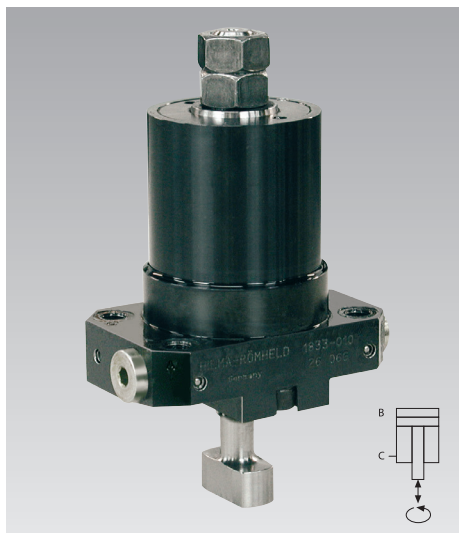




**Swivel and Pull Clamps**

double acting with 90° swivel angle and position monitoring  
max. operating pressure 400 bar



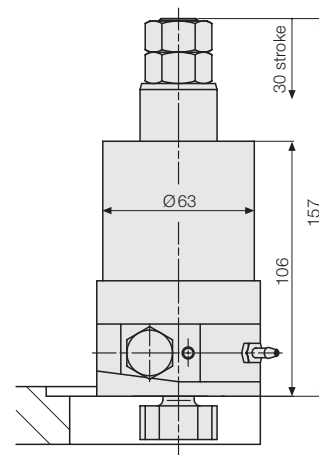
**Advantages**

- Perfectly suitable for retrofitting
- Ideal force transmission
- Compact design
- Optimum use of ram and bed surfaces
- Clamping at difficultly accessible points

**Description**

The swivel and pull clamps consist of a hollow piston cylinder and a swivel cylinder. The tie rod held in the hollow piston cylinder is provided with teeth which engage in the toothed rack of the swivel cylinder. The clamping position is pneumatically monitored. Optionally, monitoring is also possible by inductive proximity switches.

**Tie rod retracted**  
**Swivel angle 0°**



**Application**

Swivel and pull clamps are used on presses and high-speed punching presses. Thanks to the compact design, they are particularly suitable where space is limited.

**Tie rod extended by 30 mm**  
**Swivel angle 90°**

**Technical data**

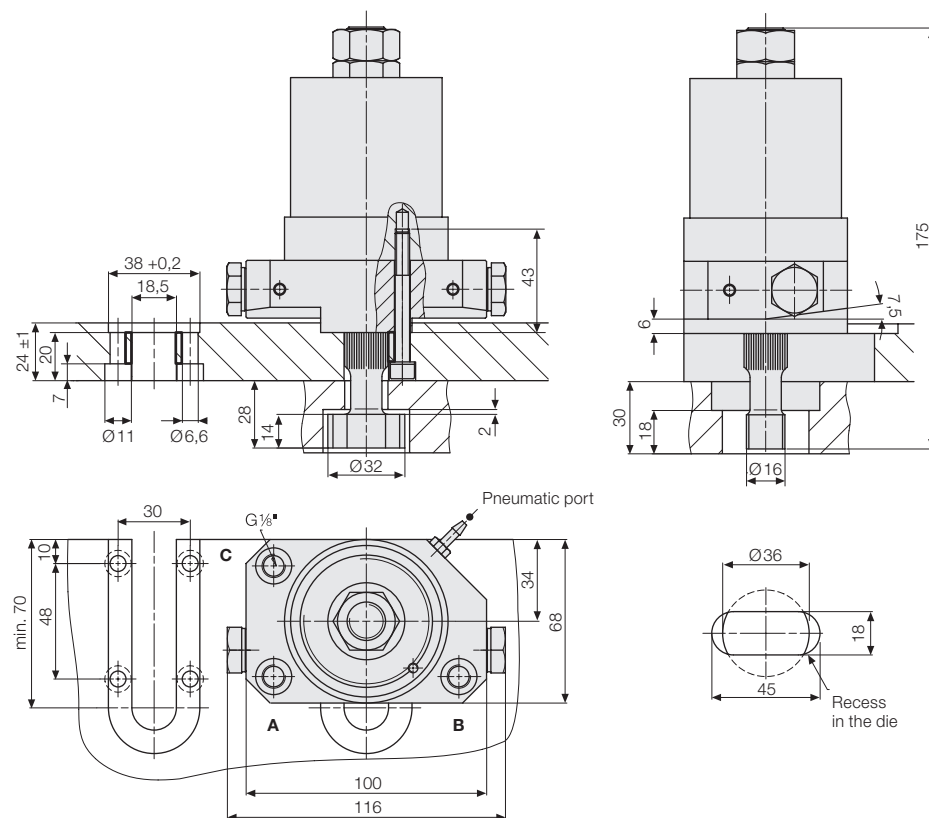
<b>Clamping force at 400 bar</b>	<b>[kN]</b>	30.4
Max. operating pressure	[bar]	400
Stroke	[mm]	30
Max. flow rate	[cm <sup>3</sup> /s]	15
Oil volume - retracting	[cm <sup>3</sup> ]	24
Oil volume - extending	[cm <sup>3</sup> ]	15
Weight	[kg]	3.2

with pneumatic position monitoring for the clamping position

**Part no. 1833010**

with inductive position monitoring

**Part no. 1833013**



**Ports:**

- A: Swivelling
- B: Extending
- C: Retracting/clamping

# Functioning

## Control

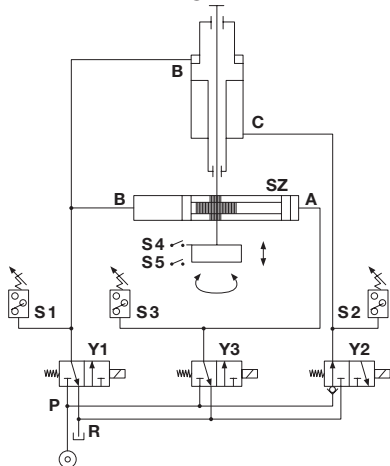
The valve control is shown in the hydraulic circuit diagram. The valves have different initial positions, in order to avoid pressure drop during clamping in case of power failure. This is ensured by the check valve in the P-port of Y2.

## Important note!

The P-port of valve Y1 must not be provided with a check valve, as during retraction pressure is applied to the piston from both sides (differential system).

Otherwise, due to the different piston areas, the pressure may be intensified and thus exceed the admissible operating pressure.

## Hydraulic circuit diagram



## Start up

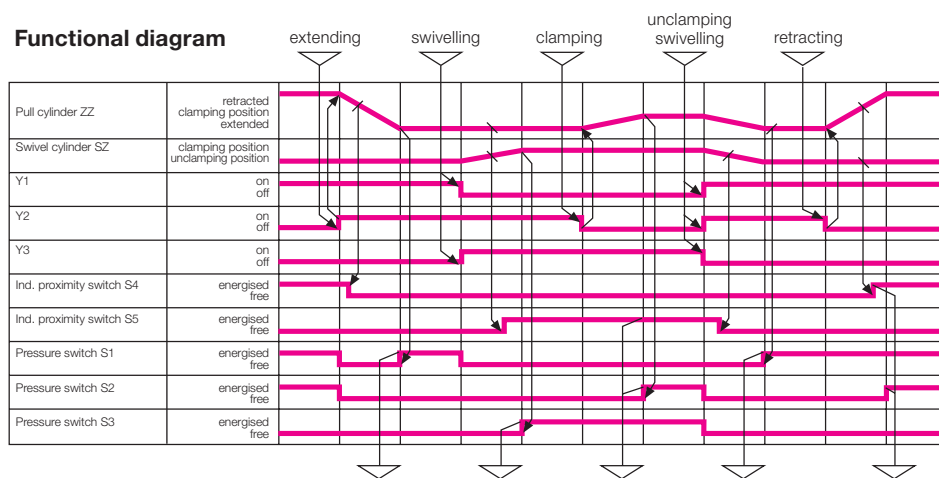
It is very important to completely bleed all lines. Proceed as follows: adjust a low pressure on the power unit (20 - 50 bar). Start with the most distant swivel and pull clamp, carefully loosen the lock nut and keep the power unit operating until the emerging oil is free from bubbles. Repeat this procedure at each port. After bleeding, retighten all screws. Adjust the defined operating pressure (see hydraulic circuit diagram) on the power unit (see operating manual). Prior to clamping a die, the functional sequence should be checked in accordance with the functional diagram.

Position monitoring, however, can only be checked with the die clamped.

## Switching sequence as per functional diagram:

- Retracted position**  
Y1 is energised, Y2 and Y3 are de-energised, pressure is applied to cylinder ports B and C.
- Extending**  
When Y2 is energised, the pressure applied to C drops, the swivel and pull clamp extends
- Swivelling**  
Y1 is de-energised, Y3 is energised, pressure is applied to A only, the clamping bolt swivels by 90°.
- Clamping**  
Y2 is de-energised, pressure is applied to A and C, the element retracts with the clamping bolt swivelled, de-energise Y3
- Extending, unclamping, swivelling**  
Y1 and Y2 are energised, Y3 is de-energised, pressure is applied to B only, the clamping bolt extends and swivels back by 90°
- Retracting**  
Y2 is de-energised, pressure is applied to B and C. Due to the larger piston area of C, the element retracts.

## Functional diagram



## Position monitoring

By means of the position monitoring system, pneumatic or inductive control of both the clamping and unclamping position is possible. Pneumatic position monitoring is made by a nozzle which is closed in the corresponding position. The position signal is generated by a pneumatic flow switch. Data sheets of the inductive proximity switches will be made available on request.

## Replacement of the clamping bolt

If it is necessary to remove the clamping bolt, it is very important that re-installation of the replacement part is made in the same toothing position.

The lock nuts have a tightening torque of 210 Nm. Make sure that there is still sufficient axial play for an easy turning of the clamping bolt (0.1 - 0.3 mm).

