Quick-Disconnect Coupling

one-hand operation “Push–Pull” ND 5, connecting thread G 1/4,max. operating pressure 500 bar

Figure 1: Coupling complete

Figure 2: Nipple with dust cap

Figure 3: Coupler with dust cap

Figure 4: Coded coupling, complete

Table of contents

1 Description of the product

The quick-disconnect coupling is a coupling of sturdy design which locks automatically after uncoupling.

The coupling and uncoupling process can be effected when both coupling parts are depressurised.

The displacement of the sleeve to the corresponding coupling or uncoupling direction enables an easy one-hand operation.

2 Validity of the documentation

Quick-disconnect coupling of data sheet F 9.381.
The following types or part numbers are concerned:

- 9384 006, 106, 206, 300, 400
- 9384-7X5, 7X6, 7X7, 600
  X = Colour key
  1 = black
  2 = white *
  3 = red
  4 = yellow
  5 = green
  6 = blue

*The white coded nipple is provided with a preloaded valve (VSV) which limits a possible pressure built-up through internal leakages in the hydraulic clamping elements to approx. 5 bar. The pre-loaded valve is not effective in coupled mode.

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 Safety instructions

⚠ 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

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.

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

Quick-disconnect couplings are used for coupling and uncoupling of hoses.

The couplings are designed for manual operation and are to be operated in depressurised mode only.

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 vibrations or other physical / chemical effects 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 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.

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.

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

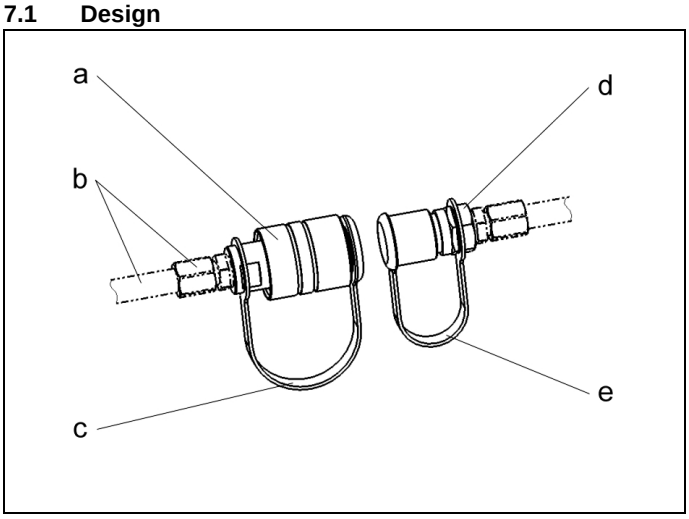

Figure 5: Components and accessories

a	Knurled sliding sleeve of the coupler The coded couplings are marked by colour and differ in addition by two pins. These pins match only to the corresponding slot in the nipple.	b	Fitting with hose (not included in the delivery)
		c	Dust cap for coupler (accessory)
		d	Nipple
		e	Dust cap for nipple (accessory)

7.2 Installation

1. Design hydraulic lines as per operating pressure!

Note

See also ROEMHELD data sheets F 9.300 (pipes) and F 9.360 (hoses).

2. Connect hydraulic lines to qualifying standards, pay attention to scrupulous cleanness!
3. Do not use sealing tape, copper rings or coned fittings.
4. Clean tubes and hoses, e.g. with cleaning agents.
5. Check sealing of the lines!
6. Use hydraulic oil as per ROEMHELD data sheet A 0.100.

8 Operation

⚠ WARNING

Injuries due to non-compliance of the operating instructions!

- The product may only be operated, if the operating instructions - especially the chapter "Safety instructions" have been read and understood.

⚠ CAUTION

Risk of injury!

Due to spring-loaded components hand or fingers can be squeezed.

- Wear personal protection equipment!

Material damage

Product and customer's installation can be damaged due to penetrating dirt.

- last clean the nipple with compressed air before coupling is made.

Function

The quick-disconnect coupling is a coupling which locks automatically after uncoupling. The coupling must only be operated in depressurised mode!

Displacement of the sliding sleeve in the corresponding coupling or uncoupling direction loosens the balls which are used for locking.

Couplings coded by colour are used to prevent the risk of confusion.

Only couplers and nipples of the same colour match.

Leakages during coupling are normal due to the design.

Coupling "Push"

- Advance manually the knurled sliding sleeve of the coupler
- Advance the coupler against the spring force of both sealing cones up to the mechanical stop
- Release sliding sleeve
- Check tight seat of the coupling

Uncoupling "Pull"

- Retract manually the knurled sliding sleeve of the coupler
- Balls of the locking will be released
- Both coupling parts will be released by spring force.

Note

To avoid penetration of contamination into the system, connect also the dust caps in coupled mode. In uncoupled mode protect coupler and nipple with dust caps. (See figure coupling complete)

9 Maintenance

9.1 Cleaning

⚠ CAUTION

Avoid damages of the moved components

Avoid damages of the moved components (rods, plungers, bolts, etc.) as well as of wiper and seal.

Aggressive cleaning agents

The product must not be cleaned with:

- Corrosive or corroding components or
- Organic solvents as halogen or aromatic hydrocarbons and ketones (cellulose thinner, acetone, etc.),

because this can destroy the seals.

The element must be cleaned at regular intervals. Especially the area of the coupling mechanism and the seals has to be cleaned of swarf and other liquids.

In the case of heavy contamination, the cleaning has to be made in shorter intervals.

9.2 Regular checks

1. Check tightness of hydraulic connections (visual control).
2. Leakage check at the coupling and the nipple.
3. Check inside and outside for run marks and damages.
   Run marks can be an indication for a contaminated hydraulic system or an inadmissible load of the product.
   Replace the product, if required.
4. Effect seat control of the coupling on the nipple.

9.3 Exchange seal kit

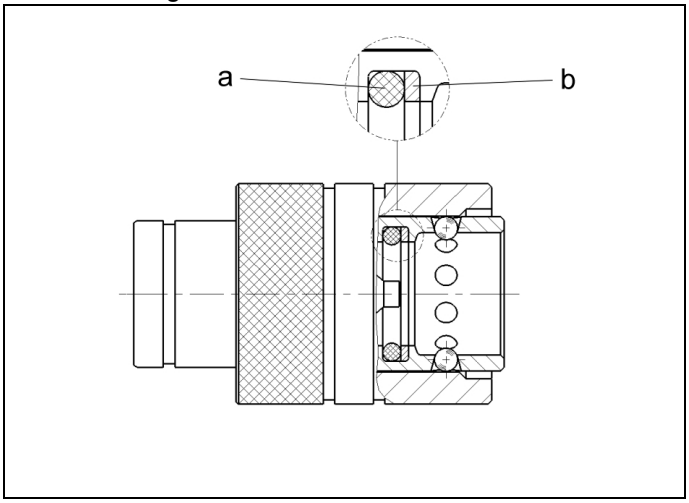

Figure 6: Position of the seal kit.

a O-ring	b Back-up ring

The exchange of the seal kit has to be made in case of external leakages. For high availability we recommend to regularly change the seals, but at least after 2 years.

The seal kit is available as spare part (see data sheet).

Exchange seal kit

Exchange the seals only through the available opening.
Avoid disassembly of the product.

Procedure

- Remove old O-ring and back-up ring
- Clean the slot of contamination and swarf
- Insert O-ring and back-up ring.
  Pay attention to correct position.

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
Force for coupling too high, coupling not possible.	Hydraulic line pressurised.	Unpressurise. Effect coupling only in unpressurised mode.
Sliding sleeve does not lock.		
Sliding sleeve does not lock.	Wear of mechanism.	See maintenance, replace , if required.
oil escapes between nipple and coupling.	Wear of the seals	Replace sealing rings.

11 Technical characteristics

NOTE

Further information

- For further technical data see ROEMHELD data sheet.

12 Accessory

NOTE

Accessories

- See data sheet.

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

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Declaration of manufacture of the products

Quick-disconnect coupling of data sheet F 9.381.
The following types or part numbers are concerned:

- 9384 006, 106, 206, 300, 400
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  X = Colour key
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*The white coded nipple is provided with a preloaded valve (VSV) which limits a possible pressure built-up through internal leakages in the hydraulic clamping elements to approx. 5 bar. The pre-loaded valve is not effective in coupled mode.

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
Laubach, 04.12.2013