



Hydraulic high-pressure hoses

assembled ready for connection, max. operating pressure 250/500 bar



1 Description of the product

Application

High-pressure hoses are used for energy and signal transmission in hydraulic systems.

Especially when connecting movable elements, but also for the connection of hydraulic subassemblies which are not fixed on a common base, e.g. power units and clamping fixtures.

2 Validity of the documentation

This document applies to the following products:

Hydraulic high-pressure hoses of data sheet F 9.361. The following types or part numbers are concerned:

High-pressure hose

- 93751 00500, 01000, 01600, 02500
- 93752 00500, 01000, 01600, 02500
- 93206 00500, 01000, 01600, 02500
- 93706 00500, 01000, 01600, 02500

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.

2 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.

Table of contents

1 Description of the product	1
2 Validity of the documentation	1
3 Target group of this document	1
4 Safety instructions	1
5 For your safety	2
6 Application	2
7 Installation	3
8 Maintenance	4
9 Technical characteristics	5
10 Storage	5
11 Disposal	5
12 Declaration of manufacture	5

⚠ 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.

ℹ 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

⚠ WARNING

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.

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 dismantling 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.

⚠ CAUTION

Operating pressure of 500 bar does not exceed

The maximum operating pressure of 500 bar must not be exceeded.

High forces are generated!

With hydraulic pressure very high forces are generated.

- The fixture or machine must be in the position to compensate these forces.

ℹ Note

Qualification of personnel

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

6 Application

6.1 Intended use

Hydraulic high-pressure hoses are used for energy and signal transmission in hydraulic systems.

This applies in particular to the connection of movable elements, but also for the connection of hydraulic subassemblies, that are not fixed on a common base, e.g. power units and clamping fixtures.

Furthermore the following are possible uses:

- Use within the capacity indicated in the technical characteristics (see data sheet).
- The operation with the permitted hydraulic oils (see data sheet A 0.100).
- 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!

- 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 dismantling 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

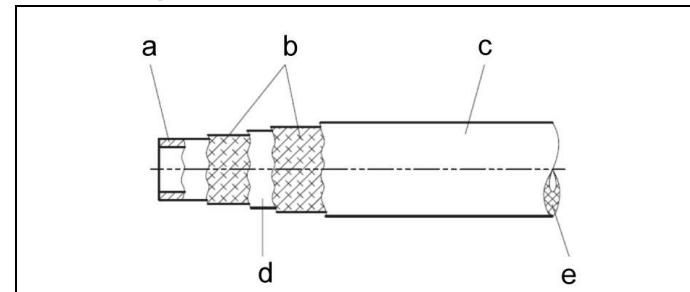


Figure 1: Hose structure

a	Inner tube	d	Insulation layer
b	Inlay	e	Hose wall
c	Cover		

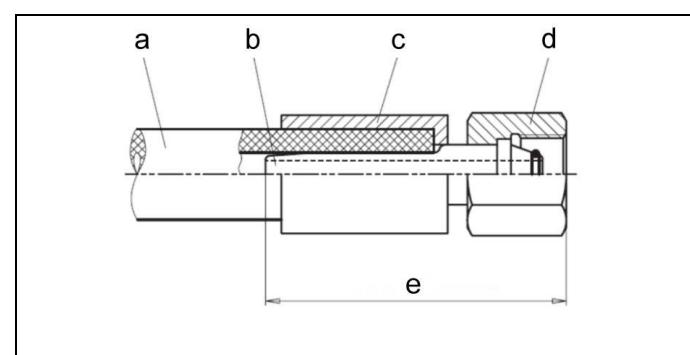


Figure 2: Hose union

a	Hose	d	Union nut
b	Nipple	e	Hose fitting
c	Holder		

Marking hose

On the hose there is the following marking:

- Name or code of the manufacturer
- Number of European standard
- Type
- Nominal diameter
- Quarter and the last two figures of the year of manufacture

Marking fitting

On the fitting there is the following marking:

- Name or code of the manufacturer
- Month of manufacture
- The last two digits of the year of manufacture
- Nominal pressure PN of the hose fitting
- Part number of the complete hydraulic hose

ⓘ Note

We deliver only completely pressed high-pressure hoses with mounted union nut.

Pipe sockets with removable cutting ring and union nut are no longer allowed.

7.2 Installation

Hydraulic high-pressure hoses may only be mounted to fittings as per DIN 2553, see also our data sheet F 9.300.

1 Note

Do not use grease, since grease particles could enter into the oil circuit.

Mounting instructions

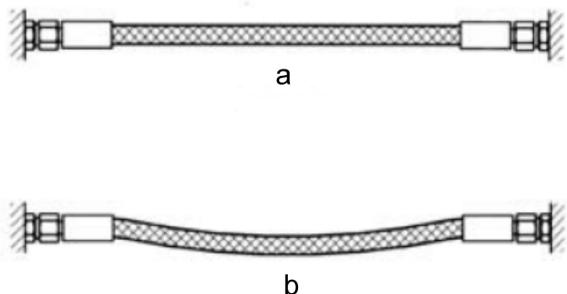


Figure 3: Upsetting or tensile stress

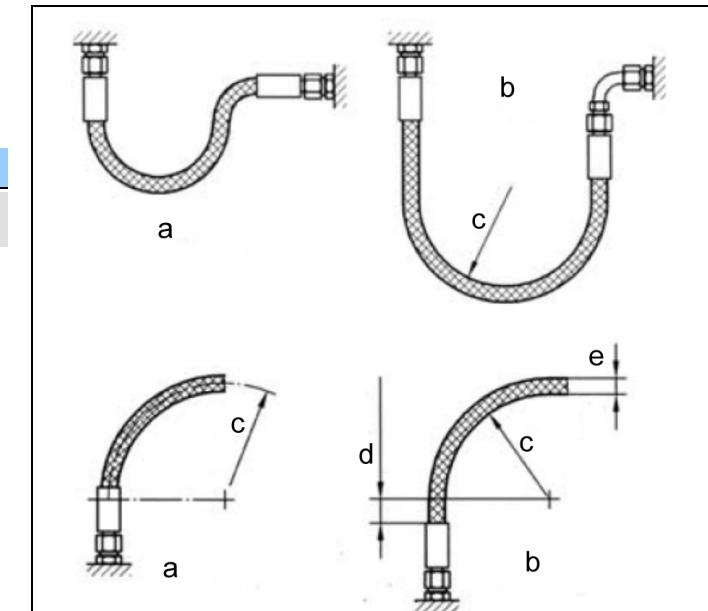


Figure 6: Bending radii

a incorrect
 b correct

c min. bending radius
 d 1.5xe

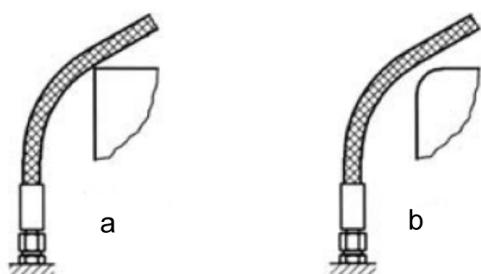


Fig. 4: mechanical damage

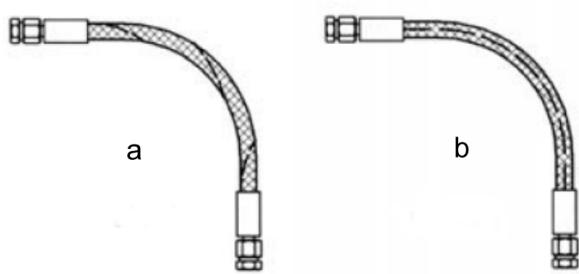


Figure 5: Torsional stress

8 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.

8.1 Cleaning

The product must be cleaned from dirt, swarf and liquids at regular intervals.

8.2 Regular checks

General information

- Check tightness and leakage of hydraulic connections (visual control) every day.
- An expert has to check all hydraulic hoses at least once a year if they are still work-proof. Assessed damages have to be repaired immediately.
- The hydraulic hoses of the device have to be exchanged as per BGR 237 at least after 6 years by new ones.

9 Technical characteristics

9.1 Dimensions / Technical characteristics

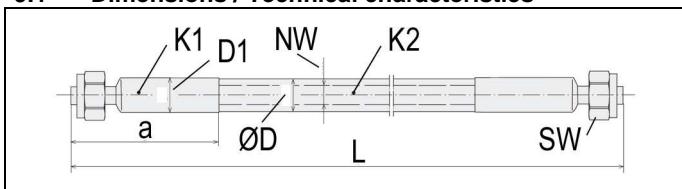


Figure 7: Dimensions / Technical characteristics

K1 Marking fitting	K2 Marking hose
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High-pressure hose	ND	4	4
Max. operating pressure	[bar]	250	500
Connection size		8L	8S
Union nut		m8L	m8S
SW	[mm]	17	19
D hose Ø	[mm]	9.5*	9.5*
D1 holder Ø	[mm]	13	13
Min. bending radius	[mm]	50	50
Fitting length a	[mm]	42	42
Minimum length	[mm]	150	150
Specific volume increase per bar and meter	$\frac{cm^2}{bar \cdot m}$	0.006	0.006
Part-no.		93751 XXXX	93752 XXXX
Preferred lengths: L = [mm]	500	93751 00500	93752 00500
	1000	93751 01000	93752 01000
	1600	93751 01600	93752 01600
	2500	93751 02500	93752 02500

High-pressure hose	ND	6.3	6
Max. operating pressure	[bar]	250	500
Connection size		8L	8S
Union nut		m8L	m8S
SW	[mm]	17	19
D hose Ø	[mm]	15	17.5
D1 holder Ø	[mm]	19	19
Min. bending radius	[mm]	100	100
Fitting length a	[mm]	50	52
Minimum length	[mm]	200	200
Specific volume increase per bar and meter	$\frac{cm^2}{bar \cdot m}$	0.008	0.006
Part-no.		93751 XXXX	93752 XXXX
Preferred lengths: L = [mm]	500	93206 00500	93706 00500
	1000	93206 01000	93706 01000
	1600	93206 01600	93706 01600
	2500	93206 02500	93706 02500

Hydraulic oils

Admissible hydraulic oils (see data sheet A 0.100).

Admissible environmental and operating temperatures

Environment: -20 up to +60 °C

Hydraulic oil: max. +63°C

Note

Further information

- For further technical data see ROEMHELD data sheet.

10 Storage

For protection against mechanical damages, leave the hydraulic high-pressure hoses in the original packing until mounting.

Storage temperature range -40 °C to +70 °C

Max. storage period 2 years.

11 Disposal

DANGER

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.

12 Declaration of manufacture

Manufacturer

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Declaration of manufacture of the products

Hydraulic high-pressure hoses of data sheet F 9.361. The following types or part numbers are concerned:

High-pressure hose

- 93751 00500, 01000, 01600, 02500
- 93752 00500, 01000, 01600, 02500
- 93206 00500, 01000, 01600, 02500
- 93706 00500, 01000, 01600, 02500

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.

Note

Directives for pressure devices

The offered products correspond to the regulations of article 3 paragraph 3 of the directives for pressure devices 97/23/EG and are not allowed to bear the CE sign.

Responsible person for the documentation:
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