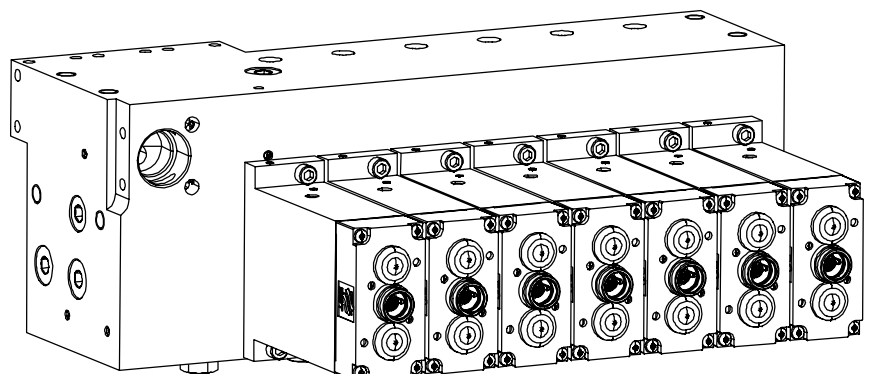




# Operating Manual

## Electrohydraulic Control Unit, 14 Functions

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## Your safety

This chapter provides vital information for your safety.

Pay special attention to this chapter. The safety instructions and rules of procedure will help you to avoid hazardous situations and to perform the necessary work as safely as possible.

### residual risk

The electrohydraulic control unit has been manufactured in accordance with the state of the art and generally recognized safety standards and regulations. However, a certain risk remains which might get you into hazardous situations when working with or on the electrohydraulic control unit. These may, for example, be caused by unforeseeable external influences, machine damage or operating errors.

### supplementary regulations

In addition to this operating manual, also be sure to observe the respective legal provisions and regulations for accident prevention in your country.

Observe the safety and accident prevention regulations:

- of the mining company,
- of the mining authority, and
- of the miners' accident insurance association.

## Personnel

Persons employed in the operation, repair, and overhaul of hydraulic and/or electrohydraulic control unit components must have special qualifications. In addition to having received training in mining skills the following minimum requirements shall be met.

### Operation and maintenance

#### qualification

Operation and maintenance of the shield control is only allowed to be performed by trained personnel. The training shall be matched to the type of shield control actually used. The content of the operating manual, especially the chapter on safety, shall constitute a part of this training.

They shall possess and furnish proof of adequate familiarity with the

- mechanical,
- hydraulic, and
- control systems.

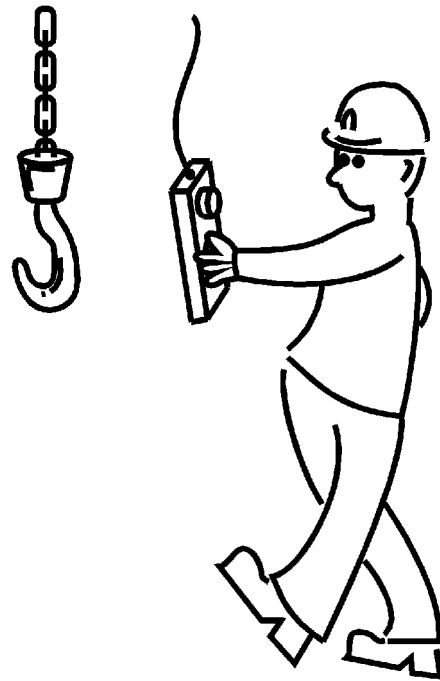
### Repair

In general, repair work shall be performed only by persons who have the respective knowledge and skills to meet the special requirements and have been adequately trained in the repair of the equipment. Repair work on and overhaul of

- control blocks,
- working valves,
- pilot control valves,
- safety components, e.g. pressure relief valves, etc.

shall be performed only by DBT service technicians or by specially trained personnel of the mining company.

# 3 Storage and transport





## Installation of the elektrohydraulic control

- ☞ Place the elektrohydraulic control into the mounting and tighten the bolts (M10) properly.



### CAUTION!

Prior to assembly, sockets and nipples of the plug-type connectors must be treated with lubricating paste B3 to EWN 7068 which does not contain molybdenum disulfide. See chapter 6, section "Recommended lubricating greases and pastes".

- ☞ Connect the hydraulic hoses, ensuring that the connections are not confused.  
Observe the hose connection plan and the markings on the hoses.



### DANGER!

Hydraulic hoses whipping around can cause serious injury or even death.

Only use suitable staples for securing the connectors. Make sure to insert both ends of the staples and push them in completely.

#### safety

- ☞ Check the hose connections again. The hose nipples must fit tightly in the sockets and be secured with staples. Make sure to insert both ends of the staples and push them in completely. Ensure that the connections are leak-tight.
- ☞ After connecting the hoses and checking the connections, plug the connecting cable of the elektrohydraulic control unit into the respective sockets of the pilot valves. Observe the circuit diagram and the markings on the cables.
- ☞ Check all the connections once more against the hose connection diagram.
- ☞ Test all functions of the shield and remove the securing devices installed at the beginning of the work.



### WARNING!

Release the shield for operation again only when you have checked the function and observed no malfunctions.



- ☞ Check the control valve block for any residual pressure. Observe also the hose connection diagram and hydraulic circuit diagram.

Only when you are sure the system has been depressurized, you can continue with the next working steps.

### Removing the accumulator cartridge



#### CAUTION!

**Impurities in the hydraulic medium can result in serious damage to the whole hydraulic system!**

**Always ensure that your working area is clean.**

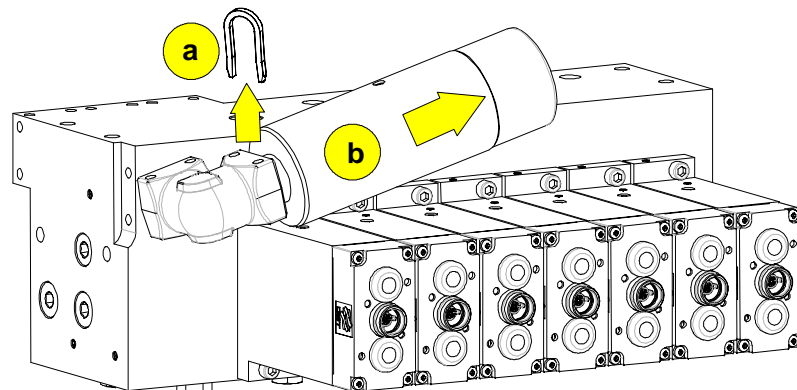
- ☞ Remove any dust and other impurities from the accumulator cartridge and the surroundings in order to prevent dirt entering the hydraulic system during assembly / disassembly of the accumulator cartridge.



#### WARNING!

**If staple locks are impossible or difficult to pull out be extremely careful as this may indicate that the hydraulic line is still under pressure. Be sure to depressurize the hydraulic line.**

Fig. 12: Replacing the accumulator cartridge



a staple

b accumulator cartridge

- ☞ Pull the staple (a) out sideways.
- ☞ Pull the accumulator (b) cartridge out to the front.

### Installing the accumulator cartridge

The new accumulator cartridge is installed in the reverse order of removal. Prior to installation, apply a separating agent/lubricant (B6 acc. to EWN 7068) to the surfaces to be joined. See also chapter 6, section "lubricating greases and lubricating pastes".



## Permissible media

### Hydraulic fluids

#### Permissible hydraulic fluids



#### NOTICE!

**Use only hydraulic fluids for which a valid certificate issued by DBT GmbH has been made available to you. Otherwise, there is the danger of serious damage to the hydraulic equipment and the loss of warranty claims.**

For the operation of hydraulic components of DBT GmbH generally only such hydraulic fluids are allowed to be used for which a valid certificate in accordance with EWM 8350 or an exemption permit of DBT GmbH is available to the respective operator. DBT GmbH will not accept any claims under warranty for components which have been or are operated with a different hydraulic fluid.

In addition, national - and sometimes also regional - regulations on health and safety at work and any environmental regulations must be observed for operation.

If a mine only uses individual hydraulic components without applying DBT shield supports or if obtaining a valid certificate would require too much effort, the same hydraulic fluid as is used for the existing shield support shall be allowed to be used for these individual components, subject to approval by DBT. The same applies e.g. to hydraulic chain tensioners, hydraulically tensionable drive units etc. The respective exemption permit will be issued by DBT GmbH upon request.

#### Suitability test

Before the certificate of DBT GmbH is issued for a hydraulic fluid the respective fluid has to be subjected to a suitability test. However, this suitability test only refers to the technological properties of the hydraulic fluid and does not allow any conclusions to be drawn with respect to its properties regarding health and safety and environmental protection.

Original samples of the concentrate and the water which will be used later when preparing the hydraulic fluid at the mine are required to perform the suitability test.

The suitability test will be carried out by an independent testing institute authorized by DBT GmbH. For the tests, the criteria as specified in EWN 8350 will be applied. The suitability test mainly serves to clarify the properties of the hydraulic fluid with respect to

- stability
- sealing materials
- corrosion

In addition, a chemical "fingerprint" of the concentrate will be prepared in order to exclude or prove any possible changes in the composition of the concentrate, if required.

If the suitability test shows that the hydraulic fluid meets the requirements, the operator will receive the respective certificate by DBT GmbH.

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