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EMCO - Simplatroll®

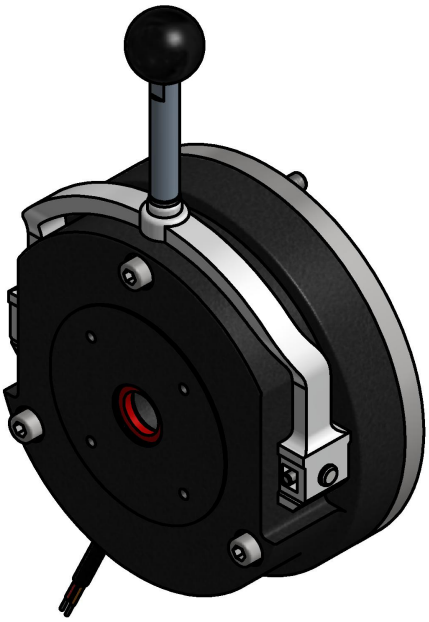
D. C. Spring Applied Brake

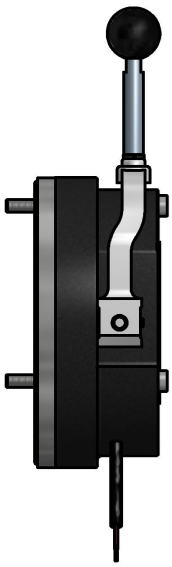
TYPE – 14.450. ☐☐

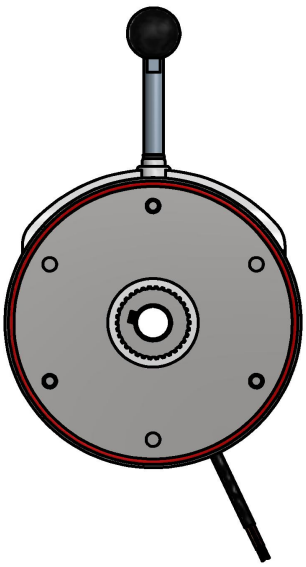
Fitting & Operating Instructions Manual

E335043

14.450.xx brakes also available in UL version 41.450.xx







D.C. SPRING APPLIED BRAKE
TYPE: - 14.450

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SECTION I

SAFETY PRECAUTIONS

1. To prevent electrical mishaps be sure to disconnect the power to the brake from its source before attempting to service or repair.
2. Look down or secure any load held by this brake prior to service or repair.
3. If this brake has been supplied with a manual hand release, do not override the brake by securing the hand release in an open position.
4. Do not operate brake in atmospheres with explosive gases and dusts or corrosive substances. This brake can operate in non-explosive dust or with optional seal in water splash and oil laden atmospheres.
5. When storing or installing the friction rotor, ensure that oil or grease is kept away from the friction material surface.

SECTION II

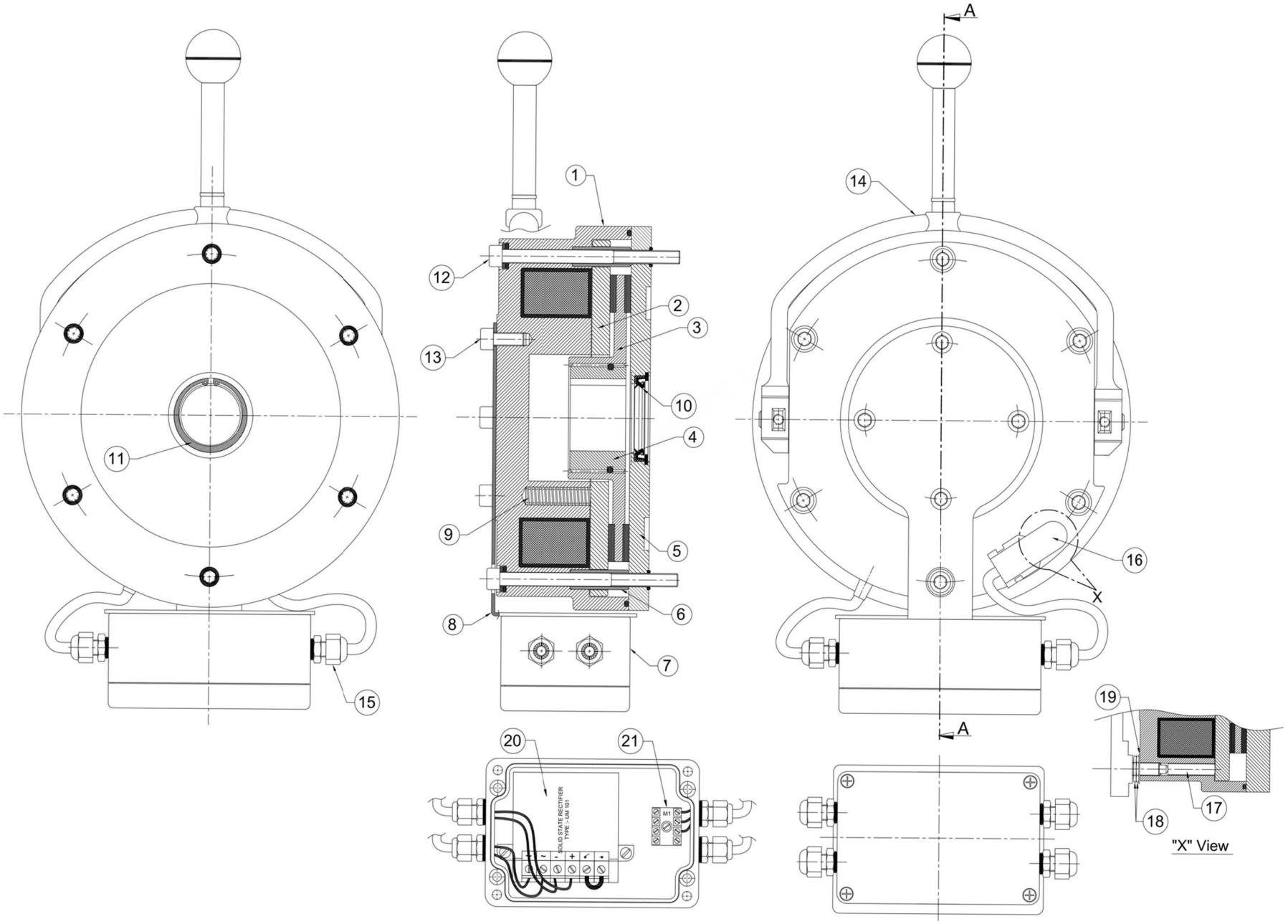
OPERATING PRINCIPLES

A. HOW THE BRAKE SETS

The EMCO Dynatorq Electromagnetic Release, Spring Set Brake – Type 14.450, as shown in Figure 1, produces its stopping torque by the use of multiple springs (9) exerting pressure against the armature plate (2). The armature plate in turn, is forced towards the flange (5) compressing the dual faced rotor (3) between the armature plate and flange. Figure 1 illustrates the position of the armature plate, rotor and flange plate in the set position. The rotor is internally splined & fit on to the hub (4) which is keyed to the shaft.

B. HOW THE BRAKE RELEASES

Energizing the coil of brake stator (1) with the proper DC voltage from Rectifier (20) produces an electromagnetic force which attracts the armature plate (2) closes the air gap “a” and allows the rotor (3) to rotate freely. The axial movement of the friction rotor is accommodated by splined hub (4).


A
1
2
3
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9
10
11
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13
14
15
16
X
19
17
18
"X" View
20
21
SOLID STATE RECTIFIER
TYPE - LM 101
M1
A

FIGURE 1

Cross Sectional View

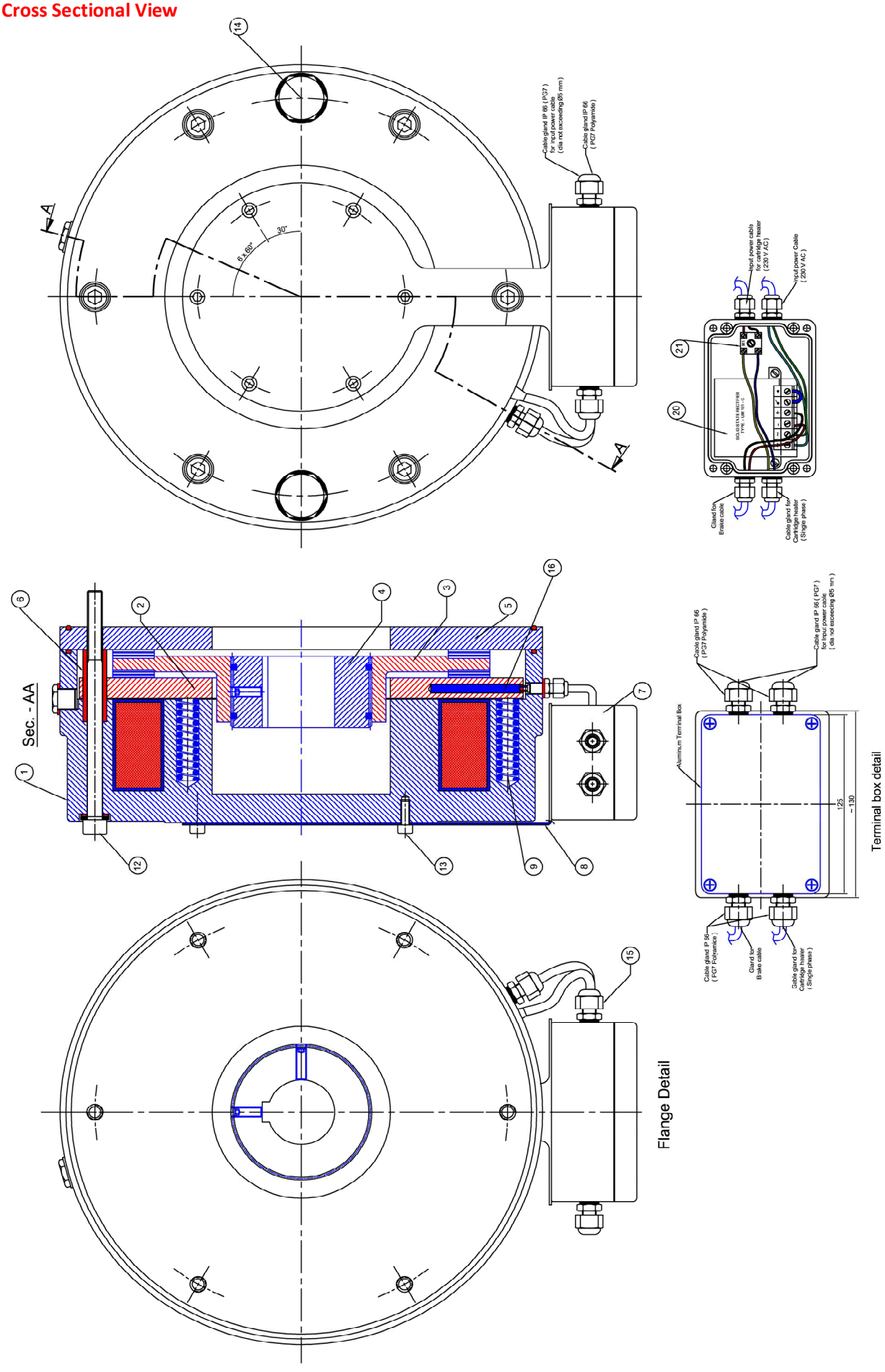


Figure 1 (Part List)

1. Brake Stator
2. Armature Plate
3. Rotor
4. Hub
5. Flange
6. Spacer
7. Terminal Box
8. Bracket for Terminal Box
9. Compression Spring
10. Rotary Shaft Seal
11. Internal Circlip
12. Brake Mounting bolts
13. Bracket mounting bolts
14. Lever Type Manual Hand Release Assembly
15. Cable Glands
16. Micro-switch & Cartridge heater
17. Hex Nuts

SECTION III

ACCESSORIES

A. MANUAL HAND RELEASE ASSEMBLY (14) (Figure 2)

In the event of power failure the brake can be released manually, pulling the handle front side releases the friction rotor by moving the armature plate away. The manual release is a dead-man type so that when it is left it returns to its original set position, which in turn immediately returns armature to its set position & sandwich rotor in between flange & brake is applied.

" OR "

In the event of power failure the brake can be released manually by removing hex plug (14) & rotating allen bolt (22) fixed inside in clockwise direction with allen-key till "U" gap is closed & friction rotor gets free. After finishing work rotate allen bolt (22) in anticlockwise direction till "U" gap mentioned in a table is set, which in turn will immediately returns armature to its set position & sandwich rotor in between flange & brake is applied. Put Hex plug (14) again on brake stator. This is a screw type of manual release system.

B. ROTARY SHAFT SEAL (10)

Rotary Shaft Seal is fixed into the groove provided in the flange. The brake is now protected against oily, dirty or wet environments. The seals is also ideal in clean environments where it is necessary to keep the friction dust contained inside the brake.

C. MOUNTING FLANGE (5)

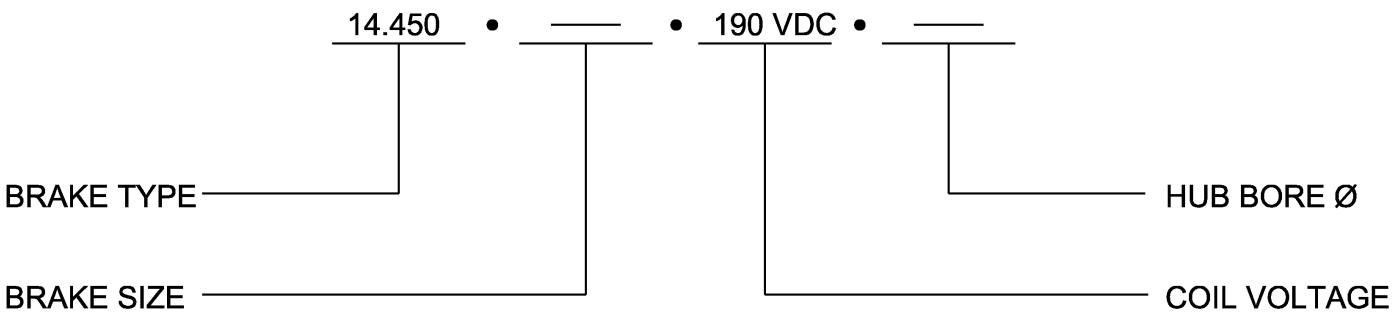
The mounting surface should be ground to a 5 – 8µm finish on applications that do not have a suitable counter surface for the rotor to act against.

D. RECTIFIER

Full and half wave rectifiers are available.
Over Excitation Voltage rectifiers are recommended to be used with brake size 18, 20, 25 & 31
Brake controllers are recommended for brake size 40 & 50.

SECTION IV

BRAKE DESCRIPTION



SECTION V

ASSEMBLY INSTRUCTIONS FOR TYPE 14.450

1. If a suitable counter braking surface for the friction rotor (3) is not available, mounting flange (5) to be used for fitting it on the machine.
2. Press the splined hub (4) onto the keyed shaft. Secure the hub axially with circlip or by similar means.
3. Slide the friction rotor (3) onto the splined hub (4).
4. Hand releases are already fitted on to the brake.
5. Place the mounting bolts (12) and washers in the holes of brake stator assembly (1).
6. Screw the brake through mounting flange (5) to the machine surface / motor end shield with mounting bolts (12) using torque values consistant with normal mechanical practice.
7. The air gap is preset at the factory. Air gap adjustment is not possible as these brakes are with fixed air gap.
8. Set the hand release gap (Dimension “U” Figure 2) to the value indicated in table 1 by tightening hand release hex bolts .Once it is set the bolts are locked with factory applied thread locking compound. Any change in this setting could interfere with the safe operation of the brake.

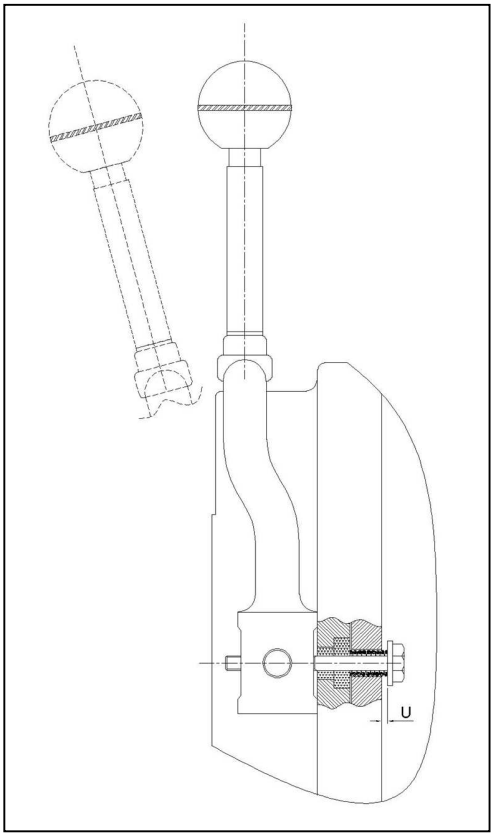
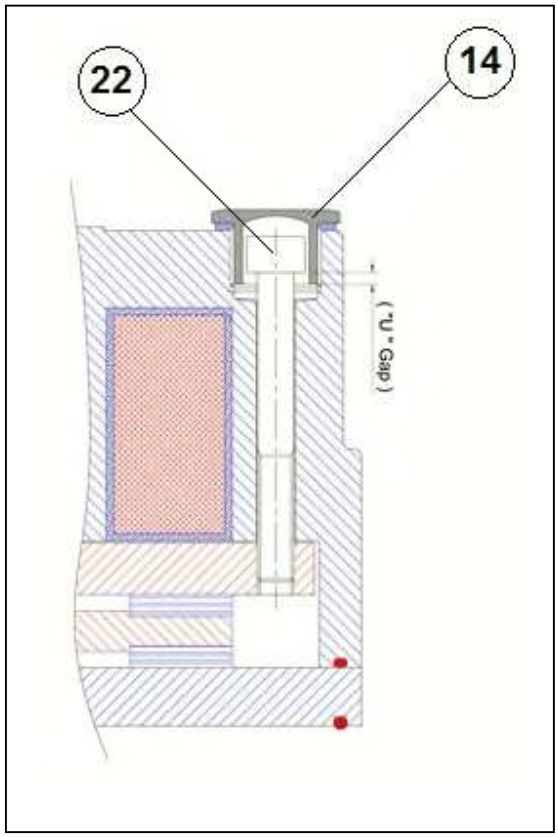


FIGURE 2
Hand release "U" Dimension



Air Gap & Hand Release "U" Gap value **TABLE - 1**

Brake Size	06	08	10	12	14	16	18	20/23	25	31
Rated air gap 'a' (+0.1/-0.05)	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5
Max airgap 'a'	0.5			0.75			1.0		1.25	
Tightening torque of fixing bolt (Nm) (±10%)	3.0	6.0	10.0		20.0			35.0		
'U' (+0.1)	1	1	1	1	1	1.5	1.5	1.5	2	2
Perpendicularity of motor shaft w.r.t end shield	0.04			0.06			0.08		0.10	

All values are in 'mm'

SECTION VI

TORQUE RATING

TABLE -2

Size	06	08	10	12	14	16	18	20/23	25	31
Torque	5	10	20	40	60	100	150	260/315	400	600/800

Brakes are supplied from the factory with a fixed torque. Torque cannot be adjusted in these brakes.

SECTION VII

MAINTENANCE

In most applications, the brake needs practically no maintenance. However, after a long period of operation, or if the brake has a high duty operations & when the 'a max' value shown in Table -1 is exceeded, rotor need to be replace as these brakes are of fixed air gap type.

SETTING OF MICRO SWITCH

Adjustment of micro switch is necessary if micro switch setting is disturbed.

1) Disconnect the micro switch cable wires from the Terminal block (21) fitted in terminal box (7)
2) Give voltage to brake stator coil (1) through rectifier to attract armature plate toward brake stator closing the air gap.
3) Now loose micro switch nuts (17).
4) Rotate micro switch (16) slightly in clockwise direction, check continuity between "C" common & "NO" Normally Open wire with multi meter.
5) If continuity is not observed between "C" & "NC" again rotate micro switch in clock wise direction till continuity between "C" & "NO" wire is observed.
6) Now tight the nuts (17) firmly so that micro switch position is locked.
7) Once again check continuity between Common & Normally open wire.
8) Connect the micro switch cable wires to the terminal block (21)

SECTION VIII

TECHNICAL DATA

Type & Brake Size	Power (Watts)	DC Voltage	Coil Resistance (Ω)		Rated Torque Nm
			Min	Max	
14.450.06	30	24	18.43	20	5
		103	339.5	368	
		110	387	420	
		190	1155	1251	
		205	1345	1457	
14.450.08	40	24	13.82	15	10
		103	254.5	276	
		110	290	315	
		190	866	939	
		205	1009	1093	

14.450.10	50	24	11.04	12	20
		103	203	221	
		110	232	252	
		190	693	751	
		205	807	874	
14.450.12	60	24	9.21	10	40
		103	170	184	
		110	193	210	
		190	577	626	
		205	672	728	
14.450.14	90	24	6.14	6.65	60
		103	113	123	
		110	129	140	
		190	385	417	
		205	448	486	
14.450.16	100	24	5.53	6	100
		103	101	111	
		110	116	126	
		190	346	376	
		205	403	437	
14.450.18	115	24	4.8	5.21	150
		103	88	96	
		110	101	110	
		190	301	327	
		205	350	380	
14.450.20	140	24	3.93	4.28	260
		103	72	79	
		110	82	90	
		190	247	268	
		205	288	313	
14.450.23	150	24	3.64	4	315
		103	67	74	
		110	77	84	
		190	231	250	
		205	268	292	
14.450.25	190	24	2.8	3.2	400
		103	53	58	
		110	61	66.5	
		190	182	190	
		205	212	230	
14.450.31	210	24	2.63	2.85	600
		103	48	53	
		110	55.3	60	
		190	165	179	
		205	192	208	
14.450.31	240	24	2.3	2.5	800
		103	42	46	
		110	48	53	
		190	144	157	
		205	168	182	

SECTION IX

PARTS LIST AND ORDERING

When ordering parts refer Figure 1 (Part List) for part description.

Ordering Example:

Give the following:

1) 14.450 __ __. Size
2) Part Description (As per list)
3) Coil Voltage
4) Hub Bore Diameter (in 'mm')

c UL us

E335043

14.450.xx brakes also available in UL version 41.450.xx

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Manufacturers:

Emco Dynatorq Pvt. Ltd.

*(Formerly known as **EMCO LENZE PVT.LTD.**)*

Unit – I : Shivam Ind. Estate, Bldg. No. 3,
Gala No. 12A & 12B, Tungareshwar Phata Road,
Sativali, Vasai (E), Thane-401 208. Maharashtra.
Phone : +91 250 2480489 / 2480490 / 3298019 / 2481256
Fax : +91 250 2481 086
Email : vasai@emco-dynatorq.in

Unit – IV : Plot No. 1426 GIDC,
Waghodia – 391 760, Dist. – Vadodara. (Gujarat)
Email : dynatorq@gmail.com

MARKETING OFFICE: 1st Floor, Sita Mauli, B Wing, Above Bank of Maharashtra,
Madanlal Dhingra Road, Panch Pakhadi, Thane – 400 602 (Mumbai)
Ph. No. : (022) 25405488, 25405490, 25452244, Fax: (022) 25452233
Email: mktg@emco-dynatorq.in
Website : www.emco-dynatorq.in

THE ORIGINAL Brake & Clutch People Since 1975

WARRANTY

CLAUSE No. ES/IBCD/101.A

The Company warranty's to repair or replace, at it's option, any of our products if proved to their reasonable satisfaction to have failed within **six months** of delivery by reason of faulty materials or workmanship.

This warranty is subject to the following conditions:

1. The products have been stored, installed, maintained and used according to the instructions given in our installation and maintenance manual.
2. The period of six months warranty is valid for usage of our products on an eight hours shift basis only. When the products are used on multiple shift basis, the warranty will stand reduced proportionately.
3. The defects are reported in writing within 15 days of occcurance but before expiry of the warranty period.
4. The warranty covers our products only. We do not assume any liability for whatsoever loss, damage, or injury caused to any machine, person, or property due to failure of our products.
   In no event shall the company be liable for loss of use of the product or for other incidental or consequential damages, expenses or economic loss or for any claim or claims for such damage expenses or economic loss.
5. The warranty stands cancelled when the products are damaged in transit, storage, or at the time of installation.
6. **A.** This warranty does not apply if the products have been damaged by accident neglect, misuse, during transit, or if the products have been modified in any way or if any attempt has been made to repair the products other than by the company.
   B. The material shall be sent to our factory for investigations on freight paid basis with octroi charges etc. to your a/c.
   If found defective or damaged not on A/c. of faulty materials or workmanship, repairs or replacement as the case may be will be carried out on chargeable basis, only after receiving your approval and acceptance.
7. The foregoing is in lieu of, all warranties express or implied and all other obligations or liabilities on the part of the company relating to the product, and the company neither assumes nor authorises any person to assume for it any other liability in connection with the sale of the product.

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WARRANTY REGISTRATION CARD

From whom received :

Date of receipt:

Sender's Name :

Address :

Address :

This portion of the warranty must be returned to the address overleaf within seven days of purchase of receipt as the case may be.

Please put seal of your company
with the signature of
authorised person.

Serial No. of Unit :

Bill No./Date :

GP-1 No. :

CUSTOMER .....

ON RECEIVING OUR PRODUCT (S) :

Complete and return the appropriate warranty
Registration card within seven days, ensuring
That all details are correctly entered.

WHEN RETURNING PRODUCT (S) FOR REPAIRS ETC:

Enclose clear detail's of claimed fault, together
with your name and address.

Please pack carefully and return it, shipment
Prepaid to :

Emco Dynatorq Pvt. Ltd.
(Formerly known as EMCO LENZE PVT. LTD.)

Unit – I : Shivam Ind. Estate, Bldg. No. 3,
Gala No. 12A & 12B, Tungareshwar Phata Road,
Sativali, Vasai (E), Thane-401 208.
Ph. : +91 250 2480489

Unit – IV :
Plot No. 1426 GIDC,
Waghodia – 391 760
Dist. – Vadodara.
Ph. : +91 2668 262180

FOR YOUR RECORDS :

PRODUCT TYPE :

EMDC FAIL SAFE BRAKE

MODEL / SIZE / DESIGN :
14.458..... VDC.....
Hub bore Ø.....H7
SERIAL NUMBER :

FROM WHOM RECEIVED :

DATE OF RECEIPT :

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