

# Series 87,000 and 87,100 Mounting Face: NEMA 182TC - 256TC/UC

## The 87,X00\*\* Series have the following design features:

- Self-Adjusting Design
- Splined Hub
- Lead Wire Length: 24 inches
- Maximum Speed:  
Horizontal 4000 rpm  
Vertical 3600 rpm (modification required for vertical mounting), [see SAB Modification Section](#).
- Coil Insulation: Standard Class B Optional  
Class H (Class H standard on 87,800)
- Certified: CSA File LR-6254
- ABS Type Approval Certified

\*\* Does not include 87,300 and 87,700 Series brakes.

### Engineering Specifications

Nominal Static Torque  lb-ft (Nm)	No. of Friction Discs	Coil Size	Maximum Solenoid Cycle Rate <sup>①</sup>  Cycles/min	Thermal Capacity <sup>②</sup>  hp-sec/min (watts)	Inertia (Wk <sup>2</sup> )  lb-ft <sup>2</sup> (kgm <sup>2</sup> x 10 <sup>-4</sup> )		
					87,000	87,100	87,700
					6 (8)	1	5
10 (14)	1	5	30	17.5 (218)	.048 (20.34)	—	.078 (32.76)
15 (20)	1	6	25	17.5 (218)	.048 (20.34)	—	.078 (32.76)
25 (34)	1	6	25	17.5 (218)	.048 (20.34)	—	.078 (32.76)
35 (47)	1	8	20	17.5 (218)	.048 (20.34)	—	.078 (32.76)
50 (68)	2	6	25	17.5 (218)	.089 (37.40)	.089 (37.40)	.108 (45.36)
75 (102)	2	8	20	17.5 (218)	.089 (37.40)	.089 (37.40)	.108 (45.36)
105 (142)	3	8	20	17.5 (218)	.129 (54.45)	.129 (54.45)	.145 (60.90)
125 (169)	3	8	20	20.0 (248)	—	.129 (54.45)	—

① Maximum solenoid cycle rate is based on ambient temperature of 72°F (22°C) with 50% duty cycle. Does not relate to brake cycle rate (see *Thermal Capacity*).

② Thermal capacity rating is based on ambient temperature of 72°F (22°C), stop time of one second or less, with no heat absorbed from motor. Derate thermal capacity by 25% for vertical mounting. Refer to *Selection Procedure* Section.  
87,800 Thermal capacity is 14 hp-sec/min (174 watts).

### Current Ratings (amperes)

Solenoid Coil Size	AC Current	Voltage: 60 Hz						Voltage: 50 Hz			Voltage: DC			
		115	200	230	400	460	575	110	220	380	24	95	115	230
		5	inrush holding	7.5 .5	4.3 .3	3.7 .2	2.2 .1	1.9 .1	1.5 .09	5.4 .3	4.0 .3	1.9 .1	38.0 .5	8.4 .1
6	inrush holding	13.0 .6	7.5 .4	6.5 .3	3.7 .2	3.2 .2	2.6 .1	9.4 .5	5.6 .3	3.2 .2	42.8 .61	11.7 .16	8.5 .13	3.7 .06
8	inrush holding	17.6 1.2	10.3 .7	8.8 .6	5.0 .3	4.2 .3	3.5 .3	15.4 1.0	7.7 .5	4.2 .3	43.1 .8	11.4 .2	9.3 .2	4.6 .09

### Motor Frame Adapters/Special Endplate

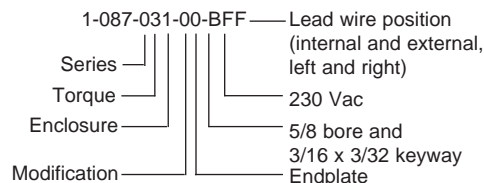
To Adapt to NEMA Frame Size	in. (mm)	Reg. No.	Adapter Stock Number	Additional Shaft Length Required in. (mm)
56C, 143TC, or 145TC 182TFC, 184TFC	4.50 (114.30)	-05	Brake endplate is modified for 4.50 in AK	— (—)
			5-55-7043-00	.56 (14.22)
284TC 286TC	10.50 (266.70)	-11	5-55-7055-00	.81 (20.64)
metric	—	-10	Endplate modified for 130mm register (AK) & 165mm bolt circle (AJ).	—
324TC, 326TC, 364TC, 365TC, 404TC or 405TC	12.50 (317.50)	-13	5-55-7046-00	.88 (22.22)
	—	-07	Endplate modified to provide a 6.75" male register (AK) and 7.19" bolt circle (AJ).	
182TC/184TC, 213TC, 215TC, 254TC/256TC	8.5 (215.90)	-03	Extended endplate.	.625 (15.88)

For motor frame adapters: Series 87,000 through 87,800 see Technical Data

### Ordering and Identification Information

The following example and tables provide information for selecting the appropriate three-letter suffix when ordering a Stearns Brake.

Example of a complete part number:



### Hub Selection

Character	Bore (in.)	Keyway** (in. x in.)
A*	5/8	1/8 x 1/16
B*	5/8	3/16 x 3/32
C*	3/4	3/16 x 3/32
D	7/8	3/16 x 3/32
E	1-1/8	1/4 x 1/8
F	1-1/4	1/4 x 1/8
G	1-3/8	5/16 x 5/32
H	1-5/8	3/8 x 3/16
I*	1-3/4	3/8 x 3/16
J*	1-7/8	1/2 x 1/4
K*	1/2	1/8 x 1/16
L*	1	1/4 x 1/8
M*	1-1/2	3/8 x 3/16
N*	9/16	1/8 x 1/16
O*	11/16	3/16 x 3/32
P*	1-1/16	1/4 x 1/8
Q*	1-7/16	3/8 x 3/16
R*	13/16	3/16 x 3/32
S*	15/16	1/4 x 1/8
T*	1-3/16	1/4 x 1/8
U*	1-5/16	5/16 x 5/32
Z	.600	pilot bore

### Standard AC Voltage Ratings

Character	Voltage	Hz
B	115	60
D	110	50
E	200	60
F	230	60
	190	50
H	220	50
L	460	60
	380	50
M	415	50
N	575	60
O	110/220	50
P	115/230	60
Q	230/460	60
	190/380	50
R	200/400	60

Maximum allowable bore 1.875 (maximum shaft length not to exceed end of hub).  
For thru-shaft applications 1.625 is maximum.

\*These bores are non-standard.

\*\*Keyseats made to ANSI B17.1 standard.

### Direct Current

Character	Voltage
T	12
U	24
V	36
W	48
X	95
Y	115
Z	230

Consult factory if other DC voltage is needed.

**Modifications are available - see SAB Modification Section**

Dimensional drawings are on the pages following.

# Series 87,000

Mounting Face: NEMA 182TC 184TC, 213TC, 215TC, 254TC, and 256TC

(Note: for 182TFC and 184TFC mounting, add a -05- register)

8.5" AK, 7.25" AJ

Static Torque: 6 through 105 lb-ft

Enclosure Material: IP 23 - Sheet Metal Housing, Aluminum Endplate. IP 54 & 55 - Cast Iron Housing and Endplate. IP 54 & 55 also available in sheet metal housing, aluminum endplate. IP 56 - Cast iron housing and endplate.

Enclosure Protection: IP 23, 54 55 (formerly referred to as NEMA 2, 4 & 4X\* respectively) & IP 56. \*BISSC Certified

Release Type: Pull Release Knob, maintained with automatic reset. Vertical above IP 54 & 55 supplied with side manual release lever; and all Cast Iron IP 55 brakes supplied with side manual release lever.

Installation, Service and Parts List: P/N 8-078-928-01 Rev. B brakes

Mounting: Horizontal, unless modified for vertical. Vertical mounting is defined as 15° or more from horizontal. Vertical above requires modification. Vertical below requires modification on 50-105 lb-ft brakes. Vertical above IP 54/55 includes side manual release. See SAB Modification Section

Fanguard-mounted brakes requiring IP 54 or IP 55 protection may require additional sealing measures beyond seals provided with the brake - Refer to Installation & Service Instruction sheets.

Specifications including bore sizes/voltages: Page 17

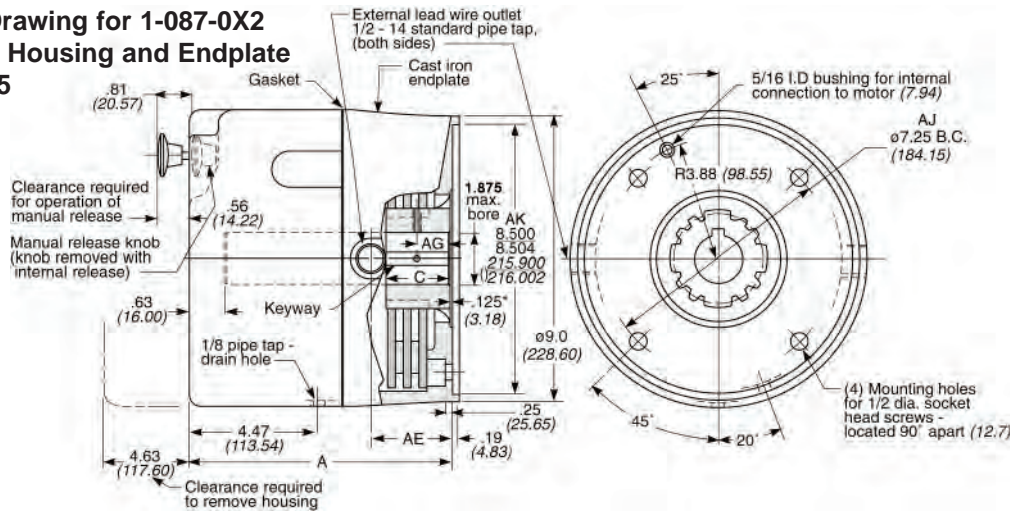
Modifications: Pages 54-63 Including New Manual Adjust Option



Brake set and release times in milliseconds, when brake and motor are switched separately (for T1/T2 definitions, see page 101):

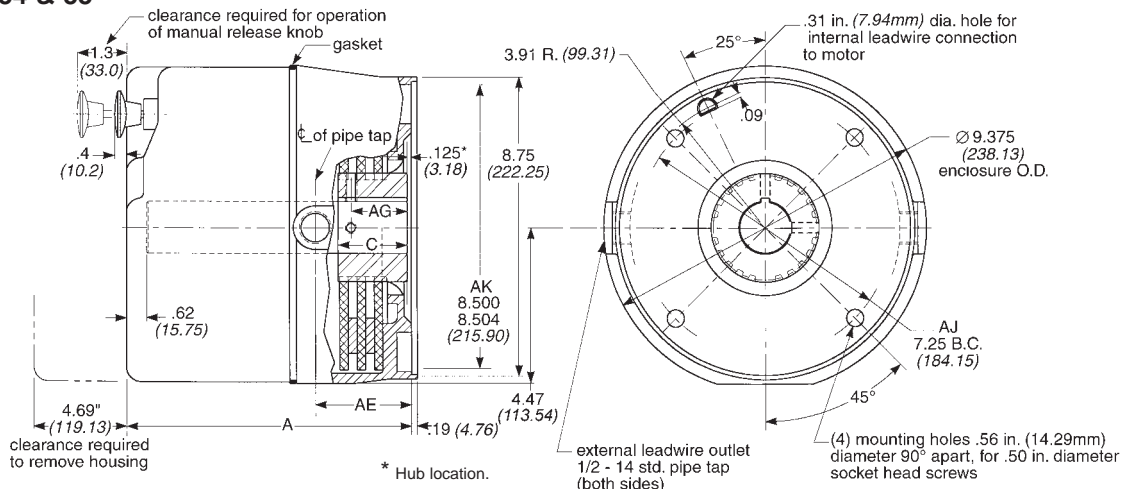
Static Torque	Coil Size	T1	T2
10, 15, 25, 50	5 & 6	42	20
35, 75, 105	8	48	20

## Outline Drawing for 1-087-0X2 Cast Iron Housing and Endplate IP 54 & 55



\* Hub location.  
Dimensions for estimating only. For installation purposes request certified prints.

## Outline Drawing for 1-087-0X1 and 1-087-0X4 Sheet Metal Housing, Aluminum Endplate IP 23, 54 & 55



\* Hub location.

IP 23 Enclosure - aluminum & steel

Nominal Static Torque lb-ft (Nm)	Basic Model Number		Dimensions in Inches (Dimensions in Millimeters)				Wt. lbs (kg)**	Discount Symbol
	AC	DC	A	AE	AG	C Hub Width		
6 (8)	1-087-001-00	1-087-005-00	7.38 (187.32)	1.81 (46.04)	.68 (17.29)	1.00 (25.40)	20 (9.0)	B2
10 (14)	1-087-011-00	1-087-015-00					20 (9.0)	B2
15 (20)	1-087-021-00	1-087-025-00					22 (10.0)	B2
25 (34)	1-087-031-00	1-087-035-00					22 (10.0)	B3
35 (47)	1-087-041-00	1-087-045-00					24 (11.0)	B3
50 (68)	1-087-051-00	1-087-055-00	7.88 (200.02)	2.31 (58.74)	.97 (24.64)	1.50 (38.10)	22 (10.0)	B3
75 (102)	1-087-061-00	1-087-065-00					27 (12.2)	B3
105 (142)	1-087-081-00	1-087-085-00	8.38 (212.72)	2.81 (71.44)	.97 (24.64)	2.00 (50.80)	33 (15.0)	B3

IP 54 and IP 55 Enclosure - CAST IRON

Nominal Static Torque lb-ft (Nm)	Enclosure	Basic Model Number		Dimensions in Inches (Dimensions in Millimeters)				Wt. lbs (kg)**	Discount Symbol
		AC	DC	A	AE	AG	C Hub Width		
6 (8)	IP 54 IP 55	1-087-002-00 1-087-002-B0	1-087-006-00 1-087-006-B0	7.56 (192.09)	1.81 (46.04)	.68 (17.29)	1.00 (25.40)	44 (20.0)	B2
10 (14)	IP 54 IP 55	1-087-012-00 1-087-012-B0	1-087-016-00 1-087-016-B0					44 (20.0)	B2
15 (20)	IP 54 IP 55	1-087-022-00 1-087-022-B0	1-087-026-00 1-087-026-B0					46 (21.0)	B2
25 (34)	IP 54 IP 55	1-087-032-00 1-087-032-B0	1-087-036-00 1-087-036-B0					46 (21.0)	B3
35 (47)	IP 54 IP 55	1-087-042-00 1-087-042-B0	1-087-046-00 1-087-046-B0					48 (21.7)	B3
50 (68)	IP 54 IP 55	1-087-052-00 1-087-052-B0	1-087-056-00 1-087-056-B0	8.06 (204.79)	2.31 (58.74)	.97 (24.64)	1.50 (38.10)	51 (23.0)	B3
75 (102)	IP 54 IP 55	1-087-062-00 1-087-062-B0	1-087-066-00 1-087-066-B0					52 (24.0)	B3
105(142)	IP 54 IP 55	1-087-082-00 1-087-082-B0	1-087-086-00 1-087-086-B0	8.56 (217.49)	2.81 (71.44)	.97 (24.64)	2.00 (50.80)	56 (25.4)	B3
125 <sup>1</sup> (169)	IP 54 IP 55	1-087-092-00 1-087-092-B0	1-087-096-00 1-087-096-B0	8.56 (217.49)	2.81 (71.44)	.97 (24.64)	2.00 (50.80)	56 (25.4)	B3

IP 54 and IP 55 Enclosure - Lightweight ALUMINUM & STEEL

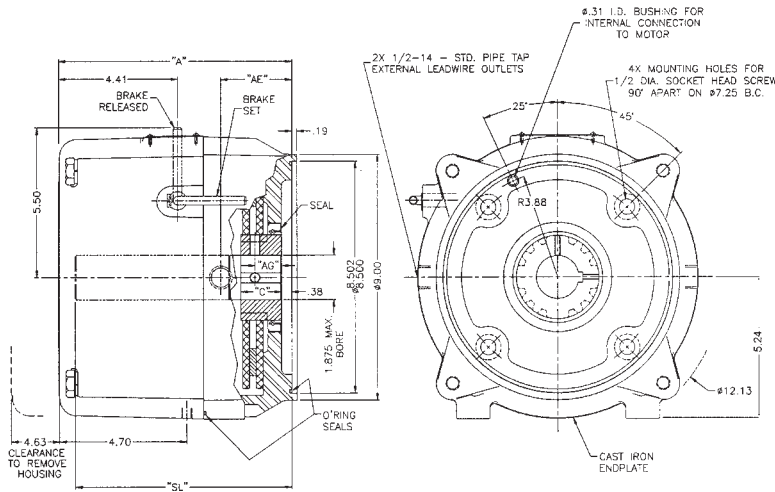
Nominal Static Torque lb-ft (Nm)	Enclosure	Basic Model Number		Dimensions in Inches (Dimensions in Millimeters)				Wt. lbs (kg)**	Discount Symbol
		AC	DC	A	AE	AG	C Hub Width		
6 (8)	IP 54 IP 55	1-087-004-00 1-087-004-B0	Contact factory	7.43 (188.59)	1.81 (46.04)	.68 (17.29)	1.00 (25.40)	19 (8.6)	B2
10 (14)	IP 54 IP 55	1-087-014-00 1-087-014-B0	Contact factory					19 (8.6)	B2
15 (20)	IP 54 IP 55	1-087-024-00 1-087-024-B0	Contact factory					20 (9.0)	B2
25 (34)	IP 54 IP 55	1-087-034-00 1-087-034-B0	Contact factory					20 (9.0)	B3
35 (47)	IP 54 IP 55	1-087-044-00 1-087-044-B0	Contact factory					22 (10.0)	B3
50 (68)	IP 54 IP 55	1-087-054-00 1-087-054-B0	Contact factory	7.93 (201.28)	2.31 (58.74)	.97 (24.64)	1.50 (38.10)	23 (10.4)	B3
75 (102)	IP 54 IP 55	1-087-064-00 1-087-064-B0	Contact factory					23 (10.4)	B3
105 (142)	IP 54 IP 55	1-087-084-00 1-087-084-B0	Contact factory	8.43 (213.97)	2.81 (71.44)	.97 (24.64)	2.00 (50.80)	24 (11.0)	B3

\*\* Foot mounting adds 7 lbs. (3.2 kg) to weight.

<sup>1</sup> These model numbers and list prices include non-standard friction discs. For high inertia or overhauling loads, it is recommended that 81,000 or 82,000 series brakes be used, as these brakes have substantially higher thermal capacities (50% higher for 81,000 series and 150% higher for 82,000 series).

Enclosure Protection: IP 56

Enclosure Material: Cast Iron Housing & Endplate



**Dimensional Data**

Nominal Static Torque lb-ft (Nm)	Basic Model Number			Dimensions in Inches (Dimensions in Millimeters)					
	Enclosure	AC	DC	A	C	AG	AE	SL	
								min	max <sup>1</sup>
25 (34)	IP 56	1-087-030-00	Consult Factory	8.63	1.50	0.97	2.63	1.88	8.00
35 (47)	IP 56	1-087-040-00	Consult Factory	8.63	1.50	0.97	2.63	1.88	8.00
50 (68)	IP 56	1-087-050-00	Consult Factory	8.63	1.50	0.97	2.63	1.88	8.00
75 (102)	IP 56	1-087-060-00	Consult Factory	8.63	1.50	0.97	2.63	1.88	8.00
105 (142)	IP 56	1-087-080-00	Consult Factory	9.13	2.00	0.97	3.13	2.38	8.50

<sup>1</sup> SL max for 1.875" max dia. shaft = 2.32" for 50 & 75 lb-ft brakes, & 2.82" for 105 lb-ft brake

**Specifications**

Nominal Static Torque lb-ft (Nm)	No. of Friction Discs	Coil Size	Maximum Solenoid Cycle Rate cycles/min	Thermal Capacity <sup>2</sup> hp-sec/min (watts)	Inertia (Wk <sup>2</sup> ) lb-ft <sup>2</sup> (kgm <sup>2</sup> x 10 <sup>-4</sup> )	Wt. Lbs (kg)**
25 (34)	2	6	25	17.5 (21.8)	.089 (37.40)	75 (34)
35 (47)	2	6	25	17.5 (21.8)	.089 (37.40)	75 (34)
50 (68)	2	6	25	17.5 (21.8)	.089 (37.40)	75 (34)
75 (102)	2	8	20	17.5 (21.8)	.089 (37.40)	76 (34.5)
105 (142)	3	8	20	17.5 (21.8)	.129 (54.45)	80 (36.3)

**Series 87,100 (1-087-1XX)**  
**Mounting Face: NEMA 284TC,**  
**284UC, 286TC and 286UC**  
**10.5" AK, 9.0" AJ**



**Static Torque:** 50 through 125 lb-ft

**Enclosure Material:** IP 23 - Sheet Metal Housing, Cast Iron Endplate. IP 54 - Cast Iron Housing and Endplate

**Release Type:** Knob, maintained with automatic reset. Vertical above IP 54 supplied with side release lever.

**Enclosure Protection:** IP 23 & 54 (formerly referred to by Stearns as NEMA Type 2 & 4, respectively).

**Installation, Service and Parts List:** P/N 8-078-928-01  
 Rev. B brakes

**Mounting:** Horizontal, unless modified for vertical. Vertical mounting is defined as 15° or more from horizontal. Vertical above and vertical below require modification. Vertical above NEMA 4/4X includes side manual release. See SAB Modification Section for detail.

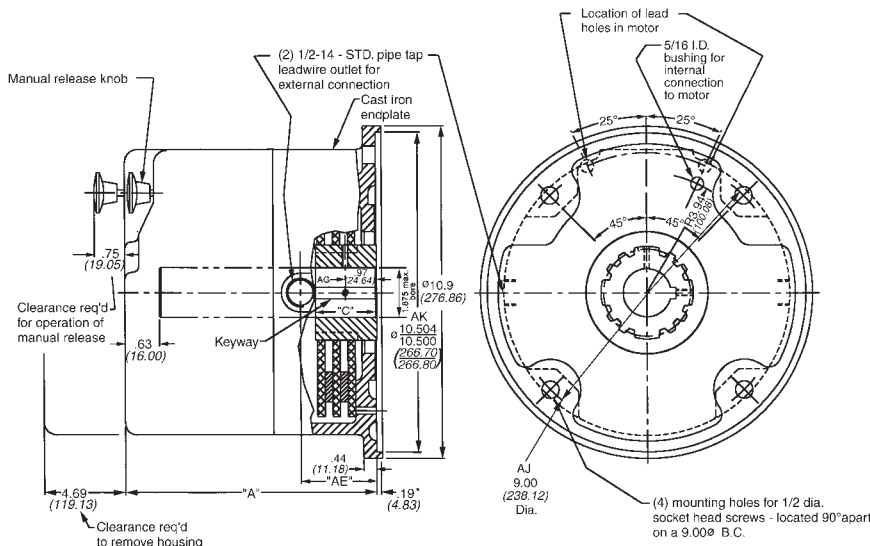
Brake set and release times in milliseconds, when brake and motor are switched separately (for T1/T2 definitions, see page 101):

Static Torque	Coil Size	T1	T2
50	6	42	20
35, 75, 105, 125	8	48	20

Fanguard mounted brakes requiring IP 54 protection may require additional sealing measures beyond seals provided with the brake - Refer to Installation and Service Instruction sheets.

**Specifications including bore sizes/voltages:** Page 17

**Modifications:** Pages 54-63 Including New Manual Adjust Option



\* Hub location  
 Dimensions for estimating only. For installation purposes request certified prints.

**Dimensional Data**

Nominal Static Torque (lb-ft) (Nm)	Enclosure	Basic Model Number		Dimensions in Inches (Dimensions in Millimeters)				Wt. lbs (kg)
		AC	DC	A	AE	AG	C	
50	IP 23	1-087-151-00	1-087-155-00	7.75 (196.85)	2.19 (55.56)	.97 (24.64)	1.50 (38.10)	40 (18.0)
50	IP 54	1-087-152-00	1-087-156-00	7.94 (201.68)	2.19 (55.56)	.97 (24.64)	1.50 (38.10)	53 (24.0)
75	IP 23	1-087-161-00	1-087-165-00	7.75 (196.85)	2.19 (55.56)	.97 (24.64)	1.50 (38.10)	44 (20.0)
75	IP 54	1-087-162-00	1-087-166-00	7.94 (201.68)	2.19 (55.56)	.97 (24.64)	1.50 (38.10)	52 (23.6)
105	IP 23	1-087-181-00	1-087-185-00	8.25 (209.55)	2.69 (68.26)	.97 (24.64)	2.00 (50.80)	46 (19.0)
105	IP 54	1-087-182-00	1-087-186-00	8.44 (214.31)	2.69 (68.26)	.97 (24.64)	2.00 (50.80)	58 (26.3)
125 <sup>1</sup>	IP 23	1-087-191-00	1-087-195-00	8.25 (209.55)	2.69 (68.26)	.97 (24.64)	2.00 (50.80)	46 (19.0)
125 <sup>1</sup>	IP 54	1-087-192-00	1-087-196-00	8.44 (214.31)	2.69 (68.26)	.97 (24.64)	2.00 (50.80)	58 (26.3)

<sup>1</sup> These model numbers include non-standard friction discs. For high inertia or overhauling loads, it is recommended that 81,000 or 82,000 series brakes be used, as these brakes have substantially higher thermal capacities (50% higher for 81,000 series and 150% higher for 82,000 series).