



## Section C: Electromagnetic Brakes

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### I. DESCRIPTION AND OPERATION INSTRUCTIONS

#### A. HOW IT WORKS.

1. You will see from the drawing in **FIGURE-1** that the spring-loaded brake is a failsafe brake with two friction surfaces. Its torque is produced with spring pressure which is adjustable and the brake is released electromagnetically.
2. If you look at **FIGURE-1**, you will notice that the brake is shown in its braking position, with no current flowing in the coil. The springs (**#4**) are pressing the armature plate (**#2**) against a rotor (**#7**) which in turn is pushed against a counter surface **A-B**.
3. Pass an electric current through the coil (**#1**) and the armature plate (**#2**) will be attracted to the coil body (stator). As the armature plate moves, the air gap 'a' is reduced to zero and the rotor (**#7**) is free to rotate.

#### B. HOW TO USE IT.

##### 1. The components.

- a. The main components are preassembled from their constituent parts. These main components are:

**STATOR/ARMATURE ASSEMBLY: (parts 1, 2, 3, 4, 5, and 8).**

**ROTOR AND HUB: (parts 6 and 7).**

**ASSEMBLY KIT: (parts 9a and 9b).**

- b. The stator/armature assembly consists of a stator body with its coil (**#1**), compression springs (**#4**), tappets (**#5**), torque adjusting ring (**#3**), armature plate (**#2**) and adjustment tubes (**#8**).
- c. The rotor (**#7**) is made of a non-magnetic material which also has a very low inertia and friction material (**#6a**) is bonded to both sides. The rotor's internal splines engage the splined but to allow the rotor to move freely axially. The brake is fixed to the counter surface **A-B** by using 3 (or 6 on sizes 20 and 25) hexagon socket screw (**#9a**).

##### 2. Electrical connections.

The brake requires D.C. voltage to operate correctly. The necessary D.C. voltage can be provided by one of our Power Units or a Bridge Rectifier type or your own supply.



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### 3. Accessories.

- a. Should power fail, the brake can be released mechanically provided the manual release mechanism is available. Pulling the handle will release the rotor by moving the armature plate away from it. The release is a 'deadman' type. When you let go, the brake immediately returns to its failsafe function.
- b. If there is not a recommended mounting surface **A-B** ground to 5-8 m surface roughness available, mounting flange should be used. The flange can be fixed by using one of two sets of mounting hole configurations.
- c. If the environment contains oil, dirt and moisture, the friction surface should be covered by a rubber seal. Stretch the seal over the gap where the rotor is located and allow it to snap into the grooves provided in the stator and mounting flange.
- d. If the standard flange is not used, a suitable groove should be provided on the surface.

### 4. Maintenance.

In most applications, the brake needs practically no maintenance. However, after a long period of operation, or when the brake has done a slot of work, adjustment of the air gap '**a**' may be required. When the '**a max**' value as shown in **TABLE-1** is exceeded, adjustment is necessary, back to the nominal value '**a**'.

**TABLE - 1**

SIZE	06	08	10	12	14	16	18	20	25
'a' INCH	.008	.008	.008	.012	.012	.012	.016	.016	.020
'a max' INCH	.020	.024	.024	.040	.043	.055	.055	.063	.087
'u' Inch	.040	.040	.040	.040	.040	.059	.059	.059	.059

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### II. REPAIRS AND PREVENTATIVE MAINTENANCE.

#### A. FITTING.

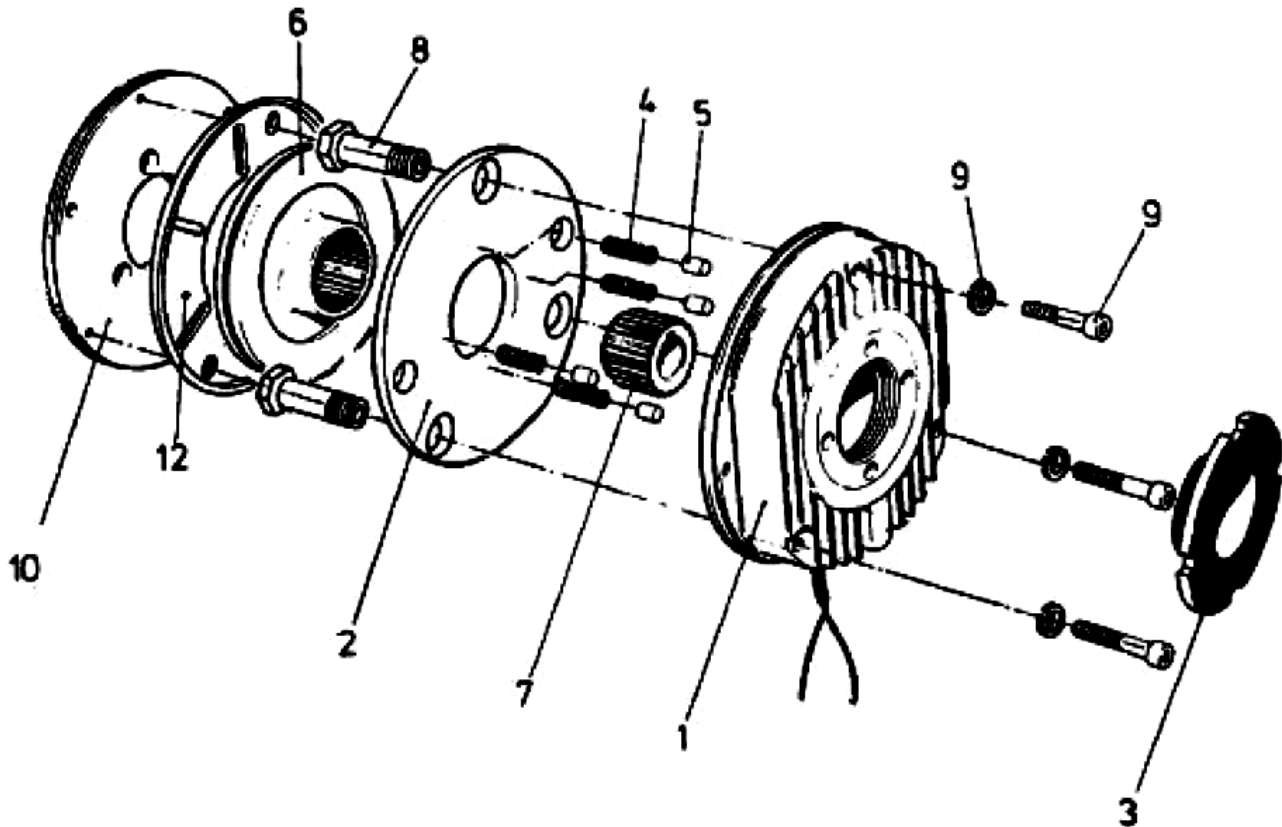
1. Where a suitable counter surface can not be provided, screw a mounting flange (#10) onto your machine.
2. Press the hub (#6) onto the shaft, please check tolerance **K6**. The hub should be secured both axially and from rotating.
3. Place the rotor (#7) onto its hub (#6).
4. Place the assembly kit screws (#9a) in the holes provided in the stator/armature assembly. Do not forget the spring washers (#9b). If you are not fitting a manual release kit, go forward to step 7.
5. The manual release lever and fork is shipped pre-assembled.
6. Remove the two fitting nuts (#12e) and associated springs. Assembly them to the stator/armature as shown in the figure below. Do not tighten the nuts (#12e) yet.
7. Screw the brake to its mounting flange or counter surface and do not forget to remove the transit clips from the adjustment tubes.
8. You can check the air gap measurement most easily by using feeler gauges in three positions.
9. If adjustment should be necessary, loosen screws (#9a) and the air gap can be set by rotating the adjustment tubes (#8). Re-tighten screws (#9a).

**NOTE** - The friction surface should never be allowed to come into contact with any lubricant whatsoever.

#### B. ALTERING THE TORQUE RATINGS.

The brake is supplied with the nominal torque settings from the factory. This torque can be reduced by unscrewing the torque adjusting ring (#3) with a 'C' spanner, as far as dimension **0<sub>i</sub>** in **FIGURE-1**. The torque adjuster has a step or decent action and the torque variation per step is given in **TABLE-2**.

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NO.	DESCRIPTION	NO.	DESCRIPTION
1	Stator (Stator/Armature Assembly)	7	Hub
2	Armature Plate	8	Adjustment Tube Kit
3	Adjuster Nut	9	Mounting Screws (9a + 9b)
4	Spring	10	Mounting Flange
5	Tappet (Spring & Tappet Kit)	11	Seal (Option)
6	Rotor	12	Wear Plate

\*\*\*There are no steps for this size. The figure given relates to a rotational angle of 45° of the adjuster.

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### TABLE - 2

SIZE	06	08	10	12	14	16	18	20	25
Torque LBS. - FT.	3	6	12	24	44	60	110	178	25
Torque Reduction/Step LBS.- FT.	0.074	0.148	0.443	0.885	1.18	1.55	1.03	1.48	3.69
O <sub>1</sub> (FIG. - 1 Inch)	0.24	0.26	0.33	0.39	0.45	0.45	0.51	0.59	0.63

SOME PARTS ARE NOT AVAILABLE SEPARATELY FROM THE COMPLETE KIT, EX. #12 HAND RELEASE KIT

### FIGURE - 1

