



## Flow-control swivel banjo coupling

adjustable, max. operating pressure 500 bar



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### 1 Description of the product

#### Application

Flow-control swivel banjo couplings are used to regulate the moving speed of hydraulic cylinders.

### 2 Validity of the documentation

This document applies to the following products:

Flow-control swivel banjo couplings of the data sheet C 2.9501.  
The following types or part numbers are concerned:

#### Version A

- 9208 181

#### Version B

- 9208 182

### 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

### **DANGER**

#### **Danger of life / heavy health damages**

Stands for an imminent danger.

If it is not avoided, death or very severe injuries will result.

### **WARNING**

#### **Personal damage**

Stands for a possibly dangerous situation.

If it is not avoided, death or very severe injuries will result.

### **CAUTION**

#### **Slight injuries / property damage**

Stands for a possibly dangerous situation.

If it is not avoided, minor injuries or property damages can be the consequences.



#### **Mandatory sign!**

The symbol stands for important information, necessary protection equipment, etc.

### **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

Flow-control swivel banjo couplings are used to regulate the moving speed of hydraulic cylinders.

Flow control swivel banjo couplings reduce the flow rate in hydraulic lines. They must not be used as shut off valve.

In addition, use in compliance with the intended purpose includes:

- Use within the capacity limits specified in the technical data (see data sheet).
- Use as described in this operating manual.
- Qualified and trained personnel for the corresponding activities.
- Mounting of spare parts only with the same specifications as the original part.
- Use only within closed, low-dust rooms

### 6.2 Misapplication

### **WARNING**

#### **Injuries, material damages or malfunctions!**

- Do not modify the product!

The use of these products is not admitted:

- For domestic use.
- On pallets or machine tool tables in primary shaping and metal forming machine tools.
- If due to physical / chemical effects (vibrations, welding currents or others) damages of the products or seals can be caused.
- In machines, on pallets or machine tool tables that are used to change the characteristics of the material (magnetise, radiation, photochemical procedures, etc.).
- In areas for which special guidelines apply, especially in installations and machines:
  - For the use on fun fairs and in leisure parks.
  - In food processing or in areas with special hygiene regulations.
  - For military purposes.
  - In mines.
  - In explosive and aggressive environments (e.g. ATEX).
  - In medical engineering.
  - In the aerospace industry.
  - For passenger transport.
- For other operating and environmental conditions e.g.:
  - Higher operating pressures than indicated on the data sheet or installation drawing.
  - With hydraulic fluids that do not correspond to the specifications.

- Higher flow rates than indicated on the data sheet or installation drawing.

- For use as safety component with safety function.

**Special solutions are available on request!**

## 7 Assembly

### **⚠ DANGER**

**Sudden movement of the hydraulic drives in case of incorrect disassembly**

Serious injury or death

- depressurise the hydraulic system,
- carry out safety measures to prepare for maintenance.

### **⚠ 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 falling parts!**

- Keep hands and other parts of the body out of the working area.
- Wear personal protection equipment!

**Poisoning due to contact with hydraulic oil!**

Wear, damage of the seals, ageing 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 Flow control swivel banjo coupling G1/4

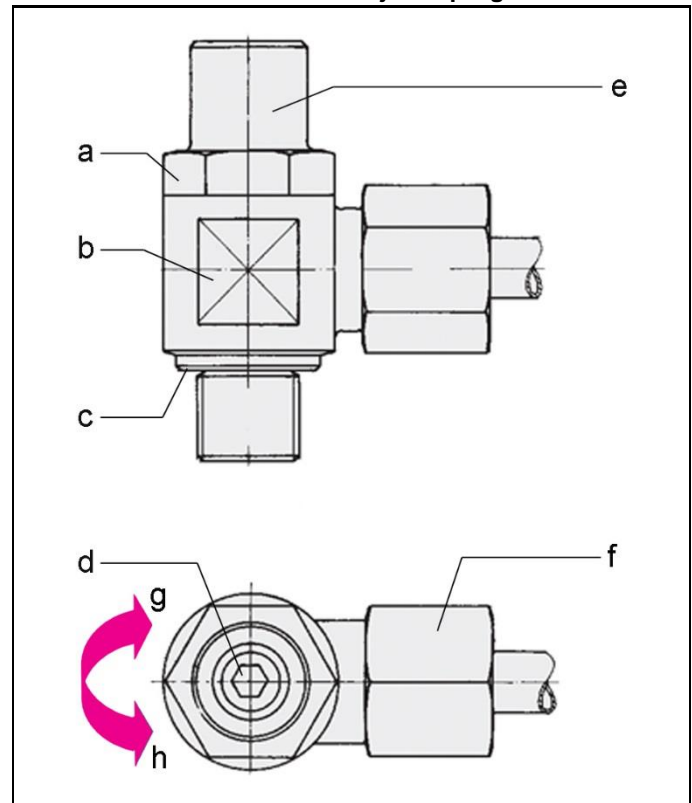


Figure 1: Flow control swivel banjo coupling G1/4

a Wrench flat SW 19	e Marking A or B
b Wrench flat SW 22	f Union nut SW19
c Elastic sealing	g Direction of rotation close
d Adjusting screw SW 4	h Direction of rotation open

## 7.2 Connection of the hydraulic equipment

1. Connect hydraulic lines to qualifying standards and pay attention to scrupulous cleanliness!

### **i NOTE**

#### Hydraulic connection

When tightening the fittings, it is essential to back up with a suitable tool.

#### 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.

- Swarf or contamination in the hydraulic oil lead to increased wear or damage at the guides, running surfaces and seals. The maximum operating pressure and the admissible flow rate of the valve must not be exceeded.
- Use only hydraulic oil HLP32 as per DIN51524.

### 7.3 Version and hydraulic symbol

#### Version A

Flow control of the oil flow from pipe or hose connection to thread G 1/4. Free flow in opposite direction.

#### Application

Moving speed regulation of individual cylinders, e.g. swing clamps. Each cylinder connection is equipped with a flow-control swivel banjo coupling.

The oil flow can be divided more evenly this way, however, it will take more time to adjust it.

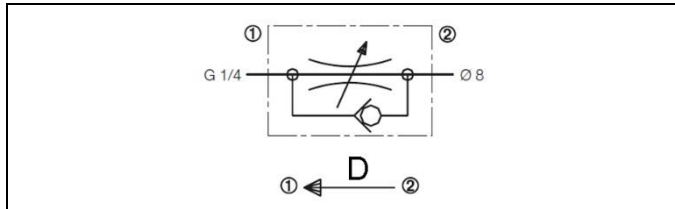


Figure 2: Hydraulic symbol version A

#### Version B

Flow control of the oil flow from thread G 1/4 to pipe or hose connection. Free flow in opposite direction.

#### Application

Moving speed regulation or flow control for cylinder groups. The flow-control swivel banjo coupling is either directly screwed into the mounting plate at the power unit or into a distributor bar.

The disadvantage is that the connected cylinders with different load have different speed.

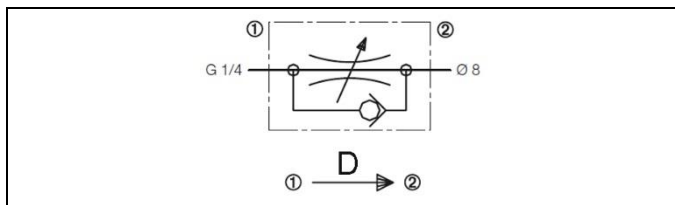


Figure 3: Hydraulic symbol version B

d	Throttle direction
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## 8 Start up

### ⚠ WARNING

#### Injuries due to misuse, incorrect operation or abuse!

Injuries can occur if the product is not used within the intended use and the technical performance data.

- Before start up, read the operating instructions!

#### Troubles of functioning

Protect the valve against penetration of swarf, otherwise the clamping force of a connected clamping cylinder is possibly no longer guaranteed.

#### Swarf in the hydraulic oil

Swarf in the hydraulic oil can damage the valve seat so that an immediate pressure drop can occur in the clamping system.

### ⚠ CAUTION

#### Operating pressure should not exceed

The max. operating pressure must not be exceeded (see technical characteristics).

## 9 Maintenance

### ⚠ WARNING

#### Burning due to hot surface!

- In operating conditions, surface temperatures of more than 70 °C can appear at the product.
- All maintenance and repair works must only be effected in cooled mode or with safety gloves.

### 9.1 Cleaning

Check regularly, but at least once a year, whether the hydraulic connections are damaged (visual control). If external leakages occur, take the system out of service and repair it.

Clean the device surface (dust deposits and dirt) at regular intervals, but at least once a year.

## 10 Trouble shooting

Fault	Cause	Remedy
Flow control swivel banjo coupling leaky	Flow control swivel banjo coupling damaged by swarf	Replace flow control swivel banjo coupling Replace elastic seal

## 11 Accessory

### ℹ NOTE

#### Accessories

- See data sheet.

## 12 Technical characteristics

Part no.	9208 181/9208 182
Max. operating pressure	500 bar
Hydraulic oil	HLP as per DIN 51524

### ℹ NOTE

#### Further information

- For further technical data see ROEMHELD data sheet. C29501

## 13 Storage

### ⚠ CAUTION

#### Storage of components!

- The product may not be exposed to direct solar radiation, because the UV light can destroy the seals.
- A storage differing from the storage conditions is inadmissible.
- In case of improper storage, the seals can embrittle and resinification of the anti-corrosive oil or corrosion at the element can occur.

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  
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### **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 and EN 982, 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.

Responsible person for the documentation:  
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**Römheld GmbH  
Friedrichshütte**

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