



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.



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ISO 9001 : 2008



QAC/R91/1264
QAC/R91/1382



ISO 9001:2008 Company

Emco Dynatorq Pvt. Ltd.

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

CIN NO. : U74999MH1991PTC061109

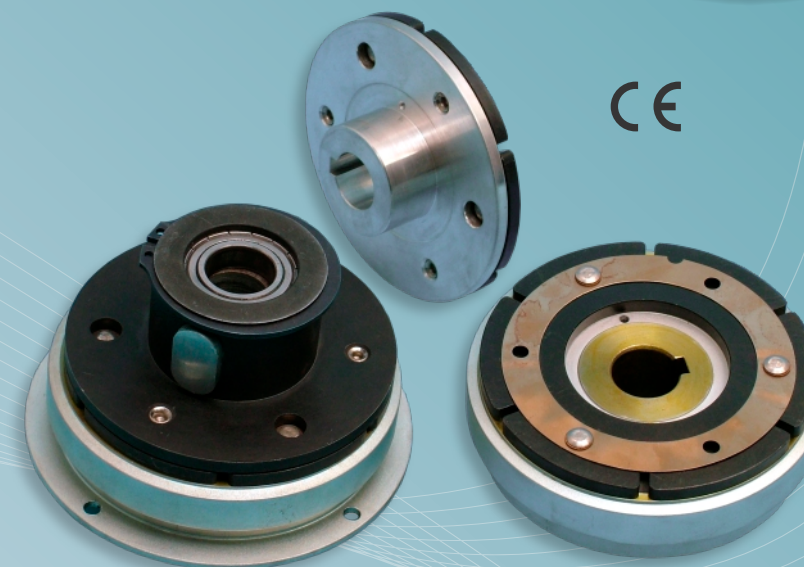
EMCO-Simplatroll®

DC Electromagnetic Brakes & Clutches

Type **14.115**
Flange Mounted Brakes
(Normally OFF)



CE



Type **14.105**
Flange & Shaft Mounted Clutches
(Normally OFF)



ISO 9001:2008 Company

Emco Dynatorq Pvt. Ltd.

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

CAT No. 458 IP 66 / Rev. 1

Emco Simplatroll DC Electromagnetic Brakes (Flange Mounted) and Clutches (Flange & Shaft Mounted) are designed for high consistent operating characteristic with a torque range of 7.5-2500 Nm. They are available in 3 different designs to stop/connect the drive or load side either shaft, pulley and sprocket. They are maintenance free and provided with a unique pre-stressed spring made from German spring steel and a coil with class 'F' insulation to give million of operations without fatigue.

Salient Features of **Type 14.115**

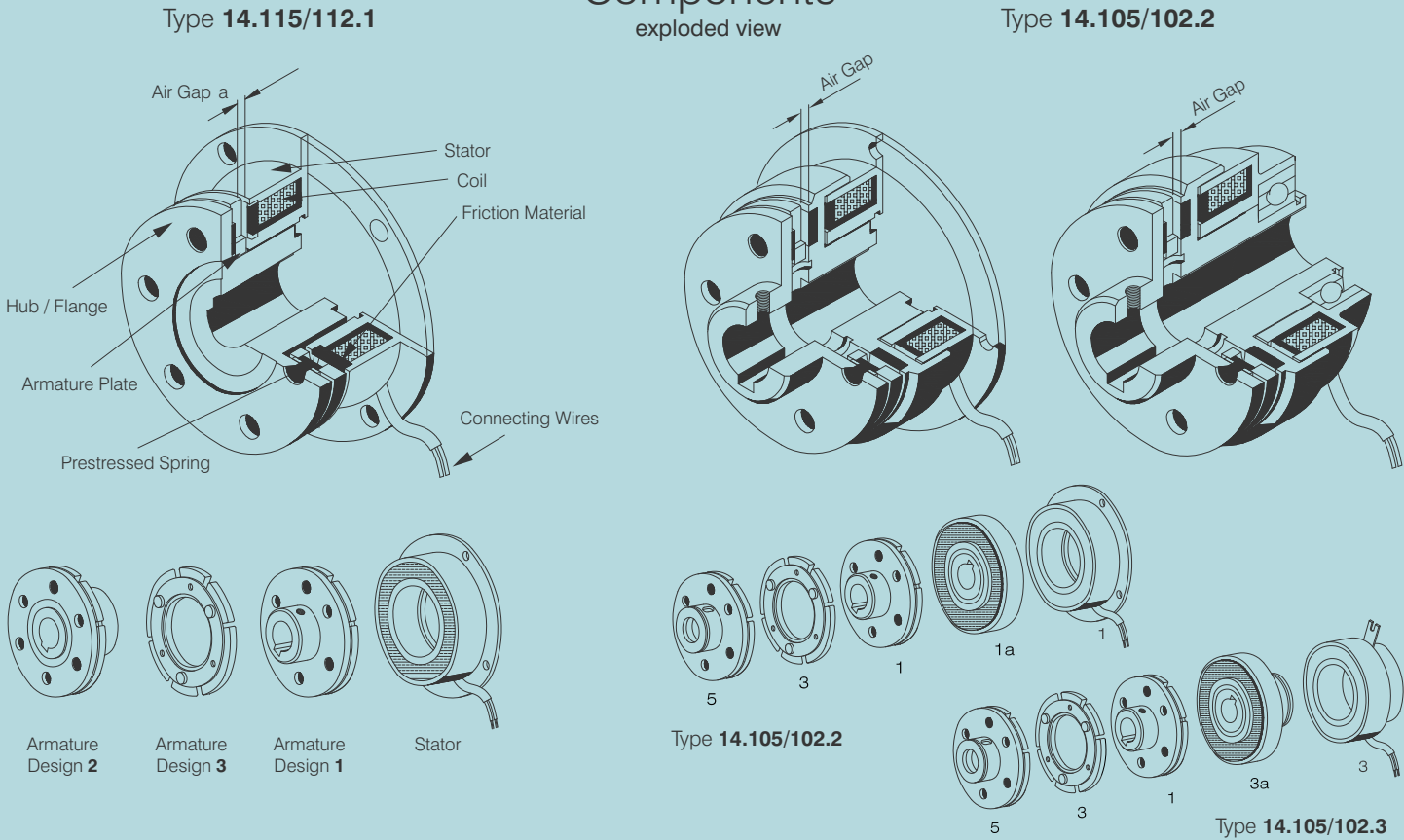
- ▶ Torque : 75 Nm to 2500 Nm
- ▶ Single Plate Dry Type
- ▶ Zero Backlash
- ▶ Residual-free
- ▶ Fast Switching Times
- ▶ High Operating Reliability
- ▶ High Operating Frequency
- ▶ Compact Dimensions
- ▶ Simple Construction
- ▶ Maintenance Free
- ▶ Long Life
- ▶ Unique Pre-stressed Spring
- ▶ Coil with Class 'F' Insulation#
- ▶ Stationery Field (No Slip Rings)
- ▶ Non Asbestos Special Friction Material*
- ▶ Consistent Operating Characteristics
- ▶ Simple Wear Compensation Adjustment
- ▶ Simple Installation
- ▶ Low Inertia of Rotating Parts
- ▶ No Restriction on Mounting Position

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

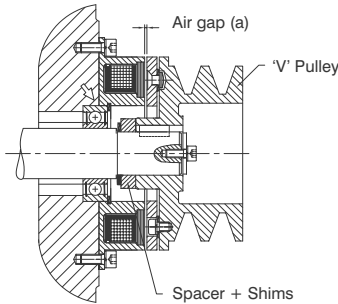
Salient Features of **Type 14.105**

- ▶ Torque : 75 Nm to 2500 Nm
- ▶ Single Plate Dry Type
- ▶ Zero Backlash
- ▶ Residual-free
- ▶ Fast Switching Times
- ▶ High Operating Reliability
- ▶ High Operating Frequency
- ▶ Compact Dimensions
- ▶ Simple Construction
- ▶ Long Life
- ▶ Unique Pre-stressed Spring
- ▶ Stationery Field (No Slip Rings)
- ▶ Consistent Operating Characteristics
- ▶ Simple Wear Compensation Adjustment
- ▶ Coil with Class 'F' Insulation#
- ▶ Asbestos-free Friction Materials*
- ▶ Simple Installation
- ▶ Low Inertia of Rotating Parts
- ▶ Raw Materials to DIN Standards
- ▶ No Restriction on Mounting Position

Components
exploded view

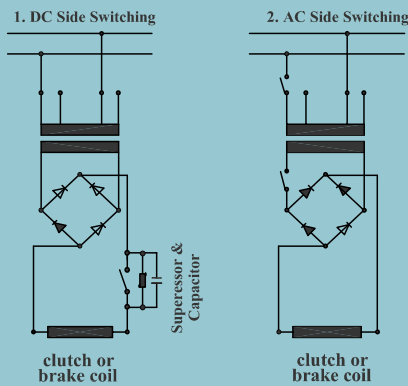


Mounting **Type 14.115**



Combination of the 115-1.3 and 'V' Pulley

Switching

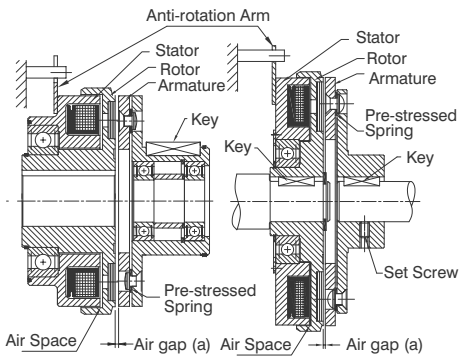


Our Brakes & clutches require DC supply voltage which is obtained through AC/DC rectification. Normally switching is carried out on the AC side.

However, for much faster engagement /disengagement time switching is carried out on the DC side for which a suitable arc suppressor and a capacitor is a must to protect the coil, switches etc. from high induction voltages produced during switching off power supply.

Engagement /disengagement time is a function of nominal release distance (airgap) and type of switching.

Mounting **Type 14.105**



Structure of the Bearing mounted type (105 model)

Working **Type 14.105**

When supplied with DC voltage the armature is attracted towards the friction material of the stator and the friction causes the rotating component to stop. When the supply is interrupted, the pre-stressed spring pulls the armature back into its original position free of residual torque even when mounted vertically.

Applications



Cranes & Hoists



Machine Tools



Packaging Machines



Textile Machines



Wire Drawing Machines



Pharmaceutical Industry



Conveyors



Printing Machines



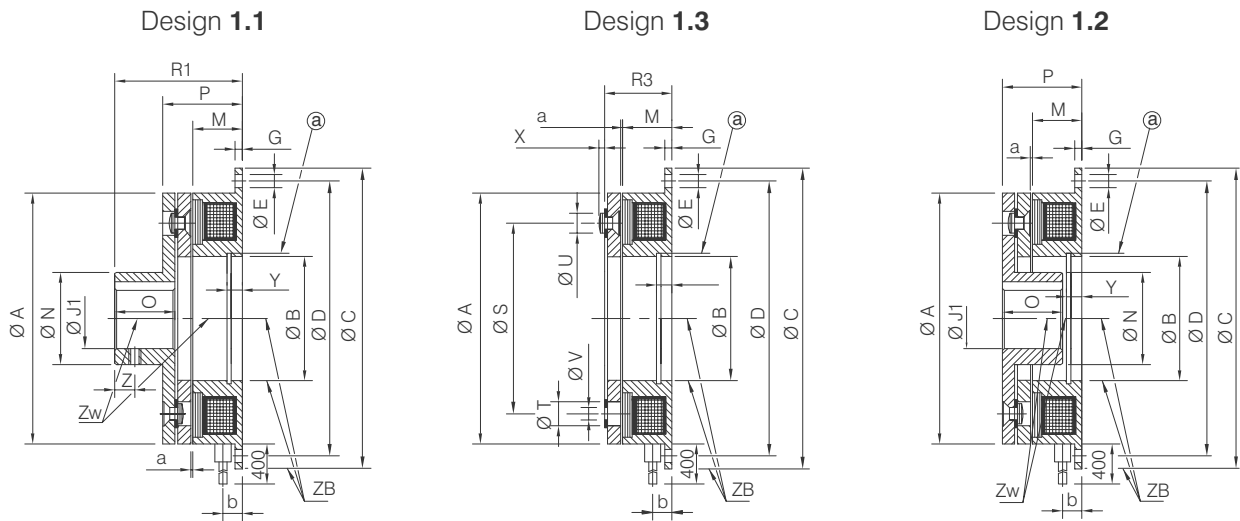
Special Purpose Machinery



Special Test Rigs

Type **14.115** (Normally OFF)

Dimensions



Tapped holes shown on dimension 'Z' on request,

Parameters

All dimensions are in mm

Parameters									All dimensions are in mm	
Size		06	08	10	12	16	20	25		
Torque M RAT. (Nm)		7.5	15	30	60	120	240	480		
Max Speed	[min ⁻¹]	8000	6000	5000	4000	3000	3000	2000		
Input Power	P20 [w]	11.5	16	21	28	38	45	70		
Inertia	[kg cm ²]	Armature ½ 3	0.6	1.71	6.64	18.0	63.3	190	480	
			0.42	1.18	4.72	13	48	137	358	
Permissible Misalignment		Zw (mm)	0.08	0.08	0.08	0.1	0.1	0.1	0.15	
		ZB (mm)	0.2	0.2	0.2	0.2	0.3	0.3	0.3	
Important : - Standard voltages : 24 VDC; 96 VDC; 190 VDC (Other voltages on request.) P : Coil Power at 20° C - Permissible voltage change +5% to -10% - Keyways to IS : 2048 wherever possible otherwise to DIN Standard @Circlip grooves to DIN 472 - Also available following Brakes Size Torque 31 630 40 1250 50 2500 Please call us for more details. * pilot bore, no keyway ** Standard bores *** Max. bores		ØA	63	80	100	125	160	200	250	
		ØB H8	35	42	52	62	80	100	125	
		ØC H9	80	100	125	150	190	230	290	
		ØD	72	90	112	137	175	215	270	
		ØE G	4 x 4.5 2	4 x 5.5 2.5	4 x 6.6 3	4 x 6.6 3.5	4 x 9 4	4 x 9 5	4 x 11 6	
		M	18	20	22	24	26	30	35	
		ØN	27	32	42	49	65	83	105	
		O	15	20	25	30	38	48	55	
		P	25.5	28.5	32.9	37	42	50.4	58.9	
		R 1	37	44.5	52.9	61	73	89.4	102.9	
		R 3	22	24.5	27.9	31	35	41.4	47.9	
		ØS	46	60	76	95	120	158	210	
		ØT	3 x 6.3	3 x 8	3 x 10.5	3 x 12	3 x 15	3 x 18	4 x 22	
		ØU	3 x 5.5	3 x 7	3 x 9	3 x 10	3 x 13	3 x 16	4 x 20	
		ØV	3 x 3.1	3 x 4.1	3 x 5.1	3 x 6.1	3 x 8.2	3 x 10.2	4 x 12.2	
		X	1.4	1.7	2.1	2.5	3	4	4.3	
		Y	3.5	4.3	5	5.5	6	7	8	
		Z	5	6	6	10	10	15	20	
		a	0.2	0.2	0.2	0.3	0.3	0.5	0.5	
		b	6.3	6.3	6.3	6.8	8.8	12.4	14.9	
ØJ ^{H7} *	10	10	14	14	20	25	25			
**	10,12,15	15,17, 20	20, 25, 28	25, 28, 30	30, 35, 40	40, 50, 55	40, 50, 60			
***	17	20	30	35	42	60	60			

Specifications are subject to change without notice.

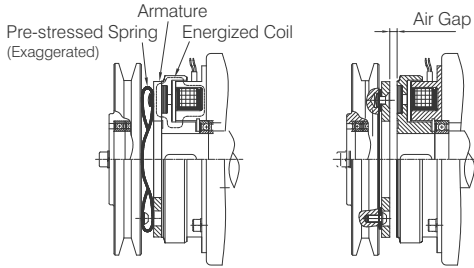


Pre-stressed Spring before installation

Pre-stressed Spring

This is a ring shaped thin plate spring of simple construction. Tens of millions of ON-OFF operations will not cause permanent set in fatigue or cracking. Nor will it be broken by rust or erosion, being fabricated out of special steel material.

It is pre-stressed and of a special WVE shape design, providing strong spring force that is durable against long-term use, and stable performance.



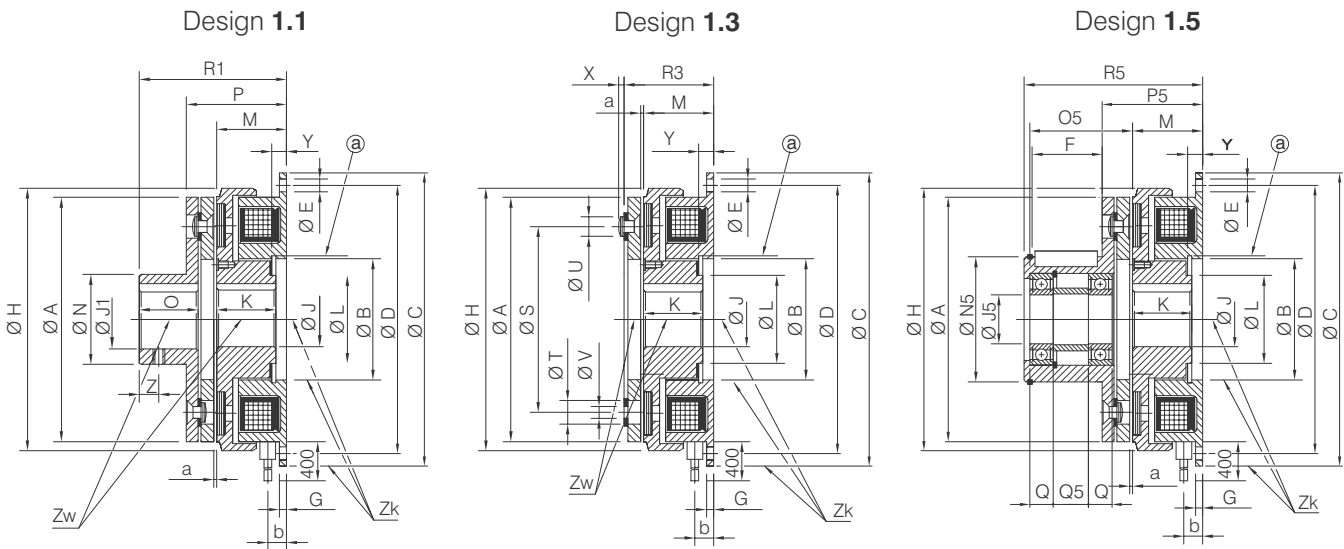
(1) Energized and Coupled

(2) Released

Operation of Clutch

Type **14.105** (Normally OFF)

Dimensions



Tapped holes shown on dimension 'Z' on request,

Parameters

All dimensions are in mm

Parameters								All dimensions are in mm									
Size		06	08	10	12	16	20	25									
Torque M RAT. (Nm)		7.5	15	30	60	120	240	480									
Max Speed [min ⁻¹]		8000	6000	5000	4000	3000	3000	2000									
Input Power P20 [w]		15	20	25	35	50	68	85									
Inertia [kg cm ²]	Rotor	1.19	2.66	7.8	22.6	63	205	547									
	Armature	1	0.6	1.71	6.64	18	63.3	190	480								
		3	0.42	1.18	4.72	13	48	137	358								
		5	0.92	2.82	9.2	25.8	86.8	258	720								
Permissible Misalignment		Zw (mm) Zk (mm)	0.05 0.1	0.05 0.15	0.05 0.15	0.05 0.1	0.1 0.2	0.1 0.25									
Important : • Standard voltages : 24 VDC; 96 VDC; 190 VDC (Other voltages on request.) • P : Coil Power at 20° C • Permissible voltage change +5% to -10% • (*) J : 55 & 60 • J₁ : 55 • @Circlip grooves to DIN 472 • Keyways to IS : 2048 wherever possible otherwise to DIN Standard • Also available following Brakes <table><tr><th>Size</th><th>Torque</th></tr><tr><td>31</td><td>630</td></tr><tr><td>40</td><td>1250</td></tr><tr><td>50</td><td>2500</td></tr></table> • Please call us for more details. * pilot bore, no keyway ** Standard bores *** Max. bores		Size	Torque	31	630	40	1250	50	2500	ØA ØB H8 ØC h9	63 35 80	80 42 100	100 52 125	125 62 150	160 80 190	200 100 230	250 125 290
		Size	Torque														
		31	630														
		40	1250														
		50	2500														
		ØD ØE F	72 4 x 4.5 17	90 4 x 5.5 22	112 4 x 6.6 27	137 4 x 6.6 36.5	175 4 x 9 44.4	215 4 x 9 53.4	270 4 x 11 83.5								
		G ØH ØJ _s	2 68 12	2.5 85.5 15	3 107 20	3.5 134.3 25	4 170 30	5 214.3 40	6 266.5 45								
		K ØL M	22 23 24	24 28.5 26.5	27 40 30	30 45 33.5	34 62 37.5	40 77 44	47 100 51								
		ØN _{as} ØN O	27 38 15	32 45 20	42 55 25	49 64 30	65 75 38	83 90 48	105 115 55								
		O _s P P _s	22.7 31.5 31	32.2 35 35	39.4 40.9 40.9	51.5 46.5 46.5	63 53.5 53.5	77.9 64.5 65.4	91.9 74.9 74.9								
		Q Q _s R _i	8 4 43	9 5.5 51	12 6.5 60.9	12 18 70.5	13 28 84.5	15 34 103.4	19 38 118.9								
		R _s R _s ØS	28 51 46	31 60 60	35.9 70.9 76	40.5 86.5 96	46.5 103.5 120	55.4 125.4 158	63.9 144.9 210								
		ØT ØU ØV	3 x 6.3 3 x 5.5 3 x 3.1	3 x 8 3 x 7 3 x 4.1	3 x 10.5 3 x 9 3 x 5.15	3 x 12 3 x 10 3 x 6.1	3 x 15 3 x 13 3 x 8.2	3 x 18 3 x 16 3 x 10.2	4 x 22 4 x 20 4 x 12.2								
		X Y	1.4 3.5	1.7 4.3	2.1 5	2.5 5.5	3 6	4 7	4.3 8								
		Z a b	5 0.2 5.7	6 0.2 6.5	6 0.2 7.9	10 0.3 7.1	10 0.3 9.1	15 0.5 12.4	20 0.5 14.9								
		ØJ ^{H7} * ** ***	10 11,14,15 17	10 14,19, 20 22	14 19, 24, 28 30	14 24, 34, 38 40	20 28, 38, 42 50	25 38,42, 48 65	25 50, 60, 70 80								
		ØJ _i ^{H7} * ** ***	10 11,12,14 17	10 14,17,19 20	14 19, 24, 28 30	14 25, 28, 34 35	20 28, 34, 38 45	25 38, 42, 48 60	25 40, 50, 60 80								

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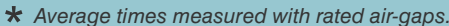
Dimensions



Specifications are subject to change without notice.

If clutch is engaged at 0 RPM, torque will be 30% - 35% than the rated torque

Operating Times*



14.105				
Clutch Size	t11ms	t12ms	t1ms	t2ms
06	15	30	45	10
08	20	55	75	15
10	25	85	110	25
12	35	105	140	40
16	45	125	170	50
20	60	140	200	60
25	75	155	230	70

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 96 or 190 VDC you can use our rectifier (Call for product details).
6. Choose correct input AC voltage for rectifier.

Life

The life of friction liner depends on number of factors like, the inertia to be retarded or stopped, the relative speed, the operating frequency, the temperature at the friction surface etc. This brake must run dry. Oil, grease, foreign materials, similar such lubricant affects the life and characteristics of friction materials. No general statement can be made about the life of friction materials.