Emco-Simplatroll DC ***Spring Applied Fail Safe Brake*** *Type 14.488 is a "****Normally On****" brake. These brakes can be used for all applications where rotating machines must be stopped quickly when switched off or when power fails ensuring the SAFETY.*

Salient Features of Type 14.488

- Power Saver
- Fast engagement and fast dis-engagement
- Low heating of the brake
- Enhanced liner life
- 'Deadman Type' Manual Release
- Dust Protecting Seal
- Compact Size
- Easy Installation
- Rust Protection to All Metal Parts
- Simple Wear Adjustment
- Coil with 'F' Class Insulation#
- Non Asbestos Friction Liner*
- Use of Special Bonding Agent
- Tacho Mounting provision possible
- Microswitch available on request
- Low Rotor Inertia
- Cold climate versions available

 # Higher coil insulation available on request.
** Standard Indian liner. German liner available on request.*

Typical Applications


Tower Cranes


Machine Tools


Packaging Machines


Textile Machines


Industrial Cranes & Hoists


Windmills


Conveyors


Printing Machines


Elevators


Pallet Truck Drives

EMCO® & **EMCO-Simplatroll®**

making machines friendly

The brands emco & emco-simplatroll stand for uncompromised quality in products as well the services. Products that are safe & reliable and service that makes our products and your machines perform efficiently.

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CE

ISO 9001 : 2008

QAC/R91/1264
QAC/R91/1382

Emco Dynatorq Pvt. Ltd.
(Formerly **Emco Lenze Pvt. Ltd.**)
CIN NO. : U74999MH1991PTC061109

ISO 9001:2008 Company

CAT No. 488 / Rev. 1

EMCO-Simplatroll®

DC Spring Applied Brake

Type 14.488 (Normally On)

Fast engagement and
fast dis-engagement brake

Patent Pending

CE

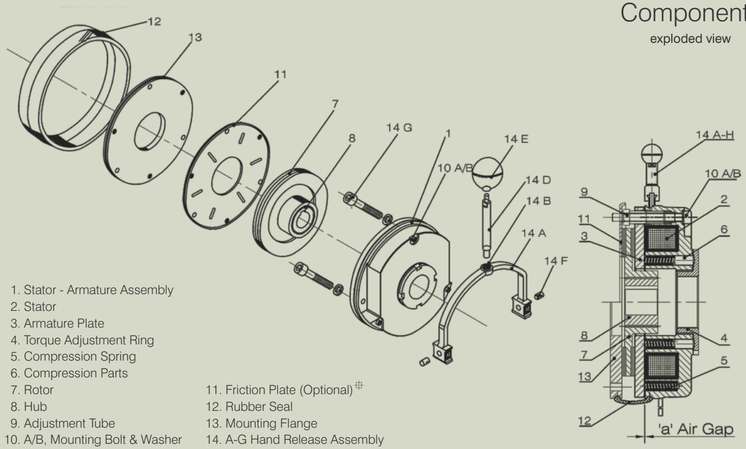
Emco Dynatorq Pvt. Ltd.
(Formerly **Emco Lenze Pvt. Ltd.**)

ISO 9001:2008 Company

GREEN BRAKE
POWER SAVER

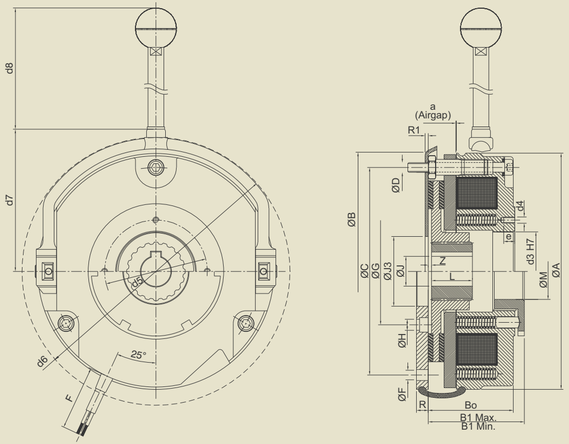
Components

exploded view



1. Stator - Armature Assembly
2. Stator
3. Armature Plate
4. Torque Adjustment Ring
5. Compression Spring
6. Compression Parts
7. Rotor
8. Hub
9. Adjustment Tube
10. A/B, Mounting Bolt & Washer
11. Friction Plate (Optional) ⌖
12. Rubber Seal
13. Mounting Flange
14. A-G Hand Release Assembly

Dimensions



Brake shown with Mounting Flange / Friction Plate and Rubber Seal

Operating times*

Brake Size	t_{11} ms	t_2 ms
06	4	12
08	6	18
10	8	30
12	10	45
14	11	55
16	12	75
18	15	105
20	22	130
25	28	170

t_{11} **Engagement time**
(Time taken by armature to get released from stator)

t_2 **Disengagement time**
(Time taken by armature to get attracted towards the stator i.e. release of brake)

The engagement times are valid for DC switching through auxiliary contact or relay. The dis-engagement times are valid AC side switching (Rectifier should not be supplied with AC input voltage continuously). AC voltage should only be supplied to the rectifier, at the same time AC voltage is supplied to motor.

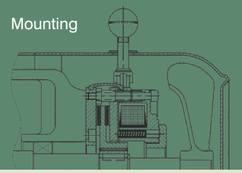
* *Average times measured with rated air-gaps.*

Advantages

The holding coil is designed for much lower power consumption (35 to 45% of the rated wattage of the standard 14.458 series brakes). Because the holding coil is "ON" most of the time (while the motor is running), there is quite a good amount of power saving as well as the following additional advantages.

- **Lower heating of the brake.**
- **Very fast engagement of the brake.**
- **The booster coil provides very fast release of the brake with the following additional advantages.**
  - Friction liner wear is greatly reduced.
  - Lower liner wear means lower maintenance costs and longer time period between resetting of the air gap.
  - Motor starting current is reduced substantially hence lower temperature rise of the motor and longer motor life.
  - Higher operating frequency is possible.

Mounting



Working

In the "power off" state the compression springs (5) press the armature plate (3) & rotor (7) against mating surface (11 or 13).

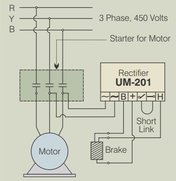
Hub (8) is firmly locked on the shaft and rotor slides over the hub.

On applying rated direct current voltage to the stator (2) the magnetic field produced will pull the armature plate (3) over air-gap 'a' towards stator against spring force. Thus the rotor is released allowing shaft to rotate.

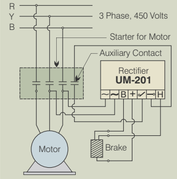
In the event of continuous power failure, rotor (7) can be made free by pulling the hand release (14) - the hand release of " deadman type". The hand release goes back automatically to its original position and brake will immediately revert to its safe hold action.

Switching

Rectifier Connection Diagram
(with purely AC switching)



Rectifier Connection Diagram
(DC switching ' Preferred Switching)



CAUTION : 14.488 BRAKES HAVE TO BE CONNECTED AS PER ABOVE DIAGRAMS ONLY OR ELSE FAILURE WILL OCCUR!

14.488 Series Double Coil Brakes are designed with two coils. 1. Booster Coil and 2. Holding Coil

The specially designed rectifier UM-201 is required for operating these brakes. Initially when AC power is applied to the rectifier the booster coil with high wattage and high magnetic force is switched 'ON' and the armature plate gets attracted very quickly to the stator, hence the brake gets released very quickly. After a few hundred milliseconds, the booster coil is disconnected electronically and the holding coil takes over. This holding coil is designed with much lower wattage, which however is sufficient to keep the armature plate to hold on to the stator and keep the brake released.

The brake can be operated with either AC switching or AC cum DC switching. With pure AC switching the brake is released very fast but the engagement is much slower (because of reverse emf generated by the motor and the brake coil). This delay in engagement can be somewhat improved by doing the AC switching through the auxiliary contact of the motor starter (where only the reverse emf of the brakes's holding coil with lower magnetic force is present) With AC and DC combined switching the brake release as well as the brake engagement is very fast.

Brake Coil Voltage	AC Input Voltage	Current Rating	Rectifier Type
190 VDC	415 VAC	1.0 Amp	UM-201
96 VDC	230 VAC	1.0 Amp	UM-201 A

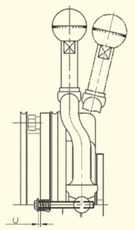
Note : 14.488 brakes are to be operated with UM-201 rectifier only.

Rectifiers made by **Usha Medisales**.

Parameters

All dimensions are in mm

Size		06	08	10	12	14	16	18	20	25	31
Torque	M RAT. (Nm)	4	8	16	32	60	100	150	260	400	600
Input Power	P20 [w]	8	10	12	16	20	31	34	40	44	56
	ØA	87	105	130	150	165	190	217	254	302	302
	ØB	82	101.5	127	147	163.5	188.5	-	-	-	-
	B0	36.3	42.8	48.4	54.9	66.3	72.5	83.1	97.6	106.7	120.7
	B1 Max.	41.5	48.5	56	64.5	77	82.5	98	114	124	144.7
	B1 Min.	39.5	47	52.5	59	71.5	77.5	89	104.6	115.7	134.7
	ØC	72	90	112	132	145	170	196	230	278	278
	ØD	3 x M4	3 x M5	3 x M6	3 x M6	3 x M8	3 x M8	6 x M8	6 x M10	6 x M10	6 x M10
	ØF	3 x 4.5	3 x 5.5	3 x 6.6	3 x 6.6	3 x 9	3 x 9	✻4 x 9	6 x 11	6 x 11	6 x 11
	ØG	30	45	56	62	74	84	100	120	150	150
	ØH	3 x 4.5	3 x 5.5	3 x 6.6	3 x 6.6	3 x 9	3 x 9	6 x 9	6 x 9	6 x 11	6 x 11
	ØJ3	20/31#	30/41#	40	45	55	65	75	90	120	120
	L	18	20	20	25	30	30	35	40	50	50
	ØM	22	26	33	40	48	56	60	73.1	95.1	95.1
	R	6	7	9	9	11	11	11	11	12.5	16
	R_1	1.5	1.5	1.5	1.5	1.5	1.5	-	-	-	-
	z	1	1.5	2	2	2	2.25	2.75	3.5	4.5	4.5
	a	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5
	U	1	1	1	1	1	1.5	1.5	1.5	2	2
	d3^{H7}	25	32	42	50	60	68	75	85	115	115
	d4	4 x M4	4 x M5	4 x M5	4 x M5	4 x M6	4 x M6	4 x M8	4 x M10	4 x M10	4 x M10
	d5	37.7	49	54	64	75	85	95	110	140	140
	d6	109	132	148	170	196	222	253	292	340	340
	d7	59	67	80	90	103	118	124	146	170	170
	d8	28	48	33	52	62	94.5	119.5	139	239	239
	e	10	12	15	15	15	15	15	20	20	20
	ØJ^{H7} **	10, 11, 12, 14, 15	11, 12, 14, 15, 19, 20	11, 12, 14, 15, 19, 20.	20, 24, 25,	20, 24, 25, 28, 30, 32	25, 28, 30, 32, 34, 35,	30, 35, 38, 40, 42,	35, 40, 42, 45, 48,	45, 48, 50, 52, 55, 60,	45, 48, 50, 52, 55, 60,
	***		24*	24*	28*	34*	38*	45	50	65, 70*	65, 70*
	F			410				610			
Inertia	J(kg cm^2)	0.15	0.61	2.0	4.5	6.3	15	29	73	200	200
Weight	kg	1.300	2.200	3.750	5.750	8.250	11.720	18.150	27.580	42.560	48.560



Brake shown with Manual Hand Release

** Standard bores
*** Max. bores

Liner wear is directly proportional to the speed at which braking takes place.

Specifications are subject to change without notice.

Important :

- For vertical mounting contact us.
- For applications with motor operated with VFD contact us for special circuit.
- Standard voltages : 96 V.D.C.; 190 V.D.C.
- P : Coil Power at 20° C
- Permissible voltage change +5% to - 10%
- Recommended ISO shaft tolerances
  Up to Ø50 mm = k6, Over Ø50 mm = m6
- Keyways to DIN 6885 / IS : 2048
  * Non std. Keyway
- 'H' holes on 'G' pcd, only on request.
- ⌖ Friction Plate upto size 16 only
- Applicable for flange bore 20/30

For size 06 ØJ ≤ 11, ØJ3 = 20
For size 06 ØJ ≥ 12, ØJ3 = 31
For size 08 ØJ ≤ 15, ØJ3 = 30
For size 08 ØJ ≥ 16, ØJ3 = 41

Selection

1. Select basic brake according to the torque.
   Torque (Nm) = 9550 X (Motor kW / RPM) X Safety factor (K)

Load Condition	Safety Factor (K)
Low masses, equal loading & non - intermittent operation	2.0
Low masses, light shock load & intermittent operation	2.5
Medium masses, light shock load & intermittent operation	3.0
Large masses, light shock load & intermittent operation	3.0
Diesel engine drive	4-5
Compressor drive	5-6
Non overhauling Loads	2-3
Overhauling Loads	3-4

2. Describe the brake with the ordering parameter.
   (Type, size, operating voltage and hub bore)
3. Choose optional extras required (G pcd, tacho mounting provision, friction plate (instead of mounting flange), with microswitch).
4. Choose appropriate safety factor for the hoist, lift, inclined conveyors or equipment where holding against gravity is required.
5. **Use rectifier UM-201 only for operating 14.488 brake.**
6. Choose correct input AC voltage for rectifier.