Position Flexible Clamping Claw
double acting, separate locking port,
with optional position monitoring, max. operating pressure 250 bar

Advantages
- Clamps position flexible within the pendulum range
- Workpiece support points adjustable and mountable in 4 positions
- Unimpeded loading and unloading of the fixture
- Very low displacing forces act on the workpiece
- Adjustable zero position
- Compensation of machining forces from all directions
- Monitoring of the unclamping position and the end of the clamping stroke can be effected pneumatically or inductively
- Clamping lever can be swivelled into small recesses
- Double-acting clamping function
- Locking port can be controlled separately
- Oil supply optionally by connecting threads or drilled channels
- Connecting hoses with swarf protection
- Air sealing connection to avoid entry of swarf and coolants

Application
Position flexible clamping elements can be used for supporting and clamping of unstable workpiece sections. They adapt themselves to the position of the clamping point without deforming them. They cushion vibrations and compensate machining forces from all directions.

Description
The position flexible clamping claw consists of an U-shaped mounting body and the displacably embedded clamping unit with oil supply by two short high-pressure hoses with swarf protection.

In the movable clamping unit a double-acting hydraulic cylinder is integrated, whose clamping force is introduced through the clamping lever by 180° into the workpiece support. This support is height-adjustable to clamp workpieces of different thickness.

After the clamping process the still displaceable clamping unit will be locked by a single-acting cylinder in the mounting body.

In unclamped mode the clamping lever swivels back so far that unimpeded loading and unloading of the clamping fixture can be effected. To control the clamping lever an inductive or pneumatic position monitoring can be delivered.

Position flexible clamping
For machining in a clamping fixture in 3 levels, a workpiece will be positioned and clamped against a maximum of 5 support and location points. If further sections of the workpiece have to be supported and clamped, additional work supports will be often used, on top of which also clamping can be effected.

Problem: If the sections to be clamped are very unstable, the contact of the support plunger may cause deformation. If the following clamping will be effected the caused deformation will not be calculable. Variations at the finish-machined workpiece are not acceptable.

Solution: The use of position flexible clamping elements at such critical points can improve considerably the result.

Example: (see figure at the top right)
A workpiece is clamped in a fixture. For machining of a relatively unstable web machining clamping with minimum of deformation is required. A position flexible clamping claw is so arranged that the web is within the clamping range. First the clamping cylinder is controlled. By nipper-like floating clamping the web will be clamped between support and clamping lever, i.e. the clamping unit adapts itself position flexible to the height. The occurring displacing force in the mounting body will be minimised by the installed weight compensation.

Then the clamping unit is locked by a second clamping circuit or a sequence valve and can now compensate machining forces from all directions.

Important notes
The position flexible clamping claw has to be checked regularly with regard to contamination by swarf and cleaned, if required.

Regular lubricating reduces the displacing forces on the workpiece during clamping.

The smaller the distance between workpiece and workpiece support point, the smaller the displacing force onto the workpiece during clamping (see contact force).

Air sealing increases life and sensitivity of the clamping element.

The clamping unit made of aluminium has to be highly protected against abrasive swarf.

Connecting possibilities
- Fitting connection
- Drilled channels
- Hose at the back
- Hose at the side

Design possibilities

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Actual issue see www.roemheld-group.com

Subject to modifications
**Version: hose at the back**

**Dimensions**

**Technical data**

- **Clamping force** $F_{SP}$ at 250 bar [kN]: 7.5
- **Retention force** $F_H$ at 250 bar [kN]: 10
- **Contact force**: [N] $0 \div 30$
- **Pendulum range** [mm]: ± 4
- **Oil volume clamping** [cm³]: 13.5
- **Oil volume unclamping** [cm³]: 8.0
- **Oil volume locking** [cm³]: 0.2
- **Max. oil flow rate** [cm³/s]: 15

**Part no.**

- **Hose at the back**: 4412977
- **Hose at the side**: 4412978

**Accessories**

- **Screw-in plug G 1/4**: 3 off
- **O-Ring 8x1.5**: 4 off
- **Inductive proximity switch**: 3829263
- **Plug with cable (5m)**: 3829099
- **Pneumatic jet with lock nut**: 4412997
- **Location for position transmitter „End of clamping stroke”**: 4412984

**Material**

- **Clamping unit**: aluminium
- **Other parts**: steel
- **Sealings**: FKM

**Technical data for inductive proximity switches**

- **Operating voltage** $U_B$: 10…30 V DC
- **Switching function**: Interlock
- **Output**: PNP
- **Filter body material**: Stainless steel
- **Protection as per DIN 40050**: IP 67
- **Environmental temperature**: -25°…+70 °C
- **Connection**: Connector
- **Protected against short circuits**: yes

**Version: hose at the side**

**Accessories**

- **Inductive proximity switch incl. lock nut**: 3829263
- **Plug with cable (5m)**: 3829099
- **Location for position transmitter „End of clamping stroke”**: 4412984

**Material**

- **Clamping unit**: aluminium
- **Other parts**: steel
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**Dimensions**

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