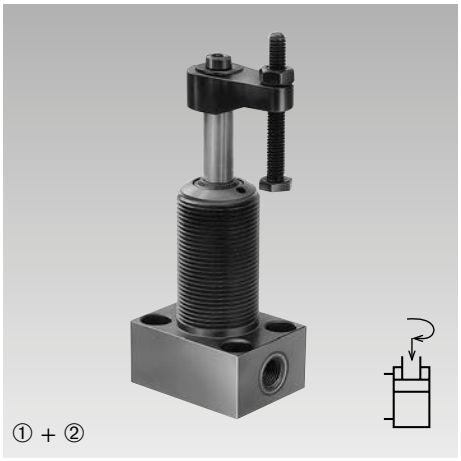
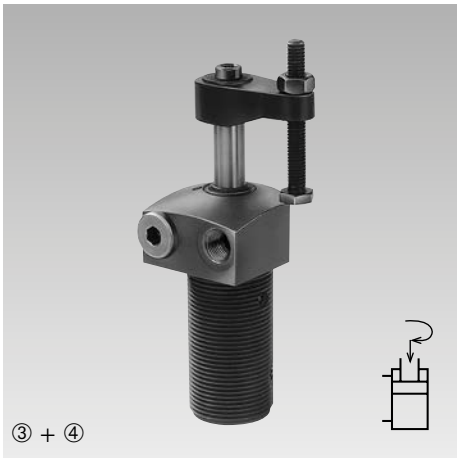
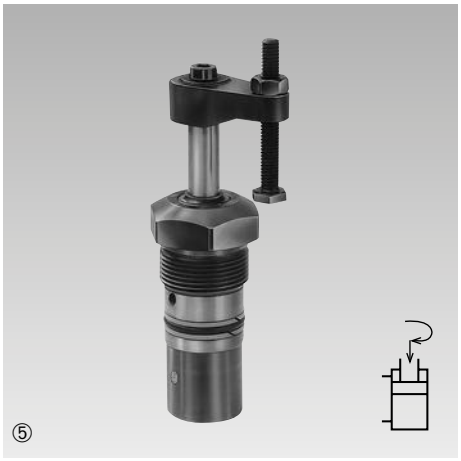
Compact Swing Clamps with Sturdy Swing Mechanism

bottom flange, top flange, threaded-body type, double acting, max. operating pressure 350 bar

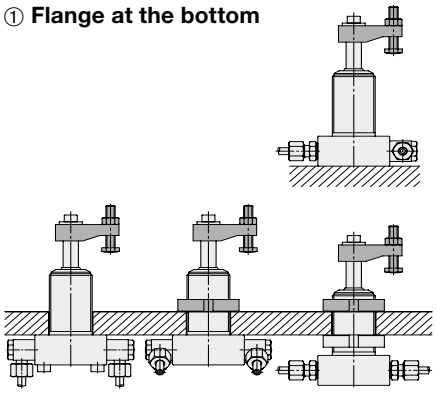




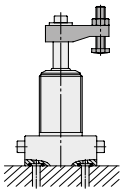


Connecting types

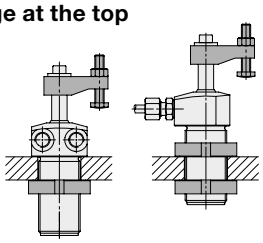
① Flange at the bottom



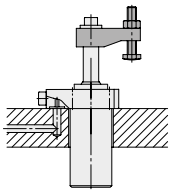
② Flange at the bottom with O-ring sealing



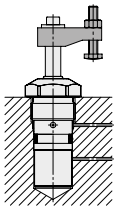
③ Flange at the top



④ Flange at the top with O-ring sealing



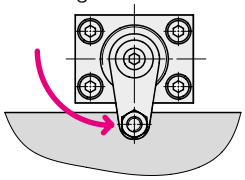
⑤ Threaded-body type



Metallic wiper optional

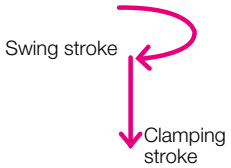
Application

Hydraulic swing clamps are used for clamping of workpieces when it is essential to keep the clamping area free of straps and clamping components for unrestricted workpiece loading and unloading.



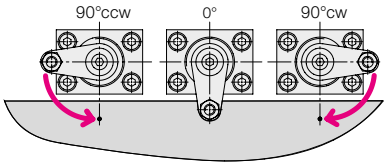
Function

This hydraulic clamping element is a pull-type cylinder where a part of the total stroke is used to swing the piston.



Swing direction

The units are available with clockwise and counterclockwise swing motion or without swing motion (0°).



Standard swing angles are 45°, 60° and 90° ±2°.
Special angles on request.
Other variants, as e.g. types with metallic wiper on request.

0°-Version

Use as pure pull-type cylinder with a piston which is secured against torsion and which allows eccentric load as per clamping force diagram.

Option: metallic wiper

In addition to the FKM wiper the following swing clamps can be equipped with a metallic wiper.

- Flange at the top with O-ring sealing
- Threaded-body type

Part no.: Add only letter “M” to the part number of the swing clamp without metallic wiper.

Example of ordering:

Swing clamp 1850 124
with metallic wiper: **1850 124M**

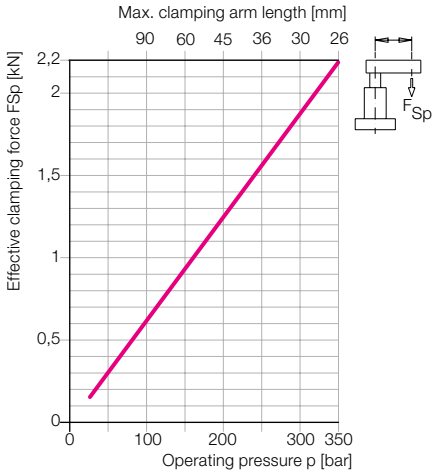
Versions

Only double-acting elements are available. Single-acting versions see data sheet B 1.849.

Flange at the bottom

Technical data		
Piston Ø	[mm]	14
Piston rod Ø	[mm]	10
Effective piston area		
Clamping	[cm²]	0.754
Unclamping	[cm²]	1.54
Oil volume per stroke		
Clamping	[cm³]	1.2
Unclamping	[cm³]	2.5
Max. oil flow rate		
Clamping	[cm³/s]	5
Unclamping	[cm³/s]	10
Min. operating pressure	[bar]	30
Max. operating pressure	[bar]	350
Max. force to pull	[kN]	2.63
Effective clamping force	[kN]	see diagram
Swing angle	[°]	(0, 45, 60, 90) ±2
Swing stroke	[mm]	8
Clamping stroke	[mm]	8
Total stroke	[mm]	16

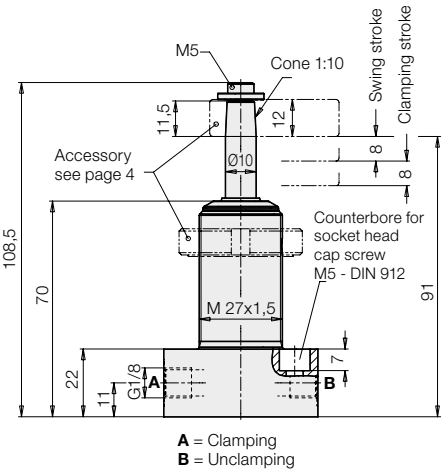
Clamping force diagram

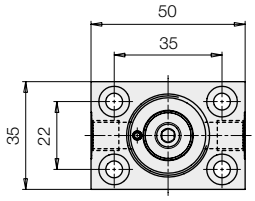


Materials

Housing and piston are made of high alloy steel. By nitrating, wear is reduced and protection against corrosion increased.
FKM seals.

① Flange at the bottom

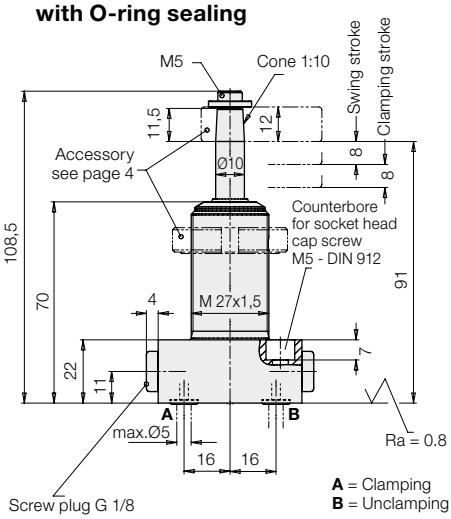


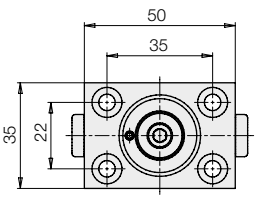


Weight: 0.42 kg

Swing angle	Swing direction	Part no. Double acting
0°	–	**1850101**
90°	cw	**1850111**
90°	ccw	**1850121**
60°	cw	**1850131**
60°	ccw	**1850141**
45°	cw	**1850151**
45°	ccw	**1850161**

② Flange at the bottom with O-ring sealing





Weight: 0.42 kg

Swing angle	Swing direction	Part no. Double acting
0°	–	**1850102**
90°	cw	**1850112**
90°	ccw	**1850122**
60°	cw	**1850132**
60°	ccw	**1850142**
45°	cw	**1850152**
45°	ccw	**1850162**

Spare O-ring (FKM) 7 x 1,5 **3001077**

Important notes

1. Danger of injury

Hydraulic clamping elements can generate considerable forces.
Due to the 90° swing motion, the exact clamping and unclamping position cannot be determined in advance. Considerable injuries can be caused to fingers in the effective area of the clamping arm.
Remedy: protection device with electrical locking.

2. Admissible oil flow rate

In case of the admissible oil flow rate as per table the shortest possible clamping or unclamping time is 0.5 second.
If the flow rate of the pump divided by the number of swing clamps is higher than the indicated value in the chart, the flow rate has to be throttled to avoid any overload and thereby high wear.
Throttling has to be made in the oil supply line to the swing clamp to rule out a possible pressure intensification. Use only flow control valves which allow oil return from the swing clamp without any impediments.

3. Unimpeded swing motion

This swing clamp does not have an overload protection device. Therefore the swing motion must not be impeded and the clamping arm may only contact the workpiece after completion of the swing stroke.

4. Clamping arm assembly

4.1 All types
When tightening and untightening the lock nut, the clamping arm has to be backed up to avoid the introduction of moments to the piston rod and thereby any deterioration of the swing mechanism.
4.2 Threaded-body type
The clamping arm can only be fixed after the housing is firmly screwed in, since the final position cannot be determined in advance.

5. Adjustment of contact bolt

The contact bolt may only contact the workpiece after completion of the swing motion. When tightening and untightening the fixing screw, the clamping arm has to be backed up (see 4.1).

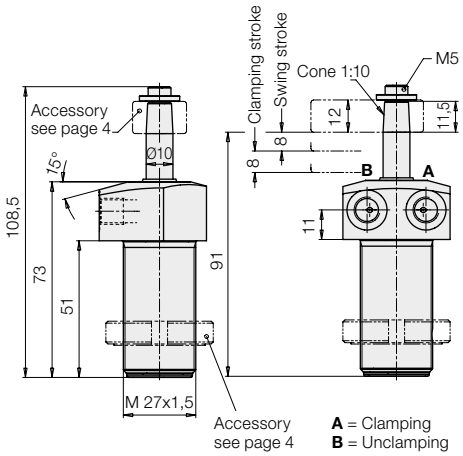
6. Special clamping arm

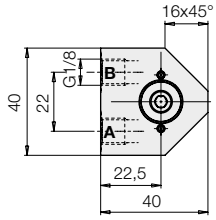
When using special clamping arms with other lengths, the corresponding operating pressures as shown in the clamping force diagram must not be exceeded.
If longer clamping arms will be used, not only the operating pressure but also the flow rate have to be reduced (see 2.).

7. Bleeding

Air in the oil prolongs the clamping time considerably and leads to function troubles. Therefore bleeding has to be effected during start up, as described as follows for the different types.

③ Flange at the top

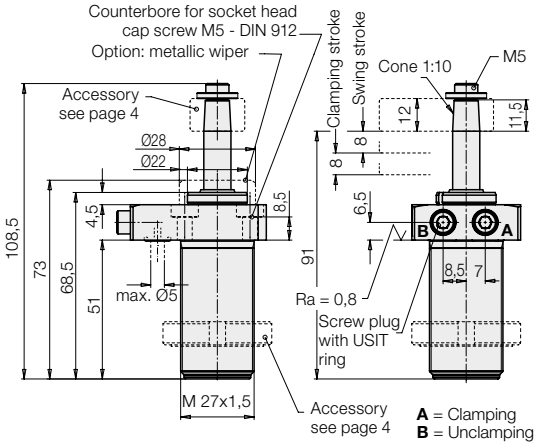


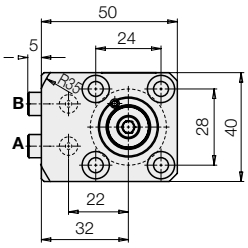


Weight: 0.35 kg

Swing angle	Swing direction	Part no. Double acting
0°	–	**1850103**
90°	cw	**1850113**
90°	ccw	**1850123**
60°	cw	**1850133**
60°	ccw	**1850143**
45°	cw	**1850153**
45°	ccw	**1850163**

④ Flange at the top with O-ring sealing

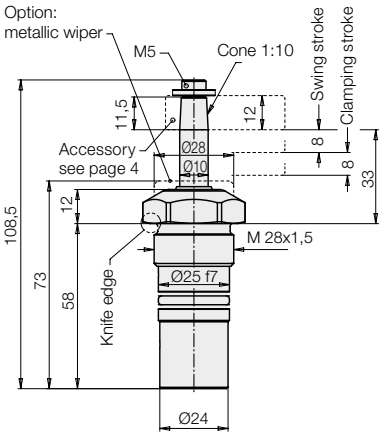


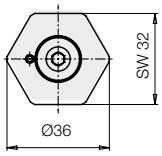


Weight: 0.42 kg

Swing angle	Swing direction	Part no. Double acting
0°	–	**1850104**
90°	cw	**1850114**
90°	ccw	**1850124**
60°	cw	**1850134**
60°	ccw	**1850144**
45°	cw	**1850154**
45°	ccw	**1850164**
Spare O-ring (FKM) 7 x 1.5		**3001077**
Metallic wiper (Spare)		**0341111**

⑤ Threaded-body type





Max. seating torque 100 Nm
Weight: 0.27 kg

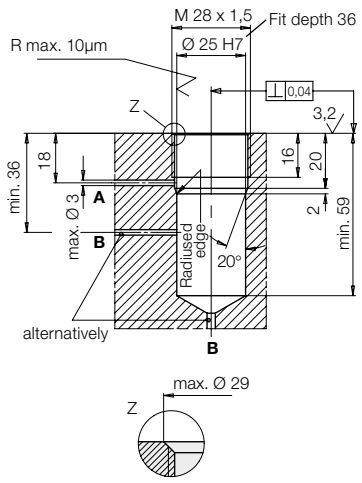
Swing angle	Swing direction	Part no. Double acting
0°	–	**1850105**
90°	cw	**1850115**
90°	ccw	**1850125**
60°	cw	**1850135**
60°	ccw	**1850145**
45°	cw	**1850155**
45°	ccw	**1850165**

7.1 Flange at the top and at the bottom
Loosen carefully the union nut of the tube at low oil pressure and pump until bubblefree oil comes out. Retigthen the union nut.

7.2 Flange with O-ring sealing
Loosen carefully the socket head cap screw M5 at low oil pressure and pump until bubble-free oil comes out. Retigthen the union nut.

7.3 Threaded-body type
There is no possibility for bleeding at the element itself. Remedy: plug the oil channels in the fixture body at the end. If required, loosen the plugs carefully and pump at low oil pressure until bubblefree oil comes out.
Retigthen the plugs.

Porting details in fixture

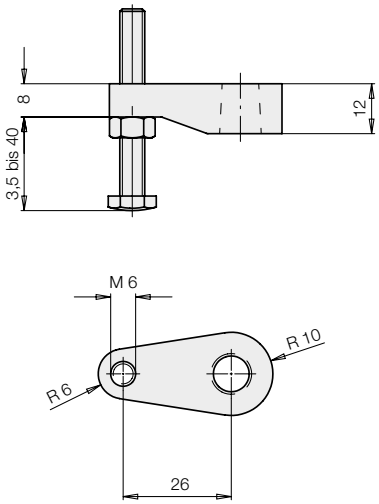


Option: metallic wiper

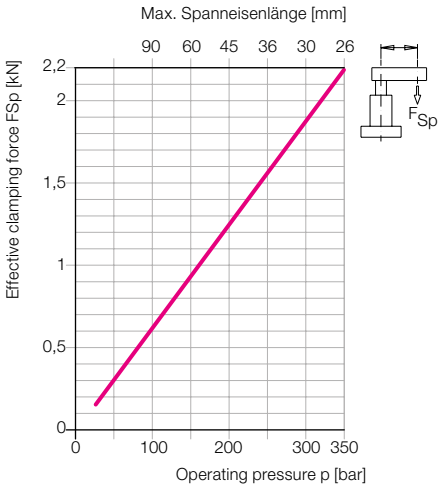
- Flange at the top with O-ring sealing
  Part no.: 1850 1X4M
- Threaded-body type
  Part no.: 1850 1X5M

Clamping arm assembly, complete, max. 350 bar

Part no. 0354057



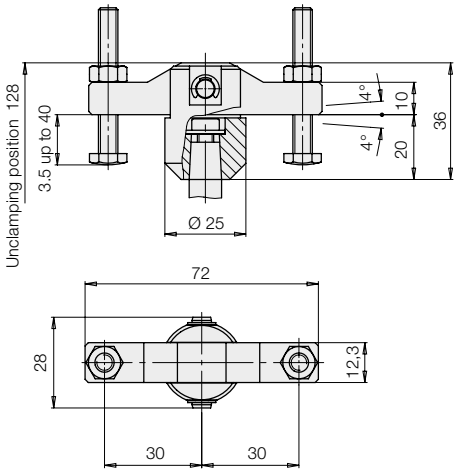
Clamping force diagram



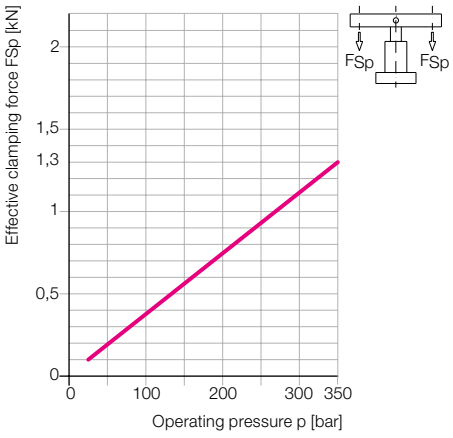
Double clamping arm, complete

Part no. 0354082

Contact bolt – M 6 x 45
Part no. 3614138

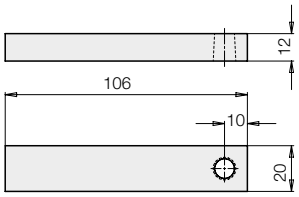


Clamping force diagram



Clamping arm - blank

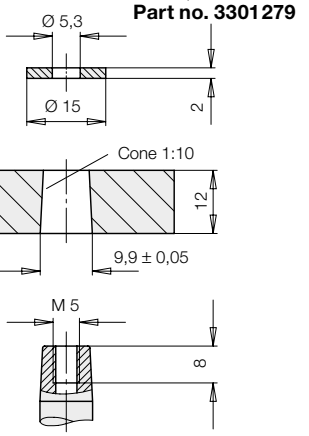
Part no. 3548900



Connecting dimensions for special clamping arms

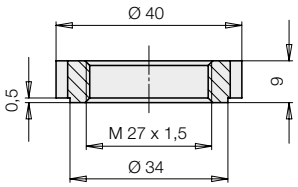
Screw
M 5 x 10 – DIN 7984
Part no. 3300918

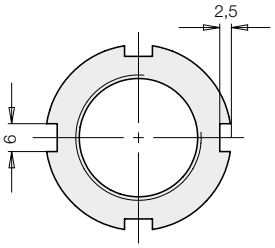
Disk 5,3 – DIN 7349
Part no. 3301279



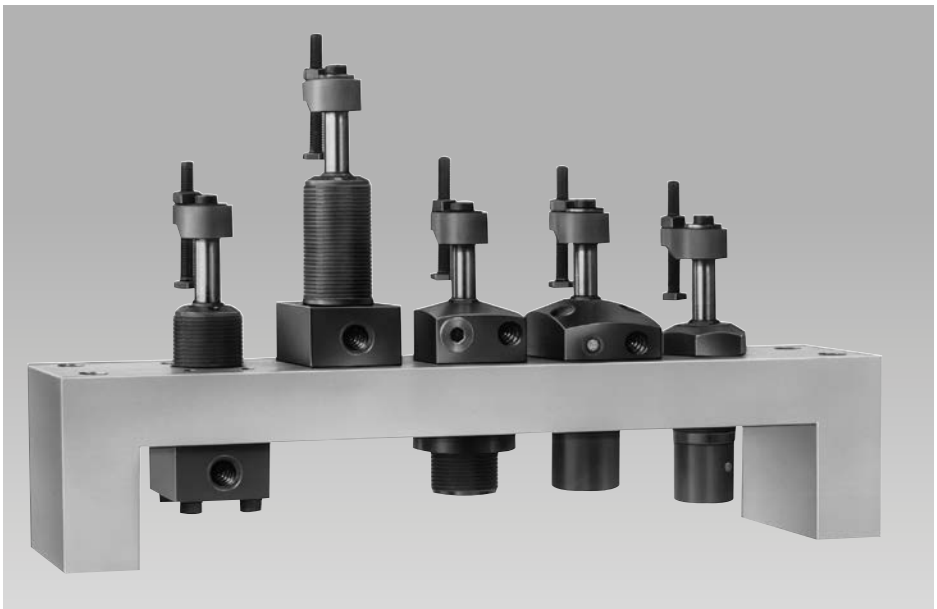
Flange nut as per DIN 1804

Part no. 3527076





Arrangement of the different connecting types



Tube male stud coupling for G1/8

ND [bar]	Designation	Part no.
250	D 8L G 1/8	**9208034**
500	D 8S G 1/8	**9208116**

Thread reducing adaptor

ND [bar]	Designation	Part no.
500	GWR 1/8 –1/4	**3613003**