Installation and Operating Instruction for ROBA-stop®-M3-Brake

Type 891.212.1
Special design

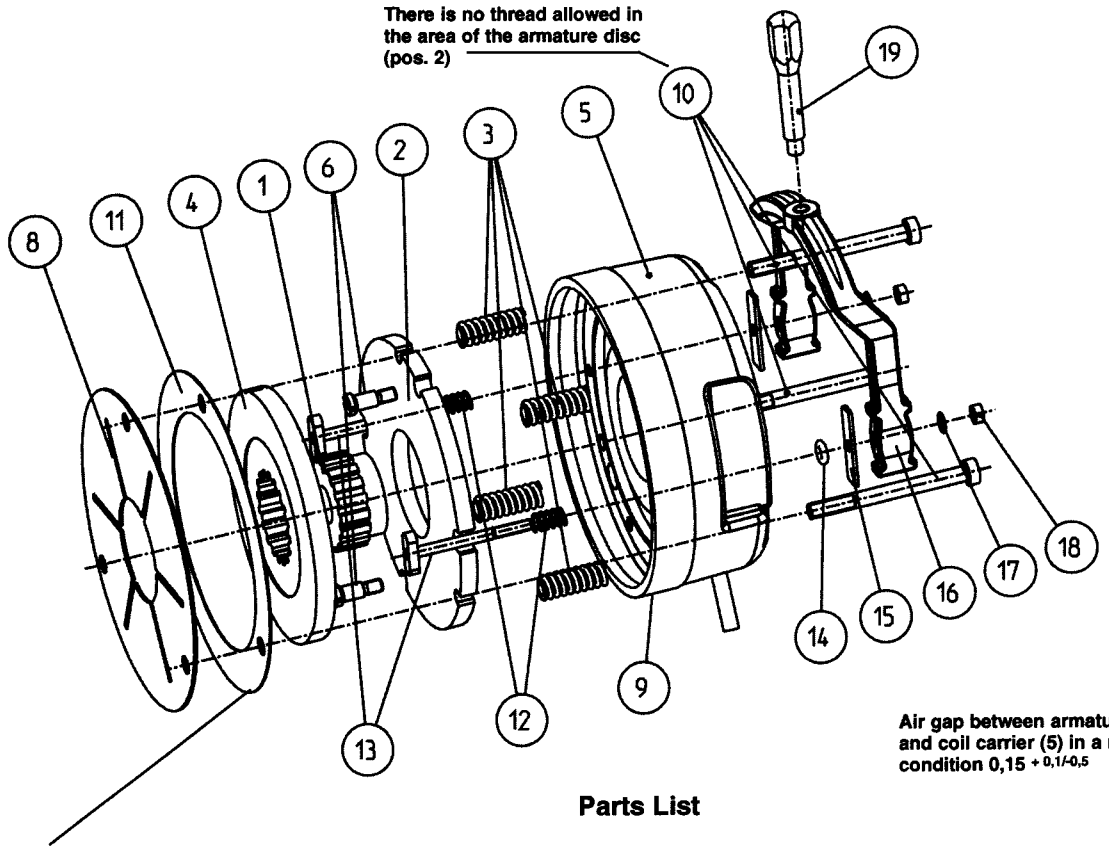

Fig. 1

Air gap between armature disc (2) and coil carrier (5) in a mounted condition 0,15 $^{+0,1/-0,5}$

Sealing (pos. 11) to be arranged by customer, sealing width, mounted 0,15 $\pm 0,03$

Parts List

1 Hub
2 Armature disc
3 Thrust spring
4 Rotor
5 Coil carrier complete with coil and plug
6 Shoulder screw
8 Friction disc
9 Type tag
10* Cap screw
11* Seal
12 Thrust spring (hand release)
13 Hand release bolts
14 O-ring
15 Intermediate plate
16 Hand release bracket
17 Washer
18 Locking nut
19 Hand release bar

*** The parts pos. 10 + 11 are made available by the customer.**

Attention:
Based on the guideline 94/9/EG (ATEX-guideline) this product is not suitable for the application in potential explosive areas without evaluation of the conformity.

Brake size M 3				
Rotor thickness „new"			**[mm]**	6,05
Tightening torque cap screw (10*)			**[Nm]**	2,5
Brake torque adjustment	**Number of springs**	2 (2 x 180 °)	3 (one spring bore not hard-faced)	4 (4 x 90 °)
	Spring art. Nr. **[mm]**	4050187 4084386 (with Coro)	4050187 4084386 (with Coro)	4050187 4084386 (with Coro)
	Brake torque **[Nm]**	1,5	2,2	3

Table 1: Rotor thickness, tightening torque, brake torque adjustment

ROBA-stop® M3-Brake

Assembly conditions

- The eccentricity of the shaft end against the fixing hole P.C. must not exceed 0,2 mm.
- The positioning tolerance of the thread for the cap screws (10) must not exceed 0,2 mm.
- Shaft end has to be square with respect to the screw-on or braking surface acc. to DIN 42955. Out of square results in lower braking torque, permanent friction of the rotor (4) and overheating.
- The fits from hub (1) and shaft are to be selected in such a way that a widening of the toothing of the hub is not possible. A widening of the toothing causes a clamping of the rotor (4) at the hub (1) and following a functional problem of the brake, (recommended hub-shaft fit H7/k6).
- Rotor (4) and friction disc (8) must be free of oil and grease.

1. Assembly (Figure 1)

1.1 Mount gear hub (1) with counterbore D18x1 in direction of machine wall to the shaft (observe the complete supporting length!!) and lock it axially, (e.g. with a locking ring).

1.2 Push rotor (4) manually onto the gear hub (1). An easy running of the toothing has to be observed. **No damage!**

1.3 Attach the brake with seal (11*) and friction disc (8) by means of the cap screws (10*) at the bearing bracket of the motor or at the machine wall, (observe tightening torques acc. to Table 1).

2. Brake torque adjustment

The brake torque of the ROBA-stop® - M3 Brake is adjusted via the different spring configurations (s. Table 1) in the factory.

3.* Mounting the hand release (see Figure 1)

The hand release can be installed only in an unscrewed condition of the brake.

Procedure:

3.1 Unscrew the brake from the motor bearing bracket or machine wall.

3.2 Remove plastic plugs, from hand release bores in the coil carrier (5).

3.3 Push thrust springs (12) onto hand release bolts (13).

3.4 Push hand release bolt (13) with thrust springs (12) from the inside (view of direction onto armature disc (2)) into the hand release bores in the coil carrier (5).

3.5 Push O-rings (14) over hand release bolts (13) and press them into the recesses of the coil carrier (5).

3.6 Push intermediate plates (15) over hand release bolt (13).

3.7 Attach hand release bracket (16) and washer (17) and screw on self-locking nuts (18).

3.8 Tighten both locking nuts (18) until the armature disc (2) contacts uniformly the coil carrier (2).

3.9 Unscrew both locking nuts (18) by 1,5 rotations, herewith the air gap between armature disc (2) and coil carrier (5) or the inspection dimension „X" (0,9 +0,1 mm) is available.

3.10 After installation of the ventilation cover screw in the hand release bar (19) into the hand release bracket (16) and tighten it.

* Hand release, which can be locked, is supplied assembled from the customer

4. Electric Connection

The coil voltage is indicated on the type tag and on the brake. The brakes are designed acc. to Euro-voltage DIN IEC 38. **D.C. current is necessary for the operation.**

This one can be generated via Trafo-rectifier or half-wave/bridge connected rectifiers.
Switching can be made in DC current or AC current sides.
A faster connection time, however, is obtained by a switching in the D.C. side (engagement of the brake).
If a faster separation time is required, a special fast acting rectifier is necessary.
Please contact our company in this case.

Please observe:
When switching off electromagnetic units spikes may occur which can cause damage to the units and must be damped.
Due to this damping the connection times indicated in the catalogue can be slower.
Protection of the voltage supply according to the power values must be provided. The brakes are designed for a relative switch-on period of 100 %.

Protection of the brake:
Protection class I acc. to DIN VDE 0580/10.94

5. Maintenance

ROBA-stop®-M brakes nearly don't require any maintenance. The rotor (4) is robust and wear resistant and hereby a very long service life of the brake is obtained.
In case, however, the rotor (4) is worn out due to a high friction work and, therefore, the function of the brake is not guaranteed any more, the brake can be brought again to its original condition by changing the rotor.
The wear condition of the rotor (4) is determined by checking the release voltage.
The release voltage may only amount to max. 90 % of the nominal voltage for a warm brake.

Exchange of the rotor (4):

For exchanging the rotor (4) the brake must be unscrewed from the motor bearing bracket or machine wall.

5.1 Remove fixing screws (10).

5.2 Clean brake, Remove abrasion by the aid of air pressure.

5.3 Pull off rotor (4) from hub (1).

5.4 Check rotor thickness of the rotor (4) and compare data with the values mentioned in Table 1.

5.5 Check armature disc on plane-parallelity and wear (strong coring must not exist). Exchange armature disc, if necessary.

Procedure:

5.5.1 Unscrew shoulder screws (6) from coil carrier (5) and remove armature disc (2), (observe mounting position of the armature disc or observe that not any thrust springs (3) fall out from the coil carrier (5)).

5.5.2 Put spare armature disc (2) onto coil carrier (5) or thrust springs (3), (observe mounting position) and screw in shoulder screws (6) until contact.

5.6 Check rotor thickness of the new rotor (4) and compare data with the values mentioned in Table 1.

5.7 Push rotor (4) onto hub (1) (observe point 1.2) and check as to radial play. If there is clearance in the toothing between hub (1) and rotor (4), pull off the gear hub from the shaft and replace it.

5.8 Attach brake by means of the enclosed fixing screws (10) (observe tightening torques acc. to Table 1).

Attention!!
For brakes with reduced braking torque and/or an operation with fast acting rectifier the braking function is not guaranteed any more after the friction linings are worn down.

Breakdowns:

Failures	Possible reasons	Remove
Brake does not release	❑ False voltage measured at the rectifier ❑ Rectifier failed ❑ Air gap too big (rotor worn down) ❑ Coil interrupted ❑ Brake is getting too warm	❑ Apply correct voltage ❑ Exchange rectifier ❑ Renew rotor ❑ Exchange brake ❑ Use fast acting rectifier
Motor does not brake	❑ Play of the shoulder screw is not available any more (rotor worn down)	❑ Exchange rotor
Brake engages with delay	❑ Brake is switched to A. C. side	❑ Switch to D. C side

General statements regarding security

- ❑ The brakes may only be connected to kind and value of voltages acc. to the type tag.
- ❑ When repairing or servicing the unit, you have to pay attention that the brake is not energized.
- ❑ Maintenance work and repairs may only be made by skilled labours.
- ❑ Current-carrying parts must not get in contact with water.
- ❑ If brakes are not used according to their designation, we don't overtake any liability for any damages (The user is responsible for the correct and safe usage).

An earthling of the brake has to be provided.

CE

Manufacturing declaration (acc. to art. 10; 73/23/EWG):

The brakes are developed and manufactured in conformance with the national standard DIN VDE 0580 according to the regulations of the low-voltage directives of the EG of 10.02.73.

They are determined for an installation into a machine. The starting is prohibited until it has been EG-directives for machines. The observance of the EMV-directive 89/336/EWG must be guaranteed by the applier.

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