

# Installation and operating Instruction

14.450 SIZE : 06



**Please read and observe this Operating Instruction carefully !**

A possible malfunction or failure of the brake and damage may be caused by not observing it.

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Manufacturer's declaration

### **Emco Dynatorq Pvt. Ltd.**

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## Safety Regulations

With this safety regulations no claim on completeness is raised!



### Attention !

Hazardous conditions when contacting hot connections and components.

Only qualified and well-trained specialists should work on the units to avoid any personal injury or damage to machinery.

### ■ Danger!

- If the electromagnetic brake is used in an improper way.
- If the electromagnetic brake has been modified or reconverted.
- If the relevant standards of the safety or installation conditions are not observed.



### Attention!

The installation and operating instructions must be read carefully and all safety regulations observed before installation and initial operation as danger to personnel and damage to machinery may be caused. The electromagnetic brakes are developed and manufactured in conformance with the temporally known rules of the technology and they are basically considered as fall-safe at the time of the delivery.

### ■ Attention :

Based on the guideline this product is not suitable for the application in potential explosive are as without evaluation of the conformity.

### ■ Observe!

- Only qualified and well trained specialists who are familiar with the transport, installation, initial start-up, maintenance and operation of the units as well as with the relevant standard may carry out the corresponding works.
- Technical data and indications (Type tag and documentation) are to be kept absolutely.
- correct supply connection according to type tag.
- Supply connections must not be released and assembly, maintenance or repair must not be made when the unit is energized.
- Electrical leads must not be under tension when connected.
- Check current carrying components regarding damage before installation. Current carrying components must not be in contact with water or other liquids.
- The braking torque does not exist any more, if the friction lining and / or friction surface come into contact with oil or grease.

### ■ Intended use

Emco brakes are determined for the use in machines and equipment and may only be used for the ordered and confirmed purpose.

The use beyond of the corresponding technical indications is considered as incorrect.

### ■ Conditions of the unit



The catalogue values are reference values, which can deviate in some cases. When selecting the brake, site of installation, braking fluctuations, permissible friction work, behaviour during run-in, wear and ambient conditions are to be carefully checked and agreed with the unit manufacturer.

### ■ Observe!

- The mounting and connecting dimensions at the site of installation must match to the size of the brake.
- The brakes are designed for a relative switch on period of 100%
- The brakes are designed for a dry running only. Should oil, grease, water or similar materials come in contact with the friction surfaces the braking torque could be reduced.
- The braking torque depends on the corresponding running in condition of the brake.
- The metallic surface of the brake is protected against corrosion arranged by the factory.

### ■ Protection IP 66 :

Dust-tight and protection against contact as well as protection against temporary submerging into water.

### ■ Ambient temperature - 20° up to +40°C

#### Attention!

The torque could be severely reduced in case of temperatures over or under the freezing point due to dewing or the rotors can freeze respectively. The user must provide corresponding counter measures.

### ■ Thermal class F (+155°C)

The magnetic coil is designed for a max. operating temperature of +155°C.

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## Safety Regulations

With this safety regulations no claim on completeness is raised!

### ■ Necessary protective measures to be undertaken by the user :

Cover all moving parts to prevent personnel injury as squeezing and seizing.

Cover dangerously hot magnetic parts to prevent contact. To prevent electrical shock and inspection, conforming to standards, of the continuous protective connection to all tangible metallic components.

Protection against high inductive cut-off peaks spark quenching units or similar, in order to prevent damage of coil insulation's or the burn-off of the switching contact.

Provide additional necessary safety measures against corrosion of the brake, if they are used in extreme ambient conditions or in the open with direct atmospheric influences.

Measures against freezing from armature disc and rotor with high humidity and deep temperatures.

### ■ Standards and Instructions

The brakes are developed and manufactured in conformance with you.

### ■ Liability

- The information, notes and technical data indicated in the documentation were at the time of printing on the latest state.  
Claims on brakes already supplied cannot be made Valid from it.
- Liability for damages and breakdowns is not taken over with
  - ignoring the installation and operating instructions.
  - improper use of the brakes.
  - arbitrary modification of the brakes,
  - inappropriate working at the brakes,
  - handling or operating errors.

### ■ Guarantee

- The warranty conditions correspond to the sales and supply conditions of Emco.
- Defects are to be advised immediately after detection to Emco.

### ■ Marking

Emco Simplatroll D.C.Spring Applied Brake with IP 66 protection

14.450.06    24 VDC    Hub Bore :-    Sr. No.  
Watt :        Torque :        Tel:- 0250-2480489

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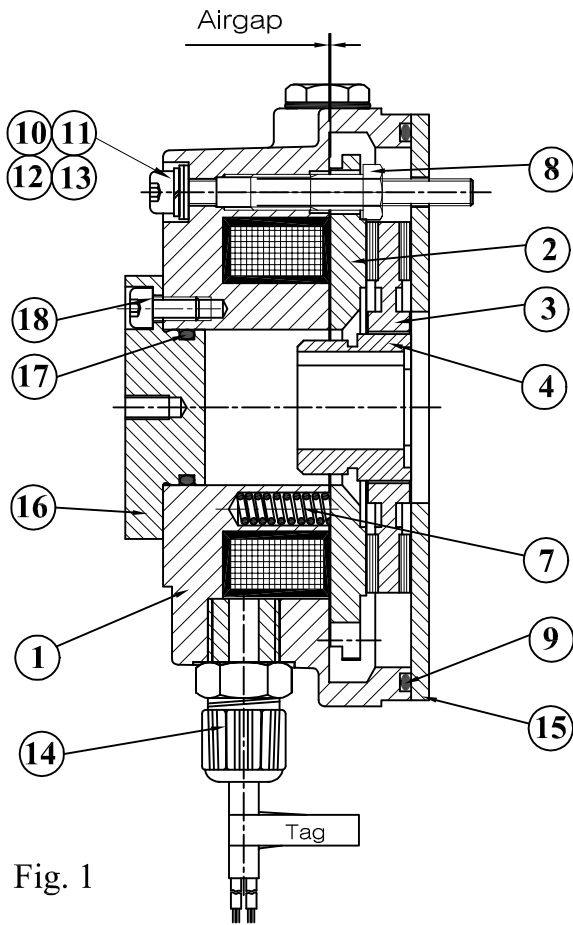


Fig. 1

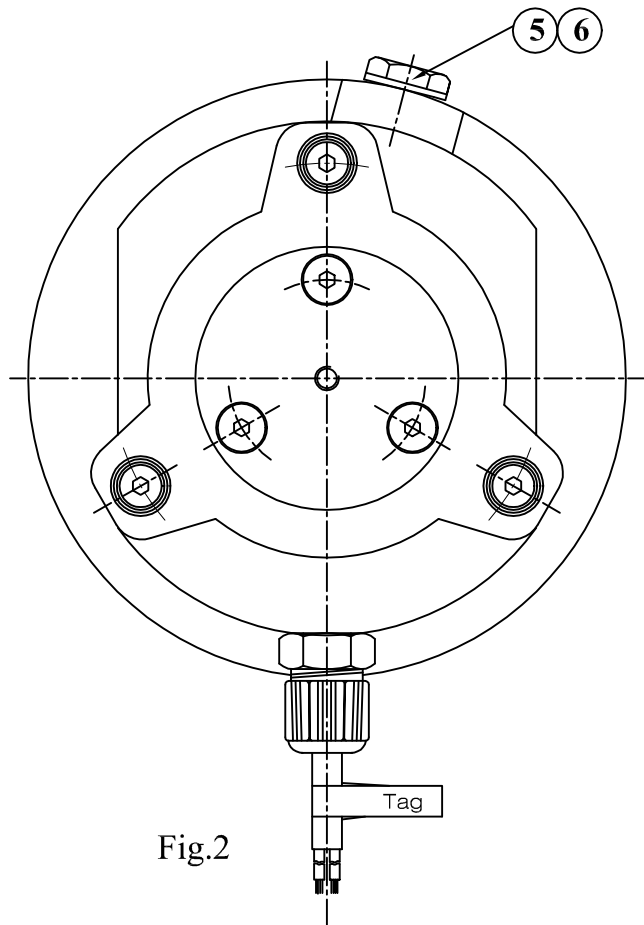


Fig.2

## Parts List

(Only Emco original parts are to be used.)

1	Brake Stator
2	Armature Plate
3	Rotor
4	Hub
5	Plug
6	'O' Ring
7	Cylindrical Comp. Spring
8	Wear Adjustment Screw
9	'O' Ring
10	Hex.Soc.Hd.Cap.Screw
11	Punch Washer
12	Rubber Washer
13	Spring Washer
14	IP65 Cable gland ( pg7 )
15	Friction plate
16	Cover
17	'O' Ring
18	Hex. Soc.Hd Cap Screw

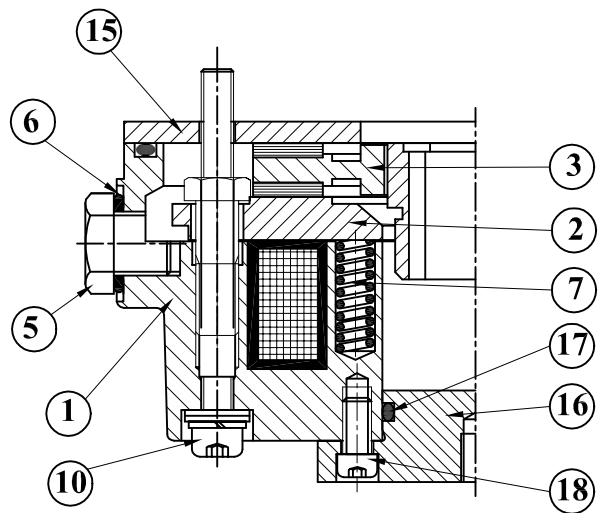


Fig.3

## Warning and Attention symbols



### Attention

Danger of injury to persons and damages to the machine possible.



### Note !

Important points to be observed.

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## ■ Design

Emco brakes are spring applied electromagnetic brakes.

The Emco is completely closed in an attached condition and fulfills the protection IP 66.

## ■ Function

The Emco brake is a spring applied electromagnetic safety brake.

### ● Spring Applied :

In a de-energised condition Cylindrical compression springs ( 7 ) press against the armature plate ( 2 ). The rotor ( 3 ) is held stationary between the armature plate ( 2 ) and the friction plate ( 15 ). The shaft is braked via the hub ( 4 ).

### ● Electromagnetic :

The armature plate ( 2 ) is attracted to the Brake stator assembly ( 1 ) against the spring pressure by the magnetic force of the in the Brake stator ( 1 ). The brake is released and the shaft is then able to rotate freely.

### ● Safety brakes :

The Emco brakes reliably and safely when the current has been switched off, in case of "emergency off". or through power failure.

## ■ Supply condition ( Figs. 1 - 3 )

The Emco Brake is factory assembled.

The 'O' ring ( 9 ). included loosely, must be inserted into the provided groove of the Brake stator ( 1 ) for the attachment.

The technical data are given on the cable of Tag.

Check supply condition !

## ■ Assembly conditions

Before mounting the Emco following points are to be observed in any case :

- The eccentricity of the shaft against the fixing hole P.C.D. must not exceed 0.2 mm. ( Fig. 4 )
- The deviation of the concentric running of the bolt-on surface with respect to the shaft must not exceed permissible tolerance of the 0.15 mm positioning Dia. & mounting surface. Larger deviations may result in a lower braking torque, permanent friction of the rotor and overheating.
- The hub ( 4 ) and shaft fits are to be a selected to avoid any distortion of the hub ( 4 ). A widening of the hub causes a clamping of the rotor ( 3 ) on the hub impairing the brake function (recommended hub - shaft fit H7/k6).

Rotor and braking surfaces must be free of oil and

- grease.

## ■ Brake - attachment



### Important !

Immediately turn the wear adjustment screws ( 8 ) back to contact (torque max. 10 Nm).

1. Remove the rotor ( 2 ) from the brake.
2. Mount the hub ( 4 ) onto the shaft, bring it to the correct position (observe the supporting length of the key over the complete hub) and lock it axially (e.g. with a circlip)
3. Bolt the brake at the place through friction plate (15) or at the brake surface on the customer side (observe centering and correct location of the 'O' ring ( 9 ) in the groove.)  
No damage of the 'O'ring ( 9 ).

4. Manually push rotor ( 3 ) onto the hub ( 4 ). An easy running of the hexagon must be observed.

No damage !

### Important !

The rotor ( 3 ) must be located on the hub ( 4 ) in such a way that the hexagon remains completely engaged even after wear of the friction linings ( Fig. 5 )

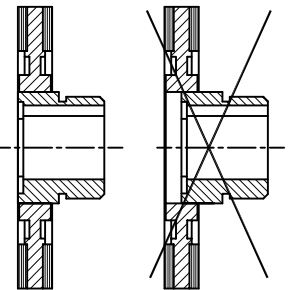


Fig.5

5. Screw in pluge ( 5 ) with 'O' ring ( 6 ).
6. Check the air gap according to airgap inspection.

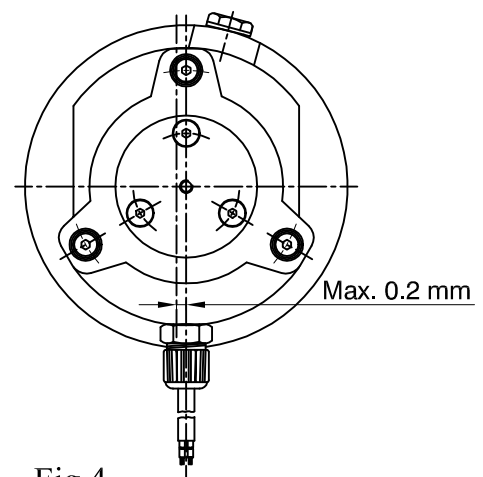


Fig.4

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## ■ Air gap - inspection ( Fig.7)

The air gap between brake stator ( 1 ) and armature plate ( 2 ) is increased if the friction linings are worn down. The wear condition of the rotor ( 3 ) must be monitored by regular air gap inspections.

Air gap inspection with de-energised brake:

1. Unscrew the plug ( 5 ) with 'O' ring ( 6 ).
2. Check the air gap by means of a feeler gauge. The air gap must be between nominal air gap and max. air gap. If the max. air gap is achieved, place new rotor ( 3 ).

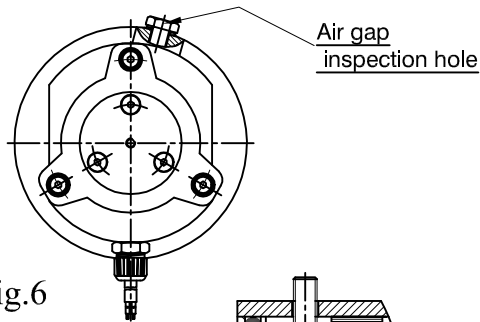


Fig.6

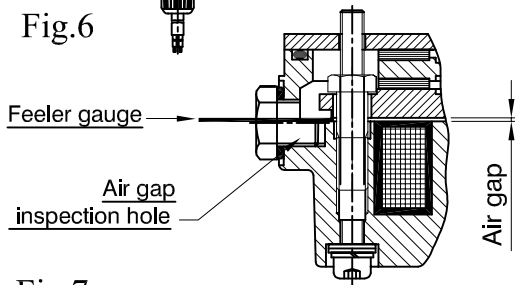


Fig.7

Table 1

Size	06
Nominal air gap [mm]	0.2
Max. air gap [mm]	0.5

## ■ Breakdowns :

Failures	Possible reasons	Solution
Brake does not release	<ul style="list-style-type: none"> <li>• Wear between armature disc and coil carrier.</li> <li>• Air gap too big or too small</li> <li>• Coil interrupted</li> <li>• Check Input power supply</li> <li>• False voltage measured at the Input power supply</li> </ul>	<ul style="list-style-type: none"> <li>• Clean brake</li> <li>• Adjust the brake replace the rotor</li> <li>• Replace brake</li> <li>• Replace Input power supply</li> <li>• Provide correct voltage</li> </ul>
Brake does not brake	<ul style="list-style-type: none"> <li>• Oil or grease not on the friction linings.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace rotor</li> </ul>

## ■ Exchange of the rotor (Pos.3/ Figs. 1 and 3)

1. Unscrew plug ( 5 ) with 'O' ring ( 6 ).
2. Remove the Brake assembly by unscrewing the hexagon head cap screws ( 10 ).
3. Clean the brake interior ( do not use grease or oil).
4. Manually remove the worn rotor ( 3 ) and locate the new exchange-rotor again. observe an easy running of the hub (4).



### Important!

The rotor ( 3 ) must be located onto the hub ( 4 ) in such a way that Hexagon remains engaged complete even if the friction linings are worn down.

5. Re-assemble the brake assembly.
6. Screw in plugs ( 5 ) with 'O' rings ( 6 ).
7. Check the air gap according to " air gap inspection".

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## ■ Electric connection (Fig. 8 )

The Brake coil voltage is indicated on the cable of tag.  
A DC voltage is necessary for the operation of the Brake coil.

## ■ Example for an electric connection

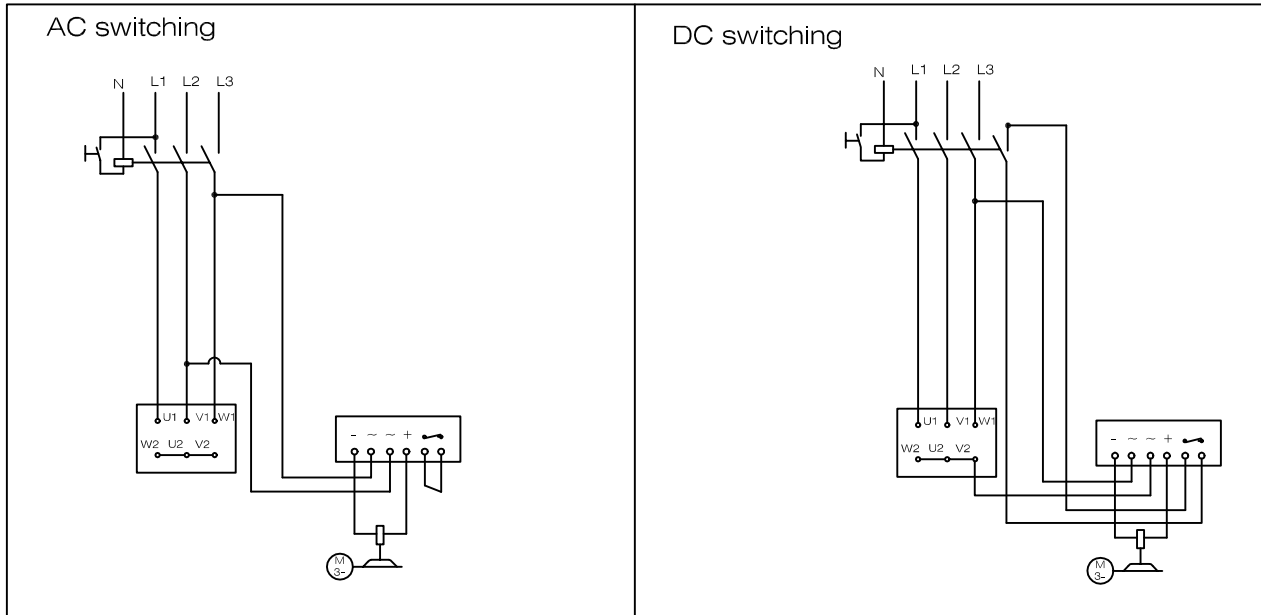


Fig. 8

Note :

For a fast switching time is necessary, i.e. a DC side switching.