

Please read carefully before starting operation !

1. Should any damage occur due to disregard of the following instructions the guarantee expires and the manufacturer is free from any obligations. The device can only be employed under operations parameters not exceeding the nominal capacity of the clutch or brake. Maximum torque and highest permissible power loss must be strictly observed. The available voltage must correspond to the operation voltage indicated on the identification plate. When a clutch of the E(R)AT ... -Type is used, the distance between the brush holders and the slide ring must correspond to the measure indicated on the table of dimensions. If a brake is used, there is no slide ring and the connection is effectuated directly on the coil. Thereupon it must be checked that no body contact takes place. If a clutch or a brake is operated in an extremely dustladen place (soot, wood chip, paper or cement dust) a dust cover should be provided. In such a case an additional fan should allow reliable dissipation of the heat developed.

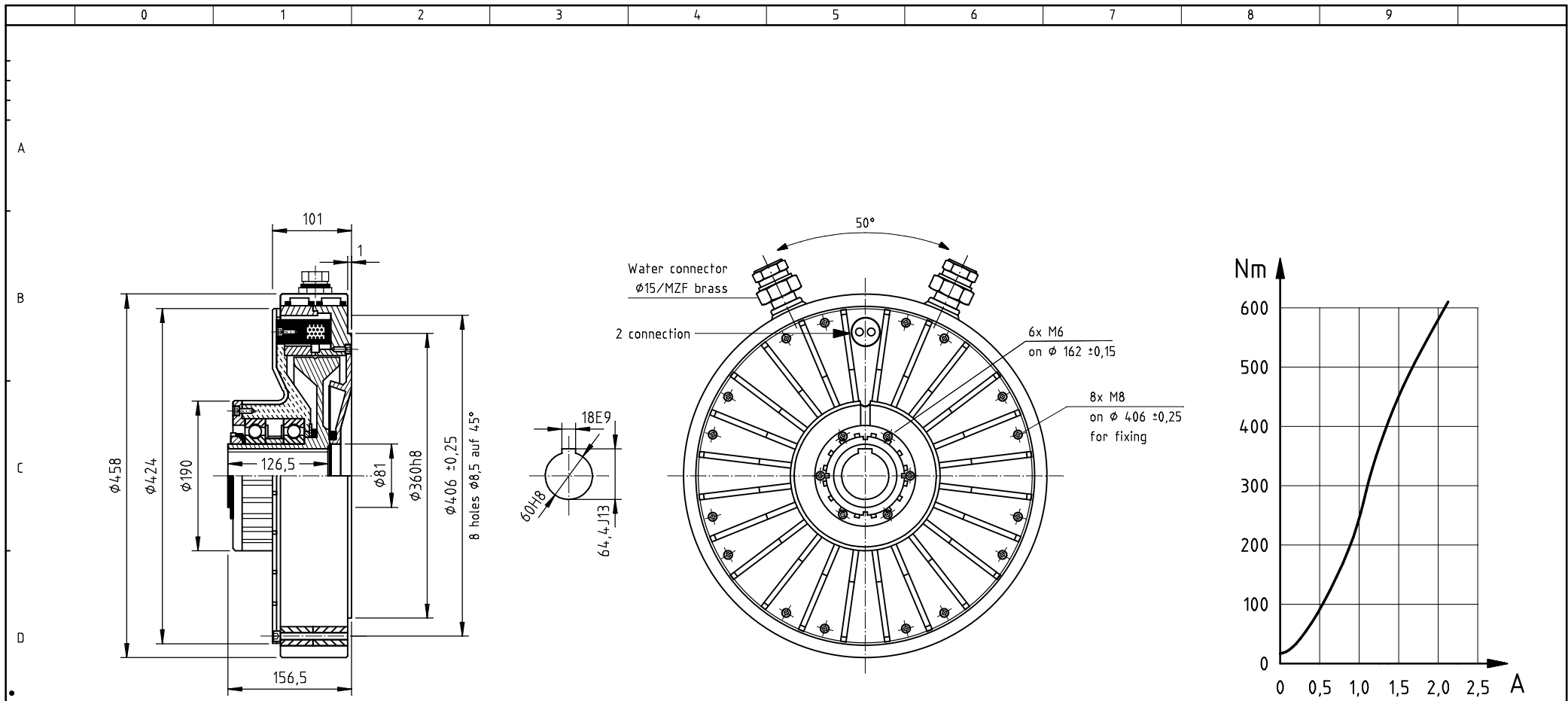
Storage : Clutches and brakes must be stored in a dry place and protected against corrosion. The device can only be stored in its welded plastic hull containing moisture absorbing chips.

2. Installation :
Installation of the device must be carried out with care in order to prevent damaging of bearing and packing. Any use of force impairs the function. The borehole present should be lightly smeared with a rust proofing grease. The system being lubricated for life, any other lubrication with oil or grease is not admitted as it would impair the performance of the device.

3. Starting operation :
Clutches and brakes should be taken into operation by means of short current pulses to allow proper distribution of the magnetic particles. Thereupon the rotor speed correspond to the use required.

4. Dismounting, Repairs :
Instructions for repair are supplied on request free of obligation. Upon disassembly of clutches and brakes any shock by knocks and shoves must be prevented. When removing the rotor a brace can be used.

| | | | | | | | | | | | | |
|---|----------|-------|--------|------------|----------------------------------|--------------|--|------------------------|---------------------|---------|----------------|-------|
| c | | | Datum | 29.12.1993 | Zeichnungsnummer/ drawing number | |  | operating instructions | Komm.Nr | | Vertragsnummer | |
| b | | | Bearb. | KIPP | 1.1232E | | | | General-Information | Blatt 1 | | |
| a | | | Gepr. | | | | | | | | | 1 Bl. |
| | Änderung | Datum | Name | Norm | Einbauort: | Ersatz fuer: | Ursprung: | 06.03.2015 | | | | |



In order to avoid magnetic leakage flux and to achieve a good heat removal, non-ferrous metals should be used for installation or attachment of auxiliary components (not for drive shaft).

Only applicable for horizontal shaft position !

dimensions and specifications subject to change

| rated torque | residual torque | field values | | | resistance at 20°C | operating times | | max. admissible power loss | | | mass moment of inertia | | weight |
|-----------------------|-----------------------|----------------|---------------|--------------------|--------------------|----------------------|-----------------------|----------------------------|------------------------|------------------------|------------------------|-----------------------|--------|
| | | maximum values | rated current | | | t _{on} [ms] | t _{off} [ms] | 0 min ⁻¹ | 1000 min ⁻¹ | 2000 min ⁻¹ | ext. rotor | int. rotor | |
| M _{max} [Nm] | M _{res} [Nm] | P [W] | U [V] | I _N [A] | R [Ω] | t _{on} [ms] | t _{off} [ms] | P _v [W] | P _v [W] | P _v [W] | J [kgm ²] | J [kgm ²] | m [kg] |
| 1000 | 10 | 200 | 24 | 1,7 | 20 | 5000 | 4600 | 5000 | - | - | - | 0,81 | 155 |

Wie recommend the use of a flow indicator to control the cooling water

water cooling
 required volume of water: V= 5,5 l/min
 water temperature 18° C
 water pressure app 3 bar
 pH- value < 8

Repair instructions :

Clutches EAT 10001 331 220 00 ERAT 10001 331 230 00

Brakes FAT 10 001 331 200 00 FRAT 10001 331 210 00

FRATO 10001 331 240 00
FRATO 10001 R 331 250 00

"R" = heat sink
"O" = watercooling

The magnetic particle clutch / brake should be disassembled in the following order :

During assembly, refer to the sectional drawing.

1. To disassemble, place the clutch / brake on a workbench with the slipring or coil connectors up. Disconnect the slipring from the coil, and remove the screws to lift the slipring from the housing.
2. Loosen the screws on the bearing shell to remove the bearing shell together with the internal rotor. The housing with the coil is now accessible.
3. After removing the circlip ring from the ball bearing, lift the ball bearing and seals from the bearing shell.
4. Clean the inner side of the housing and the internal rotor carefully of magnetic powder.
5. Fit the new seals and ball bearings in the bearing shell and fix them on the bearing cover using the circlip ring. Before that, slide the seals (V ring) on the hollow shaft of the internal rotor. Push the internal rotor into the ball bearing of a bearing shell and fix it in position using a circlip ring.
6. Housings fitted with heat sink, e.g. Type ERAT ... FRAT... have the heat sinks shrunk on. Heat them slightly if they need to be pulled off. As clutches are balanced with the heat sink fitted, be sure to re-fit it in exactly the same position.

Important note !

The magnetic powder must be poured into the air gap / space between the internal rotor and the external rotor (not into the hollow space in which the field coil is located). Be sure to use only the amount and particle size of magnetic powder approved for the particular type of clutch / brake.

The old magnetic powder must not be re-used.

Then replace the internal rotor with the housing cover and screw it down. Secure the slipring assembly and make the connections with the coil.

Following assembly, place the clutch/ brake in its fitting position, i.e. with its hollow shaft horizontal.

Push the internal rotor into the hollow shaft revolving at low speed while tapping on the rotor.

This distributes the magnetic powder evenly in the air gap.

This distributes the magnetic powder evenly in the air gap.

Spare parts :

*) Only available as complete repair kit

| | Pcs | Type 10001 | Bestell- Nr |
|--|-----|-------------------------------|---------------|
| | 1 | Internal rotor | 331 200 06 |
| | 1 | Field coil 24VDC | 331 200 14 |
| | 1 | Brush holder assy. | 314 310 60 |
| | 1 | Slip ring | 314 201 40 |
| | 4 | Carbon brush holder 17x10x5mm | 314 310 62 |
| | 2 | Ball bearing | |
| | 2 | Seal V- Ring | |
| | 1 | Felt ring seal | 314 500 72 *) |
| | 1 | Magnetic powder 460 g/ 80 µ | |
| | 1 | Magnetic powder 460 g/ 80 µ | 314 510 30 |

Additional information:

Thermo switch brake temperature:

Due to the special design of this range of brakes, we recommend carefully to be with the heat dissipation.

To avoid over heating problems, are two thermal switch installed to warn at high temperatures of the brake.

The thermal switch is normally closed and opens when temperature is 120°C. Depending of the machine process, it can be used as a warning, or the brake will shutt ofdirectly.

Thermostat cool water circuit:

In order to ensure a continuous flow of the cooling water system, the brake is equipped with a thermostat. The thermostat controls by turning on and off the cooling water temperature. It is advisable to install a flow switch.

This is mainly used in order to avoid condensation problems, when the brake is turned off.

Process:

As long as the temperature is at the break below 60°C, the cooling water is not activated.

As soon as the thermostat threshold of 60°C is reached, the cooling water is turned on.

| | | | | | | | | | | |
|----------|------------|------|--------|-----|----------------------------------|--|--|------------|--------------------------------------|---------|
| c | | | Datum | | Zeichnungsnummer/ drawing number |  | Repair instructions Clutches/ Brakes Type 10001 | Komm.Nr | | |
| b | | | Bearb. | PAR | 1.1486E | | | | | |
| a | 03.03.2011 | PAR | Gepr. | | | | | | | Blatt 4 |
| Änderung | Datum | Name | Norm | | Einbauort: | Ersatz fuer: | Ursprung: | 06.03.2015 | Magnetic-particle clutch/brake-10001 | |
| | | | | | | | | | 2 Bl. | |