WEBER-HYDRAULIK

General operating instructions

for installing, setting up and maintaining hydraulic components

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Important information

Area of validity of the operating instructions

These general operating instructions refer exclusively to hydraulic components (particularly valves, valve manifolds, pressure transducers, etc., subsequently referred to just as hydraulic components, applies equally to electrical components) from WEBER-HYDRAULIK GMBH. These operating instructions are aimed at the operating company of the hydraulic components and at system manufacturers and users. Among other things, they contain important safety information of which the operating company of the hydraulic components must be aware.

The information in these general operating instructions must be added to the operating instructions for the higher-level complete system. These operating instructions must always be kept to hand and always accessible in the vicinity of the hydraulic components of the higher-level machine system.

Declaration of liability

The declarations for defect liability and compensation claims are listed in the general terms and conditions of WEBER-HYDRAULIK GMBH. These are provided to the customer at the latest when the contract is concluded. Always first contact the factory with which you established the business relationship. They are your point of contact for declarations for defect liability and compensation claims. For hydraulic components, this is normally WEBER-HYDRAULIK GMBH in Konstanz (valve components) or WEBER-HYDRAULIK GMBH in Wörth (valve manifolds).

Exclusion of liability

The general terms and conditions apply. Among other things, warranty and liability claims for personal injury and damage to property are void if they can be traced back to one or several of the following causes:

- Improper use of the hydraulic components
- Improper installation, removal, set up and maintenance of the hydraulic components
- Failing to observe the operating instructions
- Failing to observe the technical specifications for the hydraulic components
- Unauthorized structural changes to the hydraulic components
- Improperly performed repairs
- Foreign object influences and force majeure

WEBER-HYDRAULIK accepts no liability for incorrect, incomplete or missing specifications. Subject to changes.

Proper use

The hydraulic components may only be set up and used as described in these operating instructions. The hydraulic components may only be operated as part of a higher-level complete system, e.g. a machine system and only in industrial areas in accordance with standard DIN EN ISO 4413 (Hydraulic fluid power - General rules and safety requirements for systems and their components).

Proper use

Without written approval from WEBER-HYDRAULIK, the hydraulic components are **not approved** for use in the following areas:

- Nuclear applications
- Military applications
- Aerospace applications
- Steering and braking systems in vehicles
- Rides (e.g. rollercoasters)
- In explosive atmospheres unless this is explicitly stated by the ATEX conformity marking

The hydraulic components are intended for use with mineral hydraulic oils in accordance with the filtration specifications and the relevant max working pressures, flow rates and temperatures (see the relevant data sheet for the hydraulic components). Use with other media requires approval from
WEBER-HYDRAULIK. Any other use or use beyond this is not permitted. The type plate must not be removed or painted over.

Operating company responsibilities

The operating company and user of the hydraulic components are responsible for their proper use. The information in these operating instructions regarding using, setting up, storing and maintaining the hydraulic components must be complied with. The manufacturer and the operating company of the higher-level system, e.g. a machine system is responsible for complying with the national and international safety and accident prevention regulations that apply to the special application.

Staff selection and qualifications

All work with and on hydraulic components may only be performed by staff trained and instructed to do so and who have the required knowledge and experience.

Work on electrical connections and electronic components may only be performed by an authorized electrician.

Explanation of symbols

Safety information is marked with a symbol in these operating instructions. The individual pieces of information are introduced by signal words that express the extent of the danger. Hazard avoidance instructions then follow.

DANGER

Informs of an immediate risk of death and serious injuries.

WARNING

Informs of a potential risk of serious injuries.

CAUTION

Informs of a potential risk of minor injuries or damage to property.

Personal protective equipment

Personal protective equipment for working on the hydraulic unit includes:

Ear defenders

Safety shoes

Safety goggles

Protective gloves

Protective clothing

NOTE Ensure that the personal protective equipment is resistant to the hydraulic fluid used.

Important safety instructions

Following the safety instructions and the nationally and internationally applicable safety regulations helps to avoid accidents, faults and errors.

When planning machines and using hydraulic components, the application-specific safety and accident prevention regulations must be complied with, 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). Furthermore, the operating instructions, safety instructions and other specifications on dimension and data sheets for the hydraulic components and assemblies must be observed and complied with. This applies particularly to hydraulic accumulators that are subject to the European Pressure Equipment Directive (PED 2014/68).

NOTE On systems with pressure accumulators, additional hazards must be considered, since machine movements are still possible even when the hydraulic unit is switched off and lines and components may still be pressurized. Applicable directives and regulations must always be observed in this case, particularly the German industrial safety regulations (BetrSichV) and the European Pressure Equipment Directive (PED 2014/68).

DANGER

Danger of death or risk of injury due to highly pressurized hydraulic oil spraying out. A thin oil jet that penetrates skin and clothing can escape from small openings (e.g. faulty hoses, cracked pressure gage).

Danger of death or risk of injury due to bursting components or hoses flying around.

- Depressurize the hydraulic system before working on hydraulic components.
- Check lines, hoses and screw connections on the hydraulic system at regular intervals.
- Remedy leaks immediately.
- Do not modify or convert hydraulic components.

WARNING

Health risk due to risk of fire. Hydraulic components are flammable fluids. There is even a risk of fire with media that are not highly flammable.

- Select suitable extinguishers in accordance with the material safety data sheet for the hydraulic fluid used.
- Provide suitable extinguishers at the hydraulic system's installation location.

WARNING

Health risk due to skin contact or ingesting hydraulic oils.

- Empty higher tanks before working on hydraulic components.
- If hydraulic oil has been ingested, penetrated the skin due to high pressure or entered the blood circulation, consult a physician immediately. Do not induce vomiting.
- Change clothes soaked in oil immediately.
- Do not carry cleaning cloths or similar, which are soaked in oil in your clothing.
- Do not eat, drink or smoke when working on hydraulic components.

WARNING

Health risk due to inhaling oil vapors.

- Do not inhale oil vapors directly, wear a respiratory mask if necessary.

CAUTION

Risk of slipping due to escaped hydraulic oil

- Remedy leaks immediately.
- Properly remove and dispose of any hydraulic oil that has escaped.

CAUTION

Risk of contaminating water and ground due to escaped hydraulic oil.

- Use a proper collection container.
- Dispose of hydraulic oil properly.
- Remedy leaks immediately.

CAUTION

Damage to hydraulic components due to immersion in fluids.

- Do not immerse hydraulic components in fluids.

NOTE When transporting, disposing of and handling hydraulic oils, the applicable directives and regulations (e.g. working material regulation, country-specific regulations, manufacturer material safety data sheets in accordance with EC 93/112, etc.) must be observed.

Transport and storage

Packaging and transport

- Unpack and pack hydraulic components carefully.
- Report transport damage to the carrier and WEBER-HYDRAULIK in writing immediately.
- Retain the original packaging.
- Only transport hydraulic components in properly sealed original packaging.
- Observe the data or dimension sheet for bulky, heavy or otherwise difficult to handle hydraulic components and use the attachment points/threaded transport holes provided.
- Always transport hydraulic components with dust protection.

Storage conditions

- Store hydraulic components:
  - At low humidity (<65%)
  - At temperatures of -10°C to +60°C
  - Out of direct heat sources or sunlight
  - Without the effects of OZONE and ionizing radiation
  - Free of aggressive gases and vapors or corrosive substances
  - Only in properly sealed original packaging
  - Always with dust protection

WEBER-HYDRAULIK hydraulic components are generally tested with hydraulic oil in the factory and therefore protected internally against corrosion.

If the hydraulic components have been stored for more than 1 year, check for damage before installing. If necessary, the hydraulic components can be sent to the relevant WEBER-HYDRAULIK delivery factory for a chargeable inspection.

- Store seals (NBR) for no more than 7 years.

NOTE Oil residues can cause gumming on the hydraulic components if they are stored for an extended period.

- Remove gumming prior to use.

Installation and set up

The hydraulic components may only be set up and used as described in these operating instructions.

DANGER

Serious injuries, burns or fire due to hydraulic oil spraying out. Danger due to stored energy (e.g. potential energy) on machine parts.

Prior to any work on hydraulic components:

- ☐ Switch the machine off.
- ☐ Secure the machine to prevent a restart:
  - ☐ Lock the main command device and remove the key.
  - ☐ Attach a warning sign to the main switch.
- ☐ Deenergize all electrical cables in the hydraulic circuit.
- ☐ Depressurize all pressure lines and accumulators in the hydraulic circuit.
- ☐ Ensure that no machine parts can start to move due to unintended shift positions of valves or due to oil escaping.
- ☐ Lower loads, relieve springs.

CAUTION

Risk of burns due to very hot hydraulic components and hydraulic connection lines. Coils and hydraulic oil in particular can get very hot and cause serious injuries if touched.

- ☐ Wear suitable work protective equipment (heat protection gloves, safety goggles).
- ☐ Allow components to cool before starting work. Components may still be hot after switching the system off.
- ☐ In the event of burns, cool the affected skin area with water and inform a first aider or rescue service.

Installation conditions

- ☐ Ensure that hydraulic components are undamaged.
  - ☐ Do not installed damaged hydraulic components!
- ☐ Ensure that all seals are present and undamaged.
  - ☐ Do not installed damaged seals!
- ☐ Do not install the valve directly on machine parts that are subjected to strong vibrations or impacts.
- ☐ Do not install the valve on units that move suddenly and with a movement direction that corresponds to the valve's piston direction.
- ☐ Install hydraulic components so that thermal overheating cannot occur.

Installation

- ☐ Clean the installation surface/screw-in holes thoroughly.
- ☐ Remove the dust protector from the hydraulic connection.
- ☐ Fit the seals.
- ☐ Fit the hydraulic components.
- ☐ Observe the tightening torques in the data sheet for the relevant hydraulic component.
- ☐ Slip-in valve: Screw in the installation screws without tension and tighten crosswise.
- ☐ Screw-in valve: Tighten on the screw-in hexagon.
- ☐ Define the valve shift position.

NOTE When installing hydraulic components with electrical connections or electronic components, observe the applicable regulations (VDE regulations or similar).

Regarding the nominal voltage, note that the devices correspond to protection class III. Electrical equipment in protection class III may only be connected to low-voltage systems (PELV, SELV) (IEC 60364-4-4-41).

Connection

- ☐ Check that the hydraulic components are in a proper condition.
  - ☐ Remove residues or soiling if necessary.
- ☐ Connect the connection lines. Observe the installation instructions in the data sheet for the hydraulic component.
- ☐ Attach line screw connections according to the manufacturer's specifications and ensure that the lines are assigned correctly (e.g. pressure supply, tank, etc.)!
- ☐ Ensure that all pipes and hoses are connected.
- ☐ Ensure that all screw connections and connections are tightened correctly.
- ☐ Fill the hydraulic system/hydraulic components with hydraulic oil.
- ☐ Bleed the hydraulic system at the highest point.
- ☐ The hydraulic component is ready for operation.

NOTE The maximum pressures and flow rates specified in the data sheet for the hydraulic components must always be observed. In particular, the maximum pressure of tank connections is normally significantly lower than the maximum pressure of the work connections and must not be exceeded.

NOTE Observe the applicable operating instructions for the machine system for information on bleeding the hydraulic system correctly.

Operation The hydraulic components are part of a higher-level complete system.

- ☐ Observe the corresponding operating instructions to operate this system or the higher level machine system.

Decommissioning/ dismantling

- ☐ Ensure that hydraulic system is depressurized. Pay attention to any pressure accumulators present.
- ☐ Ensure that hydraulic system is deenergized.
- ☐ Secure components that are held in position by the hydraulic components.
- ☐ Ensure that no components come loose and can move when the hydraulic oil flows out.
- ☐ Loosen the connection lines.
- ☐ Collect escaping hydraulic oil in a container.
- ☐ Loosen the installation screws on the hydraulic components.
- ☐ Remove the hydraulic components and the seals.

Maintenance and repair

Spare parts and seal sets are available from the applicable WEBER-HYDRAULIK delivery factory. These are listed in the corresponding data sheets and dimension sheets.

Only use the spare parts and seal sets specified on the data sheet for the hydraulic components.

Replacing seals

- ☐ Remove the hydraulic components.
- ☐ Remove all seals and dispose of them properly.
- ☐ Clean the hydraulic components if necessary.
- ☐ Insert the new seals carefully and check that they fit.
- ☐ Re-fit the hydraulic components. Ensure that no seal slips when doing so.
- ☐ Observe the tightening torques in the data sheet for the relevant hydraulic components.
- ☐ Tighten the installation screws without tension and crosswise or tighten the hydraulic component to the screw-in hexagon.
- ☐ Define the shift position for the hydraulic components.

Damage/faults

- ☐ Report damage or faults on hydraulic components or the machine system to the person responsible.
  - ☐ Shut down and secure the machine system if necessary.

Repairs and modifications or retrofits on hydraulic components are performed exclusively by WEBER-HYDRAULIK.

Disposal

- ☐ Remove the hydraulic components.
- ☐ Completely empty the hydraulic components until no more hydraulic oil drips out.
  - ☐ Collect the hydraulic oil and dispose of it properly.
- ☐ Dispose of the seals properly.
- ☐ Dispose of hydraulic components as scrap metal.
- ☐ Dispose of electronic components properly in accordance with the applicable regulations.

Errors and remedies

Leaks

- If leaks occur, shut down the machine system.
- Have the cause of the leak investigated by trained specialists.
- If the hydraulic components are leaking, replace the seals if necessary or replace the entire hydraulic component.
- Do not continue to operate the machine system with faulty hydraulic components!

Miscellaneous

- Contact customer service.

Technical data

- See the corresponding data sheets/dimension sheets for the hydraulic components for the technical data.

WEBER-HYDRAULIK

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Subject to changes