

EMCO® & EMC0-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.



Regd. Office :

1st Floor, Sita Mauli, above Bank of Maharashtra, Madanlal Dhirga Road
Panch Pakhadi, Thane (West), 400 602, INDIA
Tel : +91 (0) 22 2540 5490 / 2545 2244 / 2541 5913 / 2541 5914
Fax : +91 (0) 22 2545 2233
Email : mktg@emco-dynatorq.in

Unit I :

Shivam Industrial Estate, Bldg. No. 3, Gala No. 12A & 12B
Tungareshwar Phata Road, Sativali, Vasai (E), Thane - 401208
Tel : +91 (0) 250 2694 777 / 6294 888 / 6063 999 • Fax : +91 (0) 250 2481 086
Email : vasai@emco-dynatorq.in

Unit II :

1003, GIDC, Waghodia, Dist. Baroda 391 760, Gujarat
Tel : +91 (0) 2668 262186 / 263089 • Telefax : +91 (0) 2668 262180
Cell : +91 90990 78735
Email : dynatorq@gmail.com / marketing.dynatorq@gmail.com

Unit III :

Gala No. 6A & 8, Kedarnath Bldg. Tungareshwar Indl. Estate, Sativali, Vasai (E)
Tel : +91 (0) 250 2480 178 / 2480 921

Unit IV :

1426, GIDC Waghodia, Dist. Baroda 391 760, Gujarat
Tel : +91 (0) 2668 290761

Website : www.emco-dynatorq.in



ISO 9001:2015 Company

Emco Dynatorq Pvt. Ltd.

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

CIN NO. : U74999MH1991PTC061109

EMCO-Simplatroll®

DC
Spring Applied
Brakes

Type **14.450**
Sealed Design
(IP 66 Enclosure)
(Normally ON)



Type **14.461**
Sealed Design
(IP 66 Enclosure)
(Normally ON)

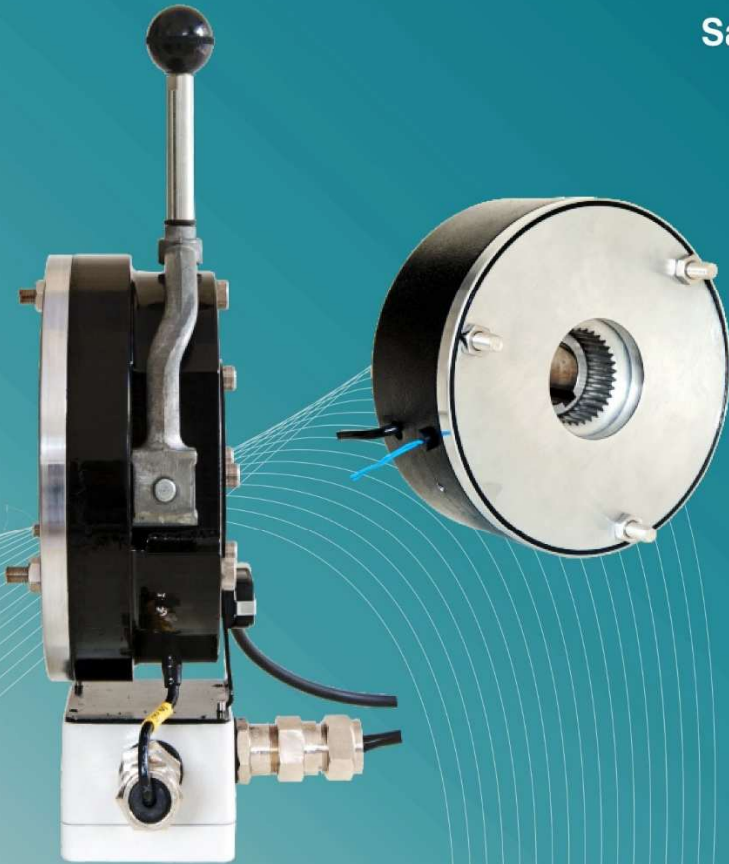


ISO 9001:2015 Company

Emco Dynatorq Pvt. Ltd.

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

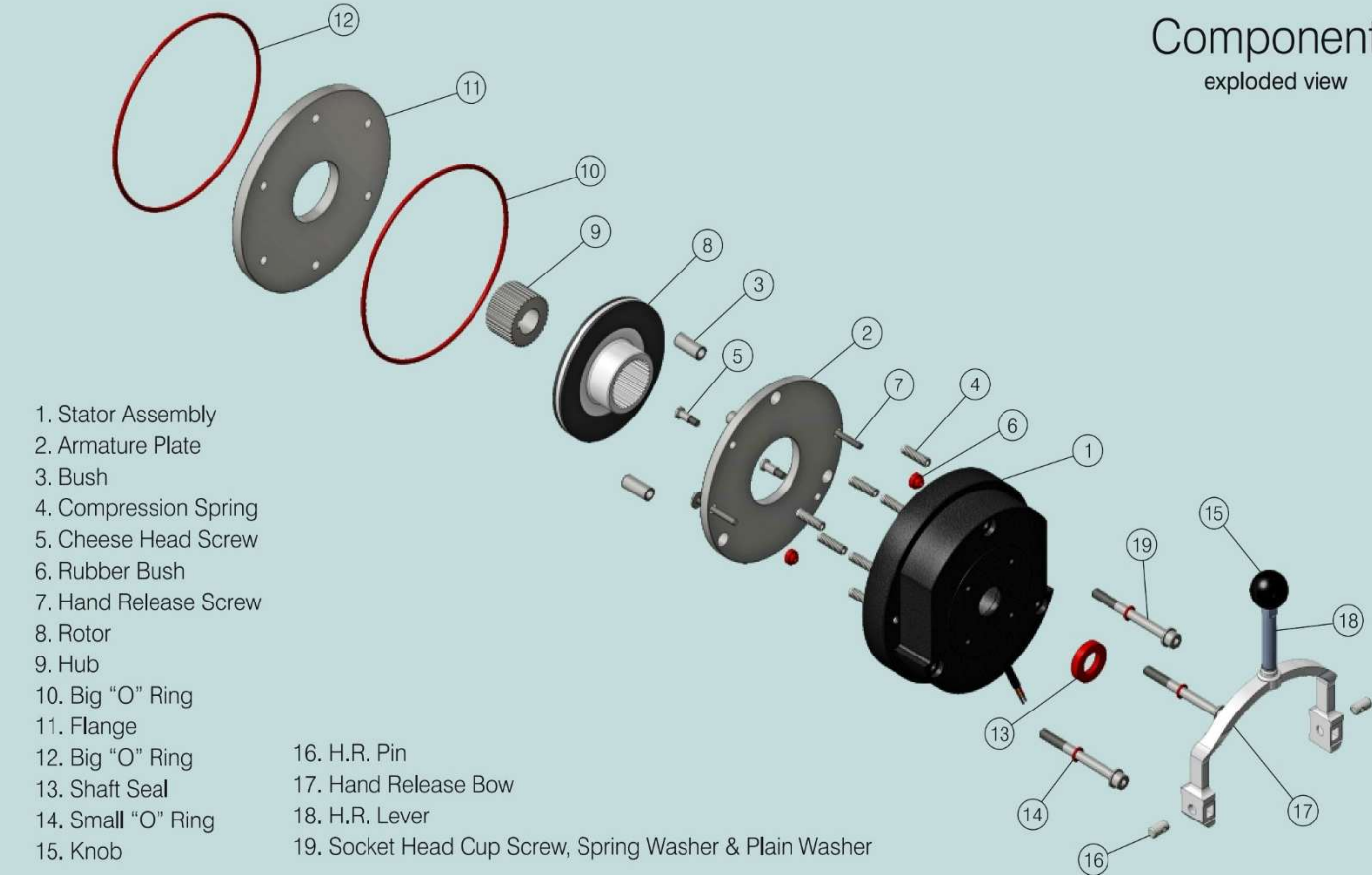
Emco-Simplatroll DC Spring Applied **Fail Safe Brake** Type 14.450/14.461 are “ Normally On” brake with IP 66 protection. These brakes can be used for all applications where rotating machines must be stopped quickly when switched off or when power fails ensuring the SAFETY.



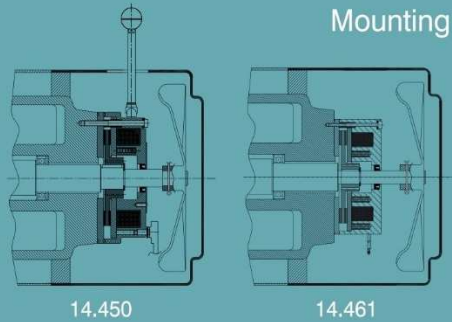
Salient Features of Type 14.450/14.461

- ▶ ‘Deadman Type’ Manual Release
- ▶ Brake outer diameter completely enclosed (Higher protection can be easily realised)
- ▶ Compact Size
- ▶ Easy Installation
- ▶ Rust Protection to All Metal Parts
- ▶ 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

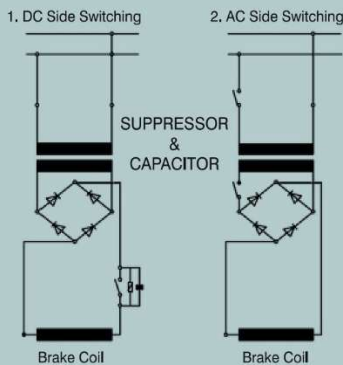
Higher coil insulation available on request.



Components
exploded view



Mounting



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).

Rectifier Type	AC Input Voltage	Current Rating	Brake Coil Voltage
UM 101	415 VAC	2 Amp	190 VDC
UM 101 AV	415 / 460 VAC	2 Amp	190 / 215 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 Rectifiers.

Applications



Cranes & Hoists



Machine Tools



Packaging Machines



Textile Machines



Construction Machinery



Windmills



Conveyors



Printing Machines



Elevators



Pallet Truck Drives

Working

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

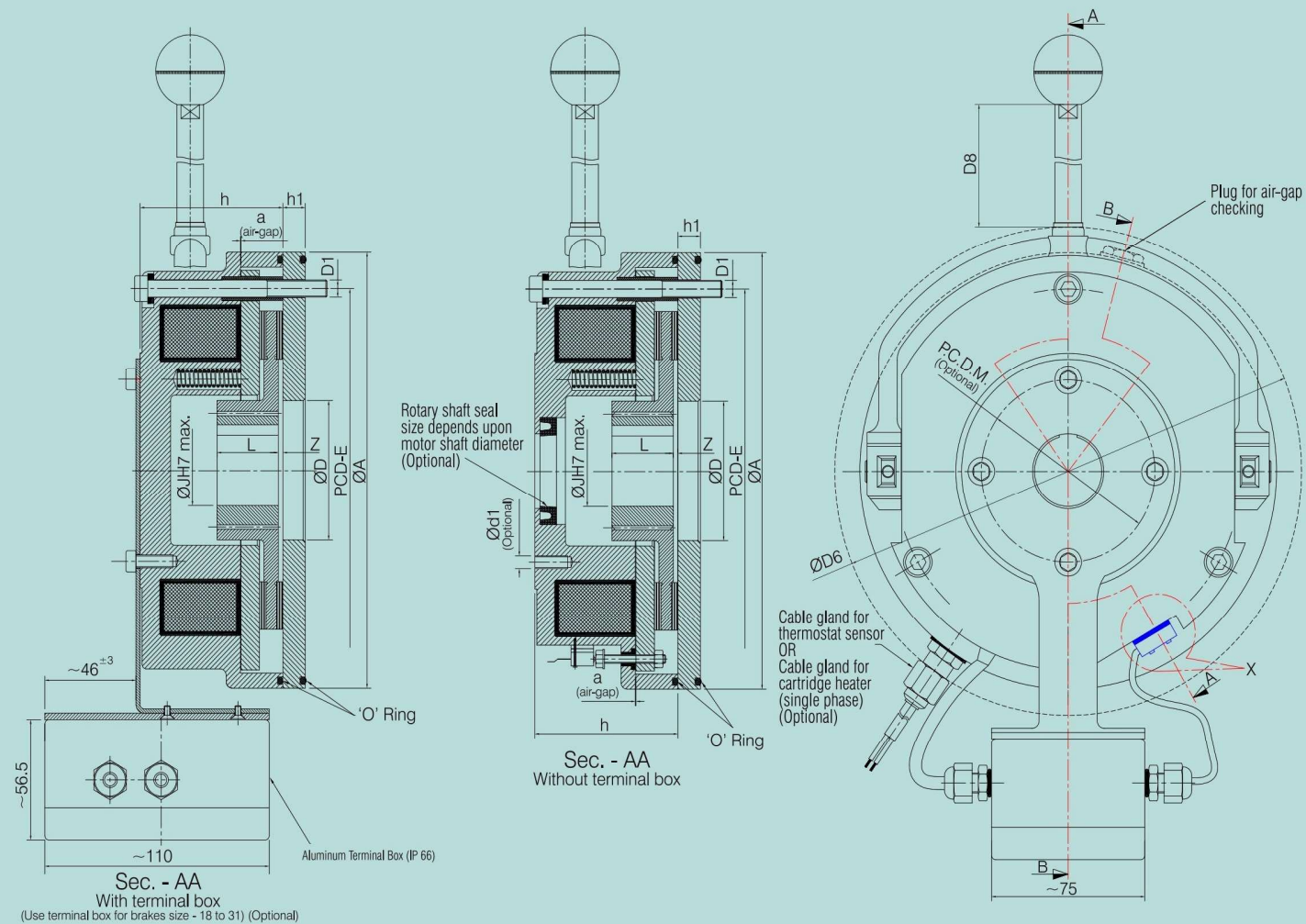
Hub (8) is firmly locked on the shaft and rotor slides over the hub.

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.

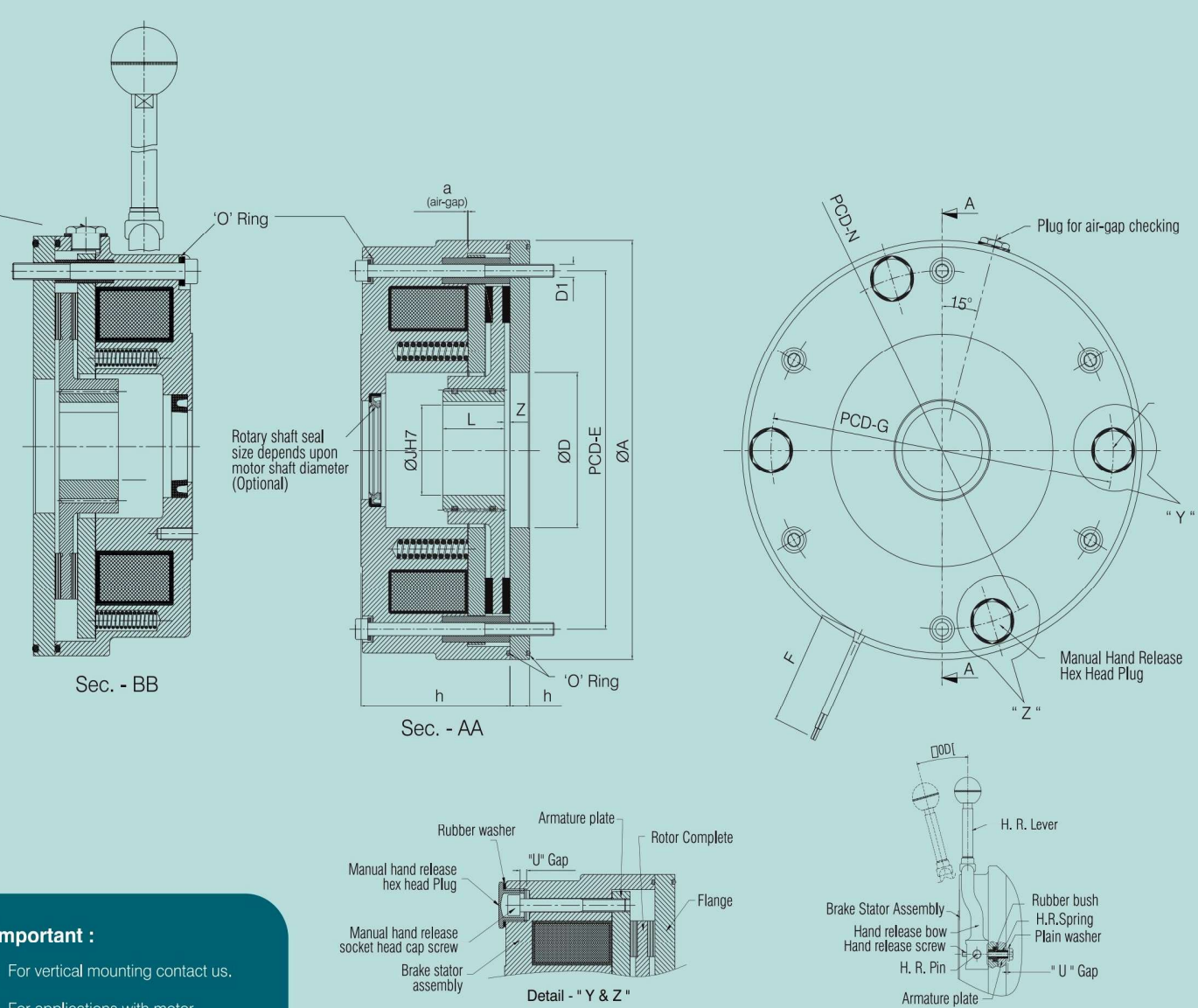
Type **14.450** (With Manual Hand Release & Saia-Burgess Microswitch)

Dimensions



Type **14.450** (With Manual Hand Release & Saia-Burgess Microswitch)

Dimensions



Parameters

All dimensions are in mm

Brake Size	Torque M RAT. (Nm)	Input Power P20 [w]	± 0.5 $\varnothing A$	± 0.1 $\varnothing D H 8$	± 0.1 P.C.D-E	± 0.1 P.C.D-M (Optional)	$\varnothing J H 7$	D1	d1	± 2 h	± 0.1 h1	± 0.2 L	± 0.1 Z	± 3 $\varnothing d 6$	± 2 D8	± 0.05 a (air-gap)
14.450.06	5	30	100	31	72	37	10,11,12,14,15	M4 x 3 Nos.	M4 x 4 Nos.	36	6	18	1	120	30	0.2
14.450.08	10	40	120	41	90	49	11,12,14,15,19,20	M5 x 3 Nos.	M5 x 4 Nos.	41	7	20	1.5	140	50	0.2
14.450.10	20	50	145	40	112	54	11,12,14,15,19,20	M6 x 3 Nos.	M5 x 4 Nos.	50	9	20	2	160	33.5	0.2
14.450.12	40	60	166	45	132	64	20,24,25	M6 x 3 Nos.	M5 x 4 Nos.	55	9	25	2	185	52.5	0.3
14.450.14	60	90	180	55	145	75	20,24,25,28,30,32	M8 x 3 Nos.	M6 x 4 Nos.	63.3	11	30	2	210	62.5	0.3
14.450.16	100	100	204	65	170	85	25,28,30,32,34,35	M8 x 3 Nos.	M6 x 4 Nos.	72.5	11	30	2.25	235	95	0.3
14.450.18	150	115	233	75	196	95	30,35,38,40,42	M8 x 6 Nos.	M8 x 4 Nos.	83	11	35	3	270	120	0.4
14.450.20	260	140	271	90	230	110	35,40,42,45,48	M10 x 6 Nos.	M10 x 4 Nos.	96	11	40	3.5	308	239	0.4
14.450.23	315	150	271	90	230	110	35,40,42,45,48	M10 x 6 Nos.	M10 x 4 Nos.	96	11	40	3.5	308	239	0.4
14.450.25	400	190	325	120	278	140	45,48,50,52,55,60,65	M10 x 6 Nos.	M10 x 4 Nos.	108	12.5	50	4.5	360	239	0.5
14.450.31	600 / 800	210 / 240	325	120	278	140	45,48,50,52,55,60,65	M10 x 6 Nos.	M10 x 4 Nos.	121	16	50	4.5	-	-	0.5
14.450.40	1600	340	390	145	325	160	50,52,55,60,65,70 75,80,85,90	M10 x 6 Nos.	M10 x 4 Nos.	133.8	20	64	4.5	-	-	0.5
14.450.50	2500	440	552	210	480	-	60,65,70,75,80,85,90 95,100,110	M16 x 6 Nos.	-	183.1	30	83	6.5	-	-	0.8

Important :

- For vertical mounting contact us.
- For applications with motor operated with VFD contact us for special circuit.

- Standard voltages :
24 VDC, 96 VDC, 190 VDC, & 220 VDC
(Other voltages on request.)

- P** : Coil Power at 20° C

- Permissible voltage change :
+5% to - 10%

- Recommended ISO shaft tolerances
Up to $\varnothing 50$ mm = k6
Over $\varnothing 50$ mm = m6

- Keyways to DIN 6885 / IS : 2048

- Brake Controller can not fit in terminal box. Please mount Brake Controller in the Control Panel.

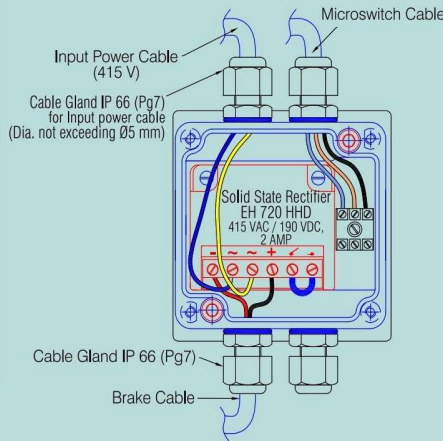
- Brake to be operated with over excitation voltage rectifier.

- Class of Insulation : "F" / "H"

- Armature Plate & Flange : SS with Zinc plated Olive Green Passivation.

- All other components Zinc plated Olive Green Passivation.

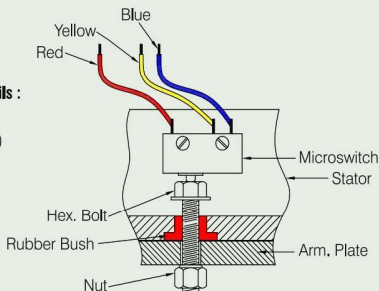
Brake shown with manual hand release details with PCD - G, PCD - N & "U" Gap			
Brake Size	PCD - G	PCD - N	"U" Gap
14.450.23	230	-	1.5
14.450.25	278	-	2
14.450.31	278	-	2
14.450.40	335	325	2.5
14.450.50	488	475	2.5



Brake shown with manual hand release		Force required to release brake with manual hand release	
"U" Gap		Brake with avg. rated air gap & "U" gap	
Brake Size	"U" Gap (0.1)	Brake Size	Manual release force (+10% Kg)
14.450.06	1	14.450.06	5
14.450.08	1	14.450.08	7
14.450.10	1	14.450.10	14.5
14.450.12	1	14.450.12	16
14.450.14	1	14.450.14	20
14.450.16	1.5	14.450.16	29
14.450.18	1.5	14.450.18	38
14.450.20	1.5	14.450.20	44

Microswitch Lead Wire details :

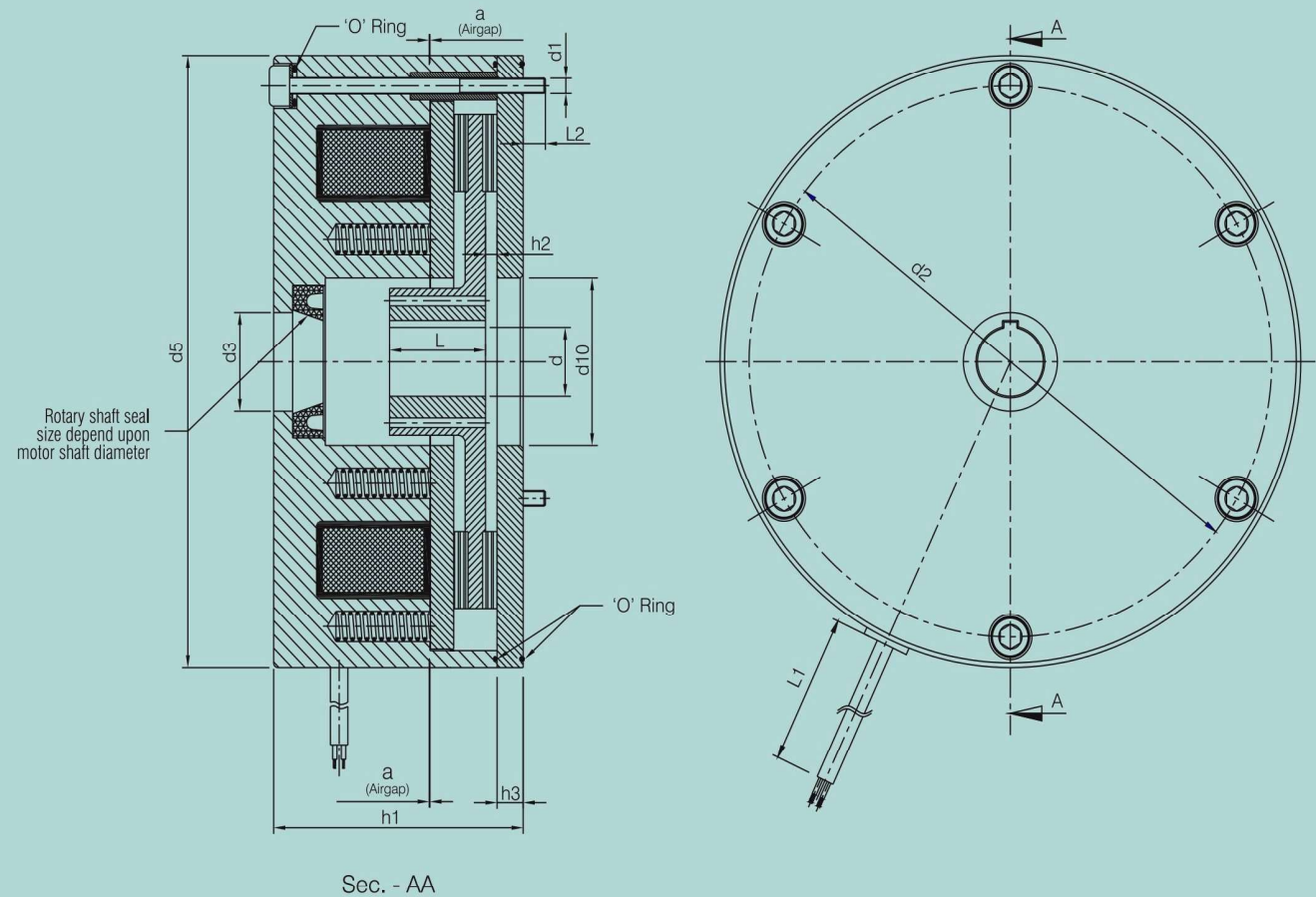
Red : C (Common)
Yellow : N.C. (Normally Closed)
Blue : N.O. (Normally Open)
Sealed : IP 67 Protection
Model No. : V4NSUL
Make : Sai-Burgess



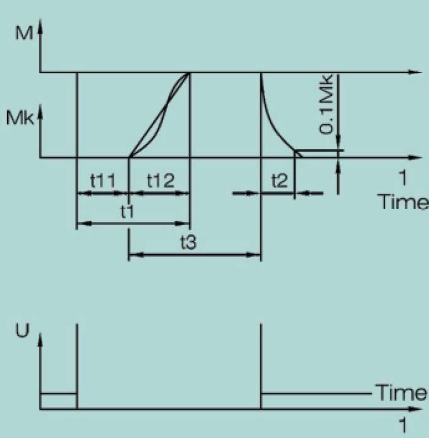
"X" View for Saia-Burgess Microswitch Detail

Type **14.461** (Normally ON)

Dimensions



Operating times



t1 Engagement time
t2 Disengagement time

Brake Size	t1ms		t2ms	
	14,450	14,461	14,450	14,461
06	7	10	17	35
08	10	25	35	65
10	10	30	40	90
12	10	40	50	120
14	15	50	65	150
16	20	70	90	180
18	30	80	110	300
20	50	150	200	400
25	70	200	270	500

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	100	75	68	66	3700
25	100	73	66	66	3000

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.

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

- Describe the brake with the ordering parameter. (Type, size, operating voltage and hub bore)
- Choose optional extras required (G pcd, tacho mounting provision, friction plate (instead of mounting flange), with microswitch).
- Choose appropriate safety factor for the hoist, lift, inclined conveyors or equipment where holding against gravity is required.
- Select proper Rectifier considering rated voltage of the brake. If coil operating voltage is 96 or 190 VDC you can use our rectifier. (Call for product details).
- Choose correct input AC voltage for rectifier.

Parameters															
All dimensions are in mm															
Brake Size	Torque M. RAT. (Nm)	Input Power P20 [w]	dH7	d1	±0.1	±0.2	±0.5	d10 H8	±1	±0.1	±0.2	+0.2	±15	L2	±0.05
14.461.06	5	30	10,11,12,14,15	M4 x 3 Nos.	72	16	87	31	42	1	6	18	410	7	0.2
14.461.08	10	40	11,12,14,15,19,20,24	M5 x 3 Nos.	90	21	103	41	50	1.5	7	20	410	9	0.2
14.461.10	20	50	11,12,14,15,19,20,24	M6 x 3 Nos.	112	21	130	44	58	2	9	20	410	12	0.2
14.461.12	40	60	20,24,25,28	M6 x 3 Nos.	132	26	148	52	63.5	2	9	25	410	12	0.2
14.461.14	60	90	20,24,25,28 30,32,34	M8 x 3 Nos.	145	31	165	55	76	2	11	30	410	12	0.3
14.461.16	100	100	25,28,30,32 34,35,38	M8 x 3 Nos.	170	36	200	70	83	2.25	11	30	610	15	0.3
14.461.18	150	115	30,35,38,40 42,45	M8 x 6 Nos.	196	46	221	77	94	2.75	11	35	610	15	0.4
14.461.20	260	140	35,40,42,45 48,50	M10 x 6 Nos.	230	52	274	90	111	3.5	11	40	610	20	0.4
14.461.25	400	190	45,48,50,52 55,60,65,70	M10 x 6 Nos.	278	72	326	120	122.5	4.5	12.5	50	610	20	0.5

Important :

- For vertical mounting contact us.
- For applications with motor operated with VFD contact us for special circuit.
- Standard voltages : **24 VDC, 96 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 (js9)
- Brake to be operated with over excitation voltage rectifier.
- Class of Insulation : "F" / "H"
- *Non Std. Keyway
- Non andjustable air-gap.
- Armature Plate & Flange : SS with Zinc plated Olive Green Passivation.
- All other components Zinc plated Olive Green Passivation.