

Series 321 & 322 NEMA C Armature Actuated Brakes

High Cycling Brake

Direct mounting to 48C and 56C motors

Features

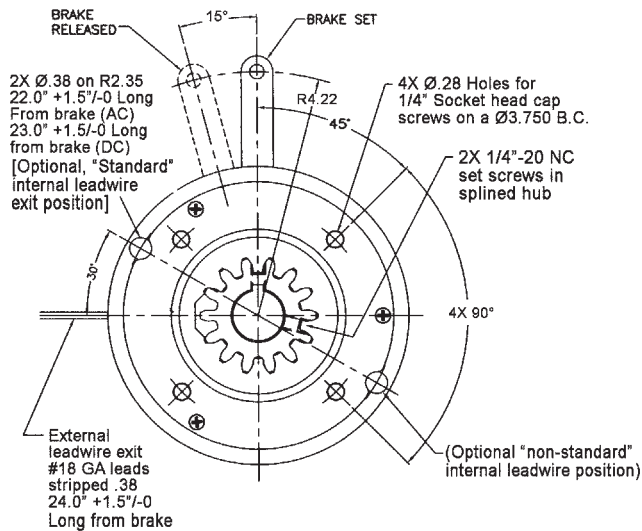
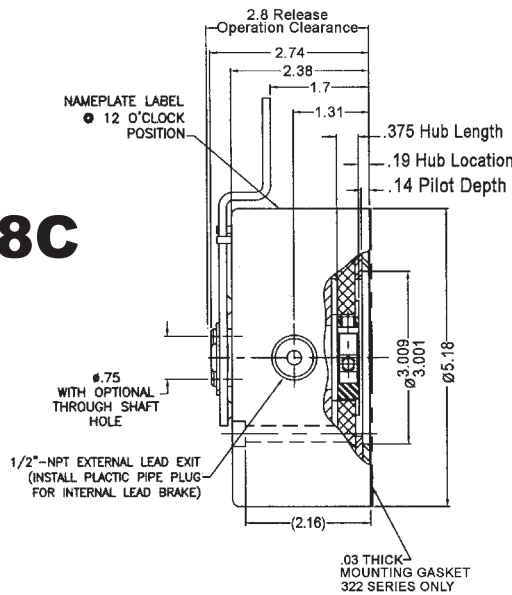
- **TENV totally-enclosed non-ventilated**
Series 321= IP42 Enclosure, Series 322 = IP54 Enclosure
- *Out-of-box torque - No burnishing required*
- *Class B temperature rise with class H mag wire*
- *Brake housing integrated with mag body creating a heat exchanger that keeps the brake coil cool*
- *Field replaceable coil*
- *Splined hub and friction disc*



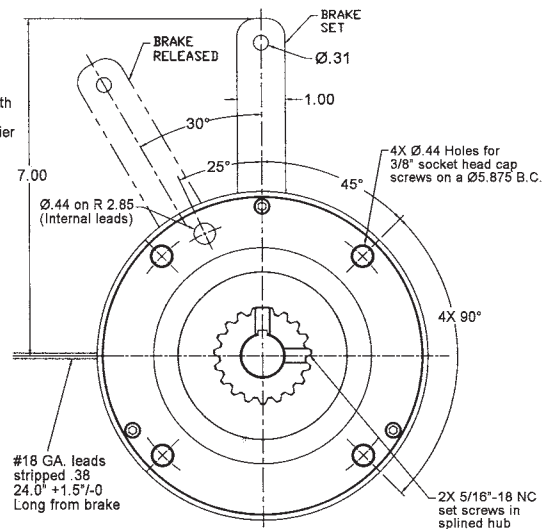
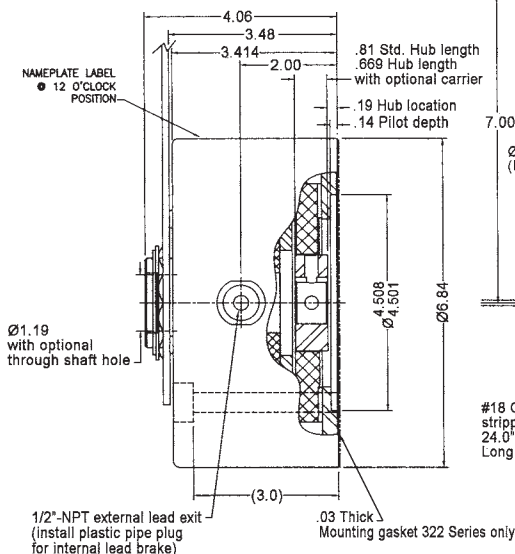
Options

- *Internal rectifier*
- *Quick-set rectifiers - for fast response time even when wired directly across motor*
- *Maintained manual release*
- *Brake release indicator switch*
- *Single point torque adjustment- to 50% of nameplate torque*
- *Through-shaft*
- *Conduit box*
- *Quiet armature actuations*
- *Carrier ring friction disc*

48C



56C



Engineering Specifications/Pricing (Discount Symbol R2)

Motor Frame	321 Series Model Number	Nominal Static Torque Lb-ft (Nm)	List Price		322 Series Model Number	List Price		Approx. Weight		Power (watts)	Hub and Disc inertia (Oz-in-sec ²)
			Standard Brake	With manual release		Standard Brake	With manual release	lbs	kg		
48C	3-21-83XF	1.5 (2)	\$360.00	\$390.00	3-22-83XF	\$488.00	\$518.00	9.5	4.3	20	1.2 x 10 ⁻²
	3-21-84XF	3 (4)	360.00	390.00	3-22-84XF	488.00	518.00				
	3-21-85XF	6 (8)	382.00	412.00	3-22-85XF	509.00	539.00				
	3-21-86XF	8.3 (11)	397.00	427.00	3-22-86XF	525.00	555.00				
56C	3-21-93XG	3 (4)	\$448.00	\$488.00	3-22-93XG	\$540.00	\$580.00	23	10.4	31	15.5 x 10 ⁻²
	3-21-94XG	6 (8)	545.00	585.00	3-22-94XG	631.00	671.00				
	3-21-95XG	10 (14)	633.00	673.00	3-22-95XG	714.00	754.00				
	3-21-96XG	15 (20)	715.00	755.00	3-22-96XG	791.00	831.00				
	3-21-98XG	25 (34)	821.00	861.00	3-22-98XG	890.00	930.00				

Ordering Information

Group "3" Armature Actuated Brakes ——— 3-2X-XXXX0-XX-XX — Options – Table 3
 Series = 321 or 322 ———
 Voltages – Table 2
 Hub Bore and Keyway – Table 1

Character	NEMA frame
8	48C
9	56C

Options = 8th digit	Modification Description	List Price Adder	
		48C	56C
0	Standard brake	-	-
S	Carrier ring friction disc	\$100.00	\$150.00

48C	
Torque = 5th digit	Nominal Static Torque Lb-ft (Nm)
3	1.5 (2)
4	3 (4)
5	6 (8)
6	8.3 (11)

Mounting = 7th digit	NEMA frame size
F	48C
G	56C

56C	
Torque = 5th digit	Nominal Static Torque Lb-ft (Nm)
3	3 (4)
4	6 (8)
5	10 (14)
6	15 (20)
8	25 (34)

Lead location & options = 6th digit	Description	List Price Adder	
		48C	56C
0	External leads	-	-
6	External leads & through shaft	\$172.00	\$172.00
A	Internal leads	-	-
C	Internal leads & through shaft	\$172.00	\$172.00

Table 1: Bore Sizes

Character to insert	Bore	Keyway	Bores Available
0B	5/8	3/16 x 3/32	48C & 56C
0D	7/8	3/16 x 3/32	56C only

Other bore sizes available. Add \$126.00 for non-standard bore sizes.

Table 2: Standard Coil Voltage

Character to Insert	Voltage	List Adder	Current Rating in Amps	
			48C	56C
C	12 Vdc	-	1.47	2.44
E	24 Vdc	-	.75	1.26
G	48 Vdc	-	.38	.647
J	90 Vdc	-	.23	.393
R	460 Vac Half Wave Internal	\$25.00	.50	.50
V	115 Vac Internal QuickSet	\$80.00	.25	.40
W	230 Vac Internal QuickSet	\$80.00	.25	.40

Other voltages available. Add \$94.00 for non-standard voltage.

Table 3: Options

Characters to Insert	Options
D G	Standard Brake With Maintained Manual Release

NOTE: Final part number may change due to specifications or options selected or other product design considerations. A number such as a 2, 3, 4 etc., in the 12th position is used to designate a unique brake (custom) and can only be assigned by Stearns Design Engineering Department.

Modifications are available - see AAB Modification Section.

Armature Actuated Brakes (AAB) Torque Selection

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 (.203)	7 (.79)	7 (.79)	7 (.79)	3 (.34)	3 (.34)	3 (.34)	3 (.34)	3 (.34)	3 (.34)
1/12	18 (.203)	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)

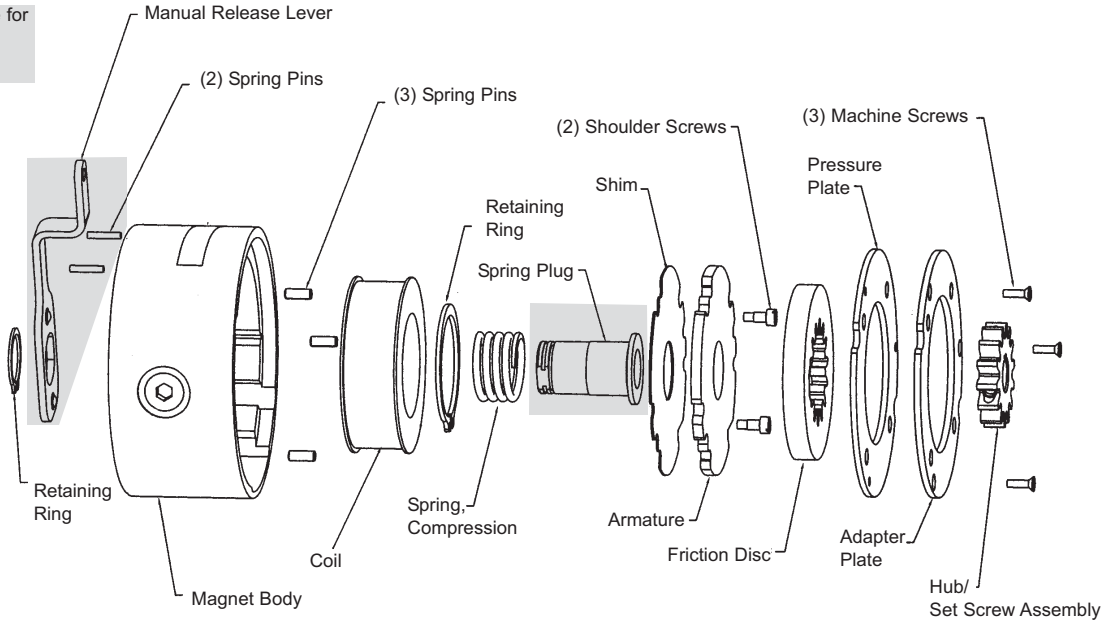
Motor hp (kw)	rpm									
	600	800	1000	1200	1500	1800	2000	2400	3000	3600
	Static Torque lb-ft (Nm)									
1/3 (.25)	6 (8)	6 (8)	3 (4)	3 (4)	3 (4)	3 (4)	3 (4)	3 (4)	3 (4)	3 (4)
1/2 (.37)	12 (16)	6 (8)	6 (8)	6 (8)	3 (4)	3 (4)	3 (4)	3 (4)	3 (4)	3 (4)
3/4 (.55)	12 (16)	12 (16)	6 (8)	6 (8)	6 (8)	6 (8)	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® Spring-Set Disc Brakes

Installation and Service Instructions for 321-8 Series AAB Spring-Set Brake (48C mounting)

Shaded items are for manual release brake only



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, WI 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 made 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.

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 interior will contain burnt and degraded friction material dust. This dust must be removed before servicing.

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 from the inside of a brake.
- 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.

Brake Identification

321 = IP42
322 = IP54

Size
8 = 48C

Torque

3-21-84010-0B-E D

Leadwire options (see Table 6)

Options (see Table 8)

D = Without manual release
G = With manual release

Voltagess – Table 11

Hub Bore size, 0B = .625"

Table 6-Leadwire options

0	External leads
4	External leads & mounting gasket
6	External leads & through shaft
A	Internal leads
B	Internal leads & mounting gasket
C	Internal leads & through shaft

Table 8-Options

0	Standard brake
E	Switch NC
F	Switch NO
S	Optional carrier lining

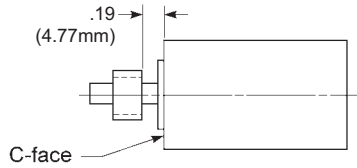
Table 11-Voltages

C	12 Vdc	J	90 Vdc
E	24 Vdc	T	115 Vac Internal Rectifier
G	48 Vdc	U	230 Vac Internal Rectifier

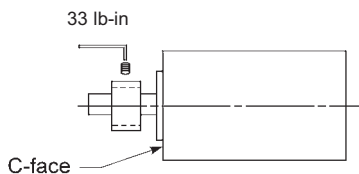
I. Installation

The brake should be pressure plate mounted only. The hub should be secured to shaft before mounting brake. Two set screws are provided and should be tightened securely. The key should not extend towards the armature or past the face of the hub.

- 1 Position hub on shaft as shown.

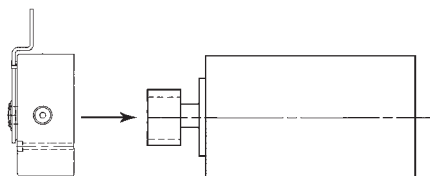


- 2 Tighten set screws to motor shaft.



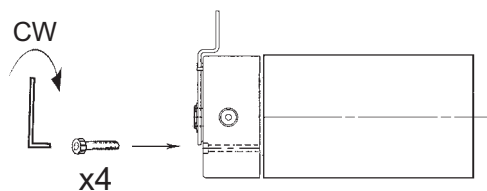
Align brake disc with the hub and slide the brake onto motor c-face. (if a gasket is supplied with the brake, position it on the motor c-face before mounting the brake).

- 3 Position brake on motor.



Secure the brake to the motor using four (4) 1/4" x 2.50" socket head cap screws (screws are *not* supplied with the brake). Torque screws to manufacturer's spec. for c-face material (i.e. steel; aluminum; etc.)

- 4 Secure brake to motor.



II. Coil Wiring

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

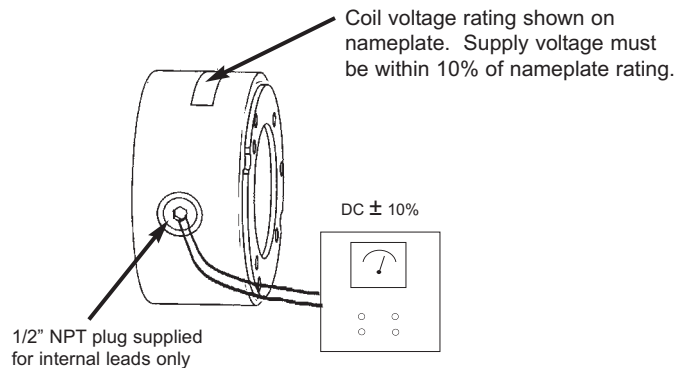
Stearns brake coils are designed for voltage input at $\pm 10\%$ of nameplate rating. Coil resistances shown below are for reference purposes.

Table A

VOLTS	OHMS $\pm 10\%$ AT 20°C*	AMPS	WATTS
12 Vdc	8.15	1.472	17.7
24 Vdc	32.08	.748	18.0
36 Vdc	79.88	.451	16.2
48 Vdc	126.00	.381	18.3
90 Vdc	393.31	.229	20.6
103 Vdc	493.77	.209	21.5
180 Vdc	1538.25	.117	21.1
205 Vdc	1930.34	.106	21.8
258 Vdc	3039.13	.085	21.9
414 Vdc	7525.93	.055	22.8

VOLTS	OHMS $\pm 10\%$ AT 20°C*	AMPS	WATTS
115 Vac	493.77	.209	21.5
230 Vac	1930.34	.106	21.8
460 Vac	1930.34	.106	21.8

*Note: Coil resistance for AC rated coil with internal rectifier can not be measured, since measured from the internal output side of the rectifier.



III. Service Notes

The airgap between the magbody and armature increases as the friction disc wears. If the disc wears beyond the minimum recommended disc thickness, it will reach the point where the armature will no longer be able to release the brake. Refer to Table B for minimum disc thickness.

Table B

Torque (lb-ft)	Minimum disc thickness
1.5	.372"
3	.382"
6	.392"
8.33	.397"

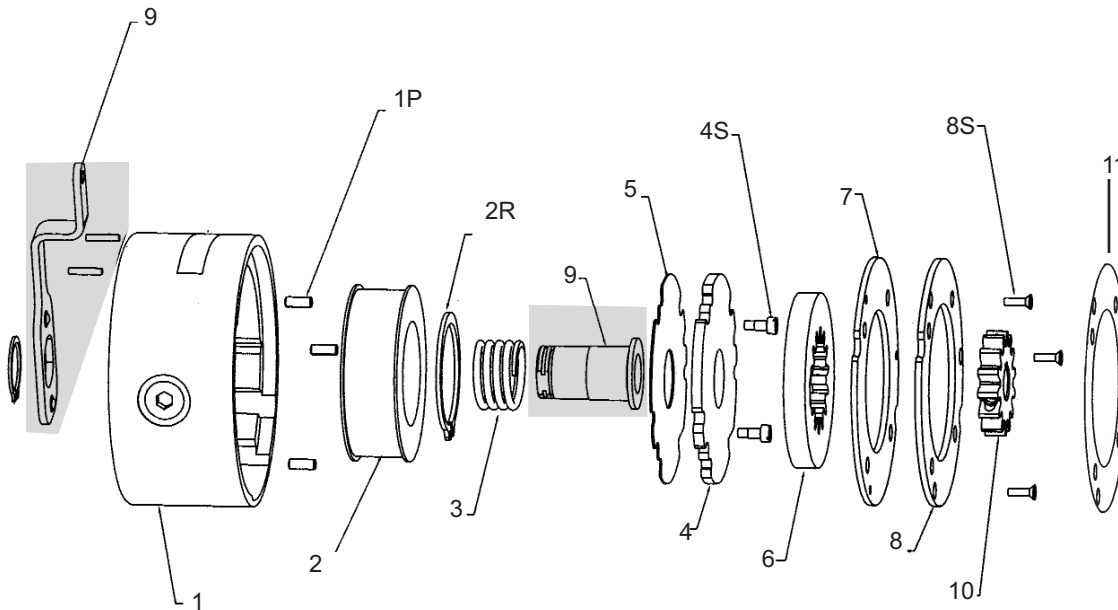
Note: When replacing the standard (fiber) friction disc the indent side (see figure 1) must face the magbody side of the brake. If an optional carrier disc is used, the disc can be inserted in either direction.



Fig. 1

Parts List 321-8

[BACK TO PRODUCT PAGE](#)



Item	Description	Part Number	Torque lb-ft (lb-in) →	1.5 (18)	1.5 (18)	3 (36)	3 (36)	6 (72)	6 (72)	8.33 (100)	8.33 (100)
			Brake Model Number →	321-83XF-XX-XXD	321-83XF-XX-XXG	321-84XF-XX-XXD	321-84XF-XX-XXG	321-85XF-XX-XXD	321-85XF-XX-XXG	321-86XF-XX-XXD	321-86XF-XX-XXG
1	Mag Body	w/out release	8-401-480-01	1		1		1		1	
		with release	8-401-480-02		1		1		1		1
1P	Locator pin	9-32-4032-00	3	3	3	3	3	3	3	3	3
2	Coil*	DC voltage	5-03-4800-20-*	1	1	1	1	1	1	1	1
		AC voltage	5-03-4801-50-*	1	1	1	1	1	1	1	1
2R	Coil retaining ring	9-03-0189-00	1	1	1	1	1	1	1	1	
3	Torque spring	9-70-2023-00	1	1							
		9-70-2019-00			1	1					
		9-70-2028-00					1	1			
		9-70-2029-00							1	1	
4	Armature	8-405-480-0K	1	1	1	1	1	1	1	1	
4S	Shoulder screws	9-26-0480-00	2	2	2	2	2	2	2	2	
5	Shim (nomex)	8-454-480-00	1	1	1	1	1	1	1	1	
6	Friction disc	8-004-406-0K	1	1	1	1	1	1	1	1	
6A	Carrier friction disc (optional)	5-14-0480-0K	1	1	1	1	1	1	1	1	
7	Pressure plate	8-438-480-0K	1	1	1	1	1	1	1	1	
8	Adapter plate	8-001-480-0K	1	1	1	1	1	1	1	1	
8S	Adapter plate screws	9-13-3090-00	3	3	3	3	3	3	3	3	
9	Manual release kit	5-77-0480-00	1	1	1	1	1	1	1	1	
10	Hub	1/2" bore	5-16-4113-02-01K	1	1	1	1	1	1	1	1
		5/8" bore	5-16-4113-02-01B	1	1	1	1	1	1	1	1
10A	Hub (use with carrier disc 8A)	1/2" bore	5-16-0948-01-01K	1	1	1	1	1	1	1	1
		5/8" bore	5-16-0948-01-01B	1	1	1	1	1	1	1	1
11	Mounting gasket (optional)	8-122-403-00	1	1	1	1	1	1	1	1	

*See Table 1

Table 1

DC Volts		AC Volts		Rectifier*	Lead exit
-1CK	12 Vdc	-1TK	115 Vac	FW -INT	External
-1EK	24 Vdc	-1UK	230 Vac	FW -INT	External
-1FK	36 Vdc	-1RK	460 Vac	HW-INT	External
-1GK	48 Vdc	-01K	115 Vac	FW -INT	Internal
-1JK	90 Vdc	-02K	230 Vac	FW -INT	Internal
-1KK	103 Vdc	-03K	115 Vac	QSFW-INT	External
-1LK	180 Vdc	-04K	230 Vac	QSFW-INT	External
-1MK	205 Vdc	-05K	115 Vac	QSFW-INT	Internal
-1SK	258 Vdc	-06K	230 Vac	QSFW-INT	Internal
-1BK	414 Vdc	-07K	460 Vac	HW-INT	Internal

* FW-INT = Full-wave, internal
 HW-INT = Half-wave, internal
 QSFW-INT = QuickSet Full-wave, internal

Item Kit Description

9	Manual release kit (5-77-0480-00) 1 - release handle 1 - spring plug 1 - retaining ring 2 - spring pins
---	---











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

[BACK TO PRODUCT PAGE](#)

Series 320/321/322

Modification	Series	Brake Size	List Price
Maintained Manual Release			
	320/321/322	1.2 1.8 2.0 2.8	\$25.00 \$30.00 \$30.00 \$30.00
Non-Maintained Manual Release			
	320/321/322	1.2 1.8 2.0 2.8	\$25.00 \$30.00 \$30.00 \$30.00
Brake Release Indicator Switch			
	320/321/322	ALL	\$40.00
AC Rectifiers, In-Line			
	310/320/321/322	ALL	\$25.00
AC Rectifiers, Internal	320/321/322	1.8 and 2.8	\$15.00
Encoder Mount			
	310/320/321/322 tapped holes in magnet body for tether mount		\$25.00
Through-Shaft			
	321/322	ALL (through-shaft combined with manual release only available on size 2.8)	\$5.00
Mounting Plates			
	320/321/322	Size	List Price
		1.2	\$20.00
		1.8, 2.8	\$15.00
		1.8, 2.8 3.5", 2.5" register	\$30.00
		2.0 2.844"	\$20.00
Double "D" Disc			
	320/321/322	1.2, 1.8, and 2.0 Contact factory for Double "D" disc on brakes rated greater than 7 lb-in	No charge
Carrier Ring Disc	320/321/322	1.8	\$10.00