

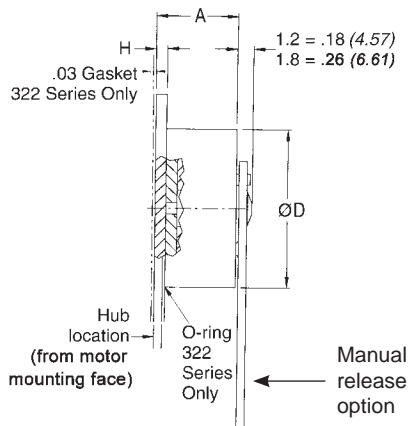
# Series 321 & Series 322 Armature Actuated Brakes



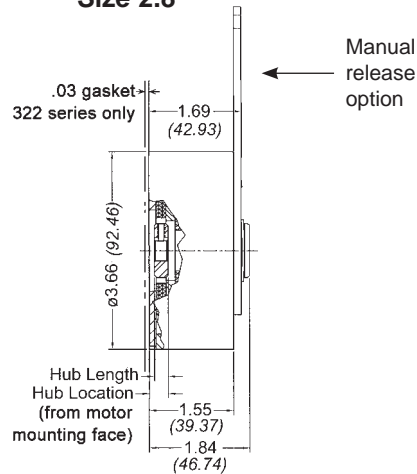
Shown: Size 2.8 with thru-shaft & manual release options

Shown: Size 1.8 flange mount with manual release option

## Size 1.2 and 1.8



## Size 2.8



## Dimensions in Inches (millimeters)

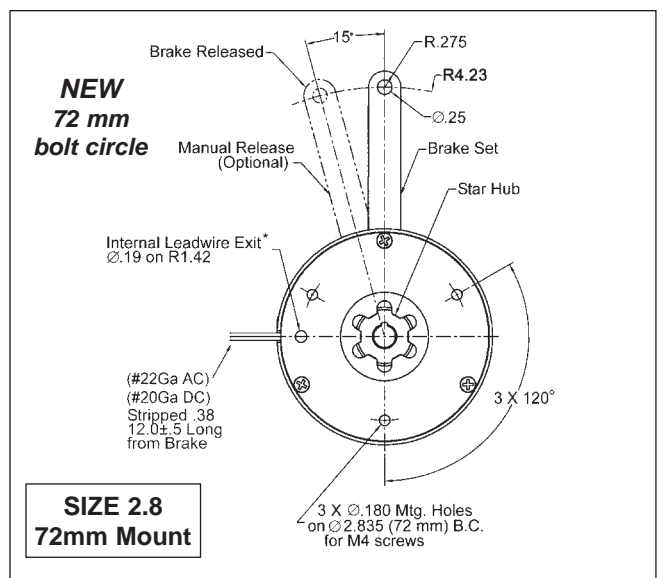
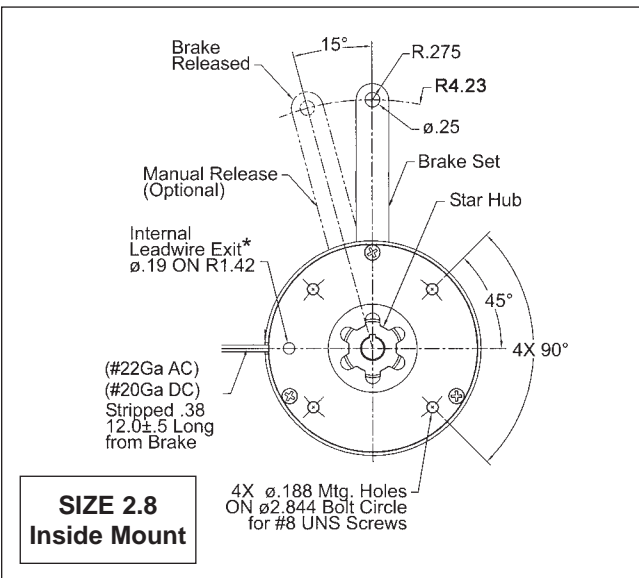
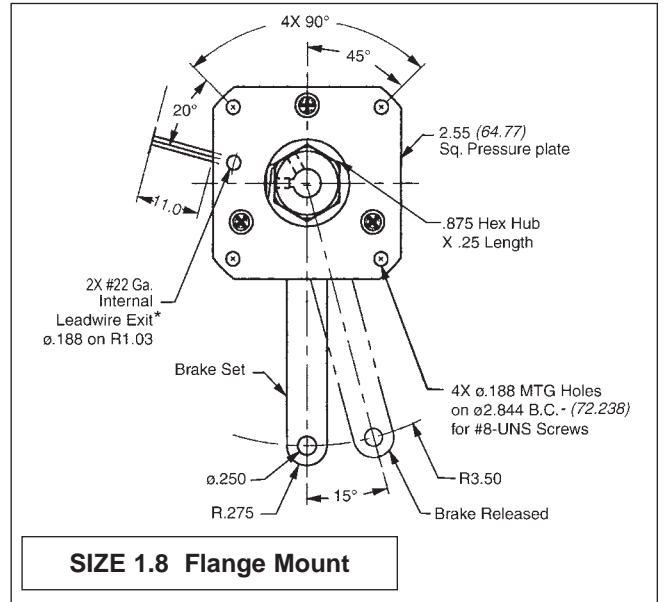
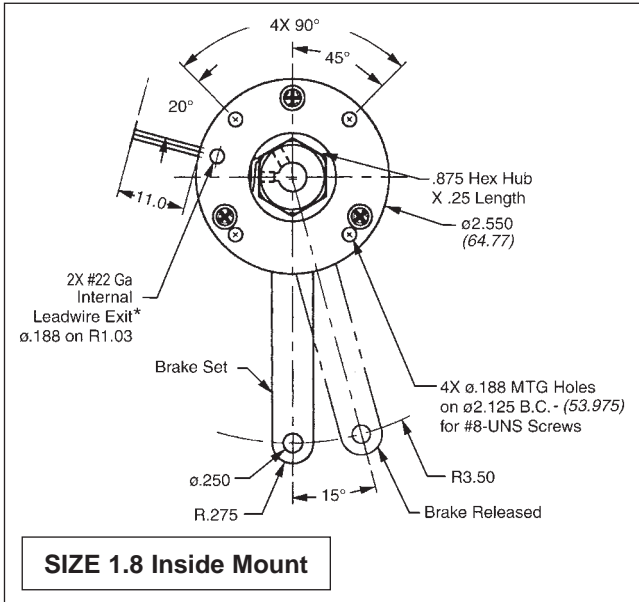
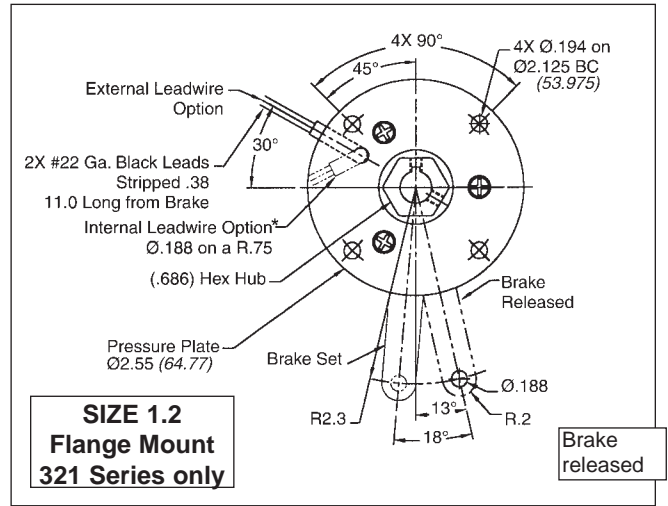
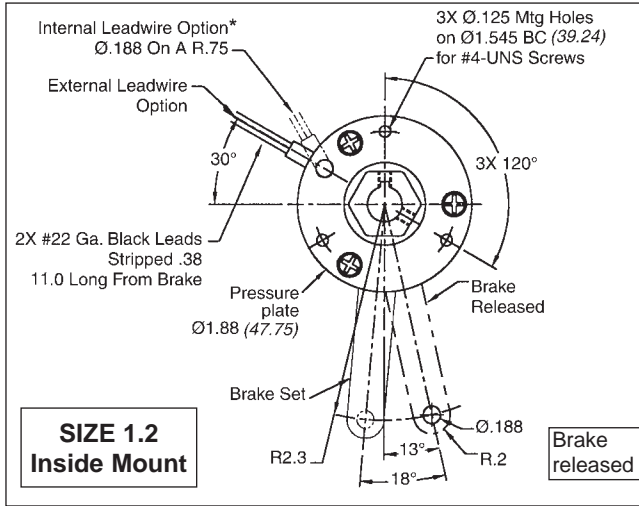
Size	Nominal Static Torque		Basic Model Number	A	H	D		Hub Location	Hub Length
	Lb-in	Nm				Series	Mag Body Ø		
1.2 Dynamic	3	.34	3-21-24	.904	.12	321	1.77 (44.96)	.02 (.51)	.19 (4.83)
			3-22-24	(22.962)		322	1.875 (47.625)	.05 (1.27)	
1.2 Holding	5	.56	3-21-25	1.080	(3.05)	321	1.77 (44.96)	.02 (.51)	.25 (6.35)
			3-22-25	(27.432)		322	1.875 (47.625)	.05 (1.27)	
1.8 Dynamic	7	.79	3-21-44	1.296	.12	321	2.50 (63.50)	.02 (.51)	.25 (6.35)
			3-22-44			(32.918)		322	
1.8 Holding	15	1.69	3-21-45	1.296	(3.05)	321	2.50 (63.50)	.02 (.51)	.25 (6.35)
			3-22-45			(32.918)		322	
1.8 Dynamic	15	1.69	3-21-46	1.296	(3.05)	321	2.50 (63.50)	.02 (.51)	.25 (6.35)
			3-22-46			(32.918)		322	
2.8 Dynamic	35	3.95	3-21-74	-	-	321	3.66 (92.96)	.100 (2.54)	.25 (6.35)
			3-22-74			(27.432)		322	
2.8 Dynamic	50	5.65	3-21-75	-	-	321	3.66 (92.96)	.100 (2.54)	.25 (6.35)
			3-22-75			(27.432)		322	
2.8 Holding	72	8.14	3-21-77	-	-	321	3.66 (92.96)	.100 (2.54)	.25 (6.35)
			3-22-77			(27.432)		322	

## Specifications

Size	Basic Model Number	Nominal Static Torque Lb-in (Nm)	Approx. Weight		Power (watts)	Hub and Disc inertia (Oz-in-sec <sup>2</sup> )	Thermal Capacity HP-sec/min	Maximum Bore Size	
			lbs	kg				in	mm
1.2 Dynamic	3-2X-24	3 (.34)	.4	.18	7	7.02 x 10 <sup>-3</sup>	Consult Factory	3/8	9
1.2 Holding	3-2X-25	5 (.56)			9				
1.8 Dynamic	3-2X-44	7 (.79)	1.3	.59	10	4.8 x 10 <sup>-4</sup>	.26	1/2**	12**
1.8 Holding	3-2X-45	15 (1.69)							
1.8 Dynamic	3-2X-46	15 (1.69)	2.0	.91	17	2.3 x 10 <sup>-3</sup>	.17	1/2	12
2.8 Dynamic	3-2X-74	35 (3.95)							
2.8 Dynamic	3-2X-75	50 (5.65)	2.0	.91	17	2.3 x 10 <sup>-3</sup>	.17	1/2	12
2.8 Holding	3-2X-77	72 (8.14)							

\*\*Set screws located 120° from keyway

# Series 321 & Series 322 Continued

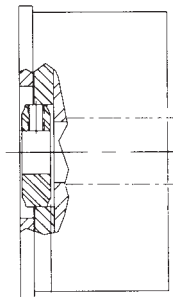


\*Also, the location of the external leads for the 322 series is on the backside of the magnet body - not on the side (as shown in the above drawings) as with the 321 series.

# Series 321 & Series 322 Continued Options

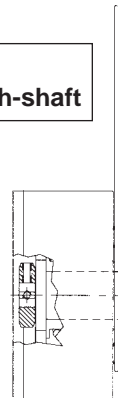
## THROUGH-SHAFT OPTION

**SIZE 1.2 & 1.8**  
Optional through-shaft - No manual release option



Size 1.2  
.41 (10.41) Max.  
Size 1.8  
.45 (11.43) Max.  
not available with manual release  
3/8" max. shaft dia.

**SIZE 2.8**  
Optional through-shaft

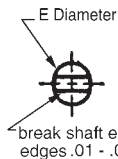
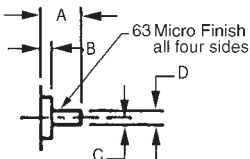


shown with manual release option (size 2.8 only)  
max. .75 (19.05)  
1/2" max. shaft dia.

## DOUBLE - D DISC OPTION



### Double "D" Option



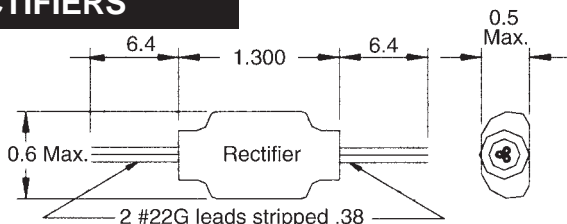
Hubless option with flattened shaft double "D" friction disc

Brake Size	A	B	Shaft Size	C	D	E
1.2	.25 + .05/-0.00	.075 max.	5/16	.052	.105 / .103	.3135 / .3115
1.8	.30 + .13/-0.00	.075 max.	3/8	.063	.126 / .124	.376 / .374

NOTE: Contact factory for Double "D" disc on brakes greater than 7 lb-in nominal static torque

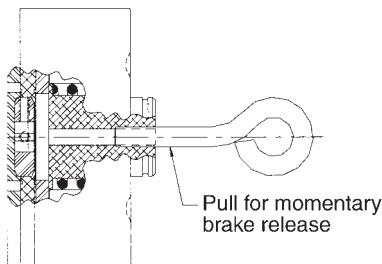
## AC RECTIFIERS

External In-line (as shown)  
or  
Internal



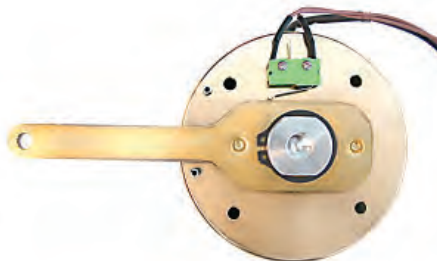
Internal rectifier is available only on the 1.8 and 2.8 models. external in-line rectifier is a standard option only on the 1.2 model.

## NON-MAINTAINED MANUAL RELEASE



## BRAKE RELEASE INDICATOR

A mechanical switch which is activated by the manual release lever, and can be used to disconnect power in case of accidental start-up when the brake is manually released.



# Series 321 & Series 322 Continued

Size	321 Series Model External leads		322 Series Model External Leads	
	Mounting		Mounting	
	Inside***	Flange	Inside***	Flange
1.2 Dynamic	3-21-2401G	3-21-2403G	3-22-2401G	N/A**
1.2 Holding	3-21-2501G	3-21-2503G	3-22-2501G	N/A**
1.8 Dynamic	3-21-4401G	3-21-440DG	3-22-4401G	3-22-440DG
1.8 Holding	3-21-4501G	3-21-450DG	3-22-4501G	3-22-450DG
1.8 Dynamic	3-21-4601G	3-21-460DG	3-22-4601G	3-22-460DG
2.8 Dynamic	3-21-7401K	N/A**	3-22-7401K	N/A**
2.8 Dynamic	3-21-7501K	N/A**	3-22-7501K	N/A**
2.8 Holding	3-21-7701K	N/A**	3-22-7701K	N/A**
	<b>72 mm mount</b>		<b>72 mm mount</b>	
2.8 Dynamic	3-21-740MK	N/A**	3-22-740MK	N/A**
2.8 Holding	3-21-750MK	N/A**	3-22-750MK	N/A**

\*\*N/A = Not Available

\*\*\*Mounting bolt circle inside (less than) the outside diameter of magnet body. (BC dimensions shown on page 71)

## Ordering Information

Group "3" Armature Actuated Brakes ——— 3-2X-XX-XX-XX-XX-XX-XX — Options – Table 3  
 Series = 321 or 322 ——— Voltages – Table 2  
 Hub Bore and Keyway – Table 1  
 For Double "D" Bores See Table 1A

Character	Size
2	1.2
4	1.8
7	2.8

Character	Modification
E	Brake release indicator (NC)
F	Brake release indicator (NO)
G	Standard - GGA Friction Material
J	CCW manual release rotation
K	"Star" hub and GGA disc size 2.8
S	Carrier ring friction disc size 1.8

Size	Static Torque (lb-in)	Numeral
1.2	3 Dynamic	4
1.2	5 Holding	5
1.8	7 Dynamic	4
1.8	15 Holding	5
1.8	15 Dynamic	6
2.8	35 Dynamic	4
2.8	50 Dynamic	5
2.8	72 Holding	7

Numeral or Letter	Description	Series
0	Standard Brake External Lead Location	321, 322
A	Internal Lead Location*	321 or 322
6	External leads Thru-Shaft	321
C	Internal Leads* Thru-Shaft	321

Numeral or Letter	Mounting	Brake Size		
		1.2	1.8	2.8
1	Inside Mount	x	x	x
D	Flange Mount 2.844" Mounting Bolt Circle	x	x	
3	Flange Mount 2.125" Mounting Bolt Circle	x		
M	Body Mount 72 mm Mounting Bolt Circle			x

Table 1: Bore Size

Characters to Insert	Bore	Keyway Size*		Bores Available		
		Width (in.) x Depth (in.)	Mag Body Size	1.2	1.8	2.8
0A	3/16	no keyway		x		
0B	3/16	1/16 1/32			x	
0C	1/4	no keyway		x		
0D	1/4	1/16 1/32			x	x
0E	5/16	no keyway		x		
0F	5/16	1/16 1/32			x	x
0G	3/8	no keyway		x		
0H	3/8	3/32 3/64			x	x
0J	1/2	1/8 1/16			①	x
05	5	2 mm 1 mm	②	x	x	
06	6	2 mm 1 mm	②	x	x	
07	7	2 mm 1 mm	②	x	x	
08	8	2 mm 1 mm	②	x	x	
09	9	3 mm 1.4 mm	②	x	x	

Table 1A: (Double "D" Bores)

Characters to Insert	Bore
0F	5/16
0H	3/8

NOTE: Contact factory for Double "D" disc on brakes greater than 7 lb-in nominal static torque. Can be used up to 15 lb-in holding.

Table 3: Options

Characters to Insert	Options
D	Short Hub pressure plate mounted
G	Short Hub with Maintained Manual Release
X	Double "D" Friction Disc
Y	Option X with Maintained Manual Release

Manual release & thru bore size 2.8 only

Table 2: Standard Coil Voltage

Character to Insert	Voltage	List Adder	Current Rating in Amps		
			Size 1.2	Size 1.8	Size 2.8
C	12 Vdc	-	.632	.826	1.37
E	24 Vdc	-	.307	.421	.70
G	48 Vdc	-	.158	.216	.36
J	90 Vdc	-	.076	.123	.17
K	103 Vdc	-	.090	.115	.150
L	180 Vdc	-	.051	.060	.090
T*	115 Vac Internal Rectifier	\$30.00	N/A	.115	.168*
U*	230 Vac Internal Rectifier	\$30.00	N/A	.059	.086*
V	115 Vac external in-line QuickSet	\$80.00	.090	.115	.168
W	230 Vac external in-line QuickSet	\$80.00	.044	.059	.086
Z	115/230 Vac external in-line	\$50.00	.090	.115	.168

\*Internal rectifier not available on size 2.8 brake with 72mm bolt circle and 1.2 brake

NOTE: Other voltages available, contact factory.

NOTE: 65°C maximum ambient temperature for all external in-line rectifiers

- ① Set Screws located 120° from keyway
- ② Hubs are provided without keyway
- \*Keyseats made to ANSI B17.1 standard

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 12<sup>th</sup> 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.

# Series 321 & 322 NEMA C Armature Actuated Brakes

## High Cycling Brake



### Direct mounting to 48C and 56C motors

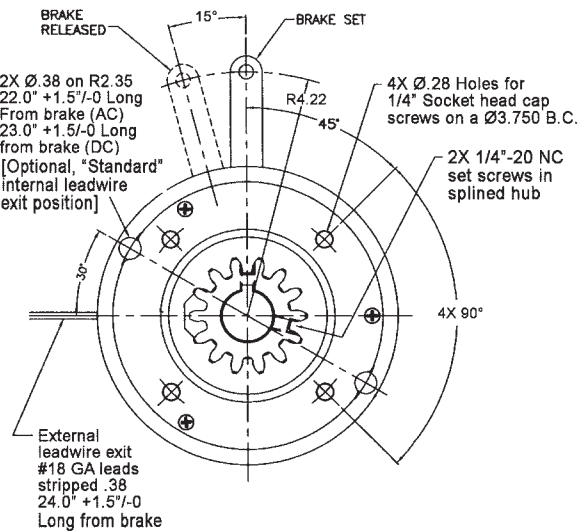
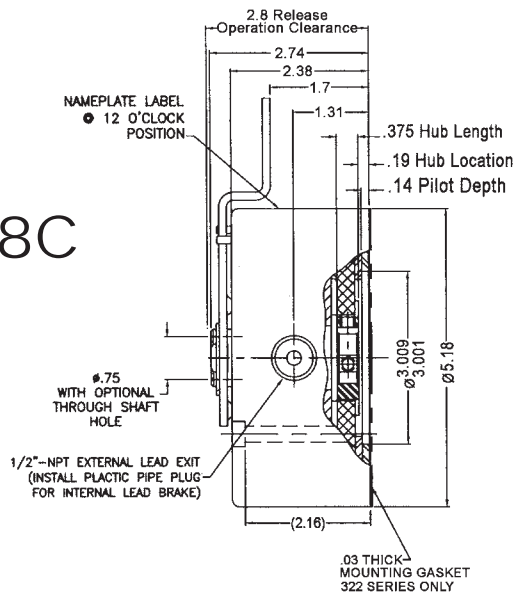
#### Features

- **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*

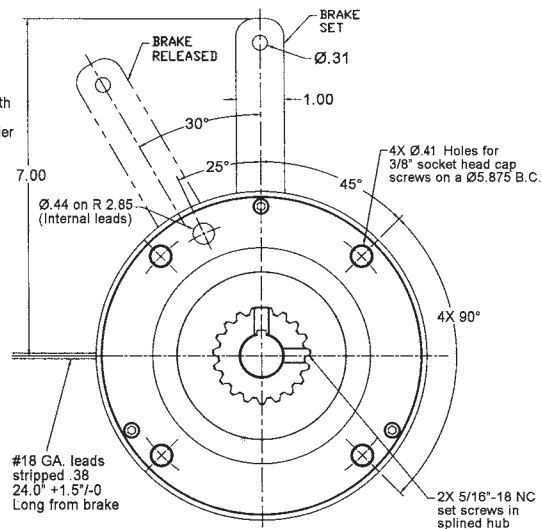
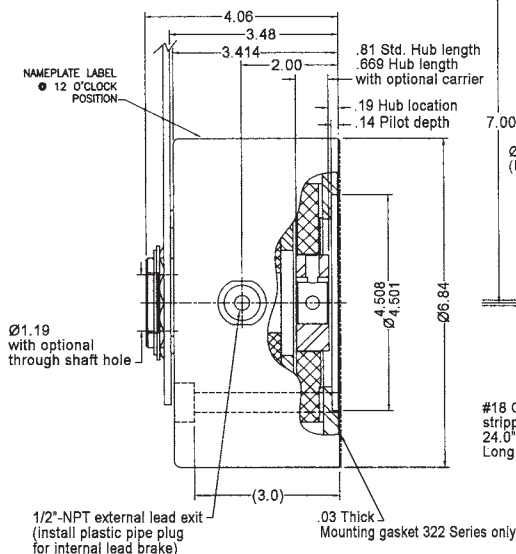
#### Options

- *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

Motor Frame	321 Series Model Number	Nominal Static Torque Lb-ft (Nm)	322 Series Model Number	Approx. Weight		Power (watts)	Hub and Disc inertia (Oz-in-sec <sup>2</sup> )
				lbs	kg		
48C	3-21-83XF	1.5 (2)	3-22-83XF	9.5	4.3	20	1.2 x 10 <sup>-2</sup>
	3-21-84XF	3 (4)	3-22-84XF				
	3-21-85XF	6 (8)	3-22-85XF				
	3-21-86XF	8.3 (11)	3-22-86XF				
56C	3-21-93XG	3 (4)	3-22-93XG	23	10.4	31	15.5 x 10 <sup>-2</sup>
	3-21-94XG	6 (8)	3-22-94XG				
	3-21-95XG	10 (14)	3-22-95XG				
	3-21-96XG	15 (20)	3-22-96XG				
	3-21-98XG	25 (34)	3-22-98XG				

Note: Available as standard or w/manual release

## Ordering Information

Group "3" Armature Actuated Brakes ——— **3-2X-XXXXX0-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
0	Standard brake
S	Carrier ring friction disc

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
0	External leads
6	External leads & through shaft
A	Internal leads

**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
0K	1/2	1/8 x 1/16	48C

Other bore sizes available.

**Table 2: Standard Coil Voltage**

Character to Insert	Voltage	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	.50	.50
V	115 Vac Internal QuickSet	.25	.40
W	230 Vac Internal QuickSet	.25	.40

Other voltages available.

**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 12<sup>th</sup> 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.