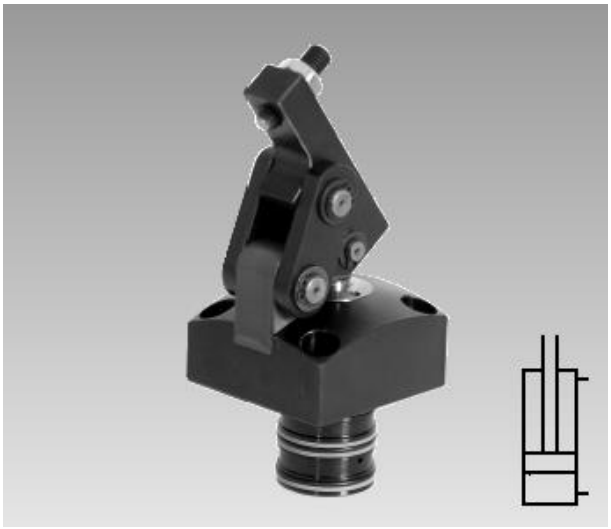
Hinge Clamps

with metallic wiper edge and optional position monitoring, double acting



1 Description of the product

When pressurising the element, the piston moves upwards and swivels the clamping lever over the hinges forwards and at the same time downwards onto the workpiece.
The piston force is deviated by 180° and is available as clamping force with virtually no loss of efficiency. If the level of the clamping surface is exactly on height h, no side loads are introduced into the workpiece.
The bodies are recessible in the fixture up to the flange. Alternatively intermediate plates are available for height adjustment.
All versions are optionally available with extended piston rod and with inductive or pneumatic position monitoring.

2 Validity of the documentation

This document applies to the following products:

Hinge clamps of data sheet B 1.8251.
The following types or part numbers are concerned:

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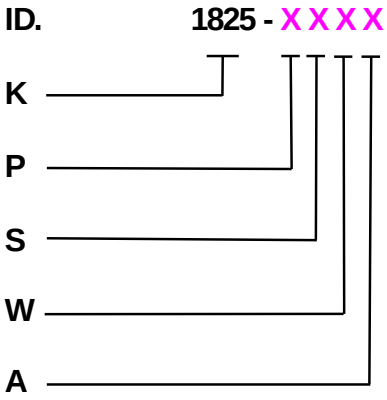

ID Part-no. K **Basic type** P Size: 1 = Size 1 2 = Size 2 3 = Size 3 4 = Size 4 S Version: 1 = cartridge-type 2 = cartridge-type with extended piston rod *) 3 = pipe thread at the back / plug-type connector 4 = pipe thread at the back / plug-type connector with extended piston rod *) 5 = pipe thread at three sides 6 = pipe thread at three sides with extended piston rod *)	W Clamping lever 0 = without clamping lever 1 = clamping lever with swivel contact bolt 2 = long clamping lever, unmachined[1] Material: C45 + C (1.0503) A Position monitoring E = mounted position monitoring, inductive (without proximity switch) P = mounted position monitoring, pneumatic

3 Target group of this document

- Specialists, fitters and set-up men of machines and installations with hydraulic expert knowledge.

Qualification of the personnel

Expert knowledge means that the personnel must

- be in the position to read and completely understand technical specifications such as circuit diagrams and product-specific drawing documents,
- have expert knowledge (electric, hydraulic, pneumatic knowledge, etc.) of function and design of the corresponding components.

An **expert** is somebody who has due to its professional education and experiences sufficient knowledge and is familiar with the relevant regulations so that he

- can judge the entrusted works,
- can recognize the possible dangers,
- can take the required measures to eliminate dangers,
- knows the acknowledged standards, rules and guidelines of the technology.
- has the required knowledge for repair and mounting.

4 Symbols and signal words

⚠ WARNING

Person damage

Stands for a possibly dangerous situation.
If it is not avoided, death or very severe injuries will result.

⚠ CAUTION

Easy injuries / property damage

Stands for a possibly dangerous situation.
If it is not avoided, minor injuries or material damages will result.

Hazardous to the environment

The symbol stands for important information for the proper handling with materials that are hazardous to the environment.
Ignoring these notes can lead to heavy damages to the environment.

Note

This symbol stands for tips for users or especially useful information. This is no signal word for a dangerous or harmful situation.

5 For your safety

5.1 Basic information

The operating instructions serve for information and avoidance of dangers when installing the products into the machine as well as information and references for transport, storage and maintenance.
Only in strict compliance with these operating instructions, accidents and property damages can be avoided as well as trouble-free operation of the products can be guaranteed.
Furthermore, the consideration of the operating instructions will:

- avoid injuries
- reduce down times and repair costs,
- increase the service life of the products.

5.2 Safety instructions

The product was manufactured in accordance with the generally accepted rules of the technology.
Observe the safety instructions and the operating instructions given in this manual, in order to avoid personal damage or material damage.

- Read these operating instructions thoroughly and completely, before you work with the product.
- Keep these operating instructions so that they are accessible to all users at any time.
- Pay attention to the current safety regulations, regulations for accident prevention and environmental protection of the country in which the product will be used.
- Use the ROEMHELD product only in perfect technical condition.
- Observe all notes on the product.
- Use only accessories and spare parts approved by the manufacturer in order to exclude danger to persons because of not suited spare parts.
- Respect the intended use.
- You only may start up the product, when it has been found that the incomplete machine or machine, in which the product shall be mounted, corresponds to the country-specific provisions, safety regulations and standards.
- Perform a risk analysis for the incomplete machine, or the machine.
  Due to the interactions between the product and the machine/fixture or the environment, risks may arise that only can be determined and minimized by the user, e.g. :
  - generated forces,
  - generated movements,
  - Influence of hydraulic and electrical control,
  - etc.

6 Application

6.1 Intended use

The products are used in industrial / commercial applications to transform hydraulic pressure into movement and /or force. They must only be operated with hydraulic oil.
Furthermore the following belongs to possible uses:

- Use within the capacity indicated in the technical characteristics.
- Use as per operating instructions.
- Compliance with service intervals.
- Qualified and trained personnel for the corresponding activities.
- Mounting of spare parts only with the same specifications as the original part.

6.2 Misapplication

⚠ WARNING

Injuries, material damages or malfunctions!

Modifications can lead to weakening of the components, reduction in strength or malfunctions.

- Do not modify the product!

The use of the products is not authorised:
- For domestic use.
- For use at fairgrounds and amusement parks.
- In food processing or in areas with special hygiene regulations.
- In mines.

- In ATEX areas (in explosive and aggressive environments, e.g. explosive gases and dusts).
- If physical effects (welding currents, vibrations or others) or chemically acting media damage the seals (resistance of the seal material) or components and this can lead to functional failure or premature failure.

For deviating operating and environmental conditions,e.g.:

- Higher operating pressures or flow rates than indicated on the data sheet or installation drawing.
- With hydraulic fluids that do not correspond to the specifications.

Side load acting on the piston rod

The application of side loads to the piston rod as well as the use of the product as a guiding element is inadmissible.

Special solutions are available on request!

7 Installation

⚠ WARNING

Injury by high-pressure injection (squirting out of hydraulic oil under high pressure)!

Improper connection can lead to escapes of oil under high pressure at the connections.

- Mounting or dismounting of the element must only be made in depressurised mode of the hydraulic system.
- Connection of the hydraulic line as per DIN 3852/ISO 1179.
- Unused connections have to be locked professionally.
- Use all mounting holes.

Injury by high-pressure injection (squirting out of hydraulic oil under high pressure)!

Wear, damage of the seals, ageing and incorrect mounting of the seal kit by the operator can lead to escapes of oil under high pressure.

- Before using them make a visual control.

Injury by dropping parts!

Some products have a heavy weight and can cause injury when dropping.

- Transport products professionally.
- Wear personal protection equipment!

Weight specifications see chapter "Technical characteristics".

Poisoning due to contact with hydraulic oil.

Wear, damage of the seals, aging and incorrect mounting of the seal kit by the operator can lead to escapes of oil.

Incorrect connection can lead to escapes of oil at the ports.

- For handling with hydraulic oil consider the material safety data sheet.
- Wear protection equipment.

7.1 Design

7.1.1 Cartridge-type version

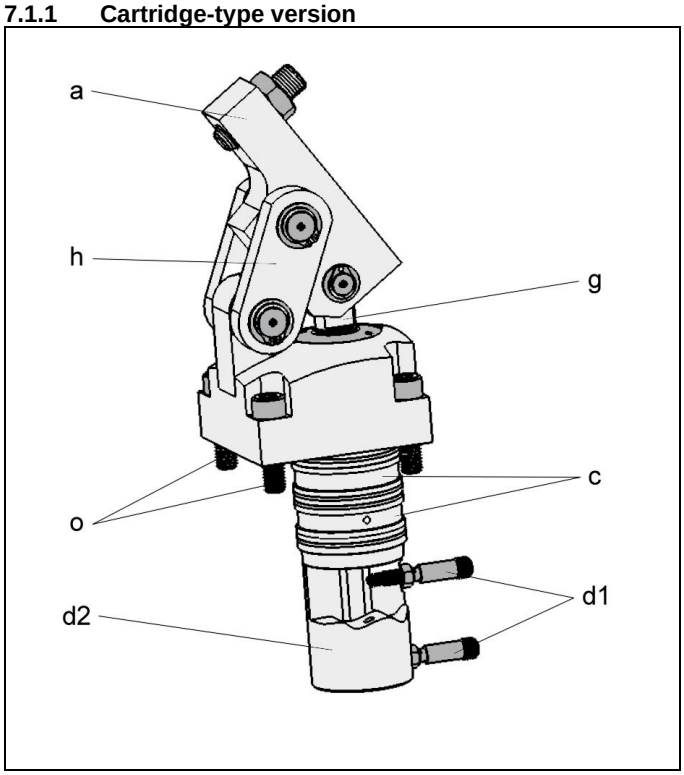

Figure 1: Components

a	Clamping lever	or	
c1	Hydraulic connection by pipes (A = Clamping, B = Unclamping)		Pneumatic jet (accessory) P1 (Clamping range) P2 (Unclamping) P3 (Exhaust air)
d1	Magnetic sensor with angle plug and cable (accessory) E1 (Clamping range) E2 (Unclamping)	d2	Housing of position monitoring
		h	Link
		o	Fixing screws

7.1.2 Pipe thread

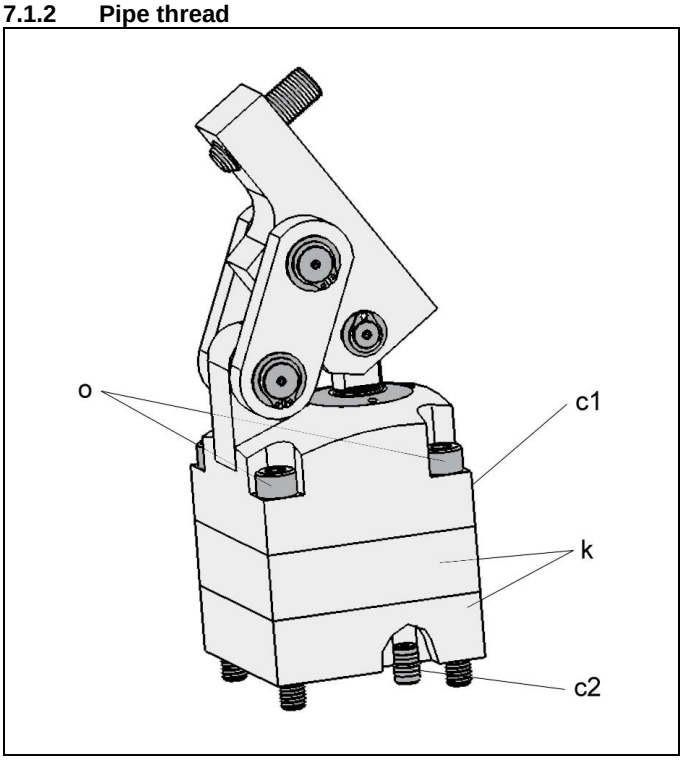

Figure 2: Components

c1 with hydraulic port and tubes (A = Clamping, B = Unclamping) c2 Hydraulic connection without pipes (optionally) via plug-type connectors (accessory)	k Intermediate plates (accessory) o Fixing screws

7.1.3 Pipe threads at three sides

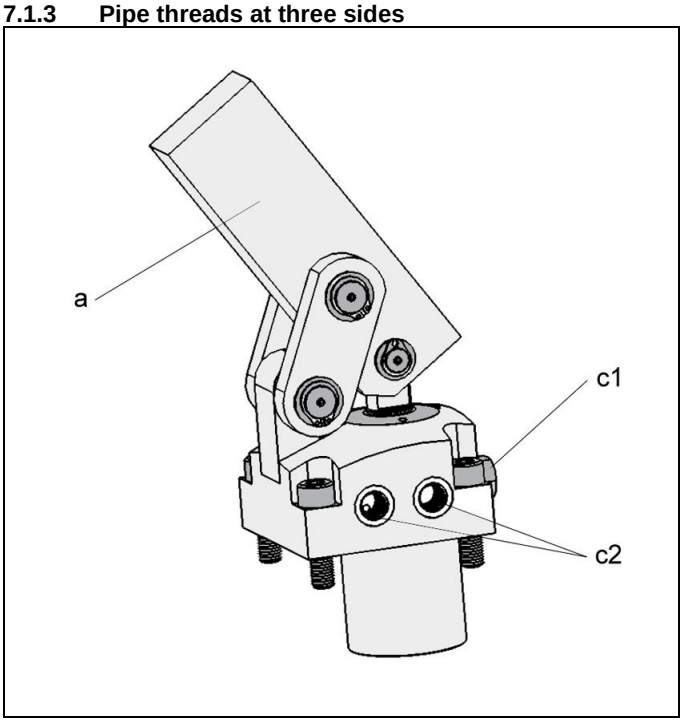

Figure 3: Components

a Long clamping arm (accessory) c1 Screw plugs at two sides	c2 Hydraulic connection by pipes (A = Clamping, B = Unclamping)

7.2 Mounting types

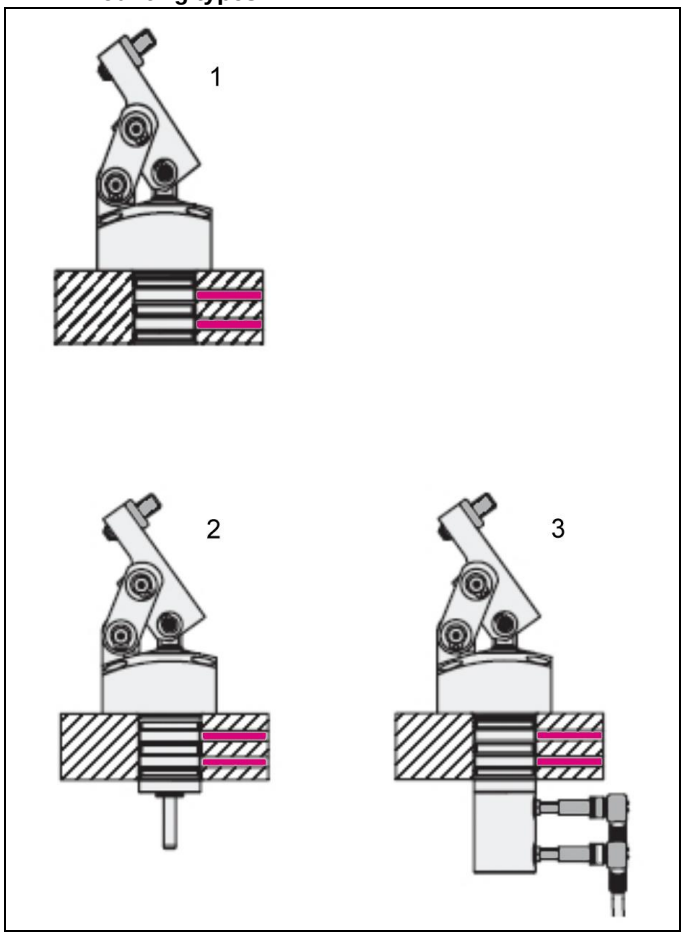

Figure 4: Fixing possibilities - cartridge-type version

1 In location hole with drilled channels 2 With extended piston rod in location hole with drilled channels	2 With extended piston rod and position monitoring in location hole with drilled channels

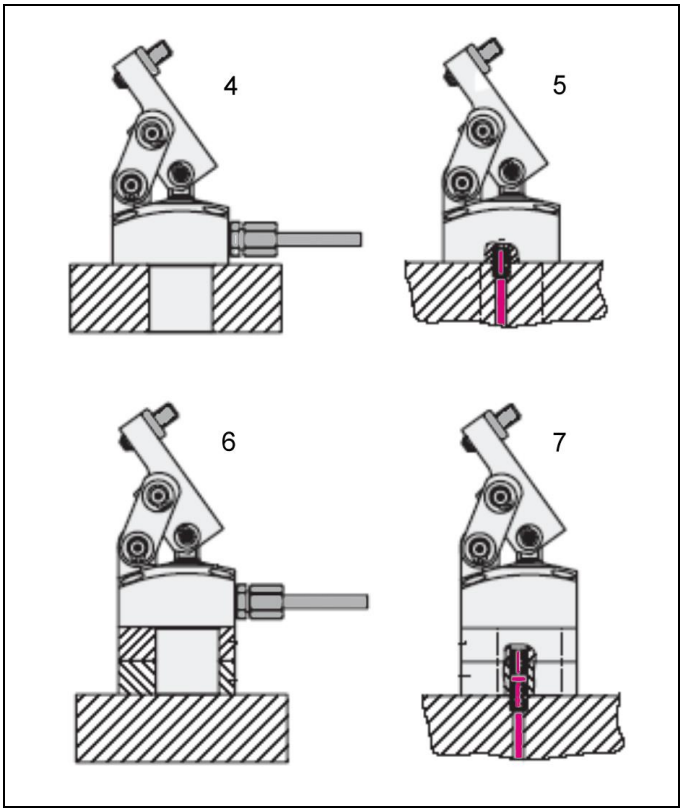

Figure 5: Fixing possibilities - pipe thread at the back

4	In through hole with pipe thread at the back	6	With intermediate plates and pipe thread at the back
5	In through hole with oil supply by plug-type connectors	7	With intermediate plates and oil supply by plug-type connectors

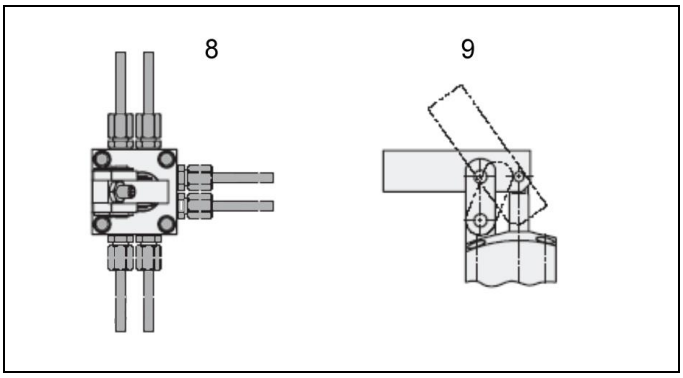

Figure 6: Fixing possibilities - pipe threads at three sides

8	Pipe threads at three sides	9	Long clamping arm (accessory)

7.3 Admissible oil flow rate

⚠ WARNING

Injury due to overload of the element

High-pressure injection (squirting out of hydraulic oil under high pressure) or flying components!

- Due to throttling or closing of ports a pressure intensification can occur.
- Connect the ports professionally!

⚠ CAUTION

Malfunction or early failure

Exceeding the max. flow rate can lead to overload and premature failure of the product..

- The maximum flow rate must not be exceeded!

7.3.1 Calculation of the admissible flow rate

Admissible flow rate

The admissible flow rate or the admissible stroke speed is valid for vertical mounting positions in combination with standard add-on parts as clamping arms or contact bolts, etc.

In case of other mounting positions and/or add-on parts the flow rate has to be reduced.

If the pump flow rate divided by the number of elements is larger than the admissible flow rate of one element, the flow rate has to be throttled.

This prevents an overload and therewith an early failure.

The flow rate can be checked as follows:

$$Q_P \leq 0{,}06 \cdot \dot{V}_Z \cdot n \quad \text{and/or} \quad Q_P \leq 6 \cdot v_Z \cdot A_K \cdot n$$

for clamping elements and work supports (indicated on the data sheets)

Maximum piston speed

At specified pump flow rate **Q_P** and with the effective piston area **A_K** the piston speed can be calculated as follows:

$$v_m < \frac{Q_P}{6 \cdot A_K \cdot n}$$

Legend

$\dot{V}_Z$ = Admissible flow rate of the element in [cm³/s]

Q_P = Flow rate of the pump in [l/min]

A_K = Piston area in [cm²]

n = Number of elements, same dimensions

$v_Z = v_m$ = Admissible/maximum stroke speed in [m/s]

NOTE

Flow rate

- The maximum oil volume and/or the maximum stroke speed depend on the corresponding product.
  - For clamping cylinders see data sheet A 0.100.
  - For clamping elements, work supports, hydraulic valves, power units and other hydraulic elements indicated on the corresponding data sheets.

Further "things worth knowing about hydraulic cylinders, basics, detailed knowledge and calculations on hydraulic cylinders" see Technical information on the internet!

7.3.2 Throttling of the flow rate

The throttling always has to be effected in the supply line to the element. Only thus pressure intensification and thereby pressures exceeding the operating pressure are avoided. The hydraulic circuit diagram shows flow control valves which allow oil return from the element without any impediments.

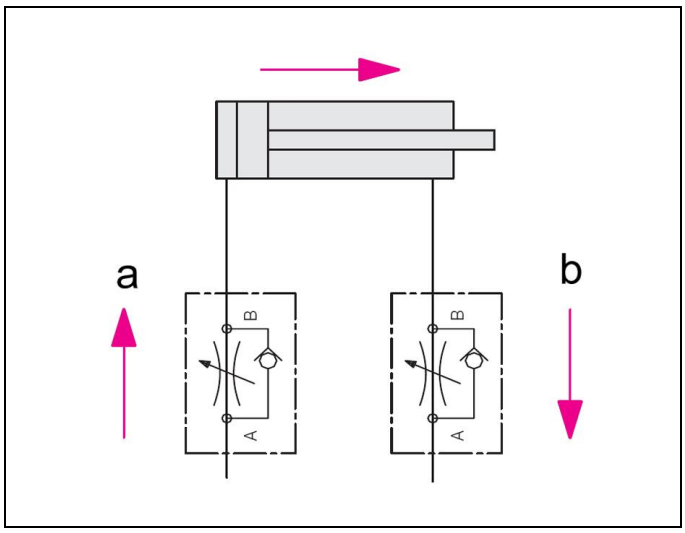

Figure 7: Hydraulic circuit diagram without flow control valves

a	Throttling direction	b	Free flow

If a return-flow throttling is required due to a negative load, it must be guaranteed that the max. operating pressure (see technical characteristics) will not be exceeded.

7.4 Installation of products with external sealing

7.4.1 Design

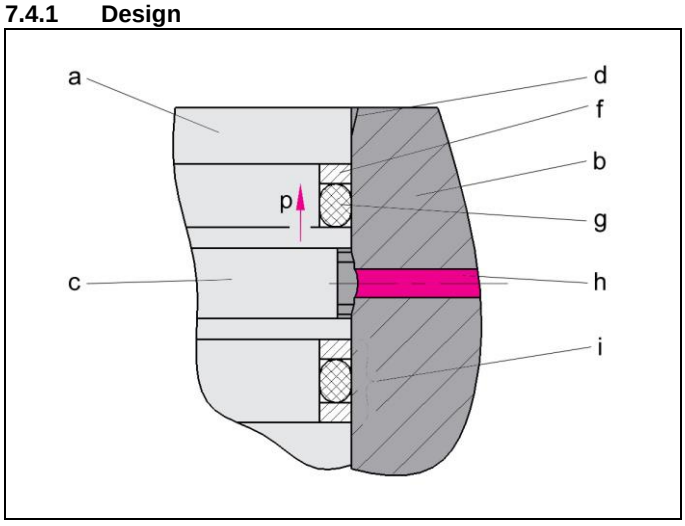

Figure 8: Components

a	Housing of the element	g	O-ring sealing
b	Fixture body	h	Supply hole in the fixture body
c	Slot for transmission of the pressure medium	i	Combination with applied pressure from both sides
d	Insertion chamfer	p	Pressure direction
f	Back-up ring on the side that is not subject to pressure		

7.4.2 Installation

⚠ WARNING

Injury by crushing!

Due to protruding components there can be pinch points during installation.

- Keep hands and fingers away from pinch points!

⚠ CAUTION

Product not properly tightened

Product can loosen during operation.

- Fix and/or secure with sufficient tightening torque.

For works at and with the product, wear protective gloves!

Before starting the installation check the following:

- Is the location hole made as per data sheet?
  - Are the indicated tolerances and surfaces kept?
  - Is the wall thickness in the fixture sufficient?
- Are the tapers in the fixture made as per drawing?
- Are the bore holes in the installation geometry are deburred and round?
- Are machining residues as swarf, dirt and foreign particles removed?
- Are crests of threads covered?
- Are seals and components greased or lubricated before installation?
  - Pay attention to compatibility of seals with the medium!
  - It is recommended to use the medium to be sealed for lubrication.
- Do not use grease with additions of solids as molybdenum sulphite or zinc sulphite.
- Do not use sharp objects for installation!
- Pay attention to protruding back-up rings. Use aids for correct positioning.
- Use always installation aids, if possible.

Procedure for installation

1. Insert seals.
2. Insert or screw in into location hole.
3. Screw in or fasten, pay attention to smooth running.
   Pay attention that the seals will not be damaged.
4. Fasten with corresponding tightening torque (see general characteristics).
   See chapter Technical characteristics.

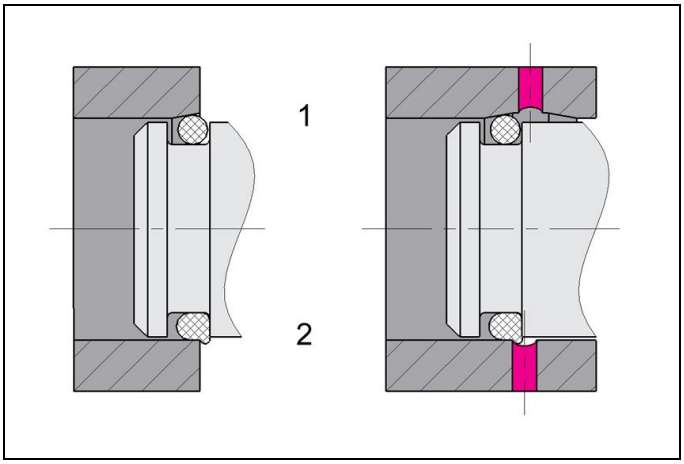

Figure 9: Installation with insertion chamfer and cross hole

1	Correct with chamfer	2	Incorrect without chamfer

7.5 Installation of manifold-mounted types

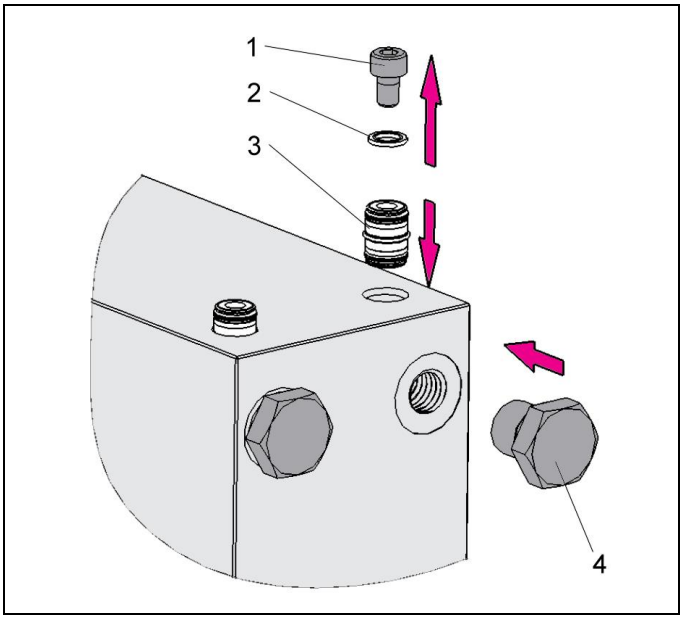

Figure 10: Example of the preparation for hydraulic ports without tubes by plug connection

1 Socket head cap screw 2 Sealing ring	3 Plug connection (accessory, if required) 4 Screw plug (accessory, if required)

1. Drill the holes for hydraulic oil supply and return in the fixture (see also data sheet).
2. Fabricate fits Ø10H7 for plug connection.
3. Remove socket head cap screws and Usit-rings .
4. Close hydraulic port by means of screw plug.
5. Insert plug connection .
6. Clean the support surfaces.
7. Position and fix on the fixture.

7.6 Installation for hydraulic port without tubes, direct connection

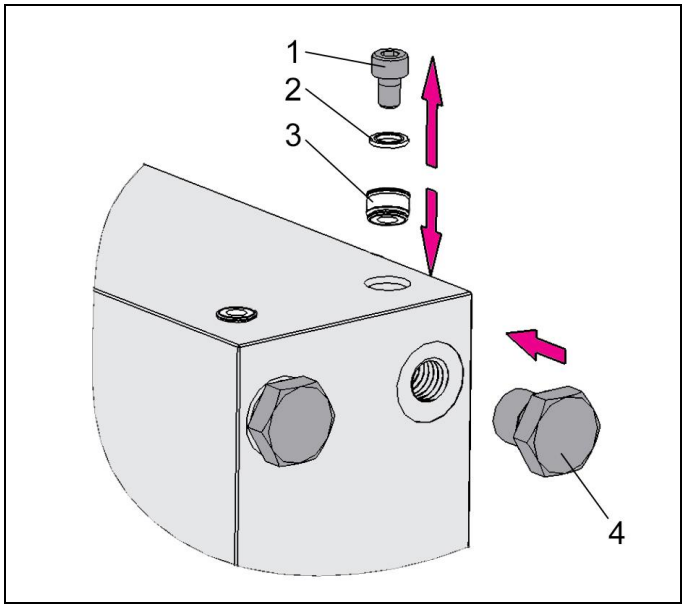

Fig. 11: Example of preparation for hydraulic ports without tubes using plug connection for direct connection

1 Socket head cap screw 2 Sealing ring	3 Plug connection (accessory) 4 Screw plug (accessory)

1. Drill the holes for hydraulic oil supply and return in the fixture (for dimensions and surface details, see also data sheet).
2. Remove socket head cap screws and USIT-rings.
3. Close hydraulic port by means of screw plug.
4. Insert plug connection.
5. Clean the support surfaces.
6. Position and fix on the fixture.

⚠ CAUTION

Product not properly tightened

Product can loosen during operation.

- Fix and/or secure with sufficient tightening torque.

NOTE

Operating pressure above 250

- For operating pressures exceeding 250 bar screws of tensile strength 12.9 are required.

Tightening torques

- The tightening torques for the fixing screws have to be designed with reference to the application (e. g. as per VDI 2230).

Proposals and approximate values for the tightening torques see chapter "Technical characteristics".

7.7 Installation of pipe-mounted types

1. Clean the support surfaces.
2. Fix the element at the support surface (see figure "Mounting types).

⚠ WARNING

Product can fall down

Injury by falling products!

- Safety shoes have to be worn to avoid injuries due to falling objects.

⚠ CAUTION

Product not properly tightened

Product can loosen during operation.

- Fix and/or secure with sufficient tightening torque.

NOTE

Determination of the tightening torque

To determine the tightening torque of the fixing screws a screw calculation as per VDI 2230 page 1 has to be effected. The screw material is indicated in the chapter "Technical characteristics".

Proposals and approximate values for the tightening torques see chapter "Technical characteristics".

7.8 Connection of the hydraulic equipment

1. Connect hydraulic lines to qualifying standards and pay attention to scrupulous cleanness (A = Clamp, B = Unwind)!

NOTE

More details
- See ROEMHELD data sheets A 0.100, F 9.300, F 9.310 and F 9.360.

Screwed Plug
- Use only fittings "screwed plug B and E" as per DIN 3852 (ISO 1179).

Hydraulic connection
- Do not use sealing tape, copper rings or coned fittings.

Pressure fluids
- Use hydraulic oil as per ROEMHELD data sheet A 0.100.

8 Start up

⚠ WARNING

Poisoning due to contact with hydraulic oil.

Wear, damage of the seals, aging and incorrect mounting of the seal kit by the operator can lead to escapes of oil.
Incorrect connection can lead to escapes of oil at the ports.
- For handling with hydraulic oil consider the material safety data sheet.
- Wear protection equipment.

Injury by crushing!

Components of the product make a movement while they are in operation, this can cause injuries.
- Keep parts of the body and items out of the working area!

⚠ CAUTION

Injury due to bursting or malfunction

Exceeding the max. operating pressure (see technical data) can cause the product to burst or malfunction.
- The maximum operating pressure must not be exceeded.
- If necessary, avoid overpressure by using suitable valves.

- Check tight seating (check tightening torque of the fixing screws, see chapter "Technical characteristics").
- Check tight seating of hydraulic connections (check tightening torque of the hydraulic connections, see chapter "Technical characteristics").
- Bleed the hydraulic system.

NOTE

Clamping time
- Without bleeding the clamping time will be considerably prolonged and function problems may occur.

- Start up of position monitoring.

Note

See operating instructions of the position monitoring.

8.1 Bleeding of pipe-mounted types

1. Loosen carefully at low pressure union nut of the pipe at the hydraulic ports.
2. Pump until bubble free oil comes out.
3. Fasten union nuts of the pipe.
4. Check tightness.

8.2 Bleeding of manifold-mounted types

1. Loosen carefully the bleeding screws of the fixture at low pressure.
2. Pump until bubble free oil comes out.
3. Fasten the bleeding screws.
4. Check correct function.
5. Check sealing of the hydraulic connections!

9 Maintenance

⚠ WARNING

Burning due to hot surface!

During operation, surface temperatures on the product can exceed 70°C.
- Maintenance and repair work should only be performed in a cooled down condition and/or with protective gloves.

Injury by crushing!

Due to the stored energy, an unexpected start of the product can occur.
- Maintenance works at the product must only be made in depressurised mode!
- Keep hands and other parts of the body out of the working area!

⚠ CAUTION

Maintenance and repair work

All maintenance and repair works only to be effected by ROEMHELD service staff.

9.1 Cleaning

⚠ CAUTION

Material damage, damage to moving components

Damage to piston rods, plungers, bolts, etc., as well as wipers and seals can lead to leakage or premature failure!
- Do not use cleaning agents (steel wool or similar) that cause scratches, marks or the like.

Material damage, damage or functional failure

Aggressive cleaning agents can cause damage, especially to seals.
The product must not be cleaned with:
- corrosive or caustic substances or
- organic, solvents such as halogenated or aromatic hydrocarbons and ketones (cellulose thinner, acetone, etc.).

The product must be cleaned at regular intervals, especially the area of the piston or the plunger housing has to be cleaned from swarf and other liquids.

In the case of heavy contamination, cleaning must be made at shorter intervals.

Note

Special care must be taken with:

- dry machining
- minimum quantity lubrication and
- small grinding swarf

Small swarf and dust can stick to the rod / plunger of the element and be pulled into the sealing gap of the metallic wiper edge.

Thus, a sticky / pasty mass of swarf / dust can arise that hardens during standstill.

Result: Malfunction due to deadlock / bonding and increased wear.

Remedy: Regular cleaning of the piston rod/support plunger in the effective area of the wiper.

9.2 Regular checks

1. Check tightness of hydraulic connections (visual control).
2. Check running surfaces (of the piston rod or bolt) if there are marks and scratches. Traces of marks can be an indication for a contaminated hydraulic system or an inadmissible side load of the block cylinder.
3. Leakage check at the housing - piston rod, bolt or flange.
4. Clamping force control by pressure control.
5. Check if the maintenance intervals are kept.

9.3 Exchange seal kit

The exchange of the seal kit is made in case of external leakages. For high availability, the seals have to be changed at the latest after 500,000 cycles or 2 years.

The seal kit is available as spare part. An instruction for the exchange of the seal kit is available on request.

NOTE

Seal Kits

- Do not install seal kits which were exposed to light for a longer time.
- Pay attention to the storage conditions (see chapter "Technical characteristics").
- Only use original seals.

10 Trouble shooting

Trouble	Cause	Remedy
Piston does not extend:	hydraulic oil supply or return is impeded	check and blow through tubes or channels
Piston extends jerkily:	air in the hydraulic system	hydraulic bleeding
System pressure reduces:	hydraulic port leaky	seal
	wear of seals	replace seals

11 Accessory

11.1 Pneumatic position monitoring to be mounted at products with extended piston rod

11.1.1 Description of the product

The position monitoring is screwed on the cylinder bottom. A control cam is provided at the extended piston rod causing the activation of the pneumatic jets.

11.1.2 Validity of the documentation

These operating instructions apply to the pneumatic position monitoring with the following part number:

- 0353 845; 853; 855; 963

11.1.3 For your safety

Qualification of the user

All works may only be effected by qualified personnel familiar with the handling of pneumatic components.

11.1.4 Application

11.1.4.1 Intended use

Pneumatic position monitorings are used for industrial applications in order to get a feedback from the unclamped end position and the clamping range of a product.

They are exclusively designed to be mounted at ROEMHELD products and for their control.

In addition, applies the intended use of the products for which they have been designed.

11.1.4.2 Misapplication

Position monitoring systems are not suitable for applications where coolants are used.

11.1.5 Installation

1. Screw on position monitoring at the flange and at the piston rod.
2. Connect both pneumatic ports **(P1 = clamping range** and **P2 = unclamped)**.

11.1.6 Start up

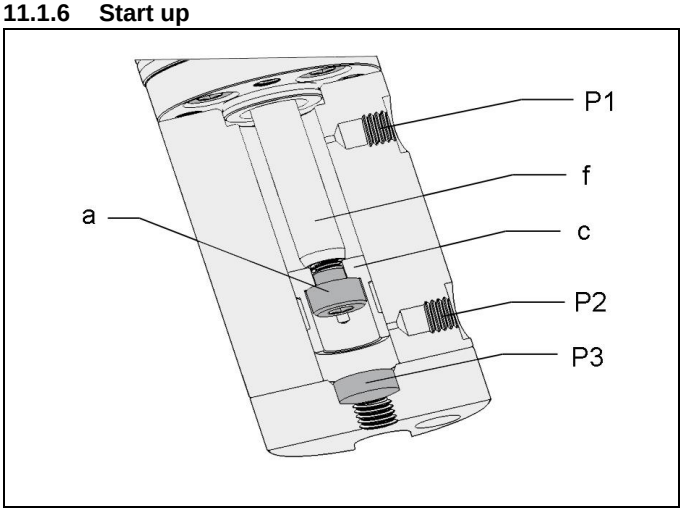

Figure 12: Design

P1 Upper pneumatic port, clamping range	a Fixation of the signal sleeve
P2 Lower pneumatic port, unclamped	χ Signal sleeve with control cams
P3 Venting by means of the filter element	f Switch rod of the hinge clamp

1. Connect the pneumatic ports of the differential pressure switch to the position monitoring.
2. The piston position will be signalled by the pressure build up at the upper or lower pneumatic port:

Pressure built-up and/or signal sleeve is	Piston is
at the top (Fig. Design)	extended
at the bottom	retracted

NOTE

Impurities in the compressed air

- The pollution of the compressed air can lead to interferences in the measurement .

11.1.7 Maintenance

⚠ WARNING

Burning due to hot surface!

During operation, surface temperatures on the product can exceed 70°C.

- Maintenance and repair work should only be performed in a cooled down condition and/or with protective gloves.

11.1.7.1 Regular checks

- Check position monitoring if there are damages.
- Check tight seating of the position monitoring.
- The position monitoring itself is maintenance free.

11.1.8 Trouble shooting

Trouble	Cause	Remedy
No signal	Insufficient pressure differential	Throttle flow rate, reduce pressure
	Position monitoring has become loose	Fix again position monitoring
	Leakage in the system	Check supply lines
Incorrect signals:	Position monitoring has become loose	Fix again position monitoring

11.1.9 Technical characteristics

Cylinder body material:	Steel, corrosion resistant

Note

Further technical data with reference to the position monitoring are included in the data sheet.

11.2 Electrical position monitoring to be mounted at products with switch rod

11.2.1 Description of the product

The position monitoring will be screwed on at the cylinder bottom and can also be mounted in a position rotated by 180°. Different versions are available according to the application conditions. A control cam is provided at the extended piston rod causing the activation of the proximity switches. Adjustment of the switching position is effected by displacement of the proximity switches in the lateral groove. The proximity switches are switched on in a stroke range of approx. 6 mm by means of the control cam.

11.2.2 Validity of the documentation

These operating instructions apply to the electrical position monitoring with the following part numbers:

- 0353 846; 854; 856; 963

11.2.3 For your safety

Qualification of the user

All works may only be effected by qualified personnel familiar with the handling of electric components.

11.2.4 Application

11.2.4.1 Intended use

Position monitorings are used for industrial/commercial applications to obtain electrical feedback from both end positions or intermediate positions of a product.
They are exclusively designed to be mounted at ROEMHELD products and for their control.
In addition, applies the intended use of the products for which they have been designed.

11.2.4.2 Misapplication

Position monitoring systems are not suitable for applications where coolants are used, since swarf can influence the function of the inductive proximity switches.

11.2.5 Installation

1. Screw on position monitoring at the flange and at the piston rod.
2. Connect both pneumatic ports **(P1 = clamping range** and **P2 = unclamped)**.

11.2.6 Start up

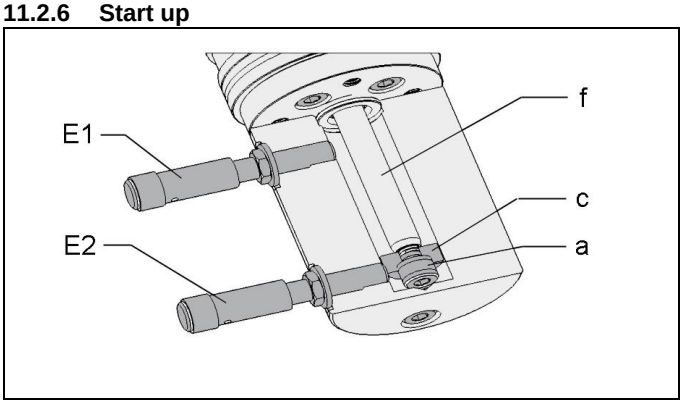

Figure 13: Design of the electrical position monitoring

E1 Proximity switch (clamping range) E2 Proximity switch (unclamped)	c Signal sleeve a Fixation of the switch rod f Switch rod of the hinge clamp

Adjustment of proximity switches

1. Set element to unclamping position.
2. Screw in proximity switch E1 up to the stop on the signal sleeve and turn back one turn.
3. Fix E1 with a nut. The distance to the signal sleeve must be 0.5 mm.
4. Set element to unclamping position.
5. Screw in proximity switch E2 up to the stop on the signal sleeve and turn back one turn.
6. Fix E2 with a nut. The distance to the signal sleeve must be 0.5 mm.

11.2.7 Maintenance

⚠ WARNING

Burning due to hot surface!

During operation, surface temperatures on the product can exceed 70°C.

- Maintenance and repair work should only be performed in a cooled down condition and/or with protective gloves.

11.2.7.1 Regular checks

- Check position monitoring if there are damages.
- Check tight seating of the position monitoring.
- The position monitoring itself is maintenance free.

11.2.8 Trouble shooting

Trouble	Cause	Remedy
No signal when extending or retracting the piston:	No supply voltage	Check supply voltage and switch on again, if necessary
Incorrect signals:	Proximity switch or position monitoring has become loose	Adjust and fix again proximity switch or position monitoring
No signal:		

11.2.9 Technical characteristics

Operating voltage UB:	10 ... 30 V DC
Residual ripple:	max. 15%
Switching function:	Interlock
Output:	PNP
Cylinder body material:	Steel, corrosion resistant
Protection as per DIN 40050	IP 67

Note

Further technical data with reference to the position monitoring are included in the ROEMHELD data sheet.

11.2.10 Accessory

- Plug with cable
- Spare proximity switch

Note

See ROEMHELD data sheet

11.3 Throttle valve

Throttle valves are used

- to reduce the lever motion of the clamping lever,
- to improve the synchronism of several hinge clamps.

This application is only possible for connection through drilled channels.

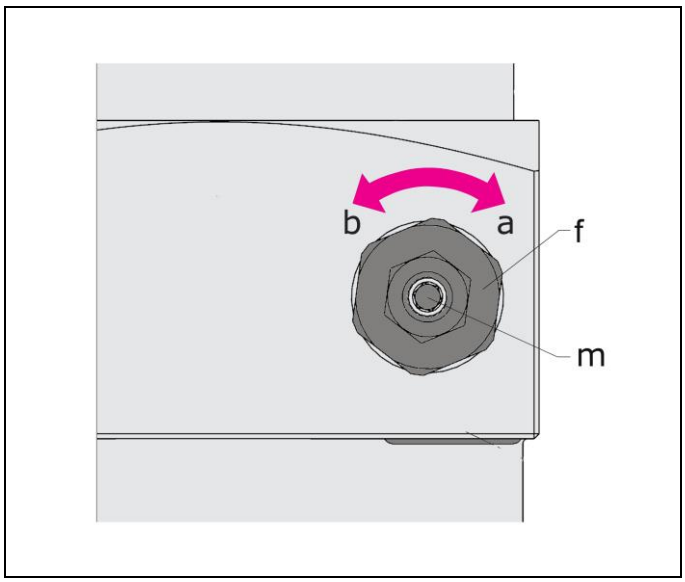

Fig. 14: Throttle valve

f	Throttle valve	m	Adjustment screw with hexagon socket 2.5 mm

11.4 Setting the throttle valve

NOTICE

Throttling

If throttling is too strong, the back pressure can trigger premature switching of pressure switches and sequence valves.

Tightening torques

For tightening torques, see data sheet.

Remove the protection cap from the throttle valve. To throttle the retracting or extension speed of the piston, turn the adjusting screw (**m**) in direction **a** using a 2.5 mm Allen key. To increase the extension speed, turn the adjusting screw (**m**) in direction **b**. After all settings have been made, place the protection cap back on the throttle valve (**f**).

11.5 Sealing for holder

If a sealing for the holder/basic fixture is necessary, we recommend using an O-ring.

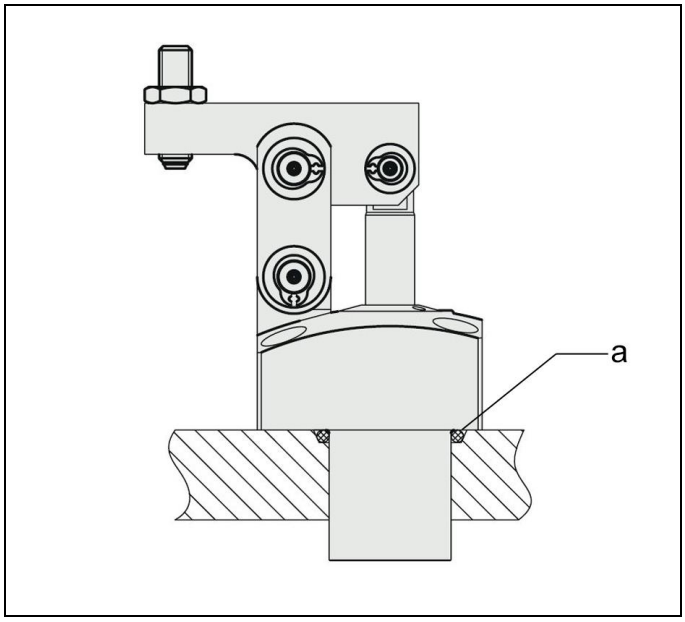

Fig. 15: Sealing for holder

a	O-ring

NOTICE

Hinge clamp

Reworking of the hinge clamp is not permitted.

O-rings

O-rings, see data sheet B18251.

12 Technical characteristics

General characteristic

Type	Maximum operating pressure [bar]	Maximum clamping force [kN]
1825-1XXX	250	3,8
1825-2XXX	250	9,7
1825-3XXX	250	14,4
1825-4XXX	250	21,5

Proposal, tightening torques for screws of tensile strength 8.8, 10.9, 12.9

NOTE

The indicated values are approximate values and have to be interpreted according to the user's application!

See note!

Thread	Tightening torque [Nm]		
	8.8	10.9	12.9
M3	1,3	1,8	2,1
M4	2,9	4,1	4,9
M5	6,0	8,5	10
M6	10	15	18
M8	25	36	45
M10	49	72	84
M12	85	125	145
M14	135	200	235
M16	210	310	365
M20	425	610	710
M24	730	1050	1220
M30	1,450	2100	2450

Note: Valid for workpieces and set screws made of steel with metric thread and connecting surface dimensions as per DIN 912, 931, 933, 934 / ISO 4762, 4014, 4017, 4032

In the table values for tightening torques the following is considered:

Design steel/steel, friction value μges = 0.14 - not oiled, utilisation of the minimum yield point = 90%.

NOTE

Further information

- For further technical data see ROEMHELD data sheet. B18251

13 Storage

⚠ CAUTION

Damage due to incorrect storage of components

In case of improper storage, the seals can embrittle and resinification of the anti-corrosive oil or corrosion on/in the element can occur.

- Storage in the packaging and moderate environmental conditions.
- The product must not be exposed to direct sunlight, since UV light may cause serious damage to the seals.

The elements are tested by default with mineral oil. The exterior of the elements is treated with a corrosion inhibitor.
The oil film remaining after the test provides for a six-month interior corrosion protection, if stored in dry and uniformly tempered rooms.
For longer storage times, the element has to be filled with a non-resinifying corrosion inhibitor and the outside surfaces must be treated.

14 Disposal

Hazardous to the environment

Due to possible environmental pollution, the individual components must be disposed only by an authorised expert company.

The individual materials have to be disposed as per the existing regulations and directives as well as the environmental conditions.
Special attention has to be drawn to the disposal of components with residual portions of hydraulic fluids. The instructions for the disposal at the material safety data sheet have to be considered.
For the disposal of electrical and electronic components (e.g. stroke measuring systems, proximity switches, etc.) country-specific legal regulations and specifications have to be kept.

15 Declaration of manufacture

Manufacturer

Römheld GmbH Friedrichshütte
Römheldstraße 1-5
35321 Laubach, Germany
Tel.: +49 (0) 64 05 / 89-0
Fax: +49 (0) 64 05 / 89-211
E-mail: info@roemheld.de
www.roemheld.com

Responsible person for the documentation:
Dipl.-Ing. (FH) Jürgen Niesner, Tel.: +49(0)6405 89-0.

Declaration of manufacture of the products

They are designed and manufactured in line with the relevant versions of the directives **2006/42/EC**(EC MSRL) and in compliance with the valid technical rules and standards.
In accordance with EC-MSRL, these products are components, that are not yet ready for use and are exclusively designed for the installation in a machine, a fixture or a plant.

According to the pressure equipment directives the products are not to be classified as pressure reservoirs but as hydraulic placing devices, since pressure is not the essential factor for the design, but the strength, the inherent stability and solidity with regard to static or dynamic operating stress.

The products may only be put into operation after it was assessed that the incomplete machine / machine, in which the product shall be installed, corresponds to the machinery directives (2006/42/EC).

The manufacturer commits to transmit the special documents of the products to state authorities on request.
The technical documentation as per appendix VII part B was prepared for the products.

Laubach, 05.11.2024