



General operating manual

for assembly, commissioning and maintenance
of valves and hydraulic manifolds

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Important information

Range of validity of the operating manual

The present general operating manual exclusively refers to hydraulic components (in particular valves, manifolds, pressure sensors etc; referred to as valves in the following; but also analogously applies to electronic components) from WEBER-HYDRAULIK ValveTech GmbH. The following operating manual is aimed at the operator of the valves and the installation manufacturer and user. Among other things, it contains important safety information that should be known by the operator of the valves.

The indications of this general operating manual are to be inserted in the operating manual of the superordinate complete system. This operating manual should be kept accessible and always close to the valve or the superordinate machine installation.

Liability declaration

The declarations on liability for defects and claims for damages are listed in the general terms and conditions of WEBER-HYDRAULIK ValveTech GmbH. These are available to the customer at the latest since the conclusion of the contract.

Liability exclusion

The general terms and conditions apply. Among others, warranty and liability claims for personal and property damages are excluded if they can be traced back to one or more of the following causes:

- inappropriate use of the valve
- inadequate assembly, disassembly, commissioning and maintenance of the valve
- disregarding the operating manual
- disregarding the technical specifications of the valve
- unauthorized constructive modifications of the valve
- inappropriately conducted repairs
- action of foreign objects and acts of God

WEBER-HYDRAULIK ValveTech does not accept liability for incorrect, incomplete or missing information. We reserve the right to modifications.

Intended use

The commissioning, application and use of the valves may only occur as described in this operating manual. The valves may only be operated as components of a superordinate complete system, e.g. a machine installation and only in industrial domains as per the DIN EN ISO 4413 standard (Hydraulic fluid power - General rules and safety requirements for systems and their components).

The valves are **not approved** for the use in any of the following applications without the explicit written consent of WEBER-HYDRAULIK ValveTech:

- nuclear facility applications
- ordnance equipment
- aircraft or aerospace applications
- steering or braking systems for vehicles
- amusement rides (e.g. rollercoaster)

Intended use

- in explosive or hazardous environments, unless it is explicitly allowed by an indication of ATEX conformity

The valves are only planned for the use with hydraulic oils based on mineral oil under observation of the filtering requirements and the respective max. operating pressures, volumetric flows and temperatures (see respective data sheet of the valves). The use with other fluids is subject to the agreement of WEBER-HYDRAULIK ValveTech. Any use beyond this is not admissible.

The type label may not be removed or painted over.

All valves are checked by WEBER-HYDRAULIK ValveTech before delivery. Non-verified valves may not be installed.

Responsibility of the operator

The operator and user of the valves is responsible for the correct use. Indications in this operating manual pertaining to use, commissioning, storage and maintenance of the valves are thereby to be respected. The manufacturer and operator of the superordinate complete system, e.g. a machine installation, is responsible for the compliance with the applicable national and international safety and accident prevention measures for the specific application.

Selection and qualification of personnel

All works with or on the valves must be performed by trained and instructed persons with the required knowledge and experience. Works on electrical connections and electronic components may only be performed by an authorized expert electrician.

Explanation of symbols

Safety indications in this operating manual are marked with a symbol. The individual indications are introduced by signal words that express the extent of the danger. Indications on avoidance of dangers follow.

**DANGER**

Indicates the immediate risk of death and serious bodily harm.

**WARNING**

Indicates the risk of serious injury.

**CAUTION**

Indicates the risk of slight injury or material damages.

Important safety instructions

Following the safety indications and the applicable national and international safety directives helps in avoiding accidents, faults and errors.

When designing machines and using valves, the application-specific safety and accident prevention directives are to be respected, such as e.g. DIN EN ISO 12100 (Safety of machinery - General principles for design - Risk assessment and risk reduction) or DIN EN ISO 4413 (Hydraulic fluid power - General rules and safety requirements for systems and their components).



DANGER

Risk of death or injury due to squirting hydraulic oil under high pressure.

- Before working on valves, release pressure from hydraulic installation.
- Check pipes, tubes and screw connections of the hydraulic installation regularly.
- Immediately remedy leaks.
- Do not modify valves.



WARNING

Health hazard through skin contact with or swallowing of hydraulic oils.

- Before working on valves, drain reservoirs which are located on a higher level.
- If hydraulic oil was swallowed or has entered the bloodstream, immediately contact a physician. Do not induce vomiting. If necessary, bind limbs.



WARNING

Health hazard due to inhalation of oil mist.

- Do not directly inhale oil mists, carry respiratory protection if necessary.



CAUTION

Danger of contamination of water and soil by leaking hydraulic oil.

- Use collection containers.
- Dispose hydraulic oil adequately.
- Immediately remedy leaks.



CAUTION

Damages to the valve due to immersion in liquids.

- Do not plunge valves in liquids.

NOTE

When manipulating hydraulic oils, the respective safety regulations applicable for the product must be observed.

Transportation and storage

Packaging and transportation

- Carefully pack and unpack the valves.
- Immediately notify any transportation damages to the transporter and WEBER-HYDRAULIK ValveTech in writing.
- Keep the original packaging.
- Only transport valves in adequate closed original packaging.
- Always transport valves with dust protection.

Storage conditions

- Storing the valves:
 - at low air humidity (<65%)
 - at temperatures from -10 to +60 °C
 - without direct heat sources or sunlight
 - without exposure to ozone or ionizing radiation
 - only in adequate closed original packaging
 - always with dust protection

WEBER-HYDRAULIK ValveTech valves are usually checked with hydraulic oil in the factory and thereby protected against corrosion. If the valves were stored for more than 1 year, check for damages before assembly. If necessary, the valves can be sent to WEBER-HYDRAULIK ValveTech for inspection at added costs.

- Store seals (NBR) for max. 7 years.

NOTE

Oil residues can lead to resinification on the valves due to longer storage times.

- Remove any resinification before use.

Assembly and commissioning

The commissioning, application and use of the valves may only occur as described in this operating manual.



DANGER

Serious injury, burns or fires due to squirting hydraulic oil.

Before all works on the valves:

- Turn off the machine.
- Protect the machine against switching back on:
 - Lock main command installation and pull out key.
 - Append warning sign on the main switch.
- Switch off voltage to all lines in the hydraulic circuit.
- Release pressure from all pressure pipes and accumulators in the hydraulic circuit.

**CAUTION**

Risk of burns due to very hot valves and hydraulic connection tubes.

- Carry adequate work protection equipments (work gloves, protective goggles).
- Let all components cool off before beginning work.

Assembly conditions

- Ensure that valves or valve components remain undamaged.
 - Do not install damaged valves or valve components!
- Ensure that all seals are available and undamaged.
 - Do not install damaged seals!
- Do not directly assemble valves onto machine parts that are exposed to strong vibrations or shocks.
- Do not install valves on units that move in a jerky fashion and that do not correspond to the direction of movement of the piston.
- Assemble the valve so that no thermal overheating may occur.

Assembly

- Thoroughly clean the assembly surface/screw holes.
- Remove dust protection from the hydraulic connection.
- Assemble seals.
- Attach valve.
- Observe installation torques in the data sheet of the respective valve.
- **Slip-in valve:** tighten assembly screws in a non-distorted manner. Tighten screws crosswise.
- **Cartridge-valve:** tighten the valve at the screwing hexagon.
- Determine switch position of the valve.

NOTE

When installing valves with electrical connections or electronic components, observe the applicable directive (VDE directives or similar).

For the rated voltage it must be noted that the devices correspond to protection class III. Electrical equipment of protection class III may be only connected to low voltage systems (PELV, SELV)(IEC 60364-4-41).

Connection

- Check adequate state of the valves.
 - If necessary, remove residues or pollution.
- Connect connection lines. Observe installation indications in the data sheet of the valve.
- Ensure that all tubes and pipes are connected.
- Ensure that all screws and connections are correctly tightened.
- Fill hydraulic installation/valve with hydraulic oil.
- Bleed hydraulic installation at the highest point.
- The valve is ready for operation.

NOTE For correct bleeding of the hydraulic installation, observe the respective operating manual of the machine installation.

Operation The valves are components of a superordinate complete system.

- In order to operate this system or the superordinate machine installation, observe the corresponding operating manual.

**Decommissioning/
disassembly**

- Ensure that the hydraulic installation is pressure-less and at zero potential. If necessary, observe available pressure accumulators.
- Ensure that no components come loose or may move when letting off hydraulic oil.
- Disconnect connection lines.
- Collect exiting hydraulic oil with a container.
- Secure components that are to be held in position by the valves.
- Unscrew assembly screws of the valve.
- Remove valve and seals.

**Maintenance and
repairs**

Replacement components and sealing kits may be obtained from WEBER-HYDRAULIK ValveTech. Only use the sealing kits indicated on the data sheet of the valve.

Exchange seals

- Disassemble valves.
- Remove all seals and dispose them adequately.
- If necessary, clean valve.
- Carefully insert new seals and ensure fitting accuracy.
- Reattach valve. Thereby ensure that no seal slips out of place.
- Observe installation torques in the data sheet of the respective valve.
- Tighten assembly screws in a non-distorted manner crosswise or tighten the valve at the screwing hexagon.
- Determine switch position of the valve.

Damages/Faults

- Immediately notify the responsible person in case of damages or faults on valves or on the machine installation.
- If necessary, switch off the machine installation and secure it.

Repairs and modifications or retrofit of valves are to be exclusively performed by WEBER-HYDRAULIK ValveTech.

Disposal

- Disassemble valves.
- Drain valve until no more hydraulic oil drips out.
 - Collect hydraulic oil and dispose it adequately.
- Dispose the seals appropriately.
- Dispose the valve as metal waste.
- Dispose electronic components adequately as per the applicable regulations.

Errors and troubleshooting

- Leaks*
- If leaks occur, stop the machine.
 - Check the causes of the leaks by trained expert personnel.
 - If the valve is leaky, exchange the seals or the complete valve.
 - Do not operate the machine further with faulty valves!
- Other*
- Contact customer service.

Technical Data

- The technical data may be found in the corresponding data sheets/dimension sheets of the valves.



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