EMCO-Simplatroll®

DC
Spring Applied
Brake

Type 14.458 (Normally On)

CE

c UL us

14.458.xx brakes are also available in UL version **41.458.xx**

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

ISO 9001: 2015 Company

Emco-Simplatroll DC ***Spring Applied Fail Safe Brake*** *Type 14.458 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 14.458

- '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 #
- German 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.

Applications

Cranes & Hoists

Machine Tools

Packaging Machines

Textile Machines

Construction Machinery

Windmills

Conveyors

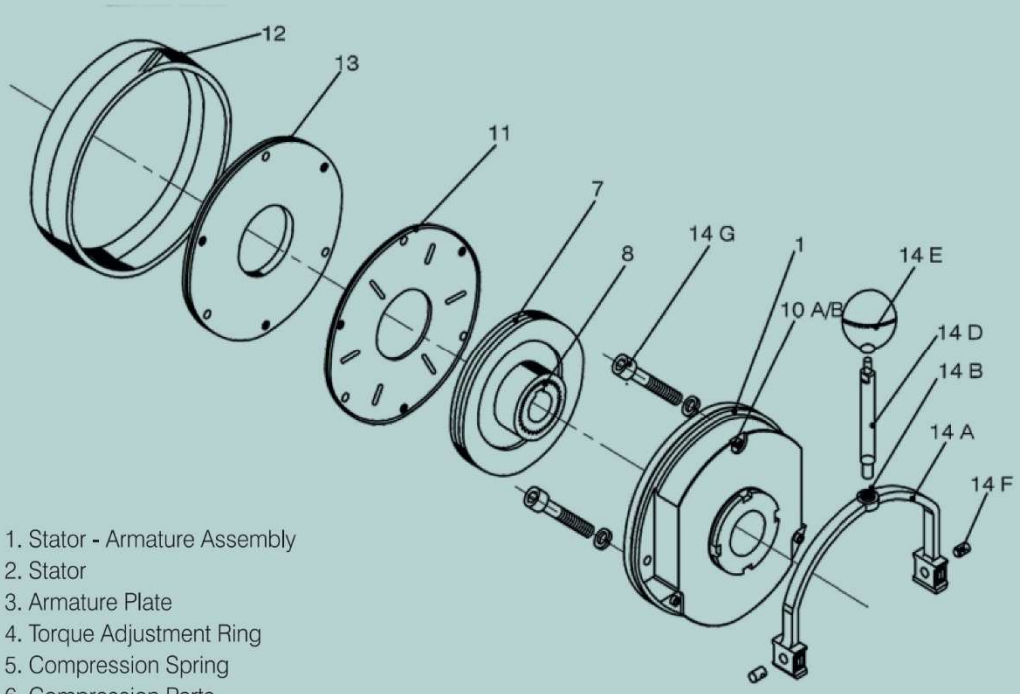
Printing Machines

Elevators

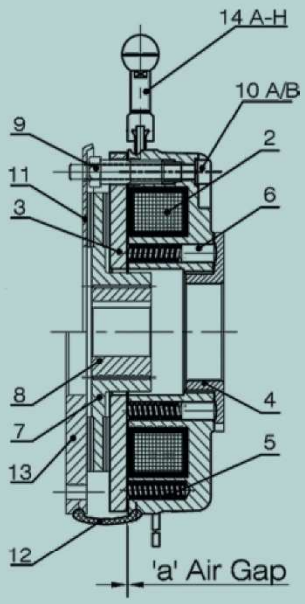
Pallet Truck Drives

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



Mounting

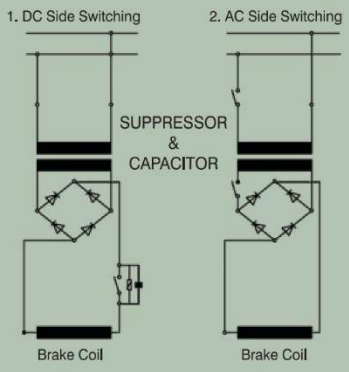
Working

In the "power off" state the compression springs (5) press the armature disc (3) and rotor (7) against attachment surface.

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 disc (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 freed 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 action.



Switching

Brake coils are operated with DC voltage. Generally when braking time is not critical AC side switching is done. This method is often used with brake motors, where brake is switched with motor contacts. Due to the inductance of the brake coil, engagement time can be 3 to 6 times longer than with DC switching. Therefore this arrangement is not suitable for hoist applications.

For falling loads such as hoist, lifts and cranes, also the high inertia loads, a brake motor to some extent regenerate the supply and hold off the brake. Here it is essential to switch on the DC side of the rectifier. DC side switching requires provision of universal spark suppressor and capacitor to protect the coil and switches against inductive voltages.

For normal rectifier converting AC to DC you can use separate universal spark suppressor and capacitor across the switch. Rectifier supplied by us are designed to include suppressor and capacitor suitable for DC switching.

For optimum performance we suggest the following Rectifiers (Power supply).

All rectifiers offered by us are with inbuilt DC switching protection circuit. Use of inferior quality & cheap rectifiers may damage your costly brake coils.

Use over excitation rectifiers UM series for all brakes involved in hoisting or application related to gravity.

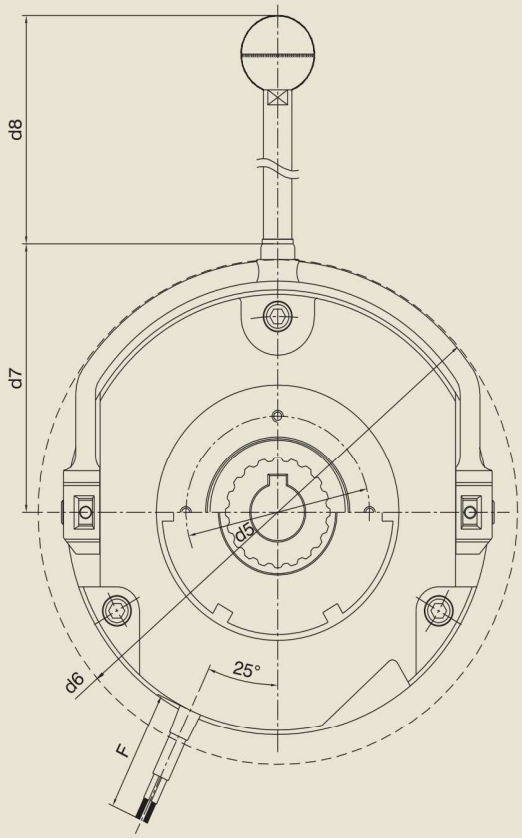
For brake size 18 and above use UM rectifiers. UM series rectifier are over excitation rectifiers.

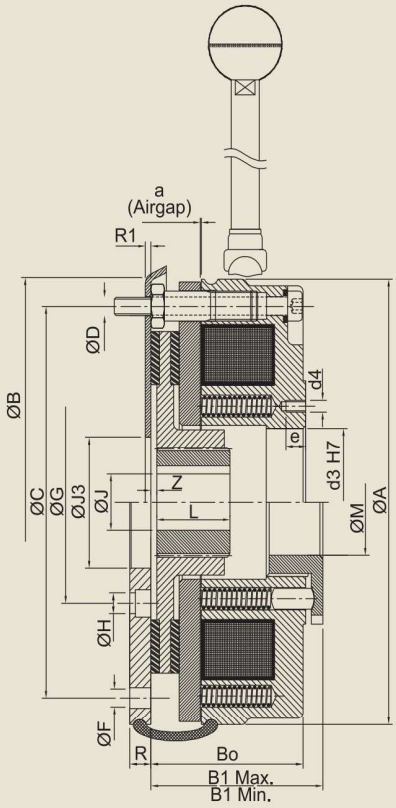
Rectifier Type	AC Input Voltage	Current Rating	Brake Coil Voltage
EH 720 HHD	415 VAC	2 Amp	190 VDC
EH 720 AD	230 VAC	2 Amp	205 VDC
EH 720 CD	230 VAC	2 Amp	103 VDC
EH 720 BD	115 VAC	2 Amp	
UM 101	415 VAC	2 Amp	190 VDC
UM 101 AV	415 / 460 VAC	2 Amp	190 / 205 VDC
UM 101 AVH	480 VAC	2 Amp	215 VDC
UM 101 A	230 VAC	2 Amp	103 VDC

Contact Sales for High Input Voltage And High Current Rating Rectifiers.

Rectifiers made by **Usha Medisales**

Dimensions



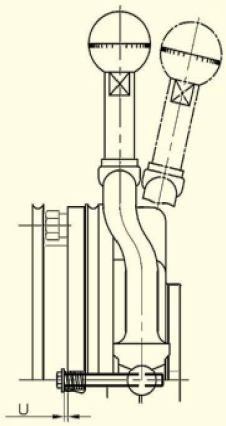


Brake shown with Mounting Flange / Friction Plate and Rubber Seal

Parameters

All dimensions are in mm

Size		06	08	10	12	14	16	18	20 / 23	25	31
Torque	M.RAT - Δn0 (Nm)	5	10	20	40	60	100	150	260 / 315	400	600 / 800
Input Power	P20 [w]	22	28	35	45	50	76	85	100 / 105	110	140 / 180
	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	31	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
	$d6^{(+1)}$	108.5	126	148.5	170	196	230	257	305	356	356
	d7	57	67	80	91	103	118	132.5	154	178	178
	d8	28	48	33	52	62	94.5	119.5	239	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



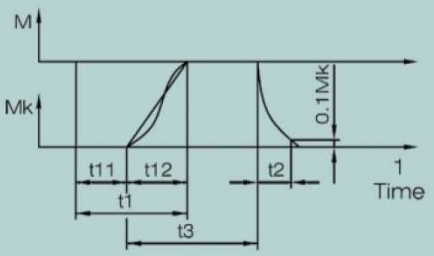
Brake shown with Manual Hand Release

** Standard bores
*** Max. bores

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

Δn0 = 100 [rpm] Initial relative speed of the brake

Operating times



The engagement times are valid for switching on DC side. The table shows the delay during engagement t11, the rise time of brake torque t12 and the engagement time t1 = t11 + t12. Disengagement time is not influenced by DC or AC side switching. However it can be reduced by suitable excitation or over excitation.

t1 Engagement time
t2 Disengagement time
t11 Delay time
t12 Rise time of brake torque
t3 Slipping time

Brake Size	t11ms	t12ms	t1ms	t2ms
06	15	14	29	46
08	15	16	31	58
10	29	19	48	76
12	29	26	55	118
14	17	28	45	215
16	29	32	61	228
18	35	48	83	272
20 / 23	70	100	170	350
25	115	128	243	405
31	130	140	270	510

Brake Size	Average Braking Torque %	Braking Torque at RPM			Maximum Speed (RPM)
		1500	3000	MAX.	
06	100	87	80	65	12400
08	100	85	78	66	10100
10	100	83	76	66	8300
12	100	81	74	66	6700
14	100	80	73	67	6000
16	100	79	72	66	5300
18	100	77	70	66	4400
20 / 23	100	75	68	66	3700
25	100	73	66	66	3000
31	100	71	64	62	3000

Important :

- Standard voltages : 24 VDC; 103 VDC; 190 VDC & 205 VDC (Other voltages on request.)
- **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
- Brake size 31 will be supplied without manual hand release lever
- For Vertical mounting, High speed braking & for special environmental conditions contact us.
- For long motor running cycles & high switching frequency, kindly contact us.
- For motors operated on VFD, do not connect input to the rectifier from motor terminals.

For Brake Size - 18

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. Select proper Rectifier considering rated voltage of the brake. If coil operating voltage is 103, 190 & 205 VDC you can use our rectifier. (Call for product details)
6. Choose correct input AC voltage for rectifier.
7. Space heater / Cartridge heater / PT sensor options available on request.
8. Inertia based size selection sheet available on request.

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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ED-155-3

E335088

14.458.xx brakes are also available in UL version 41.458.xx

Certification Partner Global

ISO 9001 : 2015

www.jas-anz.org/register

ISO 9001 : 2015 Company

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