Series 33X
Armature Actuated Brakes

Direct Replacement for European Brakes - *Kebco, Lenze, and Binder

The 33X Series have the following design features:

- *Direct Acting*
- *Torque rating 3 to 300 lb-ft (4 to 400 NM)*
- *UL Recognized Class H coil insulation system to US Standards (UR) and Canadian National Standards (CUR) - File E125303*
- *Spring-set and DC voltage released - AC rectifiers optional*
- *Series 333 torque adjustable*
- *Pre-adjusted air gap for easy assembly*
- *Corrosion resistance*
- *Spline hub for quiet dependable operation*
- *Metric and US Customary bore sizes*

Options:

- *AC rectifiers (full and half wave) See pages 86-89 for rectifier specifications*
- *Band seal (boot)*
- *Tach/encoder Mounting*
- *Manual release - Non-Maintained or Maintained*
- *Shaft seal*
- *Mounting flange*
- *Electronic brake release indicator switch*

Product Overview

333 Series

Static torque from 3 to 300 lb-ft, with nine different sizes ranging from 72mm bolt circle up to 278 mm bolt circle.

Torque can be adjusted down to approximately 50% of the nameplate torque rating.

Shown here with optional non-maintained manual release lever; other options include boot (band seal), end cap plug, through-shaft seal, and many more listed in the AAB Modification Section.

331 Series

Basic brake without the torque adjust option.

Available in torque ratings from 3 to 300 lb-ft (4 to 400 Nm).

Manual release optional, can be provided with non-maintained release lever or maintained release bolts.

Metric mount; also can be ordered with C-face adaptor or as the C-face Enclosed version, and as Severe Duty.

33X Series with C-face Adaptor

Series 331or Series 333 can be provided with a C-face adaptor for motor frames from 48C through 404/405TC, TSC, UC, USC.

All other available modifications for the 33X Series can be ordered for this brake.

33X Series Enclosed

Series 33X with a C-face adaptor and a brake housing. Order as an IP43 Enclosure with or without external manual release:

33B Series for brake without torque adjust
33C Series for brake with torque adjust

OR IP54 Enclosure with the option of internal maintained manual release:

33H Series for brake without torque adjust
33J Series for brake with torque adjust

Also Available.....

330 Series

Magnet body is not machined for a manual release option. See ordering information for the 33X Series brakes.

33X Severe Duty

Any of the 33X Series can be ordered as Severe Duty, appropriate for high-cycle rate applications. See ordering information for the 33X series brakes.

332 Series

Basic brake with the torque adjust option, and the magnet body not machined for the manual release option. See ordering information for the 33X series brakes.

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Series 331 & Series 333 Armature Actuated Brakes
C-Face Mounted

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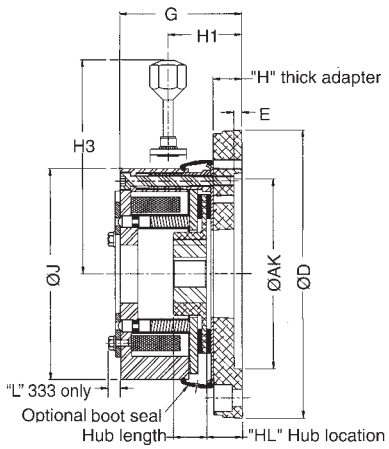

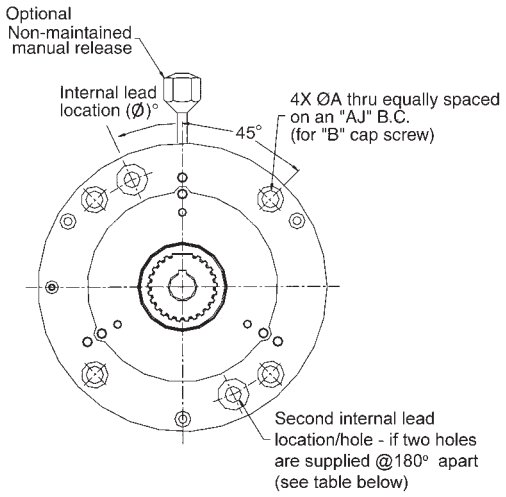

Dimensions C-Face/No Brake Housing

Model Number	Size	NEMA Frame	A	AJ	AK	B	D	E	G	H	HL	Hub Length	H1	H3	J	L	Internal Lead Hole Location
3-3X-140F0	72	48C	.28	3.75	3.0	1/4	5.50	.19	2.07	.50	.54	.709	1.22	3.85	3.35	.257	(2) @ 60°/180° apart
3-3X-240F0	90*	48C	.28	3.75	3.0	1/4	5.50	.19	2.30	.50	.55	.787	1.25	4.52	3.96	.257	(2) @ 60°/180° apart
3-3X-240G0	90	56C	.41	5.875	4.50	3/8	6.83	.19	2.48	.68	.73	.787	1.43	4.52	3.96	.257	(2) @ 25°/180° apart
3-3X-340G0	112	56C, 145TC	.41	5.875	4.50	3/8	6.83	.19	2.86	.68	.74	.787	1.72	5.08	4.97	.287	(2) @ 25°/180° apart
3-3X-440G0	132	56C, 145TC	.41	5.875	4.50	3/8	6.83	.19	3.05	.68	.74	.984	1.59	5.47	5.79	.327	(2) @ 25°/180° apart
3-3X-440H0	132	182-256TC △	.56	7.25	8.50	1/2	9.25	.19	3.37	1.00	.81	.984	1.91	5.47	5.79	.327	(1) @ 25°
3-3X-540G0	145*	145TC	.41	5.875	4.50	3/8	6.83	.19	3.63	.68	.92	1.181	1.87	6.90	6.45	.366	(2) @ 25°/180° apart
3-3X-540H0	145	182-256TC △	.56	7.25	8.50	1/2	9.25	.19	3.95	1.00	.94	1.181	2.19	6.90	6.45	.366	(1) @ 25°
3-3X-640H0	170*	182-256TC △	.56	7.25	8.50	1/2	9.25	.19	4.03	1.00	.94	1.181	2.04	7.73	7.47	.380	(1) @ 15°
3-3X-740H0	196	182-256TC	.53	7.25	8.50	1/2	8.90	.19	5.0	1.30	1.50	1.378	2.14	10.43	8.54	**	None
3-3X-740K0	196	324/326TC-△ 404/405TC	.66	11.0	12.50	5/8	13.25	.19	5.38	1.50	1.67	1.378	2.69	10.43	8.54	**	(2) @ ***
3-3X-840H0	230*	182-256TC △	.53	7.25	8.50	1/2	10.00	.19	5.62	1.00	1.22	1.58	2.42	11.26	10.00	**	None
3-3X-840K0	230	324/326TC-△ 404/405TC	.66	11.0	12.50	5/8	13.25	.19	6.10	1.50	1.72	1.58	2.94	11.26	10.00	**	(2) @ 25°***
3-3X-940K0	278*	324/326TC-404/405TC	.66	11.0	12.50	5/8	13.25	.19	6.75	1.60	1.82	1.97	3.38	13.34	12.05	**	(2) @ 25°***

*On these sizes, the brake diameter is larger than the adaptor mounting/bolt circle.

**L min. & max: size 196 = .187 min. & .479 max.
size 230/278 = .340 min. & .730 max.

***On each side of the 12:00 position (the location of second hole is not shown on above drawing)

△ Frame shaft size may require derate of a larger brake. Confirm hub bore.

Available Frames/Sizes and Unit Pricing Discount Symbol R3

Model Number	Size	Nominal Static Torque		NEMA Frame Size △	Approximate Weight		List Price 333 torque adjust brake	List Price 331 without torque adjust
		Lb-Ft	*Nm*		Lbs	*Kg*		
3-3X-140F0-XX-XX	72	3	*4*	48C	2.76	*1.25*	$277.00	$258.00
3-3X-240F0-XX-XX	90	6	*8*	48C	4.48	*2.03*	302.00	283.00
3-3X-240G0-XX-XX	90	6	*8*	56C	5.24	*2.38*	302.00	283.00
3-3X-340G0-XX-XX	112	12	*16*	56C	8.02	*3.64*	413.00	375.00
3-3X-440G0-XX-XX	132	25	*32*	56C	14.00	*6.36*	556.00	517.00
3-3X-440H0-XX-XX	132	25	*32*	182TC-256TC	17.52	*7.95*	730.00	691.00
3-3X-540G0-XX-XX	145	45	*60*	56C	16.14	*7.32*	1135.00	1079.00
3-3X-540H0-XX-XX	145	45	*60*	182TC-256TC	20.55	*9.32*	1191.00	1135.00
3-3X-640H0-XX-XX	170	60	*80*	182TC-256TC	35.00	*15.89*	1855.00	1792.00
3-3X-740H0-XX-XX	196	110	*150*	182TC-256TC	55.00	*25.00*	2070.00	2070.00
3-3X-740K0-XX-XX	196	110	*150*	324-365/404-405TC/TSC/UC/USC	72.30	*32.79*	2429.00	2429.00
3-3X-840H0-XX-XX	230	180	*240*	182TC-256TC	65.55	*29.76*	3475.00	3475.00
3-3X-840K0-XX-XX	230	180	*240*	324-365/404-405TC/TSC/UC/USC	88.30	*40.05*	3859.00	3859.00
3-3X-940K0-XX-XX	278	300	*400*	324-365/404-405TC/TSC/UC/USC	140.00	*63.50*	4565.00	4565.00

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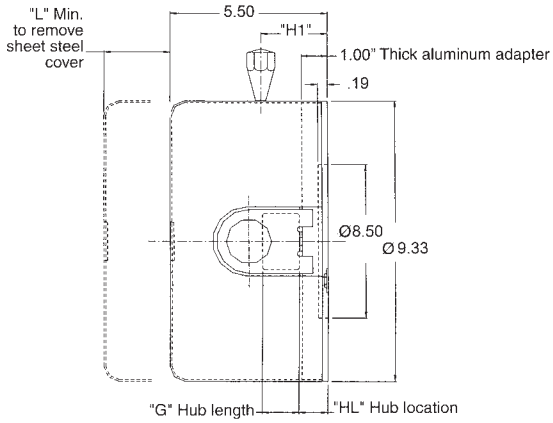
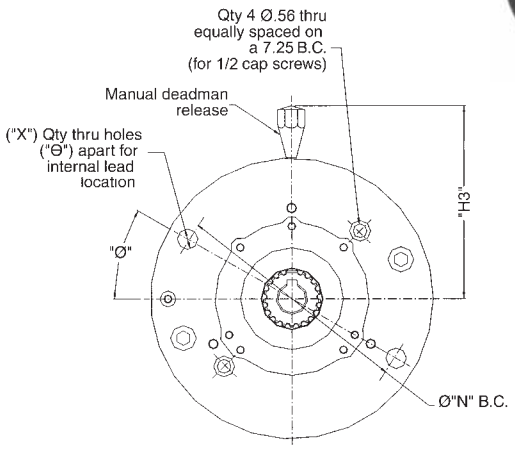
Series 331 & Series 333
Armature Actuated Brakes
C-Face with Brake Housing

IP43 Enclosure



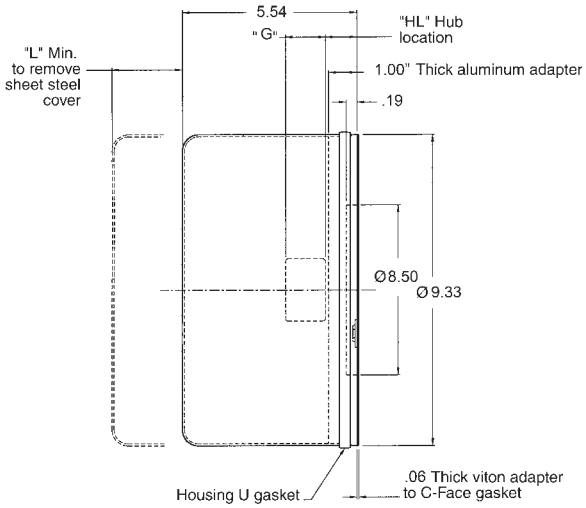


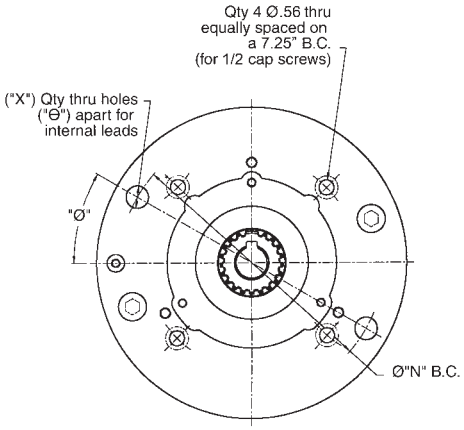
Dimensions/ Unit Pricing IP43 — Discount Symbol R3

Model Number	Size	Nominal Static Torque Lb-Ft (*Nm*)	NEMA Frame*	HL	G	H1	H3	L	Internal lead location X, Ø and O on "N" Bolt circle	Approximate Weight Lbs (*Kg*)	List Price 33C torque adjust	List Price 33B without torque adjust	Manual Release Adder
33X-441H0	132	25 (*32*)	182TC-256TC	1.16	.984	1.94	6.35	2.88	(1) @ 65° on R3.81	20.14 (*9.1*)	$805.00	$766.00	$63.00
33X-541H0	145	45 (*60*)	182TC-256TC	1.19	1.181	2.22	6.90	3.50	(1) @ 65° on R3.81	23.17 (*10.5*)	1310.00	1254.00	70.00

For sizes 196 through 278 with C-Face and housing, see Series 350 or Series 360.

IP54 Enclosure (No manual release/Optional Internal manual release)





Dimensions/ Unit Pricing IP54 — Discount Symbol R3

Model Number	Size	Nominal Static Torque Lb-Ft (*Nm*)	NEMA Frame*	HL	G	L	Internal lead location X, Ø and O on N B.C.	Approximate Weight Lbs (*Kg*)	List Price 33J torque adjust	List Price 33H without torque adjust	Internal Manual Release Adder
33X-444H0	132	25 (*32*)	182TC-256TC	1.16	.984	2.88	(1) @ 65° on R3.81	25 (*11.35*)	$1179.00	$1140.00	$63.00
33X-544H0	145	45 (*60*)	182TC-256TC	1.19	1.181	3.50	(1) @ 65° on R3.81	29 (*13.16*)	1838.00	1782.00	70.00
33X-644H0	170	60 (*80*)	182TC-256TC	1.19	1.181	3.50	(1) @ 65° on R3.81	36 (*16.34*)	2786.00	2723.00	80.00

*For NEMA 48C and 56C mounting, see pages 74-75, Series 321/322 NEMA C.

Series 331 & Series 333 Continued

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Ordering Information

Group "3" Armature Acting Brake — 333- 4 4 1 1 0 - O D - K C

- Metric Mount
- Options **Table 3**
- Voltages - **Table 2**
- Hub bore and keyseat - **Table 1**

Numeral	Description
0	No torque adjust, mag body not machined for manual release
1	No torque adjust
2	With torque adjust, mag body not machined for manual release
3	With torque adjust
B	Housing with conduit hole, no torque adjust (Size 72 - 145)
C	Housing with conduit hole, with torque adjust
H	IP54 housing, no torque adjust (Size 72 - 170)
J	IP54 housing, with torque adjust (Size 72 - 170)

Numeral	Modifications
0	Standard

Numeral	Mounting Style
0	Less pressure plate
1	Thin pressure plate (Size 72 - 170 only)
2	Thick pressure plate
F	NEMA 48C (Size 72 & 90)
G	NEMA 56C (Size 90, 132, & 112)
H	NEMA 180/210/250 TC (Size 132, 145, 170, 196 & 230)
J	NEMA 280 TC/UC (Size 196)
K	NEMA 320/360/400 TC/UC (Size 196, 230, 278)

Numeral	AAB-E Unit Sizes
1	72
2	90
3	112
4	132
5	145
6	170
7	196
8	230
9	278

Numeral	Description
2	Reduced torque with air gap shim
3	Reduced torque (severe duty- long life)
4	Standard
5	Size 90 Only; 8.34 lb-ft holding applications only
6	Std torque with air gap shim

Numeral	Enclosure Type
0	Standard
1	Seal (boot) kit thru bore
2	Seal (boot) and end cap plug
3	Seal (boot) and through-shaft seal
4	IP54 Enclosure

Table 1 - Hub Bores 333-14010- * * -EA

NOTE: See page 97 for recommended minimum bore size by torque

Bore (in)	Character to insert	Keyway Size*		Available Bores Brake Size								
				1	2	3	4	5	6	7	8	9
		Width (in)	Depth (in)	72	90	112	132	145	170	196	230	278
3/8	0V	3/32	3/64	std								
1/2	0K	1/8	1/16	std	std							
9/16	0N	1/8	1/16	non std	non std							
5/8	0B	3/16	3/32		std	std	non std					
3/4	0C	3/16	3/32		non std	non std	non std					
7/8	0D	3/16	3/32			std	std	std	non std			
1	0L	1/4	1/8				non std	std	non std			
1-1/8	0E	1/4	1/8				std	std	std	non std		
1-1/4	0F	1/4	1/8						non std	non std		
1-3/8	0G	5/16	5/32						std	std	non std	non std
1-1/2	0M	3/8	3/16							std	non std	non std
1-5/8	0H	3/8	3/16							std	std	non std
1-3/4	0I	3/8	3/16								std	non std
1-7/8	0J	1/2	1/4								std	std
2	0L	1/2	1/4									non std
2-1/8	0N	1/2	1/4									std
Metric		***Width (mm)***	***Depth (mm)***	*Metric Bores Supplied Without Set Screws, circlip recommended*								
11	11	*4*	*1.8*	std	non std	non std						
14	14	*5*	*2.3*	std	std	std	non std	non std				
15	15	*5*	*2.3*	non std	std	std	non std	non std	non std			
16	16	*5*	*2.3*		non std	non std	non std	non std	non std			
20	20	*6*	*2.8*		std**	std	non std	non std	non std	non std**		
22	22	*6*	*2.8*			std**	non std	non std	non std	non std		
24	24	*8*	*3.3*				std	non std	non std	non std		
25	25	*8*	*3.3*				std	non std	std	non std	non std**	non std**
28	28	*8*	*3.3*				non std**	non std	std	non std	non std	non std
30	30	*8*	*3.3*					std	std	std	std	std
34	34	*10*	*3.3*					std**	non std	non std	non std	non std
35	35	*10*	*3.3*						non std	std	std	std
38	38	*10*	*3.3*						std**	std	std	non std
40	40	*12*	*3.3*							std	std	std
42	42	*12*	*3.3*							non std	std	non std
45	45	*14*	*3.8*							non std	std	std
48	48	*14*	*3.8*							std**	non std	non std
49	49	*14*	*3.8*								non std	non std
50	50	*14*	*3.8*								std**	std
55	55	*16*	*4.3*									std
60	60	*18*	*4.4*									std
70	70	*20*	*4.9*									std

NOTE: Add the following for non-standard bores: • Sizes 72 through 132 = $126.00 • Sizes 145 through 196 = $148.00 • Sizes 230 & 278 = $296.00.

*Standard U.S. Keyseats made to ANSI B17.1 standard. Standard metric Keyseat DIN 6885/1 p9.

** Keyseat to DIN 6885/3 p9.

Table 2 - STD Coil Voltage 333-14010-14- * A

Character to insert	Coil Voltage	Current Rating in Amps								
		1	2	3	4	5	6	7	8	9
		72	90	112	132	145	170	196	230	278
B	414/432 Vdc	0.06	0.07	0.09	0.12	0.16	0.22	0.25	0.26	0.29
C	12 Vdc	2.13	2.66	2.27	3.50	3.90	5.60	6.40	8.30	N/A
E	24 Vdc	1.10	1.28	1.16	1.80	1.84	2.80	3.30	4.27	3.85
J	90 Vdc	0.28	0.32	0.29	0.45	0.72	0.70	0.82	1.05	1.19
K	103 Vdc	0.21	0.24	0.33	0.51	0.53	0.80	0.75	0.96	1.08
L	180 Vdc	0.15	0.17	0.15	0.23	0.38	0.36	0.42	0.54	0.61
M	205 Vdc	0.11	0.12	0.17	0.27	0.27	0.41	0.38	0.49	0.56
S	258 Vdc	0.09	0.10	0.14	0.21	0.23	0.33	0.34	0.40	0.44
N*	115 Vac	0.21	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P*	230 Vac	0.11	0.12	0.17	.27	N/A	N/A	N/A	N/A	N/A
V**	115 Vac quickset	0.21	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W**	230 Vac quickset	0.11	0.12	0.17	N/A	N/A	N/A	N/A	N/A	N/A

*In-line rectifier. Add $46.00 to brake list price.

**In-line quickset rectifier. Add $70.00 to brake list price.

Contact factory for non-standard coils.
Add the following for non-std. coil voltage
- Sizes 72 through 112 = $94.00
- Sizes 132 through 170 = $108.00
- Sizes 196 through 278 = $154.00

For separate AC rectifiers see pages 86-89

Table 3 - Options 333-14010-14-E *

Character to insert	Description/Options
A	Basic brake
C	Option A with non-maintained release
G	Short hub with non-maintained release
J	Steel hub for press-fit applications
K	Steel hub, non-maintained release
L	Internal manual release, non-maintained
R	Maintained manual release (bolts)

Modifications are available- see AAB Modification Section

Armature Actuated Brakes (AAB) Torque Selection

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Select the proper torque rating based on horsepower and rpm (speed at the clutch or brake) using the *Torque Selection Chart* below. Based on 1.4 service factor.

For other service factors and speeds, use the formulas shown below.

Formula for TABLE 1

$$T = \frac{63{,}025 \times P}{N} \times SF$$

T = Static torque, lb-in.

P = Horsepower, hp

N = Shaft speed at brake, rpm

SF = Service Factor

63,025 = Constant

Formula for TABLE 2

$$T = \frac{5{,}252 \times P}{N} \times SF$$

T = Static torque, lb-ft.

P = Horsepower, hp

N = Shaft speed at brake, rpm

SF = Service Factor

5,252 = Constant

Caution: Do not use Table 1 to select brakes for overhauling or high inertial loads, or where a stop in specified time or distance is required. For these applications the total inertia of the load and power transmission system must be determined to make a brake selection. Refer to sections on torque and thermal ratings and determination.

NOTE: Series 310 and 311 for holding applications only.

TABLE 1

Series 320, 321, 322 Static Torque in lb-in. *(Nm)*

Motor hp	rpm									
	600	800	1000	1200	1500	1800	2000	2400	3000	3600
	Static Torque lb-in *(Nm)*									
1/20	18 *(2.03)*	7 *(.79)*	7 *(.79)*	7 *(.79)*	3 *(.34)*	3 *(.34)*	3 *(.34)*	3 *(.34)*	3 *(.34)*	3 *(.34)*
1/12	18 *(2.03)*	18 *(2.03)*	7 *(.79)*	7 *(.79)*	7 *(.79)*	7 *(.79)*	7 *(.79)*	3 *(.34)*	3 *(.34)*	3 *(.34)*
1/8	35 *(3.95)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	7 *(.79)*	7 *(.79)*	7 *(.79)*	7 *(.79)*	3 *(.34)*
1/6	35 *(3.95)*	35 *(3.95)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	7 *(.79)*	7 *(.79)*	7 *(.79)*
1/4	—	35 *(3.95)*	35 *(3.95)*	35 *(3.95)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	7 *(.79)*
1/3	—	—	35 *(3.95)*	35 *(3.95)*	35 *(3.95)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*	18 *(2.03)*
1/2	—	—	—	—	35 *(3.95)*	35 *(3.95)*	35 *(3.95)*	35 *(3.95)*	18 *(2.03)*	18 *(2.03)*
3/4	—	—	—	—	—	—	35 *(3.95)*	35 *(3.95)*	35 *(3.95)*	35 *(3.95)*
1	—	—	—	—	—	—	—	—	—	35 *(3.95)*

TABLE 2

Series 333/350/360 Static Torque in lb-ft. *(Nm)*

Motor hp *(kw)*	rpm									
	600	800	1000	1200	1500	1800	2000	2400	3000	3600
	Static Torque lb-ft *(Nm)*									
1/3 *(.25)*	6 *(8)*	6 *(8)*	3 *(4)*	3 *(4)*	3 *(4)*	3 *(4)*	3 *(4)*	3 *(4)*	3 *(4)*	3 *(4)*
1/2 *(.37)*	12 *(16)*	6 *(8)*	6 *(8)*	6 *(8)*	3 *(4)*	3 *(4)*	3 *(4)*	3 *(4)*	3 *(4)*	3 *(4)*
3/4 *(.55)*	12 *(16)*	12 *(16)*	6 *(8)*	6 *(8)*	6 *(8)*	6 *(8)*	3 *(4)*	3 *(4)*	3 *(4)*	3 *(4)*
1 *(.75)*	25 *(34)*	12 *(16)*	12 *(16)*	12 *(16)*	6 *(8)*	6 *(8)*	6 *(8)*	6 *(8)*	6 *(8)*	3 *(4)*
1-1/2 *(1.1)*	25 *(34)*	25 *(34)*	12 *(16)*	12 *(16)*	12 *(16)*	12 *(16)*	6 *(8)*	6 *(8)*	6 *(8)*	6 *(8)*
2 *(1.5)*	25 *(34)*	25 *(34)*	25 *(34)*	25 *(34)*	12 *(16)*	12 *(16)*	12 *(16)*	6 *(8)*	6 *(8)*	6 *(8)*
3 *(2.2)*	45 *(60)*	45 *(60)*	25 *(34)*	25 *(34)*	25 *(34)*	25 *(34)*	12 *(16)*	12 *(16)*	12 *(16)*	12 *(16)*
5 *(3.7)*	60 *(80)*	60 *(80)*	45 *(60)*	45 *(60)*	25 *(34)*	25 *(34)*	25 *(34)*	25 *(34)*	25 *(34)*	12 *(16)*
7-1/2 *(5.6)*	110 *(150)*	110 *(150)*	60 *(80)*	60 *(60)*	45 *(60)*	45 *(60)*	45 *(60)*	25 *(34)*	25 *(34)*	25 *(34)*
10 *(7.5)*	180 *(240)*	110 *(150)*	110 *(150)*	110 *(150)*	60 *(80)*	45 *(60)*	45 *(60)*	45 *(60)*	25 *(34)*	25 *(34)*
15 *(11.2)*	300 *(400)*	180 *(240)*	110 *(150)*	110 *(150)*	110 *(150)*	60 *(80)*	60 *(80)*	60 *(80)*	45 *(60)*	45 *(60)*
20 *(14.9)*	300 *(400)*	180 *(240)*	180 *(240)*	180 *(240)*	110 *(150)*	110 *(150)*	110 *(150)*	60 *(80)*	60 *(80)*	60 *(80)*
25 *(18.6)*	—	300 *(400)*	180 *(240)*	180 *(240)*	180 *(240)*	110 *(150)*	*	*	*	*
30 *(22.4)*	—	300 *(400)*	300 *(400)*	300 *(400)*	180 *(240)*	180 *(240)*	*	*	*	*
40 *(29.8)*	—	—	300 *(400)*	300 *(400)*	300 *(400)*	180 *(240)*	*	*	*	*
50 *(37.3)*	—	—	—	—	300 *(400)*	300 *(400)*	*	*	*	*
60 *(44.7)*	—	—	—	—	300 *(400)*	300 *(400)*	*	*	*	*

* Exceeds maximum speed rating.

Stearns® *Armature Actuated Brakes*

P/N 8-078-890-05
effective 9/20/06

Installation and Service Instructions

Series AAB – Armature Actuated Brakes Sizes 72 through 170

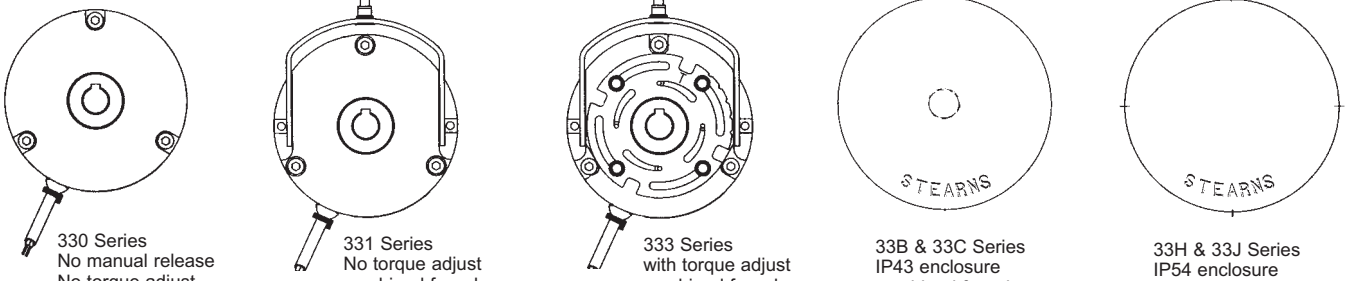
Model Numbers 33[ ]-1, 33[ ]-2, 33[ ]-3, 33[ ]-4, 33[ ]-5 and 33[ ]-6

Brake Identification

The brake part number is twelve characters, with the first 3 characters defining the brake "Series", and the 4th character defining the brake size. See explanation below.

Part Number characters 1 - 3 (Series)	Machined for manual release option (release can be added in the field)	Torque adjustable	IP43 Housing (with adaptor)	IP54 Housing (with adaptor)
330				
331	X			
333	X	X		
33B	X		X	
33C	X	X	X	
33H	X			X
33J	X	X		X

Part Number characters 1 - 4 (4th digit = size)	Size	Torque lb-ft *(Nm)*
33[ ]-1	72	3 *(4)*
33[ ]-2	90	6 *(8)*
33[ ]-3	112	12 *(16)*
33[ ]-4	132	25 *(32)*
33[ ]-5	145	45 *(60)*
33[ ]-6	170	60 *(80)*



330 Series
No manual release
No torque adjust

331 Series
No torque adjust
machined for release

333 Series
with torque adjust
machined for release

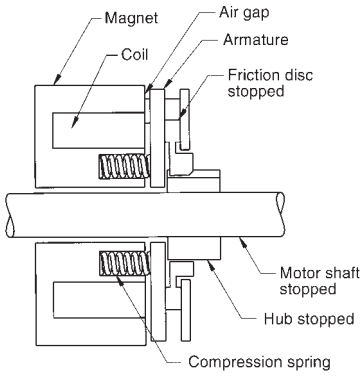
33B & 33C Series
IP43 enclosure
machined for release

33B
no torque adjust
33C
with torque adjust

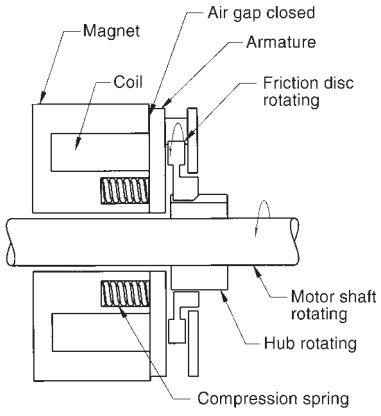
33H & 33J Series
IP54 enclosure
internal release option

33H
No torque adjust
33J
with torque adjust

General Brake Information: Record nameplate information for future repair, replacement or product support. Nameplate date includes: part number, serial number, and electrical information. A full part number or serial number identifies the voltage, mount dimensions and any brake options. The AAB is a dry brake, do not use lubrication on friction surfaces. The AAB is a spring-set, power-released DC brake which may be rectified for AC use. When power is applied to the coil, the armature is magnetically drawn to the magnet body pole faces releasing the spring force so the shaft is able to rotate. When power is removed and the brake is spring set, the compressed carrier ring friction disc prevents the hub and shaft from rotating. Brakes can be mounted horizontal or vertical above or below motor without modification.



Power Off - Brake Set



Power On - Brake Released

Important

Please read these instructions carefully before installing, operating, or servicing your Stearns brake. Failure to comply with these instructions could cause injury to personnel and/or damage to property if the brake is installed or operated incorrectly. For definition of limited warranty/liability, contact Rexnord Industries, LLC, Stearns Division, 5150 S. International Dr., Cudahy, Wisconsin 53110, (414) 272-1100.

OEM's and subsystem suppliers, please forward these instructions with your components to the final user.

Caution

1. Servicing shall be in compliance with applicable local safety codes including Occupational Safety and Health Act (OSHA). All wiring and electrical connections must comply with the National Electric Code (NEC) and local electric codes in effect.
2. To prevent an electrical hazard, disconnect power source before working on the brake. If power disconnect point is out of sight, lock disconnect in the *off* position and tag to prevent accidental application of power to system.
3. To avoid damage to internal power supply, hipot testing should not exceed 1500 volts for one second. Brake coil leads must be connected together.
4. Heat developed during normal operation (135°C/ 275°F) of the brake may be hot enough to be painful or cause injury. Be careful when touching exterior surfaces. Allow sufficient time for the brake to cool before servicing.
5. After usage, the brake will contain burnt and degraded friction material dust. This dust should be removed before servicing or adjusting the brake.

   DO NOT blow off dust using an air hose. It is important to avoid dispersing dust into the air or inhaling it, as this may be dangerous to your health.

   a) Wear a filtered mask or a respirator while removing dust.

   b) Use a vacuum cleaner or a soft brush to remove dust from the brake. When brushing, avoid causing the dust to become airborne. Collect the dust in a container, such as a bag, which can be sealed off.
6. Maximum operating ambient temperature for these brakes should not exceed 40°C (104° F).

I. Installation

Note 1: Position of hub should allow full engagement of friction disc without interfering with the movement of the armature. **Motor shaft end float should not exceed .020". Shaft runout should be within .002" TIR. Motor mounting surface should be flat and perpendicular to within .004" of motor shaft.**

Note 2: Keep grease and oil from contacting friction surfaces.

Note 3: Hub should be a tight sliding fit. **For shrink fit hub consult the factory.**

1. Hub and Pressure Plate Installation:

Most brakes use a thin pressure plate, some brakes have a thick pressure plate and some brakes have an additional plate used as a mount adapter.

1A. Supplied with thick pressure plate:

1. Bolt the thick pressure plate or adapter plate to the motor.

1B. Supplied with C-face mounting adaptor:

1. If the AAB brake diameter covers the adaptor mounting bolt circle, remove the adaptor from the brake first, and then bolt the adaptor to the motor. The thin pressure plate locates over the adaptor.

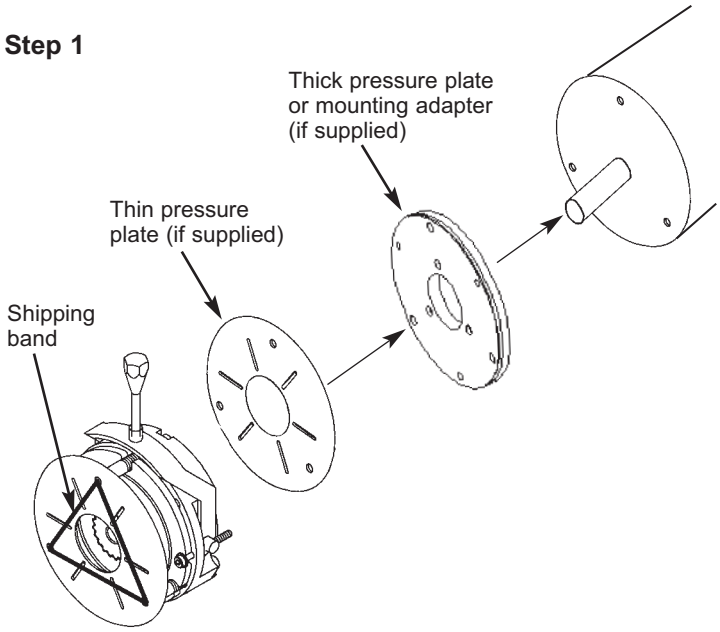
If the brake diameter does NOT cover the adaptor bolt circle, the adaptor does not need to be removed from the brake. See Step 2 and install the brake hub on the motor shaft first, and the complete brake with adaptor can be installed as shown in Step 3.

Supplied with thin pressure plate:

2. Remove the stretch shipping band from the mount bolts.

3. Remove the thin pressure plate from the brake and slide over the shaft. Place the plate tightly against the motor mount surface or the adaptor, with the rolled edge facing away from the motor. All surfaces must be flat, tight and flush.

Step 1



2. Placement of hub .

1. Slide the brake hub over the keyed motor shaft.
2. Position the hub to the H2 dimension. Measure from the outside pressure plate (or adaptor) face to the near surface of the hub. The pressure plate must be tight against the motor face when measuring the H2 dimension.
3. Tighten the single use setscrews. Carefully apply Loctite® threadlocker to the setscrew for repeat use.

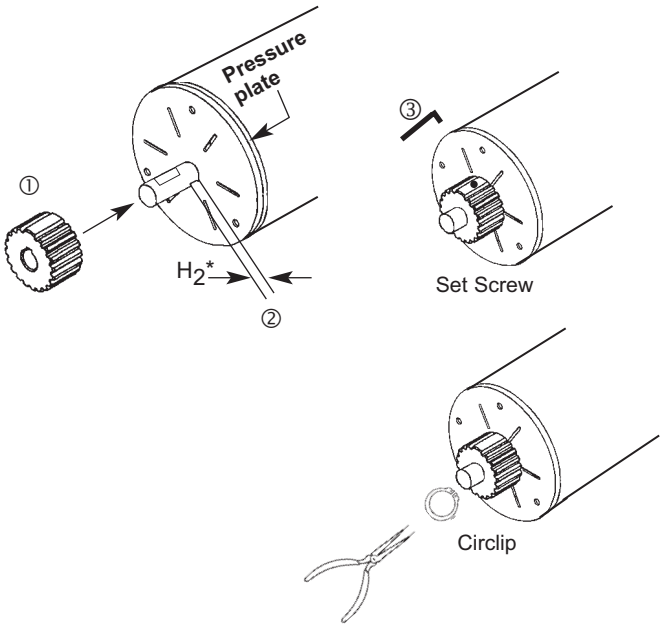
NOTES: Metric bores do not have set-screws; a circlip positioned in a groove is used to locate and retain the hub against the stepped shaft.

Circlips are recommended on all vertical installations.

Size 112 (33[ ]-3) and larger brakes without manual release: remove armature retention nuts and bolts after mounting to the motor.

The hub slides on the shaft with a close fit.

Step 2



Brake Model No.	Size (Bolt Circle mm)	H2 Hub Location		Set Screw Torque		Set screw Hex Wrench Size
		in	mm	lb-in	Nm	in
33[ ]-1	72	0.03	*0.8*	20	2.3	5/64
33[ ]-2	90	0.03	*0.8*	33	3.8	3/32
33[ ]-3	112	0.10	*2.5*	78	8.8	1/8
33[ ]-4	132	0.10	*2.5*	156	17.6	5/32
33[ ]-5	145	0.13	*3.3*	156	17.6	5/32
33[ ]-6	170	0.13	*3.3*	156	17.6	5/32

Hub location can be ±10%, as required.

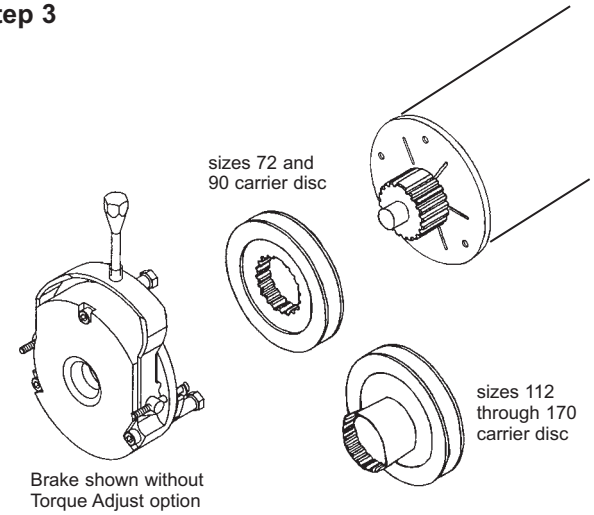
3. Mounting the Brake:

1. Slide the friction disc and carrier onto the hub.
2. Locate the brake assembly over the carrier disc and slide against the pressure plate.
3. Insert the mounting bolts and tighten to the torque listed in the table. Use of a torque wrench is necessary.
4. Remove armature retention bolts provided on sizes 112 (33[ ]-3) and larger.

Mount Bolt Torque:

Brake Model No.	Size (Bolt Circle)	Hex Wrench Size mm	Bolt Torque lb-in (Nm)		Mounting Bolt	
			Brake mount surface*		Bolt size	Length mm
			steel	aluminum		thin plate & aluminum adapter / thick plate
33[ ]-1	72	3	24 (2.7)	17 (1.9)	M4	45 / 40
33[ ]-2	90	4	40 (4.5)	27 (3.1)	M5	50 / 45
33[ ]-3	112	5	82 (9.3)	57 (6.4)	M6	60 / 55
33[ ]-4	132	5	82 (9.3)	57 (6.4)	M6	65 / 60
33[ ]-5	145	6	169 (19.1)	82 (9.3)	M8	80 / 75
33[ ]-6	170	6	169 (19.1)	82 (9.3)	M8	80 / 80

Step 3



NOTE: Size 90 carrier disc includes a stabilizing clip. Verify that the stabilizing clip is on the disc.

4. Air Gap and Wear Adjustments:

1. All brakes have an initial factory burnish to the carrier friction material.
2. Air gap is the distance between the armature and the magnet body as measured at the adjusting bolts. Air gap is factory set but may change with brake mount.
3. Measure the air gap after brake mount and again after a few cycles or after replacing friction material.
4. Air gap will increase with normal friction wear. Re-adjust the air gap when the maximum air gap is reached (See Air Gap Table).
5. Normal disc replacement occurs after 4 to 5 air gap adjustments are made.
6. It is necessary to use a torque wrench in mounting the AAB brake to set the air gap correctly.

Air Gap Table

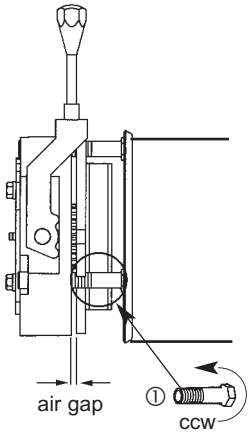
Brake Model No.	Minimum New Brake Air Gap		Minimum Burnished Brake Air Gap		Maximum Air Gap		Air Gap Adjust Hex Wrench Size
	inch	mm	inch	mm	inch	mm	mm
33[ ]-1	.010 to .014	.254 to.356	.006 to .010	.152 to .254	.019	*.48*	8
33[ ]-2	.010 to .014	.254 to.356	.006 to .010	.152 to .254	.019	*.48*	10
33[ ]-3	.012 to .016	.305 to .406	.008 to .012	.203 to .305	.019	*.48*	11
33[ ]-4	.014 to .018	.356 to .457	.010 to .014	.254 to .356	.029	*.74*	11
33[ ]-5	.013 to .017	.330 to .432	.013 to .017	.330 to .432	.031	*.78*	13
33[ ]-6	.020 to .024	.508 to .610	.020 to .024	.508 to .610	.039	*.99*	13

Wear Adjustment Procedure

1. Rotate each wear adjust screw evenly to achieve original gap (Air Gap Table).
2. Retighten mounting bolts to specifications shown in in Step 3. Recheck air gap per Air GapTable. Check air gap using a feeler gage at each of the (3) wear adjust screws.

Note 1: 90° ccw rotation of the wear adjust screw is approximately 0.010" (.25mm) for the 72, 90, 145 and 170 size brakes. 90° ccw rotation is approximately 0.012" (.30mm) for the 112 & 132 size brakes.

Note 2: Brake discs should be replaced when they reach the thickness shown in the table below. Normally this will occur after 4-5 adjustments.



Measure air gap at adjusting bolt
Optional manual release shown

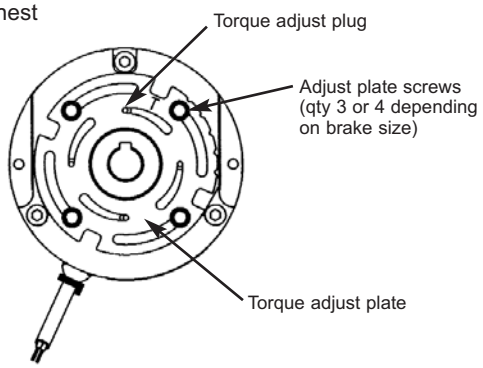
Minimum Disc Thickness

Brake Model No.	Size (Bolt circle)	Worn Friction Disc minimum thickness	
	mm	inch	mm
33[ ]-1	72	0.22	5.59
33[ ]-2	90	0.45	11.30
33[ ]-3	112	0.21	5.41
33[ ]-4	132	0.26	6.60
33[ ]-5	145	0.35	8.89
33[ ]-6	170	0.34	8.74

Torque Adjust Option

1. The torque adjust feature can be identified by a slotted round plate fastened to the magnet body.
2. All brakes are shipped with a factory burnish at or above nameplate torque rating.
3. Brakes with adjustable torque are shipped at the highest torque setting.
4. Loosen the adjust plate screws by turning counter close-wise (CCW).
5. Rotate the adjust plate clockwise to reduce torque.
6. Internal spring height, and spring force, is adjusted by the plug location in the adjust plate slot.
7. Torque decreases as the plug is rotated to the wider end of the slots.
8. Re-tighten the adjust plate screws clockwise (CW) to hold the plate in position. The plate fasteners must be tight.

Shown at highest torque setting

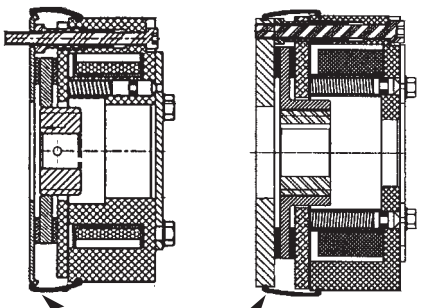


Torque adjust plate table:

Brake Model No.	Hex Wrench Size mm	Bolt Torque lb-in (Nm)	Torque decrease % per notch
33[ ]-1	8	20 (2.25)	9
33[ ]-2	10	20 (2.25)	9
33[ ]-3	11	20 (2.25)	9
33[ ]-4	11	35 (3.95)	11.5
33[ ]-5	13	35 (3.95)	7.5
33[ ]-6	13	35 (3.95)	7.5

Boot Seal Option

1. Place the optional boot seal over the lead wires and optional manual release before wiring the brake to the power source.
2. Stretch the seal over the pressure plate and magnet body assembly.
3. The seal will locate from the thin pressure plate or a groove in a thick plate adapter.
4. If the seal has a small drain hole, locate the hole at the bottom facing downward.
5. The seal should be flat against the brake and cover the open air gap areas.

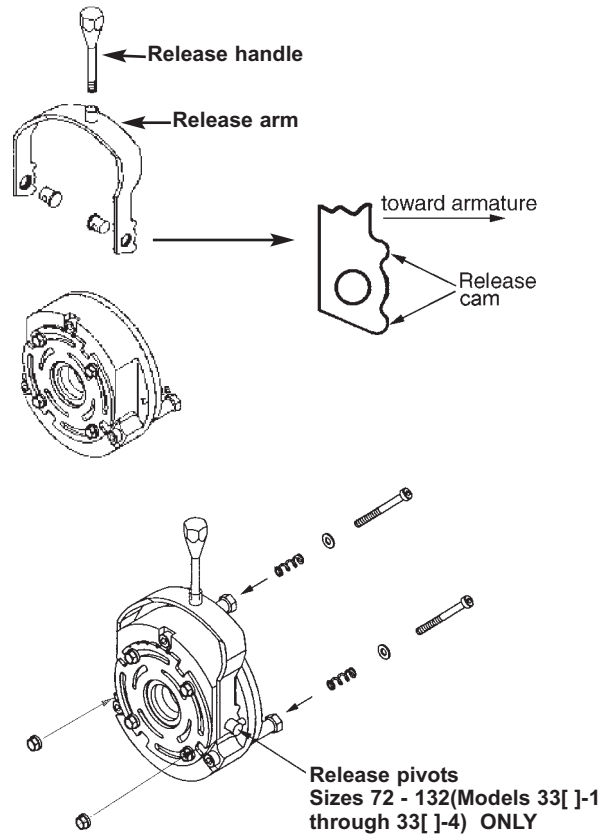


Seal locates on thin pressure plate lip
OR on a groove in the thick pressure plate

Non-Maintained (Yoke style) manual release kit

1. Thread handle into the release arm and hand tighten.
2. Insert the two release pivots in the release arm. Brake sizes 145 and 170 (models 33[ ]-5 and 33[ ]-6) do not require pivots.
3. Slide the release handle assembly over the flat sides of the brake assembly.
4. The release cams must face the armature side of the brake.
5. AAB sizes 72 through 132 (models 33 [ ]-1 and 33[ ]-4: insert cap screws, washers and springs through the armature slots. Thread into the release pivots.
6. AAB sizes 145 and 170 (models 33[ ]-5 and 33[ ]-6): Insert hex bolt, washer and spring through the armature slots and through the holes in the manual release arm. Install the threaded nut onto the screw.
7. Washers must rest on the face of the armature.

Locate release cams toward armature

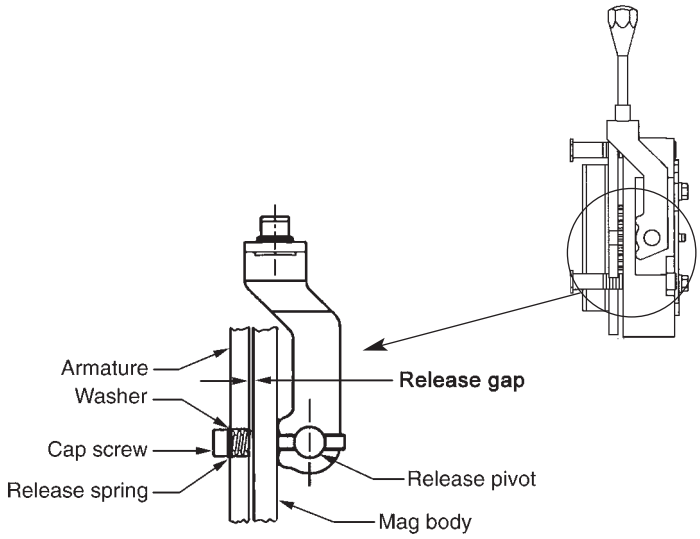


Manual release set up gap adjustment

1. Tighten the cap screws until proper set up gap is reached. The manual release set up gap is measured at the cap screw on the release side as shown.
2. Once the release has been installed and is operating, the brake air gap can be checked as detailed in the air gap adjustment section.

Set up gap adjustment table:

Brake Model No.	Hex Wrench Size	Manaul Release Adjustment Gap Set-Up
	mm	inch/mm
33[ ]-1	2.5	.040 / 1.02
33[ ]-2	2.5	.040 / 1.02
33[ ]-3	3	.040 / 1.02
33[ ]-4	3	.050 / 1.27
33[ ]-5	10	.050 / 1.27
33[ ]-6	10	.050 / 1.27



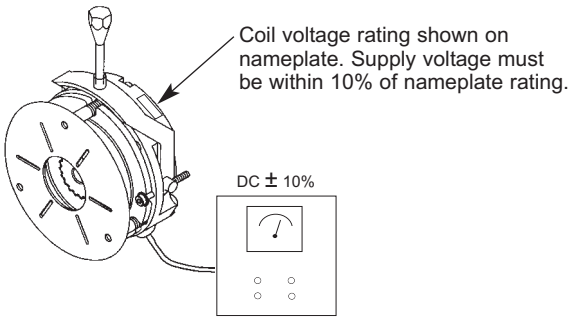
The manual release set up gap is measured above the cap screw as shown

Electrical Considerations

Coil Wiring

Caution: Brake wiring should only be carried out by qualified personnel.

Stearns brake coils are wound for DC voltage input at ± 10% of nameplate rating. Coil resistances shown below are for references purposes. For applications where AC voltage is being rectified refer to AC control switching shown on this page.



Caution: Electrical work should only be preformed by qualified personnel.

Note 1: All 33[ ] series brakes have DC wound coils designed to accept DC line voltage at ± 10% of nameplate rating.

Note 2: When using a rectifier for AC line input, use the rectifier table to determine the proper DC coil rating requirement.

Model Number		33[ ]-1	33[ ]-2	33[ ]-3	33[ ]-4	33[ ]-5	33[ ]-6
Brake Size		72	90	112	132	145	170
Torque lb-ft (Nm)		3 (4)	6 (8)	12 (16)	25 (34)	45 (60)	60 (80)
24 Vdc	Amps	1.10	1.28	1.17	1.80	1.94	2.80
	Ohms	21.8	18.7	20.5	13	12.4	8.6
	Watts	26.5	30.8	28.0	43.2	46.4	67.3
36 Vdc	Amps	0.67	0.78	0.71	1.09	1.84	1.70
	Ohms	53.5	46	50.7	33	19.5	21.2
	Watts	24.2	28.2	25.6	39.3	66.4	61.2
48 Vdc	Amps	0.57	0.66	0.60	0.93	1.25	1.44
	Ohms	83.8	72.7	79.5	52	38.4	33.3
	Watts	27.5	31.9	29.0	44.5	59.4	69,2
90 Vdc	Amps	0.28	0.32	0.29	0.45	0.76	0.70
	Ohms	320.8	277	306.5	200	119	129.3
	Watts	25.3	29.2	26.4	40.5	68.2	62.7
103 Vdc	Amps	0.21	0.24	0.34	0.51	0.55	0.80
	Ohms	501.2	433	306.5	200	186.5	129.3
	Watts	21.2	24.5	34.6	53.0	56.9	82.0
180 Vdc	Amps	0.15	0.17	0.15	0.23	0.39	0.36
	Ohms	1221	1058	1175.4	770	459	499.7
	Watts	26.5	30.6	27.6	42.1	70.7	64.8
205 Vdc	Amps	0.11	0.12	0.17	0.27	0.29	0.41
	Ohms	1904	1653	1175.4	770	718.5	499.7
	Watts	22.1	25.4	35.8	54.6	58.5	84.1
258 Vdc	Amps	0.09	0.10	0.14	0.21	0.23	0.33
	Ohms	2867	2535	1838	1204	1125	783.4
	Watts	22.4	26.3	36.3	55.3	59.2	85.0
414/432 Vdc	Amps	0.06/0.06	0.07/0.07	0.09/0.10	0.14/0.15	0.15/0.16	0.22/0.22
	Ohms	7186	6265	4483	2956	2755	1922
	Watts	23.9/26.0	27.4/29.8	38.2/41.6	57.9/63.1	62.2/67.7	89.1/97.1

Contact factory for non-standard coils.

Rectifier Table

Line Voltage (AC)	Rectifier Type	Recommended Coil Voltage Rating
100	**Full**	**90**
110	**Full**	103
115	**Full**	103
127	**Full**	103
208	**Full**	180
220	**Full**	205
230	**Full**	205
240	**Full**	205
220	**Half**	103
230	**Half**	103
240	**Half**	103
380/400	**Half**	180
415	**Half**	180
460	**Half**	205
575	**Half**	258

Note 3: Fullwave rectifier output is 90% of AC line input. Halfwave rectifier output is 45% of AC line input.

AC Switching with Standard Rectifier

Switching on the AC line is the most common method of control when the rectifier is wired through the motor windings or motor contacts. However, brake engagement can take up to 5 times longer than DC switching. Switching on the AC line is not suitable for hoist and crane applications.

Crane and Hoist Applications

For descending loads such as cranes and hoists or high inertia loads, the motor windings can develop regenerative voltage during deceleration which can delay the engagement of the brake when switching on the AC supply.

For these type of applications it is important to switch on the DC side of the rectifier or use a Quick Set device.
Stearns rectifiers have a built in suppression circuit to protect the rectifier. However, it may still be necessary to protect the switching contacts with a separate suppression device. (see Figure 1 and Figure 2).

Figure. 1

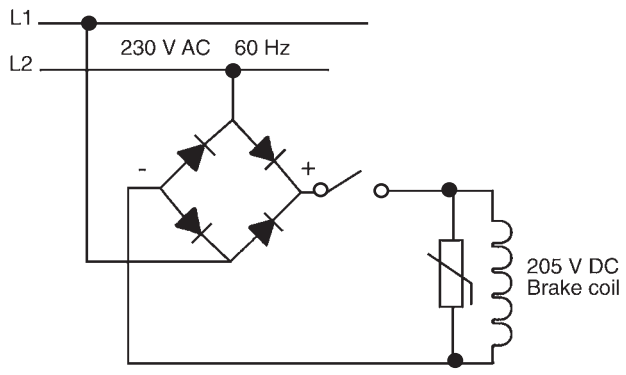
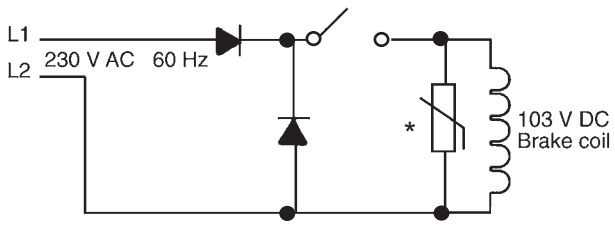


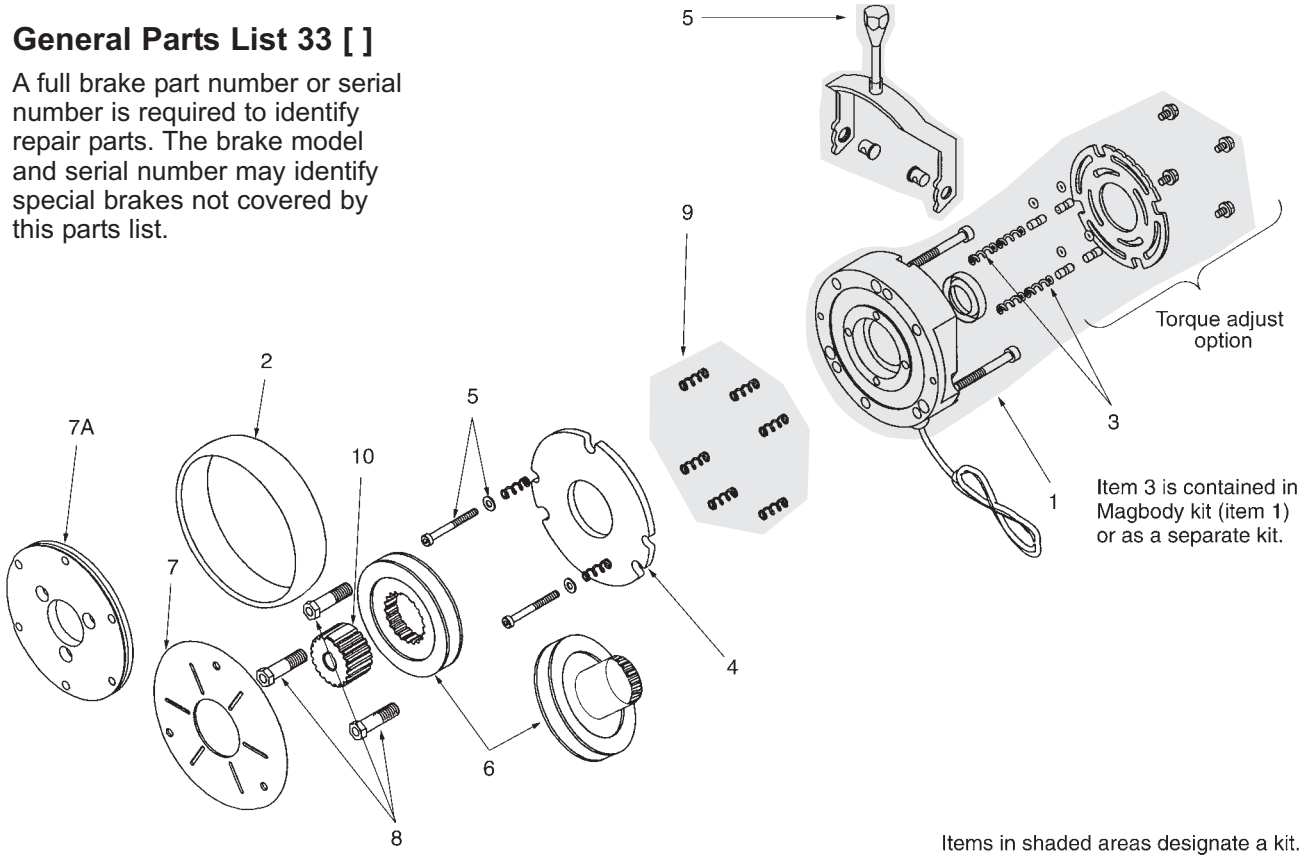
Figure. 2



* A suppression device **is** required when switching on the DC side of the line and using the half wave rectifier (412-0591-01K)

General Parts List 33 [ ]

A full brake part number or serial number is required to identify repair parts. The brake model and serial number may identify special brakes not covered by this parts list.



Item	Item Description ↓ / Brake Part No →	33[ ]-1	33[ ] -2	33[ ]-3	33[ ]-4	33[ ]-5	33[ ]6
1	Mag body & coil assy -see voltage table Torque Adjust Without Torque Adjust Without Torque Adjust OR Manual Release Machining	 5-04-0925-00-0[ ]K 5-04-0923-00-0[ ]K 5-04-0924-00-0[ ]K	 5-04-0932-00-0[ ]K 5-04-0930-00-0[ ]K 5-04-0931-00-0[ ]K	 5-04-0943-00-0[ ]K 5-04-0941-00-0[ ]K 5-04-0942-00-0[ ]K	 5-04-0957-00-0[ ]K 5-04-0955-00-0[ ]K 5-04-0958-00-0[ ]K	 5-04-0964-00-0[ ]K 5-04-0962-00-0[ ]K 5-04-0963-00-0[ ]K	 5-04-0975-00-0[ ]K 5-04-0973-00-0[ ]K 5-04-0974-00-0[ ]K
2	Boot Seal Kit	8-075-100-0K	8-075-101-0K	8-075-102-0K	8-075-103-0K	8-075-104-0K	8-075-105-0K
3	Inner Spring Kit	9-70-0932-0K	9-70-0932-0K	9-70-0942-0K	9-70-0957-0K	9-70-0964-0K	9-70-0975-0K
4	Armature Kit	8-405-925-0K	8-405-932-0K	8-405-943-0K	8-405-957-0K	8-405-964-0K	8-405-975-0K
5	Manual Release Kit	8-419-925-0K	8-419-932-0K	8-419-943-0K	8-419-957-0K	8-419-964-0K	8-419-975-0K
6	Carrier Disc Kit	5-14-0925-0K	5-14-0933-0K	5-14-0943-0K	5-14-0957-0K	5-14-0964-0K	5-14-0976-0K
7 7A	Pressure plate thin Pressure plate thick	8-438-925-0K 8-438-926-0K	8-438-932-0K 8-438-933-0K	8-438-943-0K 8-438-944-0K	8-438-957-0K 8-438-958-0K	8-438-964-0K 8-438-965-0K	8-438-975-0K 8-438-976-0K
8	Adjusting Bolt Kit	8-434-925-0K	8-434-932-0K	8-434-943-0K	8-434-957-0K	8-434-964-0K	8-434-975-0K
9	Outer Spring Kit	9-70-0933-0K	9-70-0933-0K	9-70-0943-0K	9-70-0943-0K	9-70-0965-0K	9-70-0965-0K
10	Hub-See bore size table English Bore Metric Bore	 5-16-0921-00-01[ ] 8-016-920-00-m[ ]	 5-16-0931-00-01[ ] 8-016-930-00-M[ ]	 5-16-0941-00-01[ ] 8-016-940-00-M[ ]	 5-16-0951-00-01[ ] 8-016-950-00-M[ ]	 5-16-0961-00-01[ ] 8-016-960-00-M[ ]	 5-16-0971-01-01[ ] 8-016-970-00-M[ ]

Kit Contents

Item	Description
1	Mag Body & Coil Assembly Adjust Plate Inner Plate Screws Adjust Plate Screws Mounting Bolts (3)
3	Inner Spring Set Torque Adjust Plugs
5	Release Arm Release Handle Release Pivots Release Springs Washers Assembly Screws
9	Outer Pole Springs

Coil Voltage Table

Item Magbody & Coil Assembly Voltage Identifier -0[ ]k	
Voltage	**Insert**
12 V DC	0 [C]K
24 V DC	0 [E]K
90 V DC	0 [J]K
103 V DC	0 [K]K
180 V DC	0 [L]K
205 V DC	0 [M]K
258 V DC	0 [S]K
414/432 V DC	0 [B]K

Hub Bore Table

Bore Diameters			
English Bore	**Insert [ ]**	***Metric Bore***	**Insert [ ]**
3/8	V	*9 mm*	09
1/2	K	*11 mm*	11
9/16	N	*12 mm*	12
5/8	B	*14 mm*	14
3/4	C	*15 mm*	15
7/8	D	*16 mm*	16
1	L	*17 mm*	17
1 1/8	E	*18 mm*	18
1 1/4	F	*20 mm*	20
1 3/8	G	*22 mm*	22
		24 mm	24
		25 mm	25
		28 mm	28
		30 mm	30
		34 mm	34
		35 mm	35

Troubleshooting

General Information:

Do not lubricate any part of the brake.

Electrical:

1. Compare power supply at the brake to the brake nameplate power requirements.
2. Compare rectifier input and output rating to the brake coil.
3. Check coil resistance at the coil or on the DC side of the circuit.
4. Check for damaged and grounded leadwires.
5. Check rectifier current/voltage rating. Tor-ac™ or Quickset rectifiers are available if a faster brake set time is required.

Brake does not release (power release):

1. Re-check air gap at three points using a feeler gage. Confirm air gap adjustment described in section four and the manual release adjustment section.
2. The manual release gap is used for release installation and initial set up only. The working air gap is listed separately by model number.
3. Rectifier choice will affect set and release time. To reduce brake set time, use a Quickset rectifier or switch on the DC side.
4. An air gap shim- used to reduce set time- is factory installed available.
5. Use a torque wrench to measure brake mount torque. Bolt torque rating for aluminum is different than steel. Check the installation table for the correct rating. Over-tightening will cause air gap to become smaller.

Brake does not engage (spring set):

1. Re-check air gap at three points using a feeler gage. Re-set the air gap as described in step four of the installation sheets.
2. Rectifier choice will affect release time, switch on the DC side or use a quick release rectifier to reduce coil reaction time.

Carrier Disc and hub:

1. Friction discs have a close fit on the hub. Forcing a carrier disc onto the hub may cause the disc to bind on the hub. Check for any burrs, taper or knicks on the hub. Check the disc to hub fit by reversing the hub and looking for a close free fit.
2. Hub set screws are shipped loose and have a single use locking patch. To re-use set screws, apply Loctite® 242 threadlocker, or equivalent. Tighten set screws as shown in Step 2. Do not allow loctite to pool on the hub or reach the carrier disc.
3. Check that hub is placed properly on the motor shaft as shown in Step 2.

REXNORD

Rexnord Industries, LLC.
Stearns Division
5150 S. International Drive
Cudahy, Wisconsin 53110
(414) 272-1100 Fax: (414) 277-4364 www.rexnord.com

Stearns® *Armature Actuated Brakes*

P/N 8-078-894-00
effective 8/15/05

Installation, Service and Parts List for 331 Series Armature Actuated Brakes

331-7, 331-8, and 331-9

Important

Please read these instructions carefully before installing, operating, or servicing your Stearns brake. Failure to comply with these instructions could cause injury to personnel and/or damage to property if the brake is installed or operated incorrectly. For definition of limited warranty/liability, contact Rexnord Industries, LLC., Stearns Division, 5150 S. International Dr., Cudahy, Wisconsin 53110,(414) 272-1100.

OEM's and subsystem suppliers, please forward these instructions with your components to the final user.

Caution

1. Servicing shall be in compliance with applicable local safety codes including Occupational Safety and Health Act (OSHA). All wiring and electrical connections must comply with the National Electric Code (NEC) and local electric codes in effect.
2. To prevent an electrical hazard, disconnect power source before working on the brake. If power disconnect point is out of sight, lock disconnect in the *off* position and tag to prevent accidental application of power to system.
3. To avoid damage to internal power supply, hipot testing should not exceed 1500 volts for one second. Brake coil leads must be connected together.
4. Heat developed during normal operation (135°C) of the brake may be hot enough to be painful or cause injury. Be careful when touching exterior surfaces. Allow sufficient time for the brake to cool before servicing.
5. After usage, the brake will contain burnt and degraded friction material dust. This dust should be removed before servicing or adjusting the brake.

   DO NOT blow off dust using an air hose. It is important to avoid dispersing dust into the air or inhaling it, as this may be dangerous to your health.

   a) Wear a filtered mask or a respirator while removing dust.

   b) Use a vacuum cleaner or a soft brush to remove dust from the brake. When brushing, avoid causing the dust to become airborne. Collect the dust in a container, such as a bag, which can be sealed off.
6. Maximum operating ambient temperature for these brakes should not exceed 40°C (104° F).

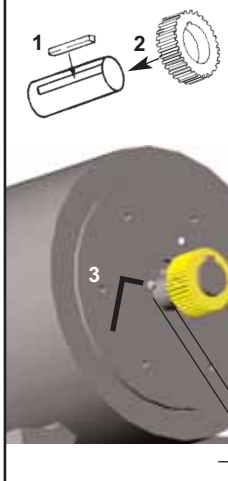
I. Installation

Note 1: Position of hub should allow full engagement of friction disc without interfering with the movement of the armature. **Motor shaft end float should not exceed .020". Shaft runout should be within .002" TIR. Motor mounting surface should be flat and perpendicular to within .004" of motor shaft.**

Note 2: Keep grease and oil from contacting friction surfaces.

Note 3: Hub should be a tight sliding fit. **For shrink fit hub consult the factory.**

I. Installation



Step 1

1. Place key in motor shaft.
2. Position hub per Table A.

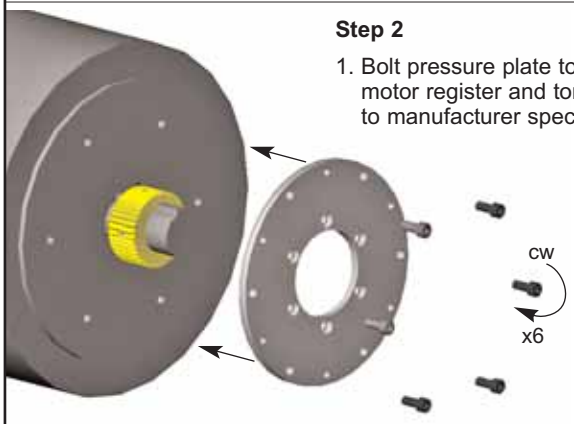
Table A (H2)

Brake Model	Bolt Circle	Metric	English
331-7	196	*14.5 mm*	.577"
331-8	230	*15.7 mm*	.619"
331-9	278	*17.2 mm*	.678"

3. Tighten set screws per Table B.

Table B

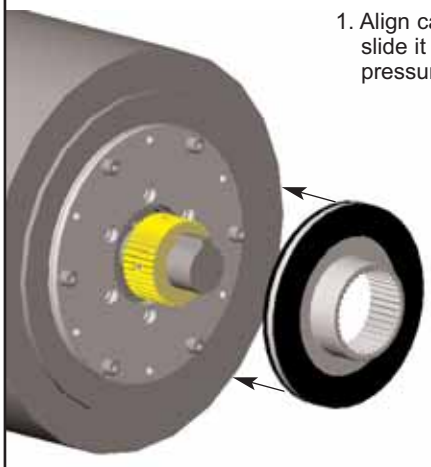
Brake Model	Bolt Circle	Metric	English	Hex Wrench
331-7	196	*32.5 Nm*	24 ft-lb	3/16"
331-8	230	*32.5 Nm*	24 ft-lb	3/16"
331-9	278	*70.5 Nm*	52 ft-lb	1/4"



Step 2

1. Bolt pressure plate to motor register and torque to manufacturer specifications.

Note: Brakes without a manual release use armature retention nuts and bolts that must be removed following mounting of the brake to the motor.



Step 3

1. Align carrier disc with hub and slide it into place against the pressure plate.

Step 4

1. Position brake assembly over hub/carrier disc and slide up against the pressure plate.* Tighten mounting bolts per Table C.

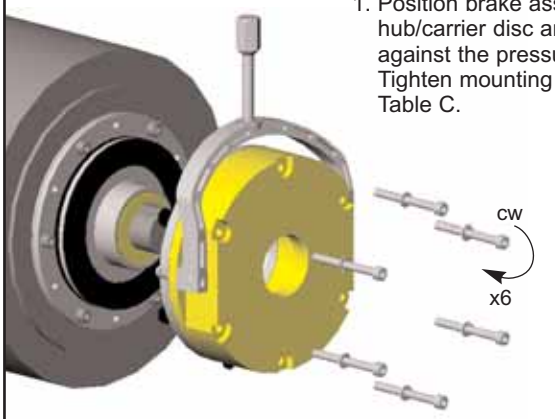


Table C

Brake Model	Bolt Circle	Mounting Bolt Torque		Hex Wrench
		Metric	English	
331-7	196	*19 Nm*	14 ft-lb	*6 mm*
331-8	230	*38 Nm*	28 ft-lb	*8 mm*
331-9	278	*38 Nm*	28 ft-lb	*8 mm*

*Manual release is optional

II. Air Gap Setting and Wear Adjust

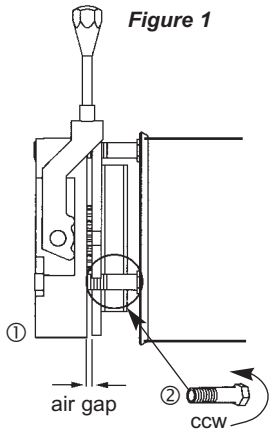


Figure 1

Air gap is factory set per Table D. Set air gap is measured at the adjusting bolts, between the armature and magbody.

Table D - Minimum Air Gap

Brake Model	Bolt Circle	Air Gap with Brake Release Indicator Switch
331-7	196	*.508-.610 mm*
		.020-.024"
331-8	230	*.508-.610 mm*
		.020-.024"
331-9	278	*.508-.610 mm*
		.020-.024"

Normal friction disc wear will cause air gap to increase from original setting (Table D). Air gap should be readjusted when gap reaches dimension shown in Table E.

Table E - Maximum Air Gap

Brake Model	Bolt Circle	Hex Wrench	Max Gap	
			Metric	English
331-7	196	3/4"	*.99 mm*	.035"
331-8	230	3/4"	*1.24 mm*	.043"
331-9	278	3/4"	*1.39 mm*	.055"

Table F - Disc Maximum Wear

Brake Model	Bolt Circle	Min Thickness	
		Metric	English
331-7	196	*9.27mm*	0.365"
331-8	230	*11.68 mm*	0.460"
331-9	278	*12.57 mm*	0.495"

Wear Adjustment

1. Loosen six mounting bolts 1/2 turn.
2. Rotate three alternate adjusting screws 1-1/2 turns counter- clockwise.
3. Rotate three remaining adjusting screws ccw to achieve original gap (Table D).
4. Retighten mounting bolts.
5. Recheck gap. Repeat above procedures as necessary.
6. Rotate three alternate adjust screws clockwise until snug with pressure plate.

Note 1: 90° ccw rotation is approximately 0.38mm (0.015") air gap increase.

Note 2: Brake discs should be replaced when they reach the thickness shown in Table F. Normally this will occur after 4-5 adjustments.

III. Coil Wiring

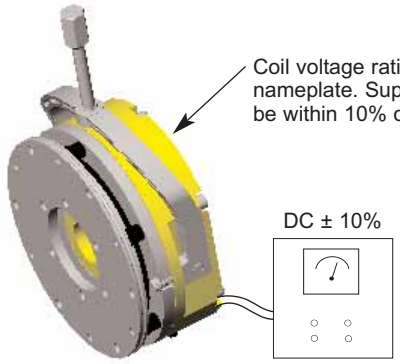
Caution: Brake wiring should only be carried out by qualified personnel.

Stearns brake coils are wound for DC voltage input at ± 10% of nameplate rating. Coil resistances shown below are for references purposes. For applications where AC voltage is being rectified refer to AC control switching shown on next page.

Table J

Bolt	196	230	278
Brake Model	**331-7**	**331-8**	**331-9**
Voltage rating	**Ohm (nominal value)***		
24	7.28	5.62	5.11
90	110.3	85.4	77.9
103	138.2	107.	97.7
180	426.8	330.7	302.6
205	534.6	414.3	379.3
258	669	650	605
414/432	1726	1649	1484

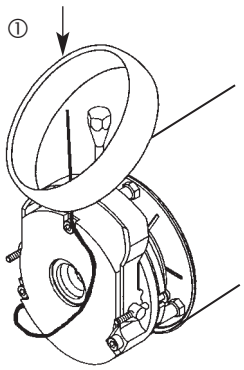
* Resistance values at 20°C



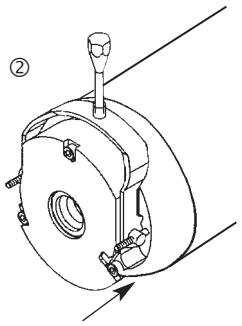
IV. Boot Seal (Optional)

Note: For brake supplied with a boot seal, the seal must be placed over the lead wires and manual release before wiring the brake to the power source.

1. Position the boot seal over the manual release (if supplied) and lead wires.



2. Stretch the seal over pressure plate and magbody coil assembly. If boot seal has optional drain hole, place hole at bottom facing downward. Check to make sure that the seal is flat against the brake and covers the open area around the brake.



BACK TO PRODUCT PAGE

Caution: Electrical work should only be performed by qualified personnel.

Note 1: All 333 series brakes have DC wound coils designed to accept DC line voltage at ± 10% of nameplate rating.

Note 2: When using a rectifier for AC line input, use table K to determine the proper DC coil rating requirement.

Table K

Line Voltage (AC)	Rectifier Type	Recommended Coil Voltage Rating	Stearns Rectifier Part Number	Rectifier Output Voltage
100	full	90	412-0291-01K	90
110	full	103	412-0291-01K	99
115	full	103	412-0291-01K	104
127	full	103	412-0291-01K	115
208	full	180	412-0291-01K	187
220	full	205	412-0291-01K	198
230	full	205	412-0291-01K	207
240	full	205	412-0291-01K	216
220	half	103	412-0591-01K	99
230	half	103	412-0591-01K	103
240	half	103	412-0591-01K	108
380/400	half	180	412-0591-01K	171/180
415	half	180	412-0591-01K	187
460	half	205	412-0591-01K	207
575	half	260	412-0591-01K	259

AC Switching with Standard Rectifier

Switching on the AC line is the most common method of control when the rectifier is wired through the motor windings or motor contacts. However, brake engagement can take up to 5 times longer than DC switching. Switching on the AC line is not suitable for hoist and crane applications.

Crane and Hoist Applications

For descending loads such as cranes and hoists or high inertia loads, the motor windings can develop regenerative voltage during deceleration which can delay the engagement of the brake when switching on the AC supply.

For these type of applications it is important to switch on the DC side of the rectifier or use a Quick Set device. Stearns rectifiers have a built in suppression circuit to protect the rectifier. However, it may still be necessary to protect the switching contacts with a separate suppression device. (see Figure 1 and Figure 2).

Figure. 1

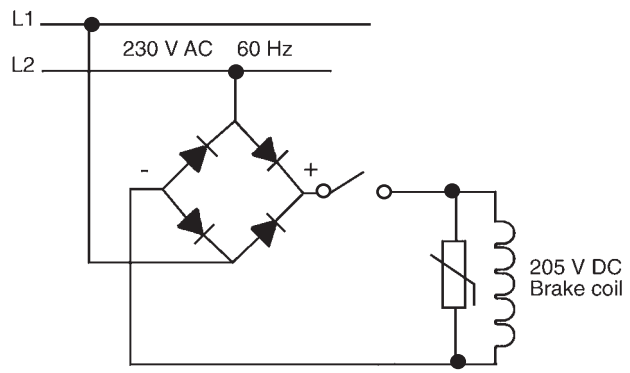
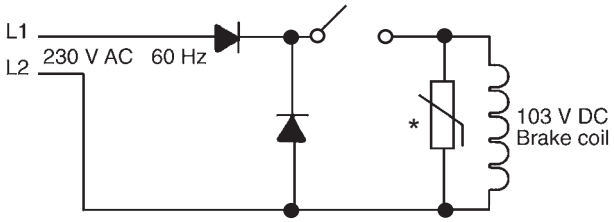
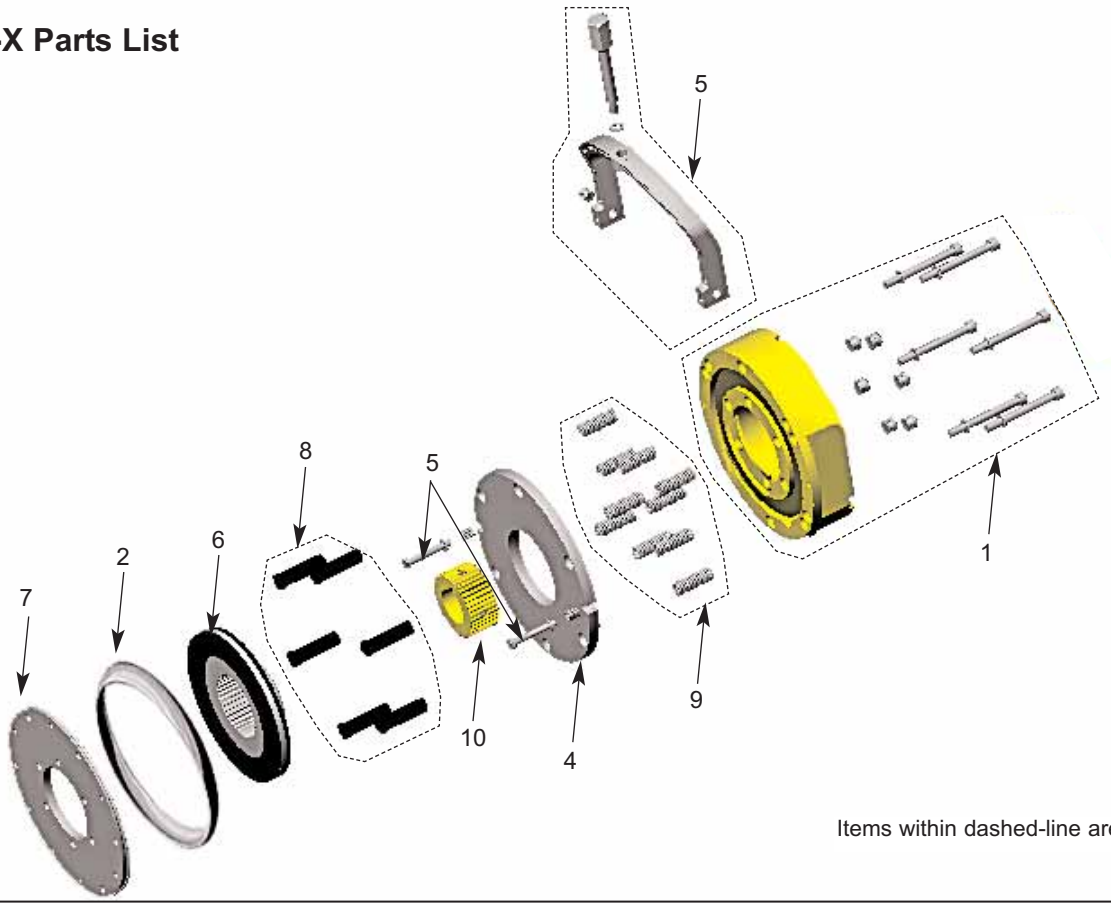


Figure. 2



* A suppression device **is** required when switching on the DC side of the line and using the half wave rectifier (412-0591-01K)

333-X Parts List



Items within dashed-line areas designate a kit.

Table L

Item	Torque Rating Description		331-7	331-8	331-9
1	Mag body & coil assembly (ref: Table M for voltage)		5-04-0983-00-0[ ]K	5-04-0988-00-0[ ]K	5-04-0993-00-0[ ]K
2	Boot Seal Kit		8-075-106-0K	8-075-107-0K	8-075-108-0K
4	Armature Kit		8-405-985-0K	8-405-990-0K	8-405-995-0K
5	Manual Release Kit		8-419-985-0K	8-419-990-0K	8-419-995-0K
6	Carrier Disc Kit		5-14-0985-0K	5-14-0990-0K	5-14-0995-0K
7	Pressure plate		8-438-985-0K	8-438-990-0K	8-438-995-0K
8	Adjusting Bolt Kit		8-434-985-0K	8-434-990-0K	8-434-990-0K
9	Spring Kit		9-70-0985-0K	9-70-0990-0K	9-70-0990-0K
10	Hub (ref: Table N)	English Bore Metric Bore	5-16-0981-01-01[ ] 8-016-980-00-M [ ]	5-16-0991-01-01[ ] 8-016-990-00-M [ ]	5-16-0995-01-01[ ] 8-016-995-00M [ ]

Kit Contents

Item	Description
1	Mag Body & Coil Assembly Adjust Plate Inner Plate Screws Adjust Plate Screws Mounting Bolts (2)
5	Release Arm Release Handle Release Pivots Release Springs Washers Assembly Screws
9	Outer Pole Springs

Table M Coil Voltage

Item Magbody & Coil Assembly Voltage Identifier -0[ ]k	
Voltage	**Insert**
24 V DC	0 [E]K
90 V DC	0 [J]K
103 V DC	0 [K]K
180 V DC	0 [L]K
205 V DC	0 [M]K
258 V DC	0 [S]K
414/432 V DC	0 [B]K

Table N

Bore Diameters			
English Bore	**Insert [ ]**	***Metric Bore***	**Insert [ ]**
1 3/8	G	*30 mm*	30
1 1/2	M	*35 mm*	35
1 5/8	H	*38 mm*	38
1 3/4	I	*40 mm*	40
1 7/8	J	*42 mm*	42
2	W	*45 mm*	45
2 1/8	Y	*48 mm*	48
		50 mm	50
		55 mm	55
		60 mm	60
		70 mm	70

Rexnord Industries, LLC.
Stearns Division
5150 S. International Dr.,
Cudahy, Wisconsin 53110
Phone (414) 272-1100 Fax (414) 277-4364 www.rexnord.com

P/N 8-078-891-00
effective 8/15/05

Stearns® *Armature Actuated Brakes*

Installation and Service Instructions for 333 Series Armature Actuated Brakes

333-7, 333-8, and 333-9

Important

Please read these instructions carefully before installing, operating, or servicing your Stearns brake. Failure to comply with these instructions could cause injury to personnel and/or damage to property if the brake is installed or operated incorrectly. For definition of limited warranty/liability, contact Rexnord Industries, Inc., Stearns Division, 5150 S. International Dr., Cudahy, Wisconsin 53110,(414) 272-1100.

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2. To prevent an electrical hazard, disconnect power source before working on the brake. If power disconnect point is out of sight, lock disconnect in the *off* position and tag to prevent accidental application of power to system.
3. To avoid damage to internal power supply, hipot testing should not exceed 1500 volts for one second. Brake coil leads must be connected together.
4. Heat developed during normal operation (135°C) of the brake may be hot enough to be painful or cause injury. Be careful when touching exterior surfaces. Allow sufficient time for the brake to cool before servicing.
5. After usage, the brake will contain burnt and degraded friction material dust. This dust should be removed before servicing or adjusting the brake.

   DO NOT blow off dust using an air hose. It is important to avoid dispersing dust into the air or inhaling it, as this may be dangerous to your health.

   a) Wear a filtered mask or a respirator while removing dust.

   b) Use a vacuum cleaner or a soft brush to remove dust from the brake. When brushing, avoid causing the dust to become airborne. Collect the dust in a container, such as a bag, which can be sealed off.
6. Maximum operating ambient temperature for these brakes should not exceed 40°C (104° F).

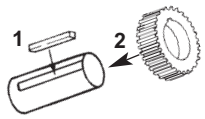
I. Installation

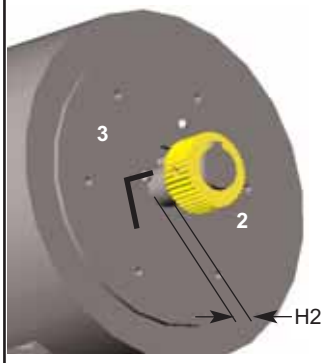
Note 1: Position of hub should allow full engagement of friction disc without interfering with the movement of the armature. **Motor shaft end float should not exceed .020". Shaft runout should be within .002" TIR. Motor mounting surface should be flat and perpendicular to within .004" of motor shaft.**

Note 2: Keep grease and oil from contacting friction surfaces.

Note 3: Hub should be a tight sliding fit. **For shrink fit hub consult the factory.**

I. Installation





Step 1

1. Place key in motor shaft.
2. Position hub per Table A.

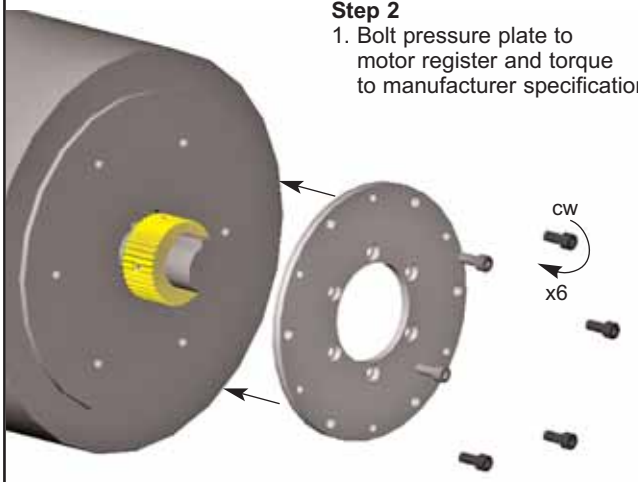
Table A (H2)

Brake Model	Bolt Circle	Metric	English
333-7	196	*14.5 mm*	.577"
333-8	230	*15.7 mm*	.619"
333-9	278	*17.2 mm*	.678"

3. Tighten set screws per Table B.

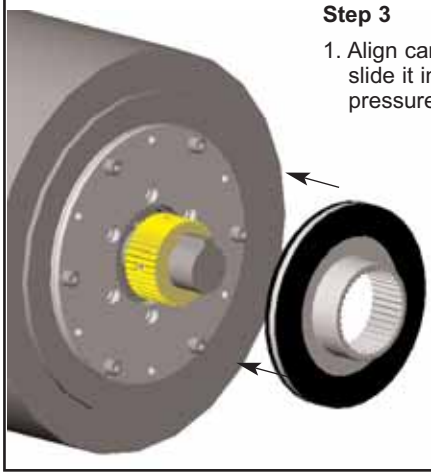
Table B

Brake Model	Bolt Circle	Metric	English	Hex Wrench
333-7	196	*32.5 Nm*	24 lb-ft	3/16"
333-8	230	*32.5 Nm*	24 lb-ft	3/16"
333-9	278	*70.5 Nm*	52 lb-ft	1/4"



Step 2

1. Bolt pressure plate to motor register and torque to manufacturer specifications.



Step 3

1. Align carrier disc with hub and slide it into place against the pressure plate.

Step 4

1. Position brake assembly over hub/carrier disc and slide up against the pressure plate.* Tighten mounting bolts per Table C.

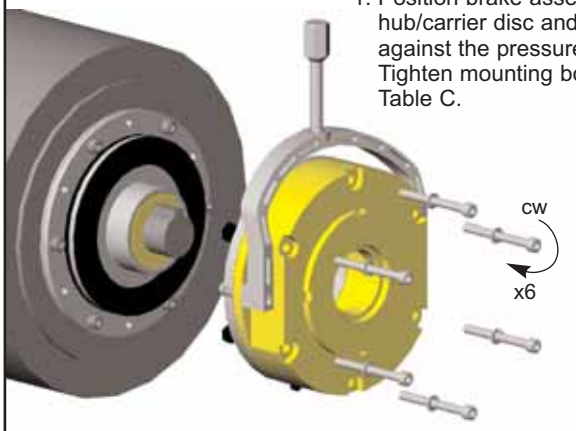


Table C

Brake Model	Bolt Circle	Mounting Bolt Torque		Hex Wrench
		Metric	English	
333-7	196	*19 Nm*	14 lb-ft	*6 mm*
333-8	230	*38 Nm*	28 lb-ft	*8 mm*
333-9	278	*38 Nm*	28 lb-ft	*8 mm*

*Manual release is optional

II. Air Gap Setting and Wear Adjust

Air gap is factory set per Table D. Set air gap is measured at the adjusting bolts, between the armature and magbody.

Figure 1

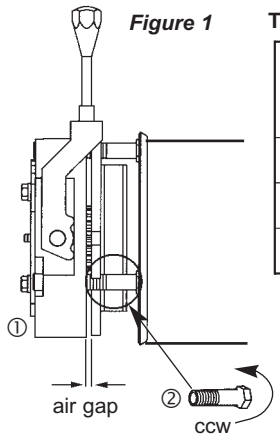


Table D - Minimum Air Gap

Brake Model	Bolt Circle	Air Gap with Brake Release Indicator Switch
333-7	196	*.508-.610 mm*
		.020-.024"
333-8	230	*.508-.610 mm*
		.020-.024"
333-9	278	*.508-.610mm*
		.020-.024"

Normal friction disc wear will cause air gap to increase from original setting (Table D). Air gap should be readjusted when gap reaches dimension shown in Table E.

Table E - Maximum Air Gap

Brake Model	Bolt Circle	Hex Wrench	Max Gap	
			Metric	English
333-7	196	3/4"	*.89 mm*	.035"
333-8	230	3/4"	*1.09 mm*	.043"
333-9	278	3/4"	*1.40 mm*	.055"

Table F - Disc Maximum Wear

Brake Model	Bolt Circle	Min Thickness	
		Metric	English
333-7	196	*9.27mm*	0.365"
333-8	230	*11.68 mm*	0.460"
333-9	278	*12.57 mm*	0.495"

Wear Adjustment

1. Loosen six mounting bolts 1/2 turn.
2. Rotate three alternate adjusting screws 1-1/2 turns counter- clockwise.
3. Rotate three remaining adjusting screws ccw to achieve original gap (Table D).
4. Retighten mounting bolts.
5. Recheck gap. Repeat above procedures as necessary.
6. Rotate three alternate adjust screws clockwise until snug with pressure plate.

Note 1: 90° ccw rotation is approximately 0.38mm (0.015") air gap increase.

Note 2: Brake discs should be replaced when they reach the thickness shown in Table F. Normally this will occur after 4-5 adjustments.

III. Torque Adjust

All standard brakes are shipped with the brakes set at the **maximum torque setting**. To adjust torque:

1. Rotate adjusting plate with spanner wrench as shown in Figure 2. Refer to Table G for approximate torque reduction per rotation.

Table G - Torque Reduction

Brake Size	333-7	333-8	333-9
% Torque Change per rotation	18%	12%	10%
Maximum turns	3	4	4

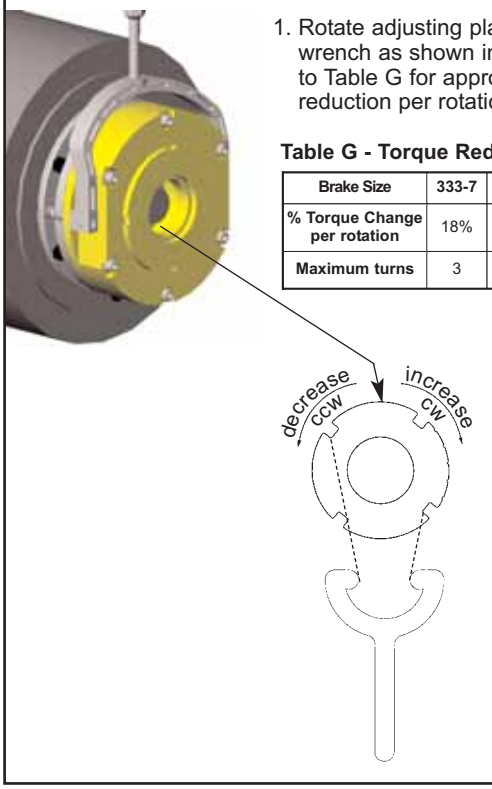
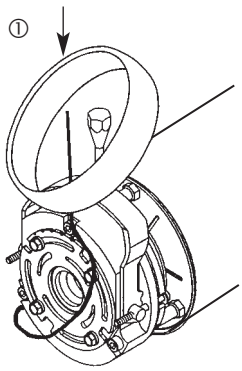


Figure 2

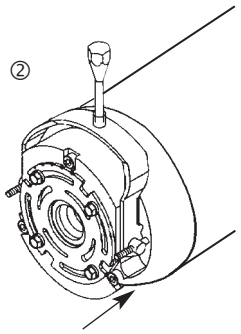
IV. Boot Seal (Optional)

Note: For brake supplied with a boot seal, the seal must be placed over the lead wires and manual release before wiring the brake to the power source.

1. Position the boot seal over the manual release (if supplied) and lead wires.



2. Stretch the seal over pressure plate and magbody coil assembly. If boot seal has optional drain hole, place hole at bottom facing downward. Check to make sure that the seal is flat against the brake and covers the open area around the brake.



Electrical Considerations

V. Coil Wiring

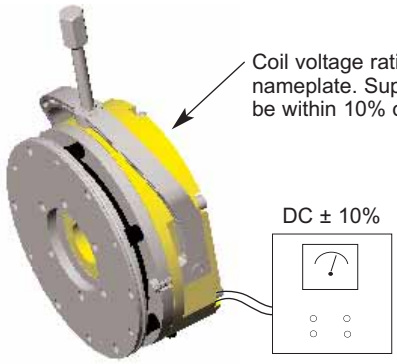
Caution: Brake wiring should only be carried out by qualified personnel.

Stearns brake coils are wound for DC voltage input at ± 10% of nameplate rating. Coil resistances shown below are for references purposes. For applications where AC voltage is being rectified refer to AC control switching shown on this page.

Table H

Bolt	196	230	278
Brake Model	**333-7**	**333-8**	**333-9**
Voltage rating	**Ohm (nominal value)***		
24	7.28	5.62	5.11
90	110.3	85.4	77.9
103	138.2	107.	97.7
180	426.8	330.7	302.6
205	534.6	414.3	379.3
258	669	650	605
414/432	1726	1649	1484

* Resistance values at 20°C



Caution: Electrical work should only be performed by qualified personnel.

Note 1: All 333 series brakes have DC wound coils designed to accept DC line voltage at ± 10% of nameplate rating.

Note 2: When using a rectifier for AC line input, use table K to determine the proper DC coil rating requirement.

Table K

Line Voltage (AC)	Rectifier Type	Recommended Coil Voltage Rating	Stearns Rectifier Part Number	Rectifier Output Voltage
100	full	90	412-0292-01K	90
110	full	103	412-0292-01K	99
115	full	103	412-0292-01K	104
127	full	103	412-0292-01K	115
208	full	180	412-0291-01K	187
220	full	205	412-0291-01K	198
230	full	205	412-0291-01K	207
240	full	205	412-0291-01K	216
220	half	103	412-0591-01K	99
230	half	103	412-0591-01K	103
240	half	103	412-0591-01K	108
380/400	half	180	412-0591-01K	171/180
415	half	180	412-0591-01K	187
460	half	205	412-0591-01K	207
575	half	258	412-0591-01K	258

Note: Fullwave rectifier output is 90% of AC line input.
Halfwave rectifier output is 45% of AC line input.
* 1 indicates 0.8 amp rating
* 2 indicates 1.6 amp rating
} Refer to Table L to determine current rating

Table L

Coil Voltage	Current Rating in Amps		
	196	230	278
414/432 Vdc	0.25	0.26	0.29
24 Vdc	3.30	4.27	3.85
90 Vdc	0.82	1.05	1.19
103 Vdc	0.75	0.96	1.08
180 Vdc	0.42	0.54	0.61
205 Vdc	0.38	0.49	0.56
258 Vdc	0.38	0.40	0.44

Contact factory for non-standard coils.

AC Switching with Standard Rectifier

Switching on the AC line is the most common method of control when the rectifier is wired through the motor windings or motor contacts. However, brake engagement can take up to 5 times longer than DC switching. Switching on the AC line is not suitable for hoist and crane applications.

Crane and Hoist Applications

For descending loads such as cranes and hoists or high inertia loads, the motor windings can develop regenerative voltage during deceleration which can delay the engagement of the brake when switching on the AC supply.

For these type of applications it is important to switch on the DC side of the rectifier or use a Quick Set device.
Stearns rectifiers have a built in suppression circuit to protect the rectifier. However, it may still be necessary to protect the switching contacts with a separate suppression device. (see Figure 1 and Figure 2).

Figure. 1

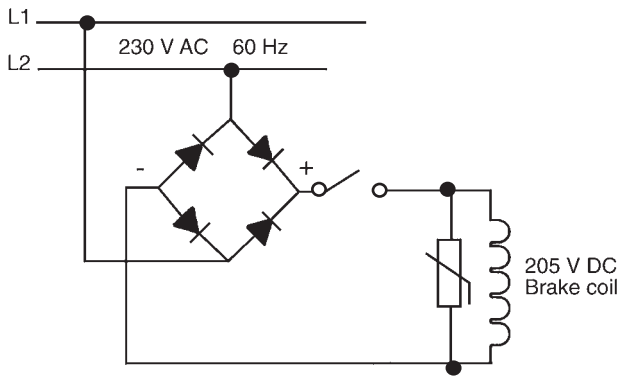
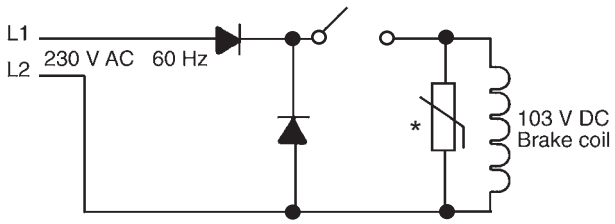
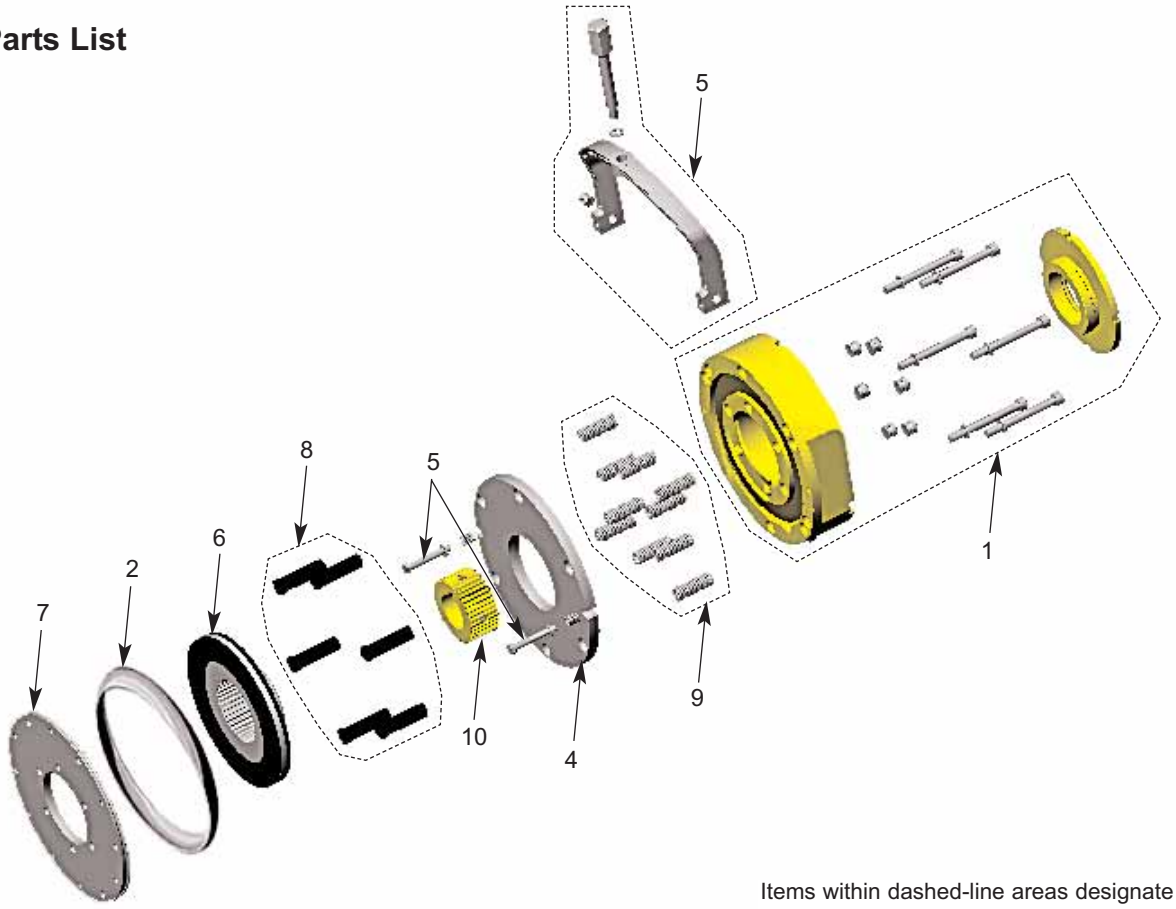


Figure. 2



* A suppression device **is** required when switching on the DC side of the line and using the half wave rectifier (412-0591-01K)

333-X Parts List



Items within dashed-line areas designate a kit.

Table M

Item	Torque Rating Description		333-7	333-8	333-9
1	Mag body & coil assembly (ref: Table N for voltage)		5-04-0985-00-0[ ]K	5-04-0990-00-0[ ]K	5-04-0995-00-0[ ]K
2	Boot Seal Kit		8-075-106-0K	8-075-107-0K	8-075-108-0K
4	Armature Kit		8-405-985-0K	8-405-990-0K	8-405-995-0K
5	Manual Release Kit		8-419-985-0K	8-419-990-0K	8-419-995-0K
6	Carrier Disc Kit		5-14-0985-0K	5-14-0990-0K	5-14-0995-0K
7	Pressure plate		8-438-985-0K	8-438-990-0K	8-438-995-0K
8	Adjusting Bolt Kit		8-434-985-0K	8-434-990-0K	8-434-990-0K
9	Spring Kit		9-70-0985-0K	9-70-0990-0K	9-70-0990-0K
10	Hub (ref: Table P)	English Bore Metric Bore	5-16-0981-01-01[ ] 8-016-980-00-M [ ]	5-16-0991-01-01[ ] 8-016-990-00-M [ ]	5-16-0995-01-01[ ] 8-016-995-00M [ ]

Kit Contents

Item	Description
1	Mag Body & Coil Assembly Adjust Plate Inner Plate Screws Adjust Plate Screws Mounting Bolts (2)
5	Release Arm Release Handle Release Pivots Release Springs Washers Assembly Screws
9	Outer Pole Springs

Table N Coil Voltage

Item Magbody & Coil Assembly Voltage Identifier -0[ ]k	
Voltage	**Insert**
24 V DC	0 [E]K
90 V DC	0 [J]K
103 V DC	0 [K]K
180 V DC	0 [L]K
258 V DC	0 [S]K
414/432 V DC	0 [B]K

Table P

Bore Diameters			
English Bore	**Insert [ ]**	***Metric Bore***	**Insert [ ]**
1 3/8	G	*30 mm*	30
1 1/2	M	*35 mm*	35
1 5/8	H	*38 mm*	38
1 3/4	I	*40 mm*	40
1 7/8	J	*42 mm*	42
2	W	*45 mm*	45
2 1/8	Y	*48 mm*	48
		50 mm	50
		55 mm	55
		60 mm	60
		70 mm	70

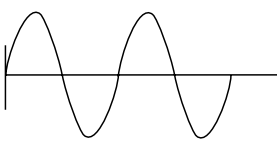
Rexnord Industries, Inc.
Stearns Division
5150 S. International Dr.
Cudahy, Wisconsin 53110
(414) 272-1100 Fax: (414) 277-4364 www.rexnord.com

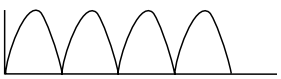
AC Rectifiers for use with Armature Actuated Brakes

Product Overview

NOTE: For brake response times with and without AC rectifiers see page 94.

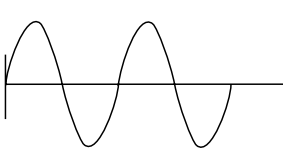
Full Wave





A rectifier in which both positive and negative half-cycles of the incoming (AC) signal are rectified to produce a unidirectional (DC) current through the load. The DC output voltage of a full wave rectifier is $V_{DC=}$ .90V_{AC}.
Maximum operating voltage is +10% of nominal, frequency 50/60 Hz, maximum ambient temperature range of -40˚C to 65˚C

Half Wave



A rectifier in which only alternate half-cycles of the incoming (AC) signal are rectified to produce a unidirectional (DC) current through the load. The DC output voltage of a half wave rectifier is $V_{DC=}$ .45V_{AC}.
Maximum operating voltage is +10% of nominal, frequency 50/60 Hz, maximum ambient temperature range of -40°C to 65°C

Combination Full and Half Wave

Provides option of utilizing either full or half wave rectification
Maximum operating voltage is +10% of nominal, frequency 50/60 Hz.
Maximum ambient temperature range is -40°C to 65°C

TOR-AC Full and Half Wave

Provides coil turn off nearly as fast as DC side switching. Includes line filter for AC drive applications or whenever electrical filtering is required to protect the rectifier from high-frequency electrical line pulses. Must be switched on/off by a switch in an AC lead of the TOR-AC. Maximum operating voltage +10% of nominal, frequency 50/60 Hz.
Maximum ambient temperature range is -40°C to 65°C

QuickSet

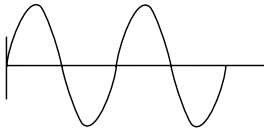
A rectifier that provides a quick brake response time even when the rectifier is permanently wired across the windings of an AC motor. The QuickSet Rectifier detects the decaying, motor generated voltage that occurs when power is removed from the motor circuit, and interrupts brake coil current in response. QuickSet Rectifiers can be specified full wave or half wave.
Operating voltage is ±10% of nominal, frequency 50/60 Hz.
Maximum ambient temperature range is -40°C to 65°C

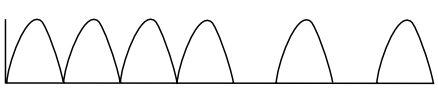
QuickSet/QuickRelease

A rectifier that provides a timed, full wave rectified "over-excitation" brake release function, followed by continuous, half wave rectified brake released "holding" function, when used in conjunction with an appropriate brake coil voltage rating.

USED AS WATTSAVER: Provides a timed, full wave rectified brake release function, followed by continuous, half wave rectified brake released "wattsaver" function, when used in conjunction with an appropriate brake coil voltage rating. The Wattsaver serves to reduce the electrical power consumption and dissipation of the brake in the released state.

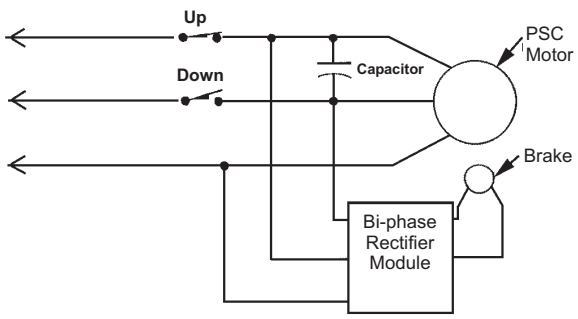
Operating voltage is ±10% of nominal, frequency 50/60 Hz.
Maximum ambient temperature varies by part number - see information by part number on following pages.





Bi-Phase Rectifiers

A rectifier that is typically used in single phase, reversing, permanent split capacitor (PSC) motor applications. A single phase, reversing, PSC motor typically has two windings of equivalent resistance. The winding which serves as the main winding is connected directly across the power line, the winding which serves as the auxiliary winding is connected in series with a run capacitor across the power line. The direction of rotation is reversed by interchanging the function of the two windings. The Bi-Phase Rectifier provides the same voltage to the brake coil regardless of the direction of rotation of the motor. The Bi-Phase Rectifier has five leads and comes in standard response and QuickSet versions. Bi-Phase Rectifiers are application specific. Please contact factory for more information.



AC Rectifiers Continued
Selection & Pricing

BACK TO PAGE 1

Discount Symbol R3

115 Vac Input Voltage

Full Wave

Brake Sizes	Part Number	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/Letter Designation	Switching	Connection	Max Current (amps)	List Price
72-196	412029101K	115	103	K or J	ac or dc side or connect across motor terminals	ac leads dc terminal block	.8	$46.00
ALL	412029201K	115	103	K or J	ac or dc side or connect across motor terminals	ac terminal block dc terminal block	1.6	$70.00
ALL	412029203K	115	103	K or J	ac or dc side or connect across motor terminals	ac leads dc leads	1.6	$70.00

Combination Full and Half Wave

Brake Sizes	Part Number	AC Input	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
*	412049101K	115/230 460/575	50/103 207/259 414/517	50 Vdc = G 103 Vdc = K* 207 Vdc = M 259 Vdc = S 414 Vdc = B 517 Vdc = A	ac or dc side or connect across motor terminals	ac terminal block dc terminal block	.8	$90.00

*At 50 Vdc coil voltage, this rectifier can be used on brake sizes 72-112. At 103 Vdc coil voltage, this rectifier can be used on brake sizes 72-196. At all other listed coil voltages, this rectifier can be used on any brake size.

230 Vac Input Voltage

Full Wave

Brake Sizes	Part Number	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/Letter Designation	Switching	Connection	Max Current (amps)	List Price
ALL	412029101K	230	207	M	ac or dc side or connect across motor terminals	ac leads dc terminal block	.8	$46.00
ALL	412029201K	230	207	M	ac or dc side or connect across motor terminals	ac terminal block dc terminal block	1.6	$70.00
ALL	412029203K	230	207	M	ac or dc side or connect across motor terminals	ac leads dc leads	1.6	$70.00

Combination Full and Half Wave

Brake Sizes	Part Number	AC Input	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
*	412049101K	115/230 460/575	50/103 207/259 414/517	50 Vdc = G 103 Vdc = K 207 Vdc = M 259 Vdc = S 414 Vdc = B 517 Vdc = A	ac or dc side or connect across motor terminals	ac terminal block dc terminal block	.8	$90.00

TOR-AC Rectifier with Line Filter, Full Wave

Brake Sizes	Part Number	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
ALL	412029401K 412029402K	230	207	M	ac side only	Terminals Leadwires	.6	$115.00

QuickSet

Brake Sizes	Part Number	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
ALL	412029601K	230	207	M	NONE-connect across motor terminals	ac terminal block dc terminal block	.6	$120.00

QuickSet/QuickRelease or 205 Vdc Wattsaver

Brake Sizes	Part Number	Max Ambient Temp	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
72-230	412029301K	65°C	230	207 Vdc over-excitation	K or J	ac side only or connect across motor terminals	ac terminal block dc terminal block	2.0	$480.00
				103 Vdc sustaining				1.0	

AC Rectifiers Selection/Pricing Continued

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Discount Symbol R3

460 Vac Input Voltage

**At 50 Vdc coil voltage, this rectifier can be used on brake sizes 72-112.
At 103 Vdc coil voltage, this rectifier can be used on brake sizes 72-196. At all other listed coil voltages, this rectifier can be used on any brakes size.

Half Wave

Brake Sizes	Part Number	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/Letter Designation	Switching	Connection	Max Current (amps)	List Price
ALL	412049301K	400	180	L	ac or dc side or connect across motor terminals	ac terminal block dc terminal block	.8	$46.00
		460	207	M				

Combination Full and Half Wave

Brake Sizes	Part Number	AC Input	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
**	412049101K	115/230 460/575	50/103 207/259 414/517	50 Vdc = G 103 Vdc = K* 207 Vdc = M 259 Vdc = S 414 Vdc = B 517 Vdc = A	ac or dc side or connect across motor terminals	ac terminal block dc terminal block	.8	$90.00

TOR-AC with Line Filter

Brake Sizes	Part Number	AC Input	DC Output	Brake Coil Voltage/Letter Designation	Switching	Connection	Max Current (amps)	List Price
ALL	412049404K	460	414	B / Full	ac side only	Terminals	0.3	$102.00
ALL	412049405K	460	414	B / Full	ac side only	Leadwires	0.3	$102.00
ALL	412049411K	460	207	M / Half	ac side only	Terminals	0.3	$102.00
ALL	412049412K	460	207	M / Half	ac side only	Leadwires	0.3	$102.00
ALL	412049413K	460	207	M / Half	ac side only	Terminals	0.6	$187.00
ALL	412049414K	460	207	M / Half	ac side only	Leadwires	0.6	$187.00

QuickSet

Brake Sizes	Part Number	AC Input	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
ALL	412049801K	460	414	B Fullwave	NONE-connect across motor terminals	ac terminal block dc terminal block	.3	$120.00
ALL	412049811K	460	207	M Halfwave	NONE-connect across motor terminals	ac terminal block dc terminal block	.6	$120.00

QuickSet/QuickRelease or 414 Vdc Wattsaver

Brake Sizes	Part Number	Max Ambient Temp	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
72-230	412049601K	45°C	460	414 Vdc over-excitation	M	ac side only or connect across motor terminals	ac terminal block dc terminal block	1.0	$480.00
				207 Vdc sustaining				0.5	

575 Vac Input Voltage

Half Wave

Brake Sizes	Part Number	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/Letter Designation	Switching	Connection	Max Current (amps)	List Price
ALL	412059101K UL E71115	400	180	L	ac side only or connect across motor terminals	ac leads dc terminal block	.8	$46.00
		575	259	S				
ALL	412059103K	400	180	L	ac side only or connect across motor terminals	ac leads dc leads	.8	$46.00
		575	259	S				

Combination Full and Half Wave

Brake Sizes	Part Number	AC Input	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
**	412049101K	115/230 460/575	50/103 207/259 414/517	50 Vdc = G 103 Vdc = K 207 Vdc = M 259 Vdc = S 414 Vdc = B 517 Vdc = A	ac or dc side or connect across motor terminals	ac terminal block dc terminal block	.8	$90.00

QuickSet

Brake Sizes	Part Number	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
ALL	412059811K	575	258	S	NONE-connect across motor terminals	ac terminal block dc terminal block	.6	$120.00

TOR-AC with Line Filter - Half Wave

Brake Sizes	Part Number	AC Input 50/60 Hz	DC Output	Brake Coil Voltage/ Letter Designation	Switching	Connection	Max Current (amps)	List Price
ALL	412059411K	575	259	S	ac side only	terminals	.6	$102.00
	412059412K					leadwires		

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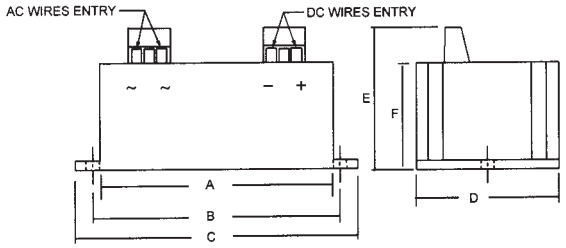
AC Rectifiers Continued

Rectifier Dimensions

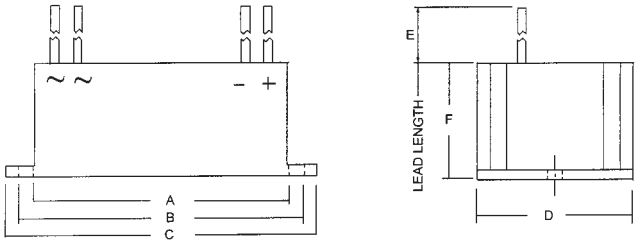
Tape Mount

Part Number	Length	Width	Ht	Connection	
				AC	DC
4-1-20291-01K	1.4	0.6	1.0	Leadwire, 7” long	Terminal
4-1-20292-01K	1.38	1.06	0.94	Terminal	Terminal
4-1-20292-03K	1.38	1.06	0.9	Leadwire, 2.5” long	Leadwire, 2.5” long
4-1-20491-01K	2.25	1.25	1.0	Terminal	Terminal
4-1-20591-03K	1.4	0.75	0.9	Leadwire, 7” long	Leadwire, 7” long
4-1-20591-01K	1.4	0.75	1.0	Leadwire, 7” long	Terminal



Terminal location or connection may differ from sketch
Flange or Tape Mount

Part Number	A	B	C	D	E	F
4-1-20293-01K	4.6	5	5.5	3.3	2.03	1.25
4-1-20294-01K	3	3.5	4	2	2	1.5
4-1-20296-01K	3	3.5	4	3	2	1.5
4-1-20493-01K	2	2.5	3	1.5	1.6	1
4-1-20494-04K	3	3.5	4	2	2	1.5
4-1-20494-11K	3	3.5	4	2	2	1.5
4-1-20494-13K	3	3.5	4	2	2	1.5
4-1-20496-01K	4.6	5	5.5	3.3	2	1.25
4-1-20498-01K	3	3.5	4	3	2	1.5
4-1-20498-11K	2	2.38	2.6	2	2.1	1.3
4-1-20594-11K	3	3.5	4	2	2	1.5
4-1-20598-11K	2	2.38	2.6	2	2.1	1.3

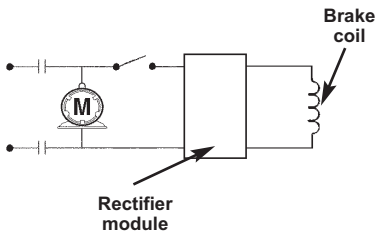


Part Number	A	B	C	D	E	F	Mount
4-1-20494-01K	2.3			1.32	6	0.86	Tape
4-1-20294-02K	3	3.5	4	2	6	1.5	Flange
4-1-20494-05K	3	3.5	4	2	6	1.5	Flange
4-1-20494-12K	3	3.5	4	2	6	1.5	Flange
4-1-20494-14K	3	3.5	4	2	6	1.5	Flange
4-1-20594-12K	3	3.5	4	2	6	1.5	Flange

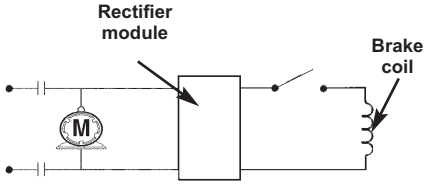
Wiring Diagrams/Switching

NOTE: For brake response times with and without AC rectifiers see page 94

AC Side Switching

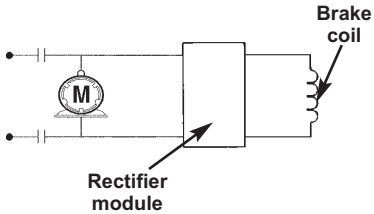


DC Side Switching



Use DC side switching with the following Rectifiers ONLY: 4-1-20291-01K, 4-1-20292-01K, 4-1-20292-03K, 4-1-20493-01K, 4-1-20491-01K

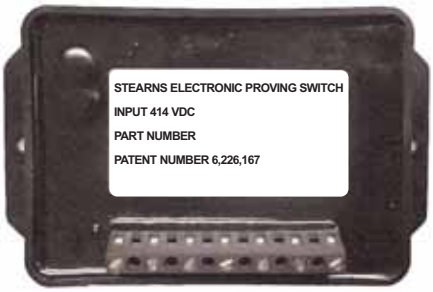
Connected Across Motor Terminals (No switching)



Electronic Brake Release Indicator (Proving Switch)
Armature-Actuated Brake Series

BACK TO PAGE 1

Indicates when the brake is released by sensing the change in the brake coil current waveform.
For use with the Series 333/350/360 brakes



Features

- *Mount in remote location (control cabinet)*
- *Operating temperature -40°C through 65°C*
- *Not susceptible to common problems of mechanical switches, such as mechanical fatigue, tolerances, and vibration.*
- *Relay contacts are silver-cadmium oxide*
- *Utilize either normally-open contacts (UL rated 2-20A, inductive or resistive, at 12-240 VAC and CSA rated 10A, inductive or resistive at 240 VAC) or normally-closed contacts (UL rated 2-10A, inductive or resistive, at 12-240 VAC and CSA rated 10A, inductive or resistive, at 240 VAC)*

Wiring Instructions: See sheet P/N 8-178-000-03

Brake Operation

When electrical power is applied to the armature-actuated brake coil, the armature is attracted by the electromagnetic force generated by the magnet body, which overcomes spring action. This allows the friction disc to rotate freely. When electrical power is interrupted, the electromagnetic force is removed and the pressure spring mechanically forces the armature plate to clamp the friction disc between itself and the pressure plate. This develops torque to stop or hold the load.

Switch Operation

When the brake armature is pulled in to the magnet body to release the brake, a change in the brake coil current waveform occurs. By tracking this change in the brake coil current, the electronic switch indicates when the brake is released.

Ordering Information

List Price	Discount Symbol
$330.00	R3

Part Number Example: 4 - 4 - 0 7 0 9 0 - X X

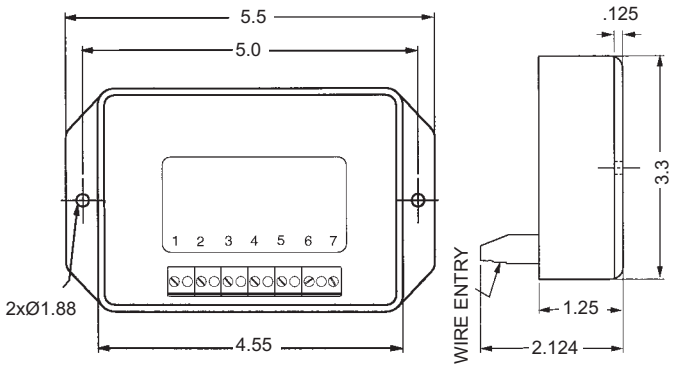
DC Voltage*	Characters To Insert
24	024
90	090
103	103
180	180
205	205
258	258
414	414

Specify brake model number. The last 2 digits of the switch part number will depend upon the brake size

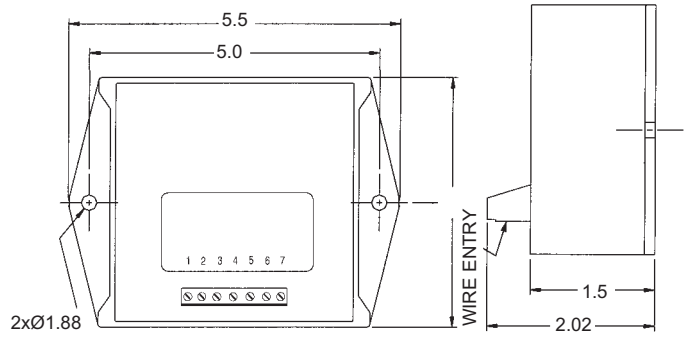
*Standard voltages listed. For other voltages, contact factory.

Dimensions

414V Unit



24V thru 240V Units



*Standard voltages listed. For other voltages, contact factory.

NOTE: Cannot be used with half-wave rectifier. Use with full-wave or TOR-AC full-wave rectifier only.

P/N 8-078-877-00
effective 09/21/06

Stearns® *Armature Actuated Brakes*

Installation and Service Instructions for Stearns AAB Rectifier

Important

Please read these instructions carefully before installing, operating, or servicing your Stearns brake and rectifier. Failure to comply with these instructions could cause injury to personnel and/or damage to property if the brake is installed or operated incorrectly. For definition of limited warranty/liability, contact Rexnord Industries, Inc., Stearns Division, 5150 S. International Dr., Cudahy, Wisconsin 53110,(414) 272-1100.

OEM's and subsystem suppliers, please forward these instructions with your components to the final user.

Caution

1. Servicing shall be in compliance with applicable local safety codes including Occupational Safety and Health Act (OSHA). All wiring and electrical connections must comply with the National Electric Code (NEC) and local electric codes in effect.
2. To prevent an electrical hazard, disconnect power source before working on the brake. If power disconnect point is out of sight, lock disconnect in the *off* position and tag to prevent accidental application of power to system.
3. Maximum operating ambient temperature for these rectifiers should not exceed 65°C (150° F).
4. Refer to specific brake Installation and Service Instructions for proper mounting of brake.

Wiring

1. Connect coil leadwires to rectifier as shown in diagrams. (Polarity does **not** matter.)
2. Connect rectifier leadwires to AC power source.

Note 1: For each nominal AC line voltage, use table to determine the proper DC coil rating requirement.

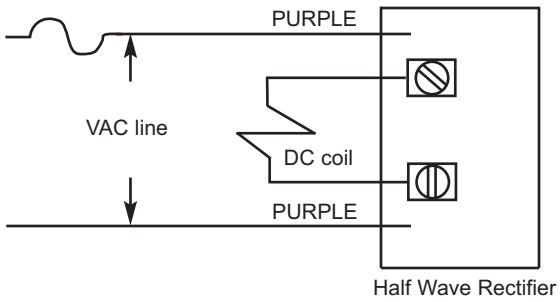
Note 2: Rectifiers must be fused with a 1 amp; fast acting fuse, with a rating at, or above the line voltage input to the rectifier. The exception to fusing are kits #412-0292-01 and 412-0292-03, which have built in fuses.

Table

Line Voltage (AC)	Rectifier Type	Recommended Coil Voltage Rating	Stearns Rectifier Part Number	Rectifier Output Voltage
100	full	90	412-029*-01K	90
110	full	103	412-029*-01K	99
115	full	103	412-029*-01K	103
127	full	103	412-029*-01K	115
208	full	180	412-029*-01K	187
220	full	205	412-029*-01K	198
230	full	205	412-029*-01K	207
240	full	205	412-029*-01K	216
230	full	205	412-0292-03K	207
220	half	103	412-0591-01K	99
230	half	103	412-0591-0*K	103
240	half	103	412-0591-0*K	108
380/400	half	180	412-0591-0*K	171/180
415	half	180	412-0591-0*K	187
460	half	205	412-0591-0*K	207
460	half	205	412-0493-0*K	207
575	half	260	412-0591-0*K	259
480	half	205	412-0591-0*K	216

Note: *Insert numeral from existing rectifier in this position. Full Wave rectifier output is 90% of AC line input. Half wave rectifier output is 45% of AC line input.

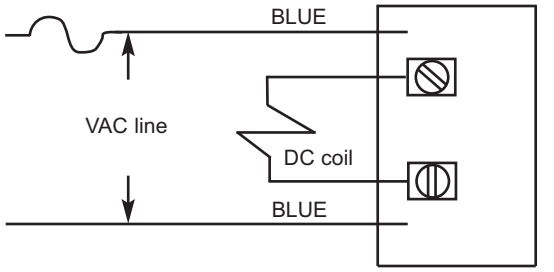
Kit Number 412-0591-01K**



Half Wave Rectifier

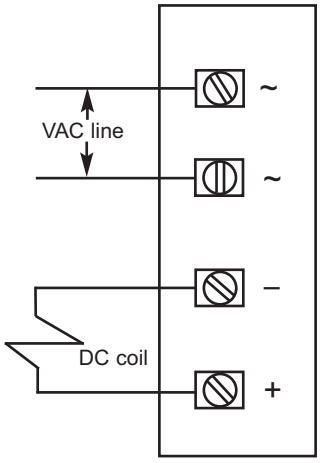
** A suppression device is required when switching on the DC side of the line and using the half wave rectifier (412-0591-01K).

Kit Number 412-0291-01K



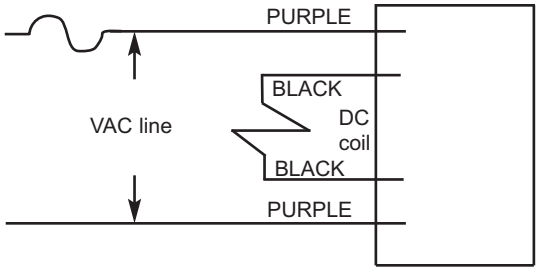
Full Wave Rectifier

Kit Number 412-0292-01K



Full Wave Rectifier

Kit Number 412-0591-03K**



Half Wave Rectifier

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Installation and Service Instructions for Stearns Quick-Set & Over-Excitation Rectifiers

Important

Please read these instructions carefully before installing, operating, or servicing your Stearns brake and rectifier. Failure to comply with these instructions could cause injury to personnel and/or damage to property if the brake is installed or operated incorrectly. For definition of limited warranty/liability, contact Rexnord Industries, Inc., Stearns Division, 5150 S. International Dr., Cudahy, Wisconsin 53110,(414) 272-1100.

OEM's and subsystem suppliers, please forward these instructions with your components to the final user.

Caution

1. Servicing shall be in compliance with applicable local safety codes including Occupational Safety and Health Act (OSHA). All wiring and electrical connections must comply with the National Electric Code (NEC) and local electric codes in effect.
2. To prevent an electrical hazard, disconnect power source before working on the brake. If power disconnect point is out of sight, lock disconnect in the *off* position and tag to prevent accidental application of power to system.
3. Maximum operating ambient temperature for these rectifiers should not exceed 65°C (150° F).
4. Refer to specific brake Installation and Service Instructions for proper mounting of brake.
5. When use of these rectifiers is in conjunction with a motor operated by a variably frequency drive, the input wiring to the rectifier should be run in a wireway that does not contain the motor wires. Shielded cable should be used in applications where the rectifier and motor wires must be run together.

Wiring

1. Connect coil leadwires to rectifier as shown in diagrams. (Polarity does **not** matter.)
2. Connect rectifier leadwires to AC power source.

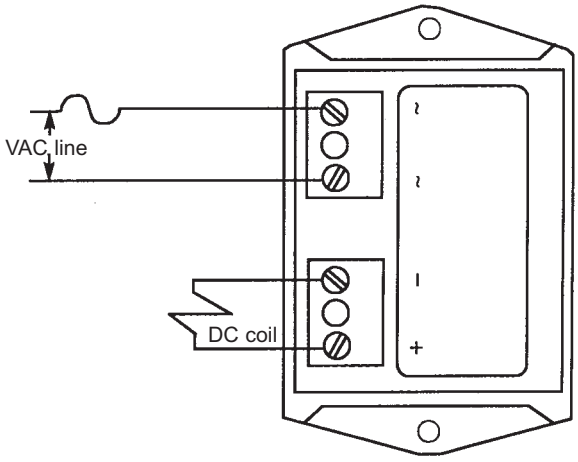
Note: For each nominal AC line voltage, use table to determine the proper DC coil rating requirement.

Table A

Line Voltage (AC)	Rectifier Type	Recommended Coil Voltage Rating	Stearns Rectifier Part Number	Rectifier Output Voltage
230	full	205	412-0296-01K	207
460	full	415	412-0498-01K	414
230	half	103	412-0293-01K	207/103*
460	half	205	412-0496-01K	414/207*
575	half	260	412-0598-11K	259
460	half	205	412-0498-11K	207

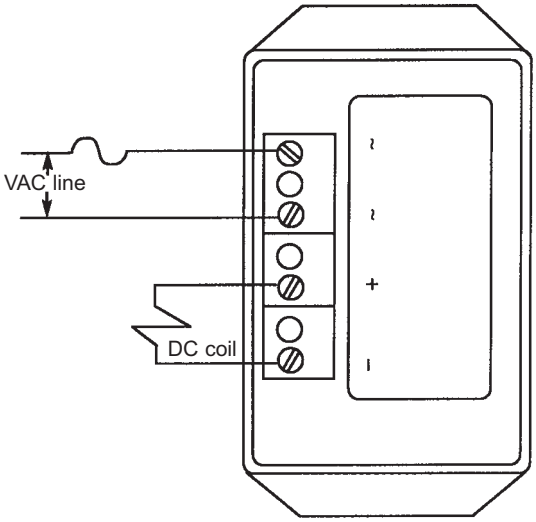
*The over-excitation rectifier produces a momentary fullwave output before switching to a halfwave output.

412-0296-01K
412-0498-01K
412-0498-11K
412-0598-11K



Quick-Set Rectifier/Tor-ac
Fuse is: 1A 250V for 230 VAC line
1A 600V for 460 VAC line
1A 600V for 575 VAC line

412-0293-01K
412-0496-01K



Over-Excitation Rectifier
Fuse is: 3A 250V for 230 VAC line
3A 600V for 460 VAC line

Rexnord Industries, LLC
Stearns Division
5150 S. International Drive
Cudahy, Wisconsin 53110
(414) 272-1100 Fax: (414) 277-4364 ***www.rexnord.com***

Armature Actuated Brake Modifications

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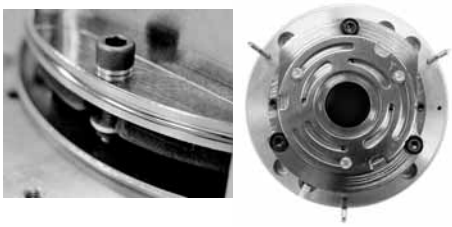
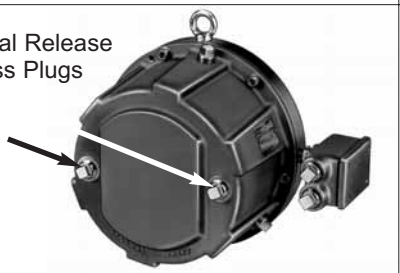
Series 333/350/360

Modification	Series	Brake Size	List Price Adder
Maintained Manual Release			
	333	ALL	size 72 $43.00 size 90 $50.00 size 112 $55.00 size 132 $63.00 size 145 $70.00 size 170 $80.00 size 196 $150.00 size 230 $184.00 size 278 $275.00
Manual Release Access Plugs 	350/360	ALL	Standard feature
Non-Maintained Manual Release			
333  360	333	ALL	size 72 $43.00 size 90 $50.00 size 112 $55.00 size 132 $63.00 size 145 $70.00 size 170 $80.00 size 196 $150.00 size 230 $184.00 size 278 $275.00
	360	ALL	size 170 $250.00 size 196-278 $300.00
Electronic Brake Release Indicator Switch			
	333/350/360	ALL	$330.00
Electronic Wear Indicator Switch	333/350/360	ALL	$330.00
AC Rectifiers, In-Line	333	size 72-90 115 Vac size 72-112 230 Vac	$46.00 standard in-line $70.00 in-line quickset
AC Rectifiers, Separate	333/350/360	ALL	see rectifier pages
Conduit Box			
	333/350/360	ALL	$205.00
	350/360 with IP67 conduit box	ALL	$360.00

Series 333/350/360 Modifications

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Modification	Series	Brake Size	List Price
Band Seal (Boot)			
	333	ALL	size 72 $11.00 size 90 $12.00 size 112 $14.00 size 132 $20.00 size 145 $34.00 size 170 $50.00 size 196 $63.00 size 230 $75.00 size 278 $90.00
End Cap Plug			
	333	ALL	size 72 $10.00 size 90 $15.00 size 112 $20.00 size 132 $25.00 size 145 $45.00 size 170 $45.00 size 196 $50.00 size 230 $60.00 size 278 $75.00
Space Heater			
	333/350/360	ALL	Sizes 72-112 $116.00 Sizes 132-278 $208.00
Tach Machining			
	333 tapped holes in magnet body for tether mount	ALL	$25.00
	350/360 Machining on brake housing	ALL	Size 170 $814.00 Sizes 196-278 $1,020.00
Through-Shaft			
	333 through-shaft seal in magnet body	ALL	Sizes 72-170 $176.00 Sizes 196-278 $376.00
	350/360 through-shaft hole in housing with shaft seal	ALL	$376.00

Stearns® Brakes, Clutches and Electronic Components

P/N 8-178-000-03
effective 6/27/03

Electronic Brake Release Indicator (Proving Switch)
Armature-Actuated Brake Series

Indicates when the brake is released by sensing the change in the brake coil current waveform.
For use with the Series 333/350/360 brakes

Features

- *Mount in remote location (control cabinet)*
- *Operating temperature -40°C through 65°C*
- *Not susceptible to common problems of mechanical switches, such as mechanical fatigue, tolerances, and vibration.*
- *Relay contacts are silver-cadmium oxide*
- *Utilize either normally-open contacts (UL rated 2-20A, inductive or resistive, at 12-240 VAC and CSA rated 10A, inductive or resistive at 240 VAC) or normally-closed contacts (UL rated 2-10A, inductive or resistive, at 12-240 VAC and CSA rated 10A, inductive or resistive, at 240 VAC)*

Brake Operation

When electrical power is applied to the armature-actuated brake coil, the armature is attracted by the electromagnetic force generated by the magnet body, which overcomes spring action. This allows the friction disc to rotate freely. When electrical power is interrupted, the electromagnetic force is removed and the pressure spring mechanically forces the armature plate to clamp the friction disc between itself and the pressure plate. This develops torque to stop or hold the load.

Switch Operation

When the brake armature is pulled in to the magnet body to release the brake, a change in the brake coil current waveform occurs. By tracking this change in the brake coil current, the electronic switch indicates when the brake is released.

Ordering Information

List Price	Discount Symbol
$330.00	R3

Part Number Example: 4 - 4 - 0 7 0 9 0 - X X

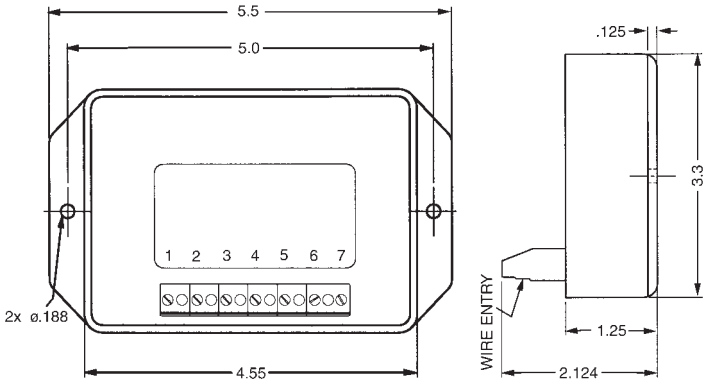
DC Voltage*	Characters To Insert
24	024
48	048
90	090
103	103
180	180
205	205
240	240
414	414

*Standard voltages listed. For other voltages, contact factory.

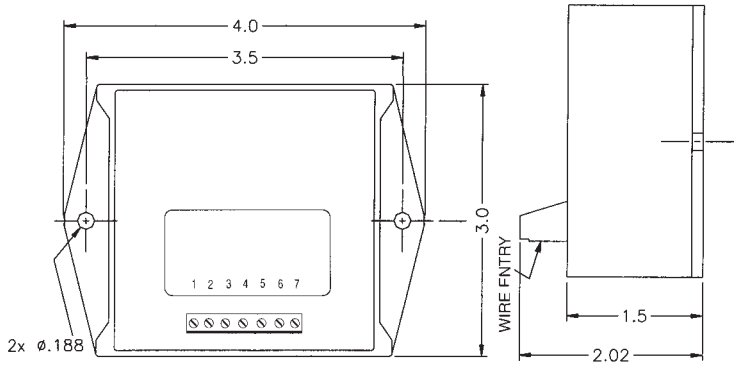
Specify brake model number. The last 2 digits of the switch part number will depend upon the brake size

Dimensions

414V Unit



24V thru 240V Units



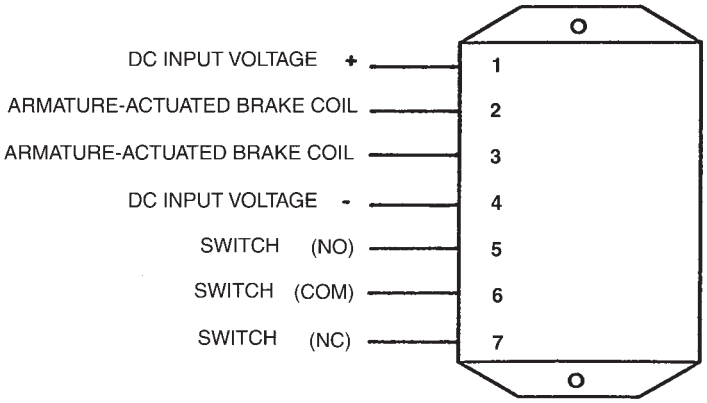
NOTE: Cannot be used with half-wave rectifier. Use with full-wave or TOR-AC full-wave rectifier only.

Wiring Instructions

IMPORTANT: Please read these instructions carefully before installing, operating or servicing your Stearns switch. Failure to comply with these instructions could cause injury to personnel and/or damage to property if the switch is installed or operated incorrectly. For definition of limited warranty/liability, contact Rexnord Insustries, Inc., Stearns Division, 5150 S International Drive, Cudahy, Wisconsin 53110, (414) 272-1100.

CAUTION!

1. Installation and servicing must be made in compliance with all local safety codes including Occupational Safety and Health Act (OSHA). All wiring and electrical connections must comply with the National Electrical Code (NEC) and local electrical codes in effect.
2. To prevent an electrical hazard, disconnect power source before working on equipment. If the power disconnect is out of sight, lock the disconnect in the *off* position and tag it to prevent accidental application of power.
3. Make sure voltage rating of the switch corresponds to the voltage rating shown on the nameplate of the brake.
4. Installation and servicing should be performed only by qualified personnel familiar with the construction and operation of this equipment.



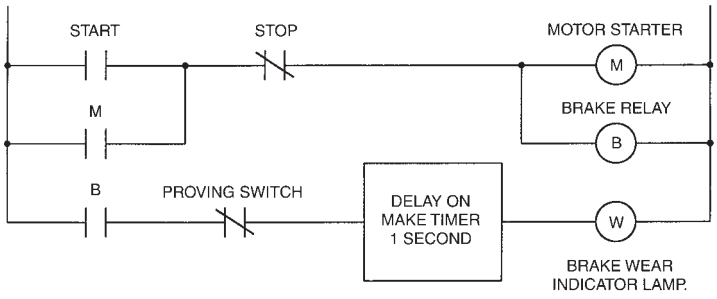
WARNING!

This switch is designed for use with a full wave rectifier only, *DO NOT USE THIS SWITCH WITH A HALF WAVE RECTIFIER.*

Applications

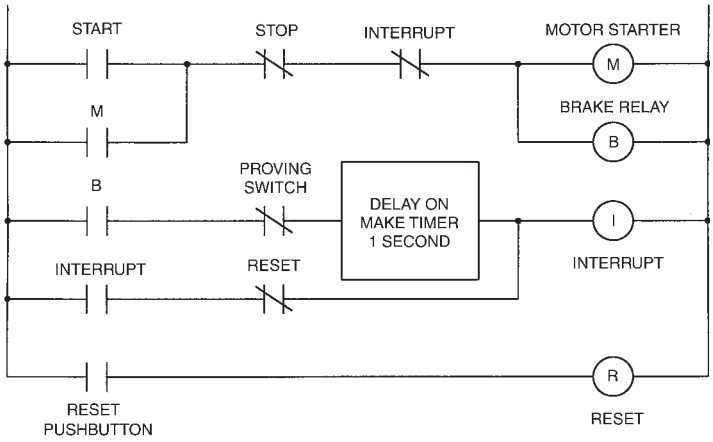
The Stearns electronic proving switch has been designed to detect and analyze the brake or clutch coil current waveform "signature" and thereby determine the operational status of the power transmission device. This operational status signal is delivered via a single pole, double throw relay contact. The status signal can be utilized in a wide variety of control and warning functions, as described in diagrams A and B.

A. SIMPLE BRAKE WEAR INDICATOR



LOGIC: If, within one second after application of power to the motor and brake, the proving switch N.C. contact does not open, the brake has not released, or has not released in an appropriate manner. The brake wear indicator lamp will illuminate, alerting the user that brake wear is excessive and service is required.

B. BRAKE RELEASE DETECTOR WITH SYSTEM SHUTDOWN



LOGIC: If, within one second after application of power to the motor and brake, the proving switch N.C. contact does not open, the brake has not released, or has not released in an appropriate manner. Interrupt relay "I" is energized and latched, disabling motor starter "M" and brake relay "B". An indicator lamp may be wired in parallel with the interrupt relay coil, indicating "Brake not Released". Adjust/repair brake, depress "Reset" push-button, depress "Start" button, system resumes operation. Control voltage may simply be interrupted to eliminate "Reset" function, if desired. Proving switch contact must be utilized to interrupt *both motor starter and brake relay !!!* If only motor starter is interrupted, load may be free to fall !!!

REXNORD

Rexnord Industries, LLC
Stearns Division
5150 S. International Dr.
Cudahy, Wisconsin 53110
(414) 272-1100 Fax: (414) 277-4364 www.stearns.rexnord.com

Technical Data

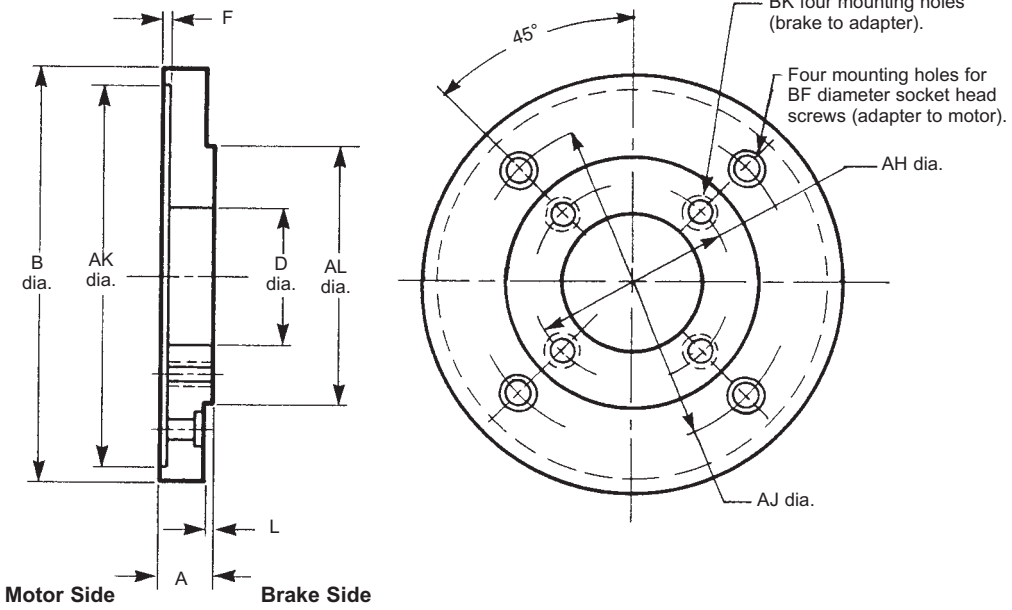
SAB Motor Frame Adapter Dimensions

Selection

To select an adapter for a specific brake, refer to the *Motor Frame Adapter* Tables as shown in the brake series sections of this Catalog. After selecting the adapter stock number, refer to the Tables below for dimensions.

All adapters are constructed with an opening for internal lead wire connection, corresponding to the NEMA standard location for the motor frame size.

Screws for mounting adapter to motor must be provided by customer. Socket head cap screws are supplied for mounting brake to adapter.



Dimensions for estimating only. For installation purposes, request certified prints.

Brake Series	Torque (lb-ft)	Adapter Stock Number	Dimensions in Inches *(Dimensions in Millimeters)*											Add'l Shaft Length Req'd	List Price	Discount Symbol
			A	AH	AJ	AK	AL	B	BF	BK Hole	D	F	L			
56,000	1.5 - 6	5-55-5041-00	1.25 *(31.75)*	5.88 *(149.22)*	7.25 *(184.15)*	8.500 8.502 *(215.900)* *(215.951)*	4.497 4.500 *(114.325)* *(114.275)*	9.00 *(228.60)*	.50 *(12.70)*	3/8 - 16 x 1/2 deep	4.00 *(101.60)*	.19 *(4.76)*	.12 *(3.18)*	.94 *(23.88)*	$700	B4
65,300*		5-55-5046-00														
56,000 and 56,800*	10 - 25	5-55-5043-00													$700	B4
87,000 and 87,800*	6 - 105	5-55-7046-00	1.06 *(26.99)*	7.25 *(184.15)*	11.00 *(279.40)*	12.501 12.504 *(317.525)* *(317.602)*	8.499 8.497 *(215.875)* *(215.849)*	13.00 *(330.20)*	.62 *(15.88)*	1/2 - 13 through	4.12 *(104.78)*	.19 *(4.76)*	.38 *(9.52)*	.87 *(22.10)*	$875	B2
87,300		5-55-7054-00														
87,000 and 87,800*	6 - 105	5-55-7055-00	1.00 *(25.40)*		9.00 *(228.60)*	10.500 10.502 *(266.700)* *(266.751)*	8.499 8.497 *(215.875)* *(215.849)*	11.00 *(279.40)*	**		6.25 *(158.75)*		.25 *(6.35)*	.81 *(20.57)*	$450	B2
87,300*		5-55-7045-00														
87,000, 87,800* and 87,300*	6 - 105	5-55-7043-00	.75 *(19.05)*	7.25 *(184.15)*	5.88 *(149.35)*	4.502 4.507 *(114.35)* *(114.48)*	8.499 8.497 *(215.875)* *(215.849)*	8.75 *(222.25)*	.62 *(15.75)*	1/2 - 13 through	4.00 *(101.60)*	.19 *(4.76)*	.25 *(6.35)*	.56 *(14.23)*	$1,300	B2
81,000	125 - 130	5-55-2045-00	1.06 *(26.99)*	11.00 *(279.40)*	14.00 *(355.60)*	16.002 16.005 *(406.451)* *(406.527)*	12.499 12.496 *(317.475)* *(317.398)*	16.50 *(419.10)*	.62 *(15.88)*	5/8 - 11 through	9.75 *(247.65)*	.19 *(4.76)*	.25 *(6.35)*	.87 *(22.10)*	$1,875	C1
81,000	125 - 230	5-55-2041-00	1.12 *(28.58)*	11.00 *(279.40)*	7.25 *(184.15)*	8.500 8.502 *(215.900)* *(215.951)*	12.499 12.496 *(317.475)* *(317.398)*	12.499 12.496 *(317.475)* *(317.398)*	.50 *(12.70)*	5/8 -11 through	6.00 *(152.40)*	.19 *(4.76)*	---	.93 *(23.62)*	$1,325	C1
81,000		5-55-2043-00			9.00 *(228.60)*	10.500 10.502 *(266.700)* *(266.751)*					7.75 *(196.85)*			.93 *(23.62)*		C1
82,000 and 82,300*	125 - 550	5-55-2046-00	1.94 *(49.21)*	11.00 *(279.40)*	14.00 *(355.60)*	16.002 16.005 *(406.451)* *(406.527)*	12.499 12.496 *(317.475)* *(317.398)*	16.50 *(419.10)*	.62 *(15.88)*	5/8 - 11 x 1 deep	9.50 *(241.30)*	.19 *(4.76)*	.25 *(6.35)*	1.75 *(44.45)*	$1,875	C1
82,000 and 82,300*		5-55-2042-00	1.38 *(34.92)*		7.25 *(184.15)*	8.500 8.502 *(215.900)* *(215.951)*		13.25 *(336.55)*	.50 *(12.70)*	5/8 -11 through	6.00 *(152.40)*			1.19 *(30.23)*	$1,325	C1
82,000 and 82,300*		5-55-2044	1.38 *(34.92)*		9.00 *(228.60)*	10.500 10.502 *(266.700)* *(266.751)*		13.25 *(336.55)*			7.75 *(196.85)*			1.19 *(30.23)*	$2,075	C1
86,000	500 - 1000	5-55-6041-00	1.56 *(38.69)*	14.00 *(355.60)*	11.00 *(379.40)*	12.500 12.504 *(317.500)* *(317.602)*	16.000 15.995 *(406.400)* *(406.273)*	16.19 *(441.16)*	.62 *(15.88)*	5/8 - 11 x 3/4 deep	8.62 *(219.08)*	.19 *(4.76)*	.25 *(6.35)*	1.37 *(34.80)*	$2,800	C1

* 1/2-13 flat head screws are supplied with adapter.

** When adding an adapter to a hazardous location brake, refer to the "mounting requirements" on the product page for the recommended brake series for accommodating adapters.

Dimensions for C-Face AC Brake Motor System (cont.)

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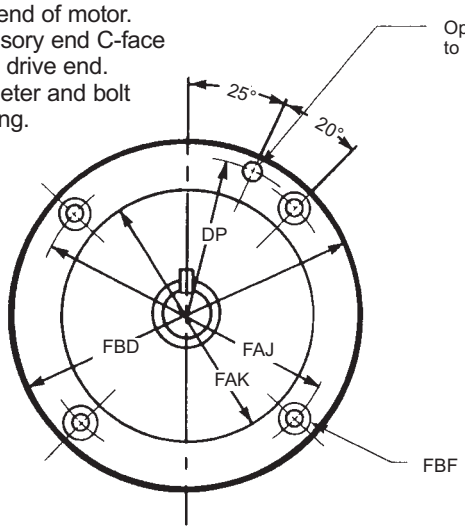
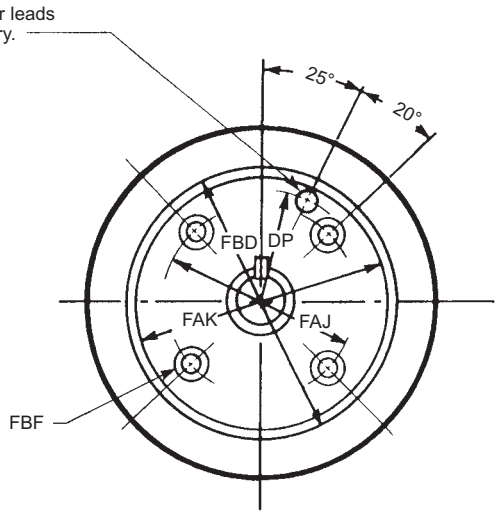
Accessory End

FC face mounting for accessories, including brakes, on the end opposite the drive end of motor. Some motor accessory end C-face may differ from the drive end. Confirm shaft diameter and bolt circle before ordering.



143TFC to 184TFC Frames, Inclusive



213TFC to 326TFC Frames, Inclusive

Dimensions (Inches)

Frame Designation	FAJ	FAK	FBD Max.	FBF Hole			Hole for Accessory Leads	
				Number	Tap Size	Bolt Penetration Allowance	DP	Diameter
143TFC and 145TFC	5.875	4.500	6.50	4	3/8-16	0.56	2.81	0.41
182TFC and 184TFC	5.875	4.500	6.50	4	3/8-16	0.56	2.81	0.41
213TFC and 215TFC	7.250	8.500	9.00	4	1/2-13	0.75	3.81	0.62
254TFC and 256TFC	7.250	8.500	10.00	4	1/2-13	0.75	3.81	0.62
284TFC and 286TFC	9.000	10.500	11.25	4	1/2-13	0.75	4.50	0.62
324TFC and 326TFC	11.000	12.500	14.00	4	5/8-11	0.94	5.25	0.62

NOTE: Standards have not been developed for the shaft extenison diameter and length, and keyseat dimensions.

Tolerances* (Inches)

FAK Dimension, Face Runout, Permissible Eccentricity of Mounting Rabbet

FAK Dimension	Tolerance on FAK Dimension		Maximum Face Runout	Maximum Permissible Eccentricity of Mounting Rabbet
	Plus	Minus		
Less than 12	0.000	0.003	0.004	0.004
12 and Larger	0.000	0.005	0.007	0.007

* Tolerance requirement on 56,X00 and 87,000 Series Brake kits is .015 T.I.R. (total indicated runout shaft to motor register face).

Shaft Runout

Shaft Diameter	Maximum Permissible Shaft Runout
0.3750 to 1.625, inclusive	0.002
Over 1.625 to 6.500, inclusive	0.003

SOURCE: ANSI/NEMA Standards Publication No. MG 1-1987; Part 4 and Part 11.

Stearns Recommended Minimum Shaft Diameter by Torque

Minimum recommended shaft size considers a keyed C1045 steel shaft under *dynamic* use in a typical spring set brake application.

Torque ft-lb	Minimum Shaft (inches)
0.50	0.250
0.75	0.250
1.5	0.375
3	0.500
6	0.500
10	0.625
15	0.750
25	0.875
35	1.000
50	1.125

Torque ft-lb	Minimum Shaft (inches)
75	1.250
105	1.375
125	1.375
175	1.625
230	1.750
330	2.000
440	2.125
500	2.375
750	2.500
1000	2.750

Torque Nm	Minimum Shaft (mm)
4 Nm	ø10 mm
8 Nm	ø13 mm
16 Nm	ø16 mm
32 Nm	ø20 mm
60 Nm	ø25 mm
80 Nm	ø28 mm
150 Nm	ø34 mm
240 Nm	ø39 mm
400 Nm	ø47 mm