Reliability at work

BUCYRUS

Operating Manual

Electrohydraulic Control Unit, 10 Functions

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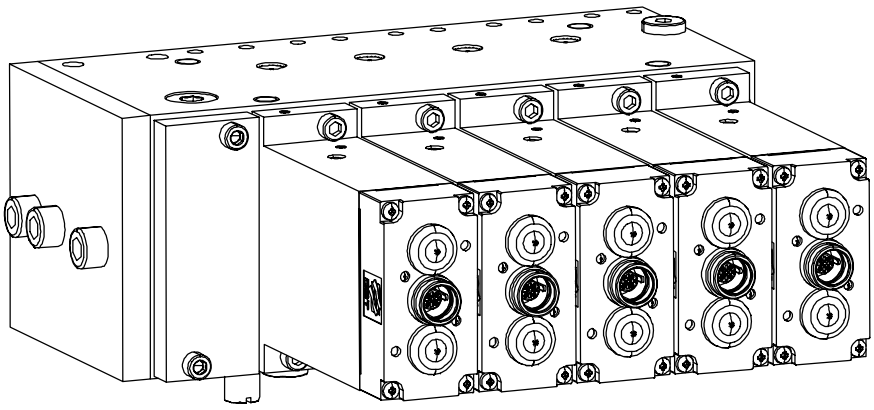

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Your safety

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

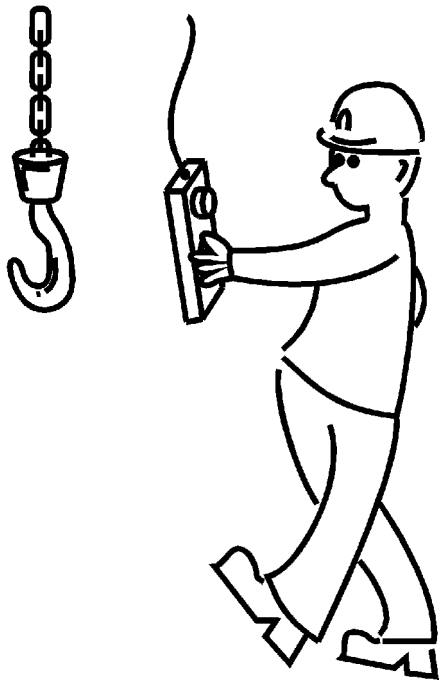
qualification

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.

3 Storage and transport



☞ Loosen the bolts of the electrohydraulic control unit mounting.

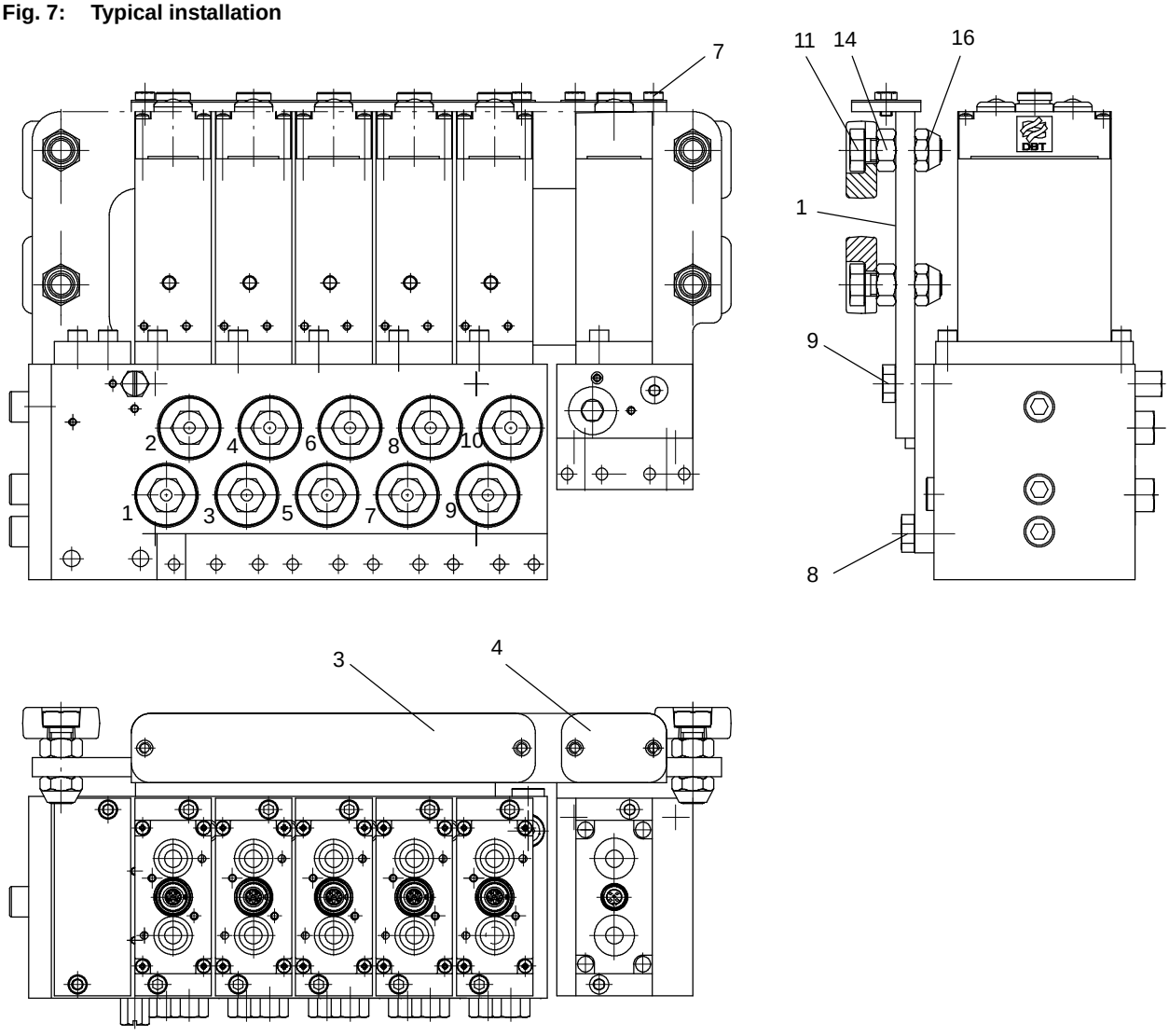
☞ Pull the electrohydraulic control unit out of the mounting.

Installation of the electrohydraulic control unit

To install the control unit,

☞ place the electrohydraulic control unit into the mounting and tighten the bolts (M10) properly.

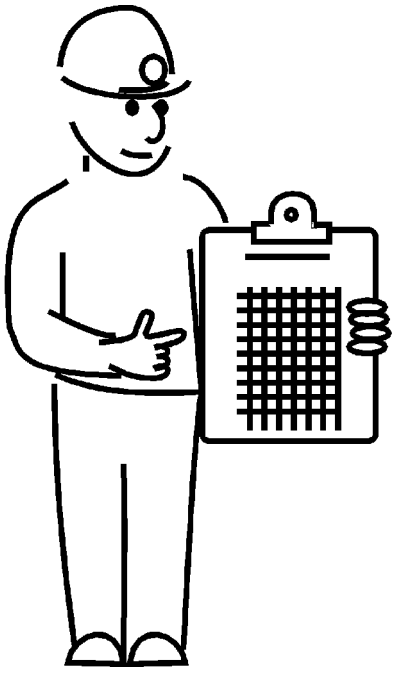
Fig. 7: Typical installation



1	retaining plate	7	hex. head bolt M6x8-A 2-70	11	hex. head bolt M12x40-A 2-70
3	operating plate, 10 functions	8	hex. head bolt M10x20-A 2-70	14	hex. nut M 12-A 4-80
4	operating plate, 2 functions	9	hex. head bolt M10x30-A 2-70	16	hex. nut M 12-A 4-80

Important!
Arrange the symbol plate at the holder of the electrohydraulic control unit such that the symbols are clearly legible.

6 Technical data



Hydraulic fluid maintenance

A consistent good quality of the hydraulic fluid is essential for the operational reliability of hydraulic systems. Therefore, maintenance of the hydraulic fluid must not be neglected but should be performed with special care. The most important properties of the hydraulic fluid should ideally be monitored automatically and recorded in order to be able to directly counter any harmful effects. These properties include: temperature, foaming, pH-value, concentrate ratio, and microbial load.

The operator of the equipment has to prepare a hydraulic fluid maintenance concept for any individual application. The maintenance concept should be prepared in close cooperation with the manufacturer of the concentrate and has to be applied consistently.

If it is not possible to monitor the hydraulic fluid continuously the properties listed in the following should be checked at least once every week:

- pH-value
  - Target value: 7.5 to 9.5
- Concentrate ratio
  - Target value: see certificate
- Microbial load
  - Target value: < 10^5 Kol/m

In addition, the electrical conductivity, foaming and the operating temperature of the hydraulic fluid should be monitored regularly.

The permissible max. temperature of the hydraulic fluid is 55 °C. During normal operation, however, an operating temperature of 45 °C should not be exceeded. A higher operating temperature will reduce the stability of the emulsion and shorten the life of the sealing material.

Quality of the process water

The quality of the water used for the preparation of the hydraulic fluid has an enormous influence on the properties of the hydraulic fluid. Accordingly, the requirements for monitoring the water quality are very high.

The following table 2 lists limit values for the essential properties and components of the water.

If the limit values shown are maintained it can be assumed that the water is basically suitable.

If one or several of the limit values mentioned are not met this should be taken into consideration when selecting a concentrate. Additional water treatment may also be required.

The customer shall in any case, however, provide a sample of the original water to permit performing the tests required for the issue of the certificate.

Changes in the composition of the water will also lead to the loss of the certificate even if they are within the limit values mentioned.