S	400	16	M 24 x 1,5	30	20,5	SR-50116S
S	400	20	M 30 x 2,0	36	24,0	SR-50120S
S	400	25	M 36 x 2,0	46	27,0	SR-50125S
S	400	30	M 42 x 2,0	50	29,0	SR-50130S
S	315	38	M 52 x 2,0	60	32,5	SR-50138S

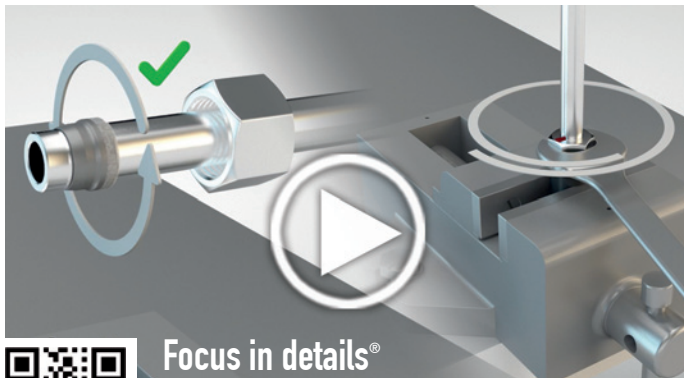


## Installation Videos

### ■ Installation Videos

Our installation videos can be found at:

[www.schwer.com](http://www.schwer.com)



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**schwer**  
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Schwer Fittings GmbH  
Hans-Schwer-Platz 1  
D-78588 Denkingen

Tel.: +49 (0) 74 24 / 98 25-0  
[info@schwer.com](mailto:info@schwer.com)  
[www.schwer.com](http://www.schwer.com)