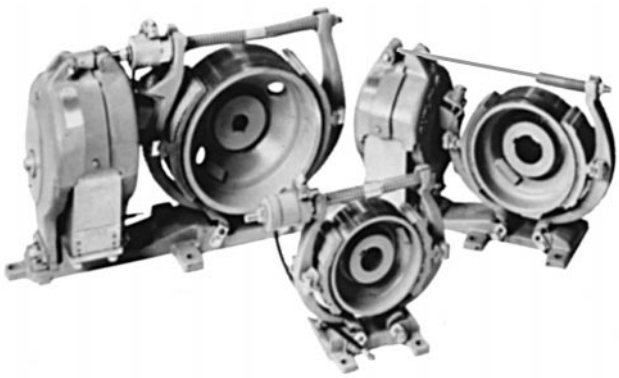
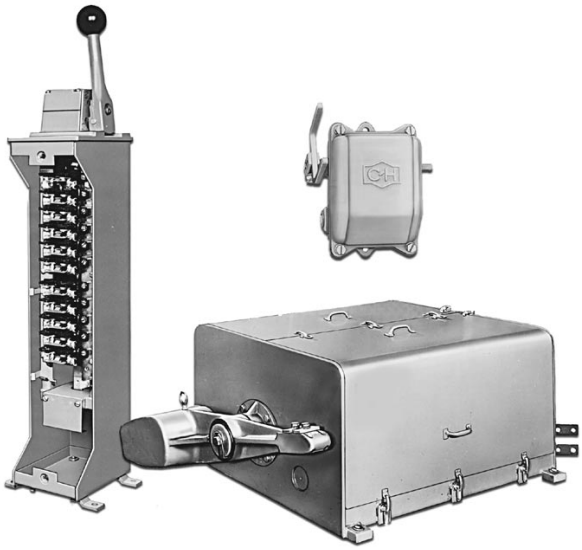
Crane Control Catalog
Contents

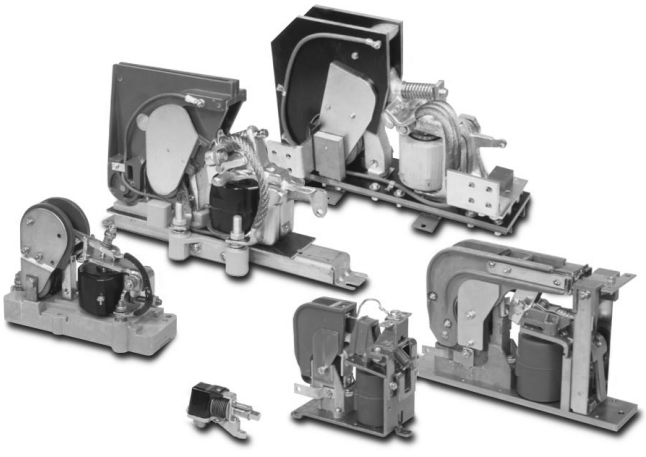
Respondor DDC Chassis



Heavy-Duty Brakes



Master & Limit Switch Family



Contactors & Relays

Dimensions, Weights and Ratings

Dimensions, weights and ratings given in this catalog **are approximate and should not be used for construction purposes**. Drawings containing exact dimensions are available upon request. All listed product specifications and ratings are subject to change without notice. Photographs are representative of production units.

Terms and Conditions

All prices and discounts are subject to change without notice. Price changes when they occur are published in the *Cutler-Hammer Price and Availability Digest* (PAD). All orders accepted by Eaton's Cutler-Hammer are subject to the general terms and conditions as set forth in "Terms & Conditions," Tabs 30 and 60.

Technical and Descriptive Publications

This catalog contains brief technical data for proper selection of products. Further information is available in the form of technical information publications and illustrated brochures. If additional product information is required, contact your local Cutler-Hammer Products Distributor, call 1-800-525-2000 or visit our web site at www.ch.cutler-hammer.com.

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Eaton Corporation offers no warranty and makes no representation that its product complies with the provisions or standards of the Occupational Safety and Health Act of 1970, or any regulations issued thereunder. In no event shall Eaton be liable for any loss, damage, fines, penalty or expenses arising under said Act.

Compliance with Nuclear Regulation 10 CFR 21

Eaton's Cutler-Hammer products are sold as commercial grade product not intended for application in facilities or activities licensed by the United States Nuclear Regulatory Commission for atomic purposes, under 10 CFR 21. Further certification will be required for use of the product in a safety-related application in any nuclear facility licensed by the U.S. Nuclear Regulatory Commission.

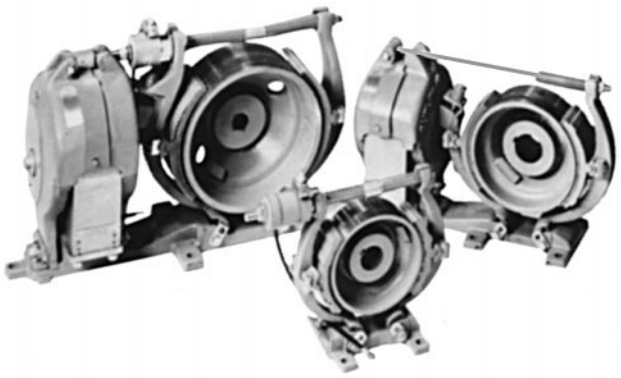
WARNING

The installation and use of Eaton's Cutler-Hammer products should be in accordance with the provisions of the U.S. National Electrical Code and/or other local codes or industry standards that are pertinent to the particular end use. Installation or use not in accordance with these codes and standards could be hazardous to personnel and/or equipment.

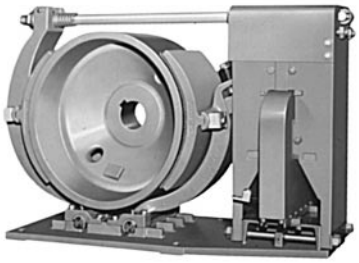
These catalog pages do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the local Cutler-Hammer Products Distributor or Sales Office. The contents of this catalog shall not become part of or modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Eaton's Cutler-Hammer. The warranty contained in the contract between the parties is the sole warranty of Eaton's Cutler-Hammer. Any statements contained herein do not create new warranties or modify the existing warranty.

Heavy-Duty Brakes

Contents



Heavy-Duty Brakes



30″ Size GH505 Magnetic Shoe Brake

Product Description

The GH505 Magnetic Brakes comprise a complete family of heavy-duty brakes for use on cranes, hoists and other machinery. They meet specifications of AISE Standard Nos. 6 and 11 and are available in seven sizes with torque ratings from 10 to 9000 lb-ft.

The GH505 Magnetic Brake is electrically released and spring set — braking force is applied when power is removed from the coil.

Brake wheels are cast of ductile iron specially formulated to withstand the effects of frequent brake operation.

The DC magnetic coil used with the GH505 brakes is encapsulated and enclosed in a weatherproof stainless steel housing. It can be operated from an AC power source by using the optional GH515 Rectifier Panel.

GH505 Magnetic Brakes conform to AISE and NEMA standards for heavy-duty shoe brakes. The brake assembly includes a base, a brake coil, two armatures, two shoe levers, plus a brake wheel for mounting on an appropriate rotating shaft. The brake coil is designed for operation with direct current power. When only alternating current power is available, a suitable power rectifier unit must be provided.

When the brake coil is energized, the armatures move together to compress a torque spring and move the shoes away from the wheel, thus releasing the brake. De-energizing the coil allows the torque spring to separate the armatures and press the shoes against the wheel. This brake design is therefore fail-safe in the event of power failure. Brake release and set times are .50 seconds or less.

GH505 brakes meet all pertinent specifications of NEMA Standard 2-220 and AISE Standards No. 6 and No. 11.

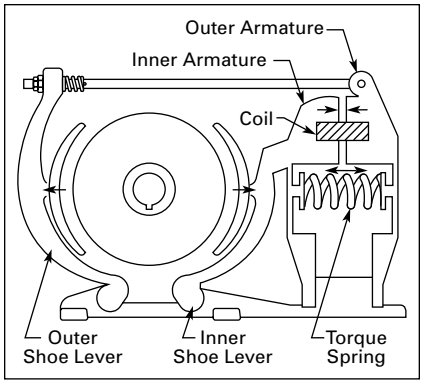


Figure 3-1. Energized Coil

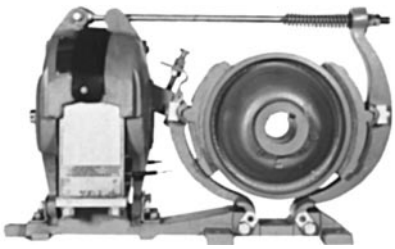
If brake release and set times are critical, consult Eaton's Cutler-Hammer for data and recommendations.

Eaton's Cutler-Hammer has the most simple, most easily understood design of any brake on the market. There are only 35 parts. This simplicity means maximum reliability in actual operation as well as ease in installation and maintenance.

Cutler-Hammer brakes by Eaton Corporation meet AISE/NEMA mounting dimensions and have the smallest overall dimension, so they can replace any AISE/NEMA brake of any manufacture and save space in the bargain. They are the heaviest brake available meeting AISE/NEMA dimensions. This higher strength through weight varies from 20 to 30 percent over some well known brands.

Note: The installation and use of Cutler-Hammer products by Eaton Corporation should be in accordance with the provisions of the U.S. National Electrical Code and/or other local codes or industry standards that are pertinent to the particular end use. Installation or use not in accordance with these codes and standards could be hazardous to personnel and/or equipment.

Over the Wheel Design

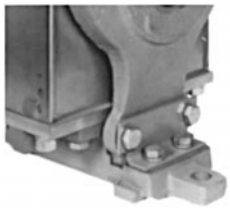


Eaton's Cutler-Hammer brakes effectively divide the braking force between the pull rod and lower pivots while transmitting the braking force to the outer shoe lever. Braking action is spread evenly over both shoes, providing maximum stopping power with minimum wear to the brake. What's more, this design eliminates complicated linkages which have additional stress and wear points.

It is the ultimate in design simplicity and the key to reliable performance. It reduces the number of required parts — only 10 major ones — thus keeping maintenance problems and downtime to a minimum. All parts are readily accessible and easily removable.

Double locking nuts on the pull rod hold the brake in adjustment, even when subjected to vibration and mechanical pounding.

Minimized Wear



Bearing wear is minimized at the shoe levers because of the large bearing area provided and the close tolerance fit of the levers into the sockets in the base.

An improved angle bracket eliminates frequent adjustment. Longer adjusting screws allow the brake to operate with fewer adjustments per time period.

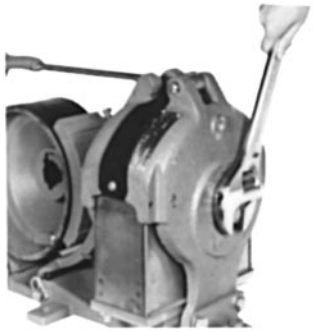
Encapsulated Coil

The coil is encapsulated for long service life and consistent reliability. A stainless steel housing provides complete environmental protection. And, because the coil can easily be reversed with the terminals facing either away from or towards the wheel, cable connections are certain to be simple. The single coil design provides greater reliability compared to dual coil designs.

Long-Life Brake Wheels

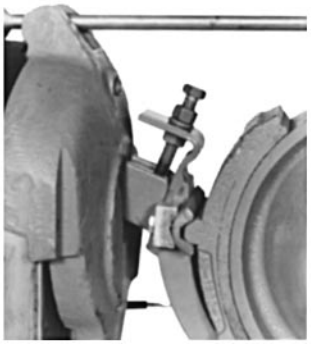
Brake wheels are made of ductile iron. Specially processed and particularly well suited for indoor or outdoor applications. The physical properties of ductile iron make it resistant to high temperatures associated with frequent braking operations. Scored wheel surfaces resulting from wheel particles lodging in the brake linings are eliminated.

Easy Brake Torque Adjustment



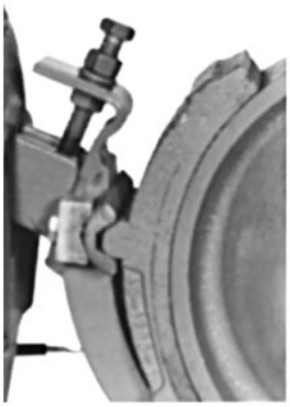
Adjustment is accomplished by turning the adjustment nut clockwise until a definite stop is encountered. This applies maximum brake torque quickly — and easily. To reduce torque, adjustment is counterclockwise. A special construction feature prevents overtightening of the spring, to eliminate overstress and any danger of stud breakage.

One-Time Shoe Positioning



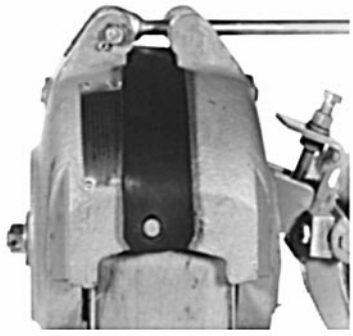
That is all it takes. Once properly positioned, the brake shoes need no further attention — ever. Cap screws and gripping blocks rigidly secure them to the brake shoe levers and prevent the shoes from tilting and "riding the wheel" when the brake is released. Self locking shoe clamp screws hold the brake in adjustment even when subjected to severe vibrations.

Asbestos-Free Shoe Linings



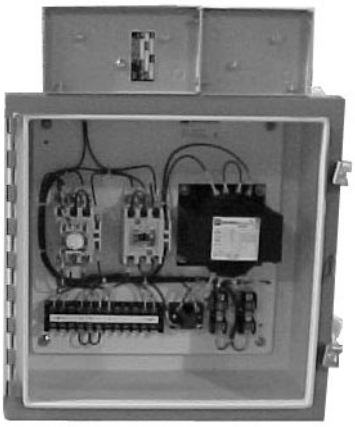
Eaton's Cutler-Hammer brake shoe linings are manufactured of improved, long-life, low-wear material. Either bonded or riveted brake shoes are available to match your operating conditions and relining capabilities.

Shoe Adjustment Indicators



Eliminate guesswork in adjusting shoe travel to compensate for lining wear. It is so easy it can be done accurately even in the dark — no gauges, no rulers necessary. When the travel of the individually adjustable shoes is just right, sounding pins on the upper sides of the armature are flush with the surface of the bushing — you can tell with a touch when adjustment is perfect.

Adaptable to AC Applications



Use of the Rectifier Panel provides the desirable fast speed and long life characteristics of DC braking on AC service. The panel is connected to the AC motor terminals to provide intermittent brake torque on installations where a continuous duty brake coil rating is required. For reduced voltage starting or drift point settings, the rectifier is connected directly to the AC power source.

Application Description

Magnetic brakes are used for both stopping and parking service on industrial machinery. These brakes are widely used on both hoist and travel motions of cranes and other moving machinery. They are also used as parking brakes for industrial process line equipment. Brakes are for use in both indoor and outdoor applications. Brakes can be released electrically by a separate operator's switch, or may be operated in conjunction with control of the related motor drive.

Brake System Selection

The number of brakes required for a mechanical drive is related to the number of drive motors required for that function. Normally, there is one brake per motor. However, for hoists and other machinery requiring a high degree of safety, two brakes per motor are sometimes specified.

Brake Size Selection

Selection of the correct brake size is based on the torque requirements of the application. When the brake is used on a motor shaft or extension thereof, the following formula can be used:

$$T = \frac{5252 \times hp}{r/min}$$

Where T = Full load motor torque in lb-ft

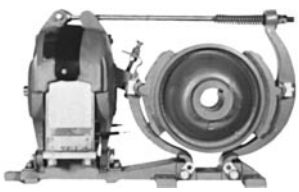
hp = Motor rated horsepower

r/min = Rated speed of the motor shaft that brake wheel is mounted on (revolutions per minute)

Note: See **Table 3-4** on **Page 3-6** for typical motor frame torques.

The rated motor torque arrived at using this formula is adequate for most types of service. However, for hoist and other high inertia applications, refer to factory.

All brakes can be mechanically adjusted down to 50% of their maximum torque rating. Brake torque ratings are related to the type of coil chosen and the duty cycle of the brake application.



GH505 Magnetic Shoe Brake

Hoist Brake Selection

AISE Standard No. 6 and OSHA Regulations state that the hoist brake is to be selected based on the torque required to hoist rated crane load at the point where the brake is applied.

CMAA Specification No. 70 states that the hoist brake is to be selected based on motor full load torque at the point where the brake is applied.

All three standards require that a hoist drive handling hot metal be equipped with two brakes.

Table 3-1. Hoist Brake Selection

	Basis for Selection of Brake Torque	Brake Torque Rating			
		Hoist Drive with Single Brake		Hoist Drive with Two Brakes	
		With Control Braking ①	With Mechanical Load Brake	Handling Hot Metal	Not Handling Hot Metal
CMAA	Motor Full Load Torque	125%	100%	100%	100%
OSHA	Torque Required to Hoist Rated Load	125%	100%	100%	100%
AISE	Torque Required to Hoist Rated Load	150%	150%	125%	100%

① Control braking is dynamic lowering, countertorque or eddy current load brake.

Coil Selection

Series coils are normally used with series wound DC motors to reduce the amount of wiring from the control point to the brake, such as between a crane bridge and trolley. The DC motors are intermittent duty, rated one hour or 1/2 hour duty. The brake should be selected at the same duty rating as the motor. When the data is available, the coil should be chosen based on the actual full load current and duty cycle of the motor (rather than the rated full load motor current).

A coil selection chart for series coils is on **Page 3-20**. Brakes with series coils are designed to release at 40% of rated current and set at 10% of rated current.

Shunt coils are normally used in applications employing:

1. Travel motions,
2. Shunt or compound wound DC motors, or
3. An AC power supply.

If the application requires the brake to be released continuously (energized), brake size should be determined using the continuous duty torque ratings. However, if a coil protective circuit is employed, such as found in the GH515 Rectifier Panel, selection can be based on the intermittent duty ratings.

Shunt coils should be selected based on the DC voltage supply to the brake and on the duty cycle of the brake. A resistor wired in series with the shunt brake coil is used to obtain desired brake response time. This resistor is supplied either with the brake (in a package attached to brake pull rod) for user installation, or as a part of the optional Rectifier Panel. When shunt wound coils are used on a DC constant potential power system, a shunt brake relay is required. The relay along with the series resistor can be mounted on the related motor control panel.

See **Page 3-15** for obsolete coil cross references.

Wheel Selection

Wheels should be selected from the tables on **Pages 3-9** and **3-10**. Wheels are ductile iron machined for gear box or motor shaft mounting.

Enclosure Selection

When brakes are exposed to adverse environmental conditions, optional brake covers or enclosures should be considered.

The weather resistant enclosure protects the wheel and brake shoes from rain, snow or sleet at any "normal" wind conditions.

The NEMA 4 enclosure protects the complete brake and wheel assembly from any type of moisture or dust impingement. To maintain watertightness, a shaft seal must be added by the factory or customer. Use of this enclosure affects the wheel centerline height dimension.

Approximate enclosure dimensions are shown on **Page 3-17**.

Features

- Seven AISE sizes available: 8, 10, 13, 16, 19, 23 and 30 inch
- Torque ranges from 10 to 9000 lb-ft.
- Ductile iron bases with steel armatures on sizes 8 thru 23 inch
- Steel base with laminated steel armatures on 30 inch size
- Partial wheel covers, weather resistant and NEMA 4-5 enclosures
- DC series or shunt coils available, or coils for use with rectifier AC power
- Simplest construction of any brake in the industry
- Mechanical options and brake rectifier packages available

Optional Features

- Riveted shoe linings (standard on 23" brakes)
- Special brake wheel dimensions
- Weather resistant enclosure
- NEMA 4 watertight and dust-tight enclosure
- Manual release — lever type, self return
- Manual release — Screw type, maintained
- Low torque rating for 8" brake
- Brake release indication circuit
- Visual torque measurement gauge

Optional Manual Release Lever

Construction Features

Major structural parts, including the brake base, shoe levers, shoes and the brake wheel, are machined from ductile iron casings. The ductile iron used in the brake wheel is specially formulated to withstand the high temperatures normally resulting from frequent brake operation. Wheels can be machined to cover a variety of motor shaft or line shaft requirements.

Note: The 30" brake size only incorporates laminated steel armature members and a fabricated steel base. Brake linings are bonded to brake shoe lining inserts of sheet steel.

The inner and outer armatures are machined from cast steel to obtain optimum magnetic properties. The brake coil is strap or wire wound and epoxy filled for long service life and top reliability. A weatherproof stainless steel housing provides complete environmental protection and eliminates the possibility of magnetic dust or "kish" build-up.

Standard coil leads extend about 4" from housing face and are supplied with suitable lugs. Coil terminals can be oriented to either face away from or toward the brake wheel. Coils are wound with Class B insulation.

The "over-the-wheel" design of GH505 brakes effectively divides the braking force between the pull rod and lower pivots while transmitting the braking force to the outer shoe lever. As a result, the braking action is spread evenly over both shoes, providing maximum stopping power with minimum wear to the brake.

Brake shoes and linings are available in either bonded or riveted construction. Linings are of a non-asbestos material having excellent wear and anti-fade characteristics. Brakes can be easily adjusted for lining wear.

The mechanical design of the brake eliminates all but one pivot pin — the pin connecting the pull rod to the outer armature. Bearing surfaces between the shoe levers and base, as well as armatures and base, are generally sized to minimize wear and help prevent "freezing" of the pivots.

All mounting and shaft height dimensions are in accordance with Association of Iron and Steel Engineers Standard No. 11. See **Page 3-12** for these dimensions.

Parking torque is easily adjusted over a 2:1 range using a standard wrench.

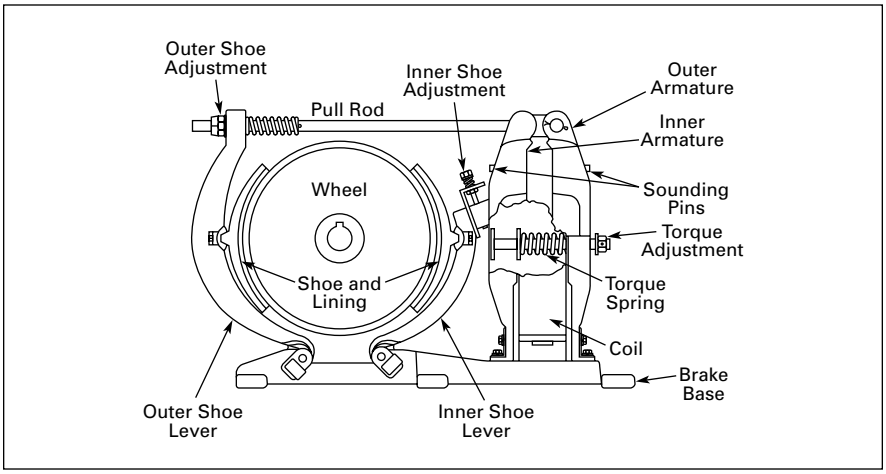


Figure 3-2. GH505 Brake Cutaway View

Standards and Certifications

- CMAA 4.9
- AISE No. 6, 11
- NEMA STD. 2-220
- NEMA ICS 2-220.21
- ASTM 80-55-06

Technical Data and Specifications

- Sizes:
  - Available in 8, 10, 13, 16, 19, 23 and 30 inch
- Mounting:
  - Designed for floor mounting
  - Dimensions per AISE Standard No. 11
- Torque Ratings:
  - 10 lb-ft through 9000 lb-ft
  - Equal stopping and holding torque rating
- Operation:
  - Electrically released, spring set
  - Brake sets in case of power failure
- Torque Adjustment:
  - Brake mechanism adjustable over a 2:1 torque range (except for low torque 8" brakes)
- Ambient Temperature: 40°C

Table 3-2. Specifications

Maximum Torque (lb-ft)				Brake Size Inches (mm)	Wheel Specifications	
Series Wound		Shunt Wound ①				
1/2 Hour	1 Hour	Intermittent	Continuous		WR^2 ($lb\text{-}ft^2$)	Maximum r/min
100	65	100	75	8 (203)	1.1	5000
200	130	200	150	10 (254)	3	4000
550	365	550	400	13 (330)	12	3180
1000	650	1000	750	16 (406)	36	2500
2000	1300	2000	1500	19 (483)	70	2110
4000	2600	4000	3000	23 (584)	210	1740
9000	6000	9000	6750	30 (762)	880	1340

① When brake is used with Eaton's Cutler-Hammer Rectifier Panel, intermittent duty torque ratings may be used as continuous.

Common Motor Data

Table 3-3. Series Wound DC Mill Motor Ratings

Motor Frame Size	1/2 Hour Ratings				1 Hour Ratings			
	hp	Torque	RPM	FLC	hp	Torque	RPM	FLC
602	10	80	675	44	7-1/2	50	800	31
603	13-1/2	115	620	57	10	70	725	41
604	19	180	560	77	15	120	650	59
606	33	340	515	129	25	230	575	95
608	45	500	470	175	35	320	525	131
610	65	770	445	248	50	525	500	184
612	100	1225	430	375	75	830	475	274
614	135	1735	400	500	100	1140	460	360
616	200	2630	400	730	150	1750	450	536
618	265	3810	385	955	200	2560	410	712
802A	6-1/2	45	750	29	5	30	900	21
802B	10	80	675	45	7-1/2	50	800	31
802C	13-1/2	105	675	57	10	65	800	41
803	19	160	620	77	15	110	725	59
804	26	235	580	98	20	160	650	75
806	39	410	500	145	30	275	575	112
808	65	760	450	246	50	500	525	184
810	90	1070	440	335	70	735	500	260
812	135	1690	420	500	100	1110	475	360
814	200	2625	400	730	150	1710	460	533
816	265	3480	400	955	200	2330	450	712
818	325	4740	360	1140	250	3000	410	900

Table 3-4. AC Wound Rotor Motors

Horse-power	Full Load Torque — ft-lbs		
	900 RPM	1200 RPM	1800 RPM
5	31	23	15
7-1/2	46	35	23
10	62	46	31
15	93	69	46
20	124	92	61
25	155	115	76
30	185	138	92
40	247	185	
50	309	221	
60	371	277	
75	464	346	
100	619	461	
125	770	576	
150	926		

Options

Table 3-5. Optional Features

Option	Description	Ordering Instruction Change Catalog Number Listed in Product Selection Table on Page 3-19 as Noted Below	Adder U.S. $ Brake Size — Inches (mm)						
			8 (203)	10 (254)	13 (330)	16 (406)	19 (483)	23 (584)	30 (763)
Mechanical (7th digit of Catalog Number GH505AA**A**)	Riveted linings	Change 7th Digit from A to **B** Example: GH505AAA to GH505A**B**A	360.	360.	410.	490.	N/A	Std.	N/A
	Manual release (lever type)	Change 7th Digit from A to **C** Example: GH505AAA to GH505A**C**A	480.	580.	650.	860.	1,630.	1,730.	N/A
	Maintained manual release (screw type)	Change 7th Digit from A to **D** Example: GH505AAA to GH505A**D**A	480.	580.	650.	860.	1,630.	1,730.	N/A
	Low torque 8" GH505 brake 10 lb-ft	Change 7th Digit from A to **G** Example: GH505AAA to GH505A**G**A	1,050.	—	—	—	—	—	—
	Low torque 8" GH505 brake 25 lb-ft	Change 7th Digit from A to **H** Example: GH505AAA to GH505A**H**A	1,050.	—	—	—	—	—	—
	Brake release indication circuit	Change 7th Digit from A to **J** Example: GH505AAA to GH505A**J**A	1,040.	1,040.	1,040.	1,780.	1,780.	1,780.	N/A
	Visual torque measurement gauge	Change 7th Digit from A to **K** Example: GH505AAA to GH505A**K**A	780.	780.	780.	780.	780.	780.	N/A
	Soft stop	Change 7th Digit from A to **L** Example: GH505AAA to GH505A**L**A	2,750.	2,750.	2,750.	3,570.	N/A	N/A	N/A
	Special — Supply complete description	Change 7th Digit from A to **S** Example: GH505AAA to GH505A**S**A	Consult Factory						
Enclosure (8th digit of Catalog Number GH505AA**A**)	NEMA 4 Enclosure with options requiring engineering — Supply complete description	Change 8th Digit from A to **S** Example: GH505AAA to GH505AA**S**							
		■ Shaft seal	1,240.	1,656.	1,960.	2,200.	2,360.	2,440.	N/A
		■ Terminal box	600.	600.	600.	600.	600.	600.	N/A
		■ Space heater	680.	680.	1,000.	1,000.	1,000.	1,000.	N/A

Industrial Torque Rating (7th Digit)

These magnetic shoe brakes are Type GH505 modified to provide higher maximum torque ratings. See **Table 3-27** on **Page 3-19** for product selection. They are designed primarily for use with adjustable voltage or adjustable frequency drive systems, operated by brake rectifier panels. Order brake rectifier panels from **Page 3-13**.

Table 3-6. GH505 Brake — Industrial Rating

Maximum Torque (lb-ft) ①		Brake Size Inches (mm)
Intermittent	Continuous	
120	90	8 (203)
240	180	10 (254)
660	495	13 (330)
1200	900	16 (406)
2400	1800	19 (483)
4800	3600	23 (584)

① When brake is used with Eaton's Cutler-Hammer Rectifier Panel, intermittent duty torque ratings may be used as continuous.

Soft Stop Feature (7th Digit)

Gradual Increase in Torque Application

- Reduces dangerous load swings on overhead cranes.
- Reduces gear wear caused by sudden stops of mechanical drive systems.

A Low-Cost Alternative to Hydraulic Brakes on Radio Controlled Cranes

Field Adjustable Full Torque Delay

- Simple adjustment requires no additional parts.
- Up to 6-second delay fits most applications.

Self-Contained System

- No hydraulic power assist package needed.
- Maintenance-free design.

Enclosures (8th Digit)

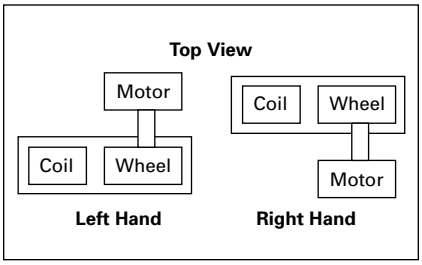


Figure 3-3. Brake Orientation

This is an illustration of Left and Right Hand enclosures. Enclosures must be mounted against end bell of motor — no gasket is supplied. Specify diameter of shaft at point it enters enclosure. Enclosure will be drilled to fit motor when requested — bolt hole configuration must be supplied.

Dimensions. . . . . **Pages 3-16, 3-17**
Discount Symbol **18CD-2**

3

GH505 Brake Wheel for Straight Shaft with Keyway

Accessories

Brake Wheels

These brake wheels are manufactured in 7 AISE sizes from ductile iron conforming to ASTM 80-55-06. Steel wheels are also available. Stocked wheels are set up for mounting on mill and industrial motor shafts. Wheels with a pilot bore are also available for the OEM market.

Wheel Selection

Brake wheel selection is dependent on the dimensions of the shaft on which it will be mounted and on the location of the motor end bell and mounting feet with relation to the brake. Most commonly, these brake wheels are mounted on a motor shaft extension opposite the drive end shaft. Sometimes the brake will be located on the high speed shaft between the motor and gear box. Occasionally there will be a high speed shaft extension on the opposite side of the gear box where the brake can be located.

For DC mill motors, where the brake is to be located on the motor shaft extension opposite the drive end, standard wheel dimensions have been established (AISE Standard No. 11). On **Pages 3-9** – **3-10**, **Table 3-11** lists brake wheels where a "Standard" wheel has been set up for various motor frames.

If wheel requirements do not match motor frame listing availability, then two alternatives are open:

1. Choose the "Universal" wheel, which is a partially finished wheel. This wheel has the maximum amount of hub length and a pilot bore. The customer must machine the hub to the required length, and the required bore and keyway dimensions.
2. Order a "Special" brake wheel with all machining completed by Eaton's Cutler-Hammer. "C", "D", Bore, Taper (if required), and keyway dimensions must be specified. See brake wheel dimension drawing, **Figure 3-4** on **Page 3-11** for maximum and minimum dimensions. Note that wheel dimensions will always be "Special" when a NEMA 4 enclosure is required.

Specifications

- Standards:
  - CMAA 4.9, AISE No. 6, 11
  - ASTM 80-55-06
  - NEMA Standard 2-220
  - NEMA ICS 2-220.21
- Sizes:
  - 8, 10, 13, 16, 19, 23 and 30 inch
- Mounting:
  - Tapered or straight bore shafts
  - Keyed or pressure fit
- Construction:
  - Ductile iron standard with an option for steel
- Standard Wheels:
  - For mill and industrial frame motors

Energy Dissipation and Absorption Capability

Each brake has a maximum energy dissipation and energy absorption capability based on a 40°C ambient temperature. Brake energy ratings are normally given in foot pounds per hour (ft-lb/hr) for repetitive brake operations or in foot pounds (ft-lbs) for one long stop as listed in **Table 3-7**.

Table 3-7. Energy Dissipation/Absorption

Brake Size Inches (mm)	Energy Dissipation Repetitive Operation (ft-lb/hr)	Energy Absorption One Long Stop (ft-lbs)
8 (203)	1,500,000	163,000
10 (254)	2,200,000	236,000
13 (330)	4,300,000	470,000
16 (406)	6,100,000	678,000
19 (482)	9,400,000	1,040,000
23 (584)	14,600,000	1,625,000
30 (762)	21,200,000	2,360,000

Table 3-8. Brake Wheel Inertias and Maximum Allowable Rotational Speeds

Brake Size	WR^2 (lb-ft^2)	Maximum r/min
8 (203)	1.1	5000
10 (254)	3	4000
13 (330)	12	3180
16 (406)	36	2500
19 (482)	70	2110
23 (584)	210	1740
30 (762)	880	1340

Table 3-9. Brake Wheel Catalog Numbering System

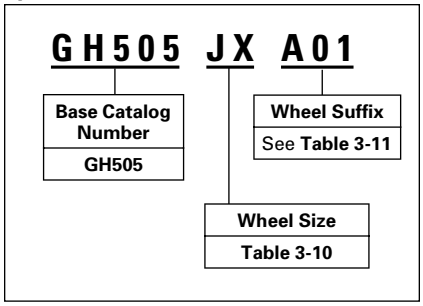


Table 3-10. Wheel Size Code Suffix

Size Inches (mm)	Code Number	Size Inches (mm)	Code Number
8 (203)	JX	19 (483)	NX
10 (254)	KX	23 (584)	PX
13 (330)	LX	30 (762)	RX
16 (406)	MX		

Table 3-11. Brake Wheel Selection Table

Motor Frame ①	Approximate Dimensions in Inches (mm)								Brake Wheel Suffix No.
	Wheel ②					Bore			
	A Wheel Dia.	B Wheel Face	C Hub Length	D Offset	E Inset	Size	Taper per ft. (mm per meter)	Keyway	
8" Brake Wheel (203 mm)									
402 - 602 - 802	8 (203)	3.25 (82.6)	3 (76.2)	4 (101.6)	2.63 (66.7)	1.75 (44.4)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**A01**
AC1 - AC2 - AC4	8 (203)	3.25 (82.6)	3 (76.2)	4 (101.6)	2.63 (66.7)	1.75 (44.4)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**A01**
603 - 604 - 803 - 804	8 (203)	3.25 (82.6)	3.5 (88.9)	4 (101.6)	2.13 (54.0)	2 (50.8)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**A02**
AC8	8 (203)	3.25 (82.6)	4 (101.6)	4 (101.6)	1.63 (41.3)	2.50 (63.5)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**A03**
Universal	8 (203)	3.25 (82.6)	6.88 (174.6)	5.25 (133.4)	0	.75 NOM (19.0)	—	—	**A04**
SW5 - 2W5	8 (203)	3.25 (82.6)	3 (76.2)	4.5 (114.3)	3.13 (79.4)	1.75 (44.4)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**A05**
MC20	8 (203)	3.25 (82.6)	3.5 (88.9)	3 (76.2)	1.13 (28.6)	2 (50.8)	1.22 (101.6)	.50 x .22 (12.7 x 5.5)	**A06**
MC30	8 (203)	3.25 (82.6)	4 (101.6)	3 (76.2)	.63 (15.9)	2.50 (63.5)	1.22 (101.6)	.63 x .25 (15.9 x 6.4)	**A07**
MCS2 - MD402AE	8 (203)	3.25 (82.6)	3 (76.2)	2.75 (69.9)	1.38 (34.9)	1.75 (44.4)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**A08**
K1	8 (203)	3.25 (82.6)	3.5 (88.9)	3 (76.2)	1.13 (28.6)	1.12-1.13 (28.5-28.6)	—	.31 x .13 (8.0 x 3.2)	**A09**
K2	8 (203)	3.25 (82.6)	4 (101.6)	3 (76.2)	.63 (15.9)	1.37-1.38 (34.9-34.92)	—	.38 x .13 (9.5 x 31.8)	**A10**
K3 - K4	8 (203)	3.25 (82.6)	4 (101.6)	3 (76.2)	.63 (15.9)	1.62-1.63 (41.25-41.28)	—	.44 x .16 (11.1 x 4.0)	**A11**
1811 - 1812	8 (203)	3.25 (82.6)	2 (50.8)	3.25 (82.6)	2.88 (73.0)	1.12-1.13 (28.5-28.6)	—	.25 x .13 (6.4 x 3.2)	**A12**
2111 - 2112	8 (203)	3.25 (82.6)	2.5 (63.5)	3.75 (95.3)	2.88 (73.0)	1.37-1.38 (34.90-34.92)	—	.31 x .16 (8.0 x 4.0)	**A13**
2510 - 2511	8 (203)	3.25 (82.6)	2.5 (63.5)	3.75 (95.3)	2.88 (73.0)	1.62-1.63 (41.2-41.3)	—	.38 x .19 (9.5 x 4.7)	**A14**
289 - 2810 - 2811	8 (203)	3.25 (82.6)	2.75 (69.9)	3.75 (95.3)	2.63 (66.7)	1.87-1.88 (47.6-47.63)	—	.50 x .25 (12.7 x 6.4)	**A15**
327 - 328	8 (203)	3.25 (82.6)	3 (76.2)	4 (101.6)	2.63 (66.7)	2.12-2.13 (53.9-54.0)	—	.50 x .25 (12.7 x 6.4)	**A16**
366	8 (203)	3.25 (82.6)	3 (76.2)	4 (101.6)	2.63 (66.7)	2.25 (57.12)	—	.50 x .25 (12.7 x 6.4)	**A17**
367 - 368 - 369 - 3610	8 (203)	3.25 (82.6)	3.5 (88.9)	4 (101.6)	2.13 (54.0)	2.25 (57.12)	—	.50 x .25 (12.7 x 6.4)	**A18**
10" Brake Wheel (254 mm)									
602 - 802 - AC1 - AC2 - AC4	10 (254)	3.75 (95.3)	3 (76.2)	4.25 (108.0)	3.13 (79.4)	1.75 (44.4)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**B01**
603 - 604 - 803 - 804	10 (254)	3.75 (95.3)	3.5 (88.9)	4.25 (108.0)	2.63 (66.7)	2 (50.8)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**B02**
606 - 806 - AC8 - AC12	10 (254)	3.75 (95.3)	4 (101.6)	4.25 (108.0)	2.13 (54.6)	2.50 (63.5)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**B03**
608	10 (254)	3.75 (95.3)	4.5 (114.3)	4.25 (108.0)	1.63 (41.3)	3 (76.2)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**B04**
Universal	10 (254)	3.75 (95.3)	7.75 (196.9)	6.25 (158.8)	.38 (9.5)	1 NOM (25.4)	—	—	**B05**
MD404AE - SW10	10 (254)	3.75 (95.3)	3.5 (88.9)	2.88 (73.0)	1.25 (31.8)	2 (50.8)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**B06**
MD404AE2 - MCS4	10 (254)	3.75 (95.3)	3.5 (88.9)	3.88 (98.4)	2.25 (57.2)	2 (50.8)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**B07**
K5	10 (254)	3.75 (95.3)	4 (101.6)	3.13 (79.4)	1 (25.4)	1.87 (47.6)	—	.50 x .19 (12.7 x 4.8)	**B08**
BW	10 (254)	3.75 (95.3)	3.5 (88.9)	2.5 (63.5)	.88 (22.2)	2.50 (63.5)	1.22 (101.6)	.63 x .19 (15.9 x 4.8)	**B09**
MD103	10 (254)	3.75 (95.3)	4.75 (120.7)	3.25 (82.6)	.38 (9.5)	2.50 (63.5)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**B10**
—	10 (254)	3.75 (95.3)	3.5 (88.9)	4.25 (108.0)	2.63 (66.7)	1 NOM (25.4)	—	—	**B11**
327 - 328	10 (254)	3.75 (95.3)	3 (76.2)	4.25 (108.0)	3.13 (79.4)	2.12-2.13 (53.9-54.0)	—	.50 x .25 (12.7 x 6.4)	**B12**
366 - 367 - 368 - 369 - 3610	10 (254)	3.75 (95.3)	3 (76.2)	4 (101.6)	2.88 (73.0)	2.25 (57.1)	—	.50 x .25 (12.7 x 6.4)	**B13**
408 - 409	10 (254)	3.75 (95.3)	4.25 (108.0)	4.25 (108.0)	1.88 (47.6)	2.88 (73.0)	—	.75 x .38 (19.1 x 9.5)	**B14**
13" Brake Wheel (330 mm)									
603 - 604 - 803 -804	13 (330)	5.75 (146.1)	3.5 (88.9)	5 (127.0)	4.38 (111.1)	2 (50.8)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**C01**
606 - 806 - AC8 - AC12	13 (330)	5.75 (146.1)	4 (101.6)	5 (127.0)	3.88 (98.4)	2.50 (63.5)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**C02**
608 - 808	13 (330)	5.75 (146.1)	4.5 (114.3)	5.38 (136.7)	3.75 (95.3)	3 (76.2)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**C03**
610 - 810 - AC18 - MC10	13 (330)	5.75 (146.1)	4.5 (114.3)	5.38 (136.7)	3.75 (95.3)	3.25 (82.5)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**C04**
612 - 812 - AC25 - AC30	13 (330)	5.75 (146.1)	5 (127.0)	5.38 (136.7)	3.25 (82.6)	3.62-3.63 (91.95-92.08)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**C05**
614	13 (330)	5.75 (146.1)	5 (127.0)	5.38 (136.7)	3.25 (82.6)	4.25 (107.9)	1.25 (104.2)	1 x .38 (25.4 x 9.5)	**C06**
Universal	13 (330)	5.75 (146.1)	8 (203.2)	6 (152.4)	.88 (22.2)	1 NOM (25.4)	—	—	**C07**
K6	13 (330)	5.75 (146.1)	4 (101.6)	4 (101.6)	2.88 (73.0)	2.12 (53.9)	—	.50 x .19 (12.7 x 4.8)	**C08**
K7	13 (330)	5.75 (146.1)	4 (101.6)	4 (101.6)	2.88 (73.0)	2.37 (60.3)	—	.63 x .25 (15.9 x 6.4)	**C09**
K8	13 (330)	5.75 (146.1)	4 (101.6)	4 (101.6)	2.88 (73.0)	2.62 (66.6)	—	.63 x .28 (15.9 x 7.1)	**C10**
MC40 - MC50	13 (330)	5.75 (146.1)	4.5 (114.3)	3.19 (81.0)	1.56 (40.0)	3 (76.2)	1.22 (101.6)	.63 x .28 (15.9 x 7.1)	**C11**
327 - 328	13 (330)	5.75 (146.1)	3.19 (81.0)	4.5 (114.3)	4.19 (106.3)	2.12-2.13 (53.9-54.0)	—	.50 x .25 (12.7 x 6.4)	**C12**
366 - 367 - 368 - 369 - 3610	13 (330)	5.75 (146.1)	4 (101.6)	5.5 (140.0)	4.38 (111.1)	2.25 (57.1)	—	.50 x .25 (12.7 x 6.4)	**C13**
408 - 409 - 4010	13 (330)	5.75 (146.1)	4.25 (108.0)	5 (127.0)	3.63 (92.1)	2.88 (73.0)	—	.75 x .38 (19.1 x 9.5)	**C14**
506 - 507 - 508	13 (330)	5.75 (146.1)	5 (127.0)	4.25 (108.0)	2.13 (54.0)	3.62-3.63 (92.05-92.08)	—	.88 x .44 (22.2 x 11.1)	**C15**

① 400 - 600 - 800 AC motor frames all per AISE specifications. See **Page 3-12** for dimensional compatibility.

② See dimensional drawing, **Figure 3-4** on **Page 3-11**.

Note: Dimensions shown are approximate and are not to be used for construction purposes.

Table 3-11. Brake Wheel Selection Table (Continued)

Motor Frame ①	Approximate Dimensions in Inches (mm)								Brake Wheel Suffix No.
	Wheel ②					Bore			
	A Wheel Dia.	B Wheel Face	C Hub Length	D Offset	E Inset	Size	Taper per ft. (mm per meter)	Keyway	
16" Brake Wheel (406 mm)									
606 - 806 - AC8 - AC12	16 (406)	6.75 (171.5)	4 (101.6)	6.5 (165.1)	5.88 (149.2)	2.50 (63.5)	1.25 (104.2)	.50 x .25 (12.7 x 6.4)	**D01**
608 - 808	16 (406)	6.75 (171.5)	4.5 (114.3)	6.5 (165.1)	5.38 (136.5)	3 (76.2)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**D02**
610 - 810 - AC18	16 (406)	6.75 (171.5)	4.5 (114.3)	6.5 (165.1)	5.38 (136.5)	3.25 (82.5)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**D03**
612 - 812 - AC25 - AC30	16 (406)	6.75 (171.5)	5 (127.0)	6.5 (165.1)	4.88 (123.8)	3.62-3.63 (91.9-92.0)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**D04**
614 - 814 - AC40 - AC50	16 (406)	6.75 (171.5)	5 (127.0)	6.5 (165.1)	4.88 (123.8)	4.25 (107.9)	1.25 (104.2)	1 x .38 (25.4 x 9.5)	**D05**
616 - 816	16 (406)	6.75 (171.5)	5.5 (140.0)	6.5 (165.1)	4.38 (111.1)	4.62-4.63 (117.3-117.4)	1.25 (104.2)	1.25 x .38 (31.8-9.5)	**D06**
Universal	16 (406)	6.75 (171.5)	8.38 (212.9)	7.25 (184.2)	2.25 (57.2)	1.5 NOM (38.1)	—	—	**D07**
MS10 - MD410AE2	16 (406)	6.75 (171.5)	4.5 (114.3)	7 (177.8)	5.88 (149.2)	3.25 (82.5)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**D08**
SW50 - MD412AE	16 (406)	6.75 (171.5)	5 (127.0)	4.25 (108.0)	2.63 (66.7)	3.62-3.63 (91.9-92.0)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**D09**
MCS12 - MD412AE2	16 (406)	6.75 (171.5)	5 (127.0)	7.25 (184.4)	5.63 (142.9)	3.62-3.63 (91.9-92.0)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**D10**
EW	16 (406)	6.75 (171.5)	5 (127.0)	5 (127.0)	3.38 (85.7)	4 (101.6)	1.219 (101.6)	1 x .38 (25.4 x 9.5)	**D11**
408 - 409 - 4010	16 (406)	6.75 (171.5)	4.38 (111.3)	6.5 (165.1)	5.50 (139.6)	2.88 (73.0)	—	.75 x .38 (19.1 x 9.5)	**D12**
506 - 507 - 508	16 (406)	6.75 (171.5)	4 (101.6)	5 (127.0)	4.38 (111.1)	3.63 (92.0)	—	.88 x .44 (22.2 x 11.1)	**D13**
587 - 588 - 589	16 (406)	6.75 (171.5)	5 (127.0)	5 (127.0)	3.38 (85.7)	4.13 (104.7)	—	1 x .50 (25.4 x 12.7)	**D14**
19" Brake Wheel (482 mm)									
608 - 808	19 (483)	8.75 (222.3)	4.5 (114.3)	7.5 (190.5)	7.38 (187.3)	3 (76.2)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**E01**
610 - 810 - AC18	19 (483)	8.75 (222.3)	4.5 (114.3)	7.5 (190.5)	7.38 (187.3)	3.25 (82.5)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**E02**
612 - 812 - AC25 - AC30	19 (483)	8.75 (222.3)	5 (127.0)	7.5 (190.5)	6.88 (174.6)	3.62-3.63 (91.9-92.0)	1.25 (104.2)	.75 x .25 (19.1 x 6.4)	**E03**
614 - 814 - AC40 - AC50 - SW75S	19 (483)	8.75 (222.3)	5 (127.0)	7.5 (190.5)	6.88 (174.6)	4.25 (107.9)	1.25 (104.2)	1 x .38 (25.4 x 9.5)	**E04**
MCS14 - MD414AE2	19 (483)	8.75 (222.3)	5 (127.0)	7.5 (190.5)	6.88 (174.6)	4.25 (107.9)	1.25 (104.2)	1 x .38 (25.4 x 9.5)	**E04**
616 - 816	19 (483)	8.75 (222.3)	5.5 (140.0)	7.5 (190.5)	6.38 (161.9)	4.62-4.63 (117.3-117.4)	1.25 (104.2)	1.25 x .38 (31.8 x 9.5)	**E05**
618 - 818	19 (483)	8.75 (222.3)	6 (152.4)	7.5 (190.5)	5.88 (149.2)	5 (127.0)	1.25 (104.2)	1.25 x .50 (31.8 x 12.7)	**E06**
620	19 (483)	8.75 (222.3)	6.75 (171.5)	7.5 (190.5)	5.13 (130.2)	5.87-5.88 (149.1-149.2)	1.25 (104.2)	1.25 x .50 (31.8 x 12.7)	**E07**
Universal	19 (483)	8.75 (222.3)	11 (279.4)	10 (254.0)	3.38 (85.7)	2.25 NOM (57.1)	—	—	**E08**
SW75 - MD414AE	19 (483)	8.75 (222.3)	5 (127.0)	4.5 (114.3)	3.88 (98.4)	4.25 (107.9)	1.25 (104.2)	1 x .38 (25.4 x 9.5)	**E09**
23" Brake Wheel (584 mm)									
612 - 812 - AC25 - AC30	23 (584)	11.25 (285.8)	5 (127.0)	8.25 (210.0)	8.88 (225.4)	3.62-3.63 (91.9-92.0)	1.25 (104.2)	.75 x .25 (9.5 x 6.4)	**F01**
614 - 814 - AC40 - AC50	23 (584)	11.25 (285.8)	5 (127.0)	8.25 (210.0)	8.88 (225.4)	4.25 (107.9)	1.25 (104.2)	1 x .38 (25.4 x 9.5)	**F02**
616 - 816	23 (584)	11.25 (285.8)	5.5 (140.0)	8.25 (210.0)	8.38 (212.7)	4.62-4.63 (117.3-117.4)	1.25 (104.2)	1.25 x .38 (31.8 x 9.5)	**F03**
618 - 818	23 (584)	11.25 (285.8)	6 (152.4)	8.75 (222.3)	8.38 (212.7)	5 (127.0)	1.25 (104.2)	1.25 x .50 (31.8 x 12.7)	**F04**
620 - 820	23 (584)	11.25 (285.8)	6.75 (171.5)	9.75 (247.7)	8.63 (219.1)	5.87-5.88 (149.1-149.2)	1.25 (104.2)	1.5 x .75 (38.1 x 19.1)	**F05**
622 - 822	23 (584)	11.25 (285.8)	7.25 (184.2)	9.75 (247.7)	8.13 (206.4)	6.25 (158.7)	1.25 (104.2)	1.5 x .75 (38.1 x 19.1)	**F06**
624 - 824	23 (584)	11.25 (285.8)	9.25 (235.0)	9.75 (247.7)	6.13 (155.6)	7 (177.7)	1.25 (104.2)	1.5 x .75 (38.1 x 19.1)	**F07**
Universal	23 (584)	11.25 (285.8)	12.5 (317.5)	11 (279.4)	4.13 (104.8)	2.5 NOM (63.5)	—	—	**F08**
SW150 - MD418AE2 - MCS18	23 (584)	11.25 (285.8)	8 (203.2)	4.75 (120.7)	4.38 (111.1)	5 (127.0)	1.25 (104.2)	1.25 x .63 (31.8 x 15.9)	**F09**
30" Brake Wheel (762 mm)									
616 - 816	30 (762)	14.25 (362.0)	5.5 (140.0)	10.25 (260.4)	11.88 (301.6)	4.62-4.63 (117.3-117.4)	1.25 (104.2)	1.25 x .38 (31.8 x 9.5)	**G01**
618 - 818	30 (762)	14.25 (362.0)	6 (152.4)	10.25 (260.4)	11.38 (288.9)	5 (127.0)	1.25 (104.2)	1.25 x .50 (31.8 x 12.7)	**G02**
620 - 820	30 (762)	14.25 (362.0)	6.75 (171.5)	10.25 (260.4)	10.63 (269.9)	5.87-5.88 (149.1-149.2)	1.25 (104.2)	1.5 x .75 (38.1 x 19.1)	**G03**
622 - 822	30 (762)	14.25 (362.0)	7.25 (184.2)	10.75 (273.1)	10.63 (269.9)	6.24-6.25 (158.5-158.7)	1.25 (104.2)	1.5 x .75 (38.1 x 19.1)	**G04**
624 - 824	30 (762)	14.25 (362.0)	9.25 (235.0)	10.75 (273.1)	8.63 (219.1)	7 (177.7)	1.25 (104.2)	1.5 x .75 (38.1 x 19.1)	**G05**

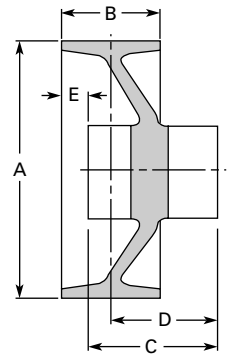
① 400 - 600 - 800 AC motor frames all per AISE specifications. See **Page 3-12** for dimensional compatibility.

② See dimensional drawing, **Figure 3-4** on **Page 3-11**.

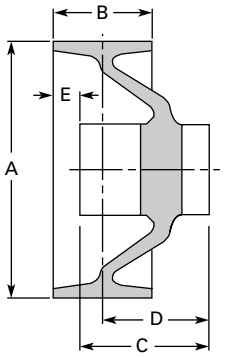
Table 3-12. Brake Wheels Only Product Selection
Incomplete Catalog Number — add standard wheel Suffix Number from **Table 3-11** on **Pages 3-9** and **3-10**

Wheel Size Inches (mm)	Catalog Number ①	Price U.S. $	
		Standard	Non-standard ②
8 (203)	**GH505JX_ _ _**	1,250.	1,460.
10 (254)	**GH505KX_ _ _**	1,490.	1,780.
13 (330)	**GH505LX_ _ _**	2,000.	2,250.
16 (406)	**GH505MX_ _ _**	2,600.	2,980.
19 (483)	**GH505NX_ _ _**	4,040.	4,860.
23 (584)	**GH505PX_ _ _**	6,780.	8,130.
30 (762)	**GH505RX_ _ _**	12,650.	13,800.

① Listed Catalog Numbers are incomplete. Add Wheel Suffix Number from **Table 3-11** on **Pages 3-9** and **3-10**.
② For non-standard wheels, see ordering information at right.



13", 16", 23" and 30" Wheels



8", 10" and 19" Wheels

DRAWING KEY:
A= Wheel Diameter
B= Wheel Face
C= Hub Length
D = Offset
E= Inset

Figure 3-4. Brake Wheel Dimensions

Table 3-13. Brake Wheel Dimensions

Approximate Dimensions in Inches (mm)										Estimated Shipping Weight Lbs. (kg)
A	B	C Maximum	D		E		Minimum Bore		Maximum Bore	
			Minimum	Maximum	Minimum	Maximum	Tapered	Straight		
8 (203)	3.25 (83)	6.88 (175)	2.63 (67)	5.25 (133)	0	2.88 (73)	1.0 (25)	.88 (22)	2.63 (67)	25 (11)
10 (254)	3.75 (95)	7.75 (197)	3.5 (89)	6.25 (159)	.38 (10)	3.63 (92)	1.0 (25)	1.0 (25)	3.0 (76)	40 (18)
13 (330)	5.75 (146)	8.0 (203)	3.25 (83)	6.0 (152)	.88 (22)	4.38 (111)	1.0 (25)	1.0 (25)	4.25 (108)	90 (41)
16 (406)	6.75 (171)	7.25 (184)	3.63 (92)	7.25 (184)	2.25 (57)	5.5 (140)	1.0 (25)	1.0 (25)	4.25 (108)	135 (61)
19 (483)	8.75 (222)	11.0 (279)	5.38 (137)	10.0 (254)	3.38 (86)	7.25 (184)	3.0 (76)	2.37 (60)	5.5 (140)	215 (98)
23 (584)	11.25 (286)	12.5 (318)	5.38 (137)	11.0 (279)	4.25 (108)	9.38 (238)	3.0 (76)	2.88 (73)	6.38 (162)	350 (159)
30 (762)	14.25 (362)	18.0 (457)	5.88 (149)	12.75 (324)	0	13.5 (343)	5.0 (127)	4.5 (114)	7.0 (178)	1100 (499)

Note: 1/2 B + D Must Equal C + E.

Non-standard Wheels

Special wheels are available and are machined from ductile iron castings only. For wheels constructed of some other material consult factory. Supply complete dimensions — they must fall within the parameters shown in **Table 3-13**.

Order as GH505_ _ - Special

Insert two letter Wheel Size Suffix from **Table 3-10** on **Page 3-8**.

Wheel with Lockwasher Slot — Supply Complete Description of Slot and Wheel

To order insert letter **L** into the 8th position of Catalog Number and leave the 9th and 10th positions blank. Example: GH505JX**L**.

Table 3-14. Wheels with Lockwasher Slot

Adder U.S. $			
Wheel Size Inches (mm)	Price U.S. $	Wheel Size Inches (mm)	Price U.S. $
8 (203)	520.	19 (483)	760.
10 (254)	600.	23 (584)	760.
13 (330)	680.	30 (762)	920.
16 (406)	760.		

Discount Symbol **18CD-2**

Table 3-15. Brake Compatibility with 400, 600 and 800 Frame Mill Motors — Inches (mm)

Brake Size Wheel Diameter	Wheel Rim Width C	Motor Frame Size	Height Difference A	1st Hole to Brake Centerline Z	Hub Length D	Hub Extension E	Key Width F	Bore Diameter G
8 (203)	3.25 (83)	402	—	8.25 (210)	3.0 (76)	2.38 (60)	.5 (12.7)	1.75 (44)
		403	—	9.0 (229)	3.0 (76)	2.38 (60)	.5 (12.7)	2.0 (51)
		602	—	8.25 (210)	3.5 (89)	2.38 (60)	.5 (12.7)	1.75 (44)
		802A	.63 (16)	8.25 (210)	3.0 (76)	2.38 (60)	.5 (12.7)	1.75 (44)
		802B	.63 (16)	8.25 (210)	3.0 (76)	2.38 (60)	.5 (12.7)	1.75 (44)
10 (254)	3.75 (95)	404	—	9.75 (248)	3.5 (89)	2.38 (60)	.5 (12.7)	2.0 (51)
		406	—	9.75 (248)	4.0 (102)	2.38 (60)	.5 (12.7)	2.5 (64)
		603	—	9.25 (235)	3.5 (89)	2.38 (60)	.5 (12.7)	2.0 (51)
		604	—	9.75 (248)	3.5 (89)	2.38 (60)	.5 (12.7)	2.0 (51)
		802C	-.75 (-19)	8.50 (216)	3.0 (76)	2.38 (60)	.5 (12.7)	1.75 (44)
		803	.13 (3.2)	9.25 (235)	3.5 (89)	2.38 (60)	.5 (12.7)	2.0 (51)
13 (330)	5.75 (146)	408	—	11.0 (280)	4.5 (114)	2.50 (64)	.75 (19)	3.0 (76)
		410	—	11.63 (295)	4.5 (114)	2.50 (64)	.75 (19)	3.25 (83)
		606	—	10.50 (267)	4.0 (102)	2.13 (54)	.50 (12.7)	2.5 (64)
		608	—	11.0 (280)	4.5 (114)	2.50 (64)	.75 (19)	3.0 (76)
		804	-.88 (-22.2)	10.50 (267)	3.5 (89)	2.13 (54)	.50 (12.7)	2.0 (51)
		806	.13 (3.2)	10.50 (267)	4.0 (102)	2.50 (64)	.50 (12.7)	2.5 (64)
16 (406)	6.75 (171)	412	—	13.25 (337)	5.0 (127)	3.13 (79)	.75 (19)	3.63 (92)
		610	—	12.75 (324)	4.5 (114)	3.13 (79)	.75 (19)	3.25 (83)
		808	-.88 (-22.2)	12.13 (308)	4.5 (114)	3.13 (79)	.75 (19)	3.0 (76)
19 (483)	8.75 (222)	414	—	15.25 (387)	5.0 (127)	3.13 (79)	1.0 (25.4)	4.25 (108)
		416	—	16.50 (419)	5.5 (140)	3.13 (79)	1.25 (32)	4.63 (117)
		612	—	14.25 (362)	5.0 (127)	3.13 (79)	.75 (19)	3.63 (92)
		614	-1.0 (-25.4)	15.25 (387)	5.0 (127)	3.13 (79)	1.0 (25.4)	4.25 (108)
		810	.13 (3.2)	13.25 (337)	4.5 (114)	2.63 (67)	.75 (19)	3.25 (83)
		812		14.25 (362)	5.0 (127)	3.13 (79)	.75 (19)	3.63 (92)
23 (584)	11.25 (286)	418	—	17.25 (438)	5.5 (140)	3.13 (79)	1.25 (32)	5.0 (127)
		616	—	17.25 (438)	6.0 (152)	2.63 (67)	1.25 (32)	4.63 (117)
		618	—	17.25 (438)	6.0 (152)	3.13 (79)	1.25 (32)	5.0 (127)
		814	-1.13 (-29)	15.50 (394)	5.0 (127)	2.13 (54)	1.0 (25.4)	4.25 (108)
		816	.13 (3.2)	17.25 (438)	5.5 (140)	2.63 (67)	1.25 (32)	4.63 (117)

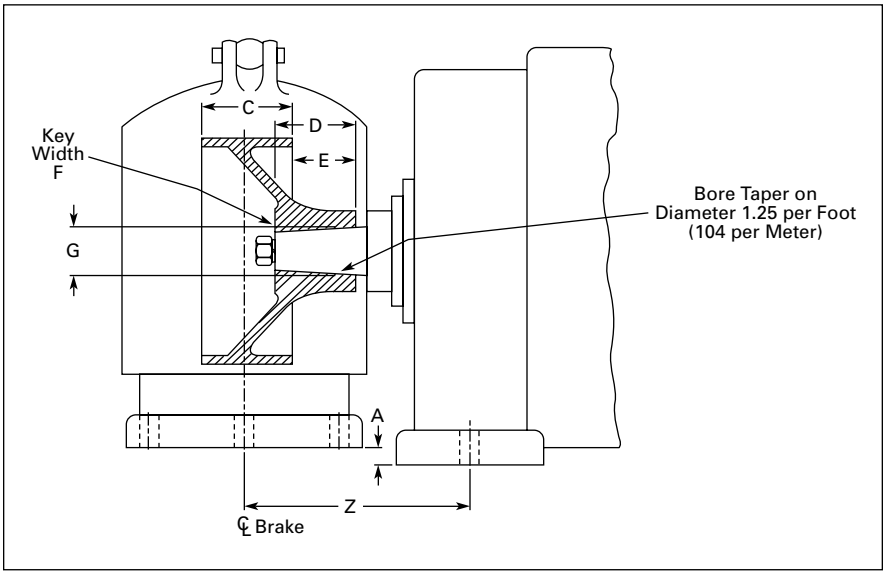
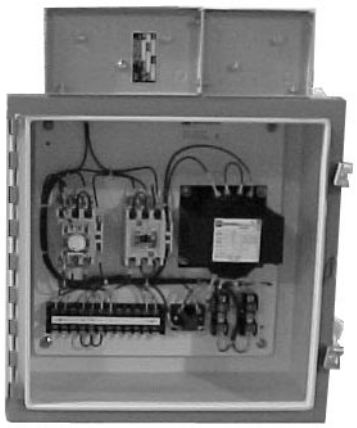


Figure 3-5. "Z" Dimension Drawing Reference

Note: Per AISE Standard No. 11 and NEMA 2-220, horizontal and vertical mounting tolerances shall be ± .063 inch (1.59 mm).



Rectifier Panel for AC Operation of Brake

Rectifier Panels

The universal brake rectifier panel is designed for application on Type GH505 brakes. It is sized to handle up to four 8 or 10 inch brakes, two 13 or 16 inch brakes, or one 19 or 23 inch brake. Resistor components are provided for any of these brake combinations. A brake coil protective circuit included in the design allows continuous duty brakes to be applied at intermittent duty torque ratings.

Specifications

- Input Voltage:
  - 230V or 460V AC 3-Phase, 60 Hz
- Output Voltage:
  - 208V DC
- Economized Voltage:
  - Approximately 30V DC
- Maximum Number of Brakes:
  - 4 – 8" or 10"
  - 2 – 13" or 16"
  - 1 – 19" and above
- Operation:
  - DC rectifier with forcing circuit
  - Full voltage applied to coil for pick-up, economized voltage applied for holding
- Enclosures:
  - NEMA 1/NEMA 3R and NEMA 4 with resistor penthouse

Table 3-16. Rectifier Panel Selection Table — Wall Mounted

Brake Size Inches (mm)	Maximum Quantity Brakes ①	NEMA 12 Enclosure			
		460V Input	Price U.S. $	230V Input	Price U.S. $
8 or 10 (203 or 254)	1	**GH515ED17-1**	4,700.	**GH515ED20-1**	4,400.
	2	**GH515ED17-2**	4,700.	**GH515ED20-2**	4,400.
	4	**GH515ED17-3**	4,700.	**GH515ED20-3**	4,400.
13 or 16 (330 or 406)	1	**GH515ED17-4**	4,700.	**GH515ED20-4**	4,400.
	2	**GH515ED17-5**	4,700.	**GH515ED20-5**	4,400.
19 or 23 (483 or 584)	1	**GH515ED17-6**	4,700.	**GH515ED20-6**	4,400.
30 (762)	1	**GH515ED17-7**	6,700.	**GH515ED20-7**	6,400.

① All brakes must be used on the same motion or motor drive.

Table 3-17. Shunt Brake Coil Data for Brakes Used with GH515 Rectifier Panels

Size	Coil Part No.	Coil Ohms 20°C	Torque lb-ft	Coil Voltage	Series Ohms	Release Amps	Set Amps	Release Time Secs.	Set Time Secs.	Max. Coil Watts	Coil Suffix No.
8	9-872-18	44.4	100	29	350	4.69	.19	.22	.15	310	**2164**
10	9-871-7	44.6	200	29	350	4.67	.28	.25	.20	385	**2264**
13	9-875-7	29.1	550	30	225	7.15	.49	.30	.22	550	**2364**
16	9-890-1	24.5	1000	27	225	8.48	.50	.40	.25	710	**2464**
19	9-888-3	9.34	2000	23	100	22.30	1.36	.45	.30	1025	**2564**
23	9-889-1	11.0	4000	26	100	18.90	1.21	.50	.32	1400	**2664**

Dimensions..... **Page 3-14**
Discount Symbol..... **18CD-2**

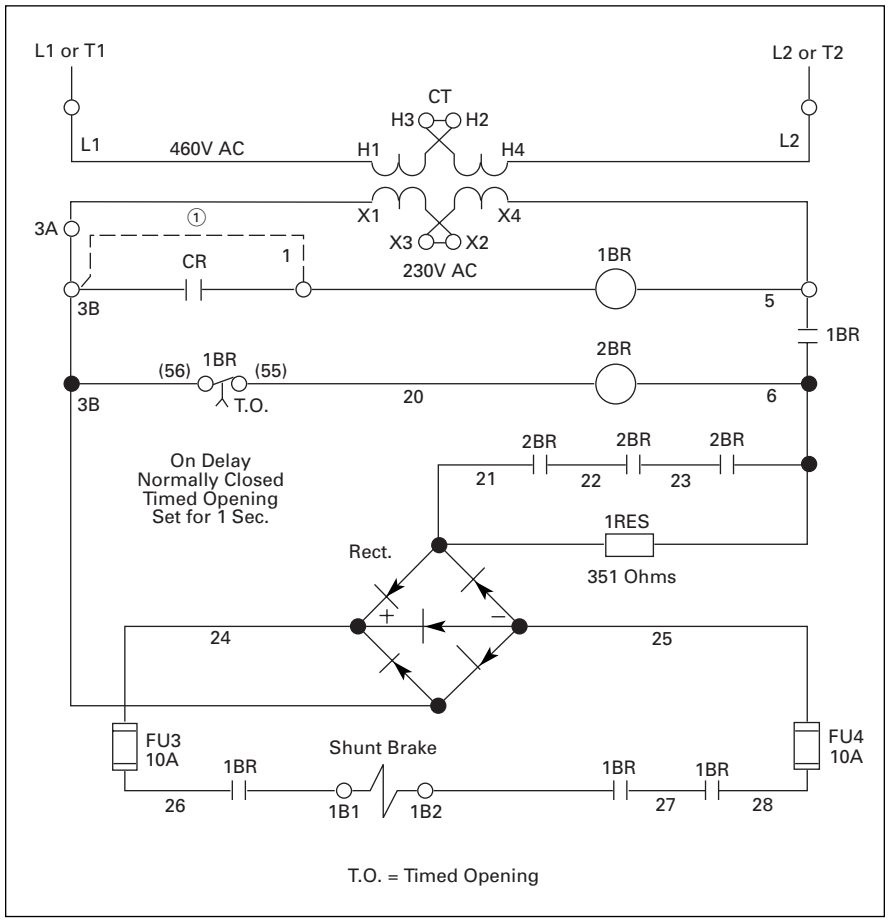


Figure 3-6. Elementary Diagram

① Connect per dotted line if CR is omitted (T1 and T2 to motor terminals) (CR contact is mounted on motor controller).

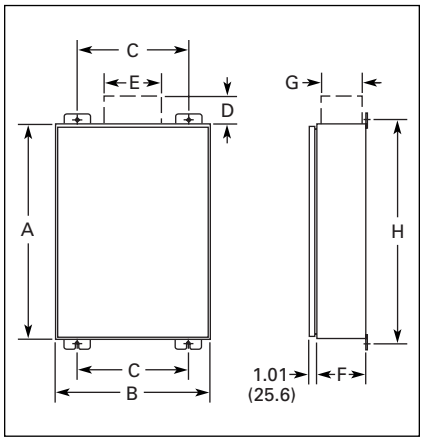


Figure 3-7. Approximate Dimensions

Table 3-18. Approximate Dimensions and Shipping Weights

Brake Rectifier Panel Number	Dimensions in Inches (mm)								Ship. Wt. Lbs. (kg)
	A	B	C	D	E	F	G	H	
GH515ED17-1 **GH515ED20-1**	20.00 (508) 20.00 (508)	20.00 (508) 20.00 (508)	14.00 (356) 14.00 (356)	5.00 (127) 5.00 (127)	15.50 (394) 15.50 (394)	10.00 (254) 10.00 (254)	10.00 (254) 10.00 (254)	21.25 (540) 21.25 (540)	130 (59) 130 (59)
GH515ED17-2 **GH515ED20-2**	20.00 (508) 20.00 (508)	20.00 (508) 20.00 (508)	14.00 (356) 14.00 (356)	5.00 (127) 5.00 (127)	9.00 (229) 9.00 (229)	10.00 (254) 10.00 (254)	10.00 (254) 10.00 (254)	21.25 (540) 21.25 (540)	130 (59) 130 (59)
GH515ED17-3 **GH515ED20-3**	20.00 (508) 20.00 (508)	20.00 (508) 20.00 (508)	14.00 (356) 14.00 (356)	5.00 (127) 5.00 (127)	9.00 (229) 9.00 (229)	10.00 (254) 10.00 (254)	10.00 (254) 10.00 (254)	21.25 (540) 21.25 (540)	130 (59) 130 (59)
GH515ED17-4 **GH515ED20-4**	20.00 (508) 20.00 (508)	20.00 (508) 20.00 (508)	14.00 (356) 14.00 (356)	5.00 (127) 5.00 (127)	9.00 (229) 9.00 (229)	10.00 (254) 10.00 (254)	10.00 (254) 10.00 (254)	21.25 (540) 21.25 (540)	130 (59) 130 (59)
GH515ED17-5 **GH515ED20-5**	20.00 (508) 20.00 (508)	20.00 (508) 20.00 (508)	14.00 (356) 14.00 (356)	5.00 (127) 5.00 (127)	13.00 (330) 13.00 (330)	10.00 (254) 10.00 (254)	10.00 (254) 10.00 (254)	21.25 (540) 21.25 (540)	130 (59) 130 (59)
GH505ED17-6 **GH515ED20-6**	20.00 (508) 20.00 (508)	20.00 (508) 20.00 (508)	14.00 (356) 14.00 (356)	5.00 (127) 5.00 (127)	13.00 (330) 13.00 (330)	10.00 (254) 10.00 (254)	10.00 (254) 10.00 (254)	21.25 (540) 21.25 (540)	130 (59) 130 (59)

Renewal Parts

Table 3-19. Replacement Brake Shoes and Linings Selection Chart

Description	Brake Size						
	8 Inch	10 Inch	13 Inch	16 Inch	19 Inch	23 Inch	30 Inch
	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number
Shoe Lining ①	**48-1818**	**48-1818-2**	**48-1818-3**	**48-1818-4**	**48-1818-5**	**48-1818-6**	**48-1278-3**
Shoe with Bonded Lining ①	**48-1267-4**	**48-1268-4**	**48-603-7**	**48-554-7**	**48-1971**	—	—
Shoe with Riveted Lining ①	**48-1462-3**	**48-1463-3**	**48-603-8**	**48-554-8**	—	**48-633-4**	**48-1277-2**
Rivet (Quantity) ②	**13-4762** (8)	**13-4762** (8)	**13-4762** (12)	**13-4762** (18)	—	**13-4762** (30)	—

① Quantity 2 required for each brake.
② Quantity listed is per shoe.

Note: For prices, refer to Eaton's Cutler-Hammer parts distributor or consult factory.

Table 3-20. Cross Reference to New Coils

Old Part Number	Brake Size	Catalog Suffix Number	Replacement Part Number
9-827-1	16	**1402**	**9-884-1**
9-827-2	16	**1401**	**9-884-10**
9-827-3	16	**1405**	**9-884-5**
9-827-4	16		**9-884-4**
9-827-6	16	**1400**	**9-884-11**
9-827-7	16	**1404**	**9-884-9**
9-827-9	16	**1404**	**9-884-9**
9-827-10	16		**9-884-4**
9-827-11	16		**9-884-3**
9-840-1	13	**1302**	**9-883-10**
9-840-2	13	**1305**	**9-883-6**
9-840-3	13	**1302**	**9-883-10**
9-840-4	13	**1301**	**9-883-7**
9-840-5	13	**1304**	**9-883-2**
9-840-6	13		**9-883-4**
9-840-7	13	**1303**	**9-883-1**
9-841-1	19	**1507**	**9-885-25**
9-841-2	19	**1512**	**9-885-6**
9-841-3	19		**9-885-19**
9-841-4	19	**1503**	**9-885-17**
9-841-5	19	**1507**	**9-885-27**
9-841-6	19	**1503**	**9-885-17**
9-841-8	19	**1505**	**9-885-16**
9-841-9	19	**1504**	**9-885-24**
9-841-10	19		**9-885-21**
9-841-11	19	**1511**	**9-885-18**
9-841-12	19	**1508**	**9-885-8**
9-841-13	19		**9-885-10**
9-841-14	19	**1501**	**9-885-23**
9-841-15	19	**1501**	**9-885-23**
9-841-16	19	**1502**	**9-885-20**
9-844-2	10	**1210**	**9-2628-3**
9-844-3	10	**1207**	**9-2628-1**
9-844-4	10	**1208**	**9-2628-2**
9-845-1	23	**1604**	**9-886-5**
9-845-2	23	**1605**	**9-886-8**
9-845-3	23		**9-886-14**
9-845-4	23	**1601**	**9-886-10**
9-845-5	23		**9-886-13**
9-845-6	23		**9-886-14**
9-845-7	23		**9-886-13**
9-845-9	23	**1602**	**9-886-1**
9-845-10	23	**1603**	**9-886-4**
9-845-11	23		**9-886-13**
9-845-12	23	**1602**	**9-886-1**
9-845-13	23	**1601**	**9-886-10**
9-847-1	8	**2163**	**9-872-11**
9-847-2	8	**2164**	**9-872-18**
9-847-3	8		**9-872-12**
9-847-4	8	**1108**	**9-872-4**
9-847-5	8	**1111**	**9-872-7**
9-847-6	8		**9-872-16**
9-847-7	8		**9-872-1**
9-847-8	8	**1102**	**9-872-10**
9-847-9	8	**1112**	**9-872-8**
9-847-10	8	**1107**	**9-872-3**
9-847-11	8		**9-872-12**
9-847-12	8	**1113**	**9-872-13**
9-847-13	8		**9-872-21**
9-847-14	8		**9-872-14**
9-847-15	8		**9-872-22**
9-847-17	8		**9-872-1**

Old Part Number	Brake Size	Catalog Suffix Number	Replacement Part Number
9-864-1	10	**2263**	**9-871-8**
9-864-2	10	**2264**	**9-871-7**
9-864-3	10	**1204**	**9-871-4**
9-864-4	10	**1205**	**9-871-5**
9-864-6	10		**9-871-1**
9-864-7	10		**9-871-9**
9-864-8	10	**1203**	**9-871-3**
9-864-9	10	**1202**	**9-871-2**
9-864-10	10		**9-871-12**
9-864-11	10		**9-871-14**
9-864-12	10		**9-871-13**
9-864-13	10		**9-871-15**
9-865-1	13	**2363**	**9-875-12**
9-865-2	13	**2364**	**9-875-7**
9-865-4	13		**9-875-9**
9-865-5	13		**9-875-15**
9-865-6	13	**1308**	**9-875-1**
9-865-7	13	**1309**	**9-875-2**
9-865-8	13	**1308**	**9-875-1**
9-865-9	13		**9-875-4**
9-865-10	13	**1307**	**9-875-8**
9-865-12	13		**9-875-17**
9-865-13	13		**9-875-18**
9-865-14	13		**9-875-16**
9-865-16	13		**9-875-19**
9-865-17	13		**9-875-14**
9-866-1	16	**2463**	**9-890-2**
9-866-2	16	**2464**	**9-890-1**
9-866-3	16		**9-890-3**
9-867-1	19	**2563**	**9-888-1**
9-867-2	19		**9-888-3**
9-867-3	19		**9-888-2**
9-867-6	19	**2564**	**9-888-3**
9-868-1	23	**2663**	**9-889-5**
9-868-2	23	**2664**	**9-889-1**
9-868-3	23		**9-889-2**
9-868-4	23		**9-889-4**
9-882-1	8	**1114**	**9-872-20**
9-885-15	19	**1506**	**9-885-25**
9-1641-1	30	**1704**	**9-1641-8**
9-1641-2	30	**1705**	**9-1641-7**
9-1641-3	30	**1706**	**9-1641-6**
9-1641-4	30	**1703**	**9-1641-9**
9-1641-5	30	**1702**	**9-1641-10**
9-1955-1	10	**1240**	**9-2628-3**
9-1956-2	13	**1301**	**9-883-7**
9-1960-1	23	**1604**	**9-886-5**
9-1960-2	23	**1605**	**9-886-8**
9-1961-1	30	**1704**	**9-1641-8**
9-1961-2	30	**1705**	**9-1641-7**
9-1961-3	30	**1706**	**9-1641-6**
9-1964-1	8	**2163**	**9-872-11**
9-1964-2	8	**2164**	**9-872-18**
9-1967-1	10	**2263**	**9-871-8**
9-1967-2	10	**2264**	**9-871-7**
9-1969-1	13	**2363**	**9-875-12**
9-1969-2	13	**2364**	**9-875-7**
9-1971-1	16	**1402**	**9-884-1**
9-1971-2	16	**1401**	**9-884-10**
9-1973-1	19	**1505**	**9-885-16**
9-1973-2	19	**1503**	**9-885-17**

Sample Product Specification

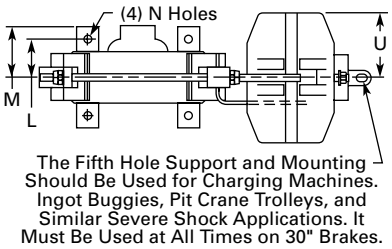
Magnetic brakes shall be heavy-duty, mill type, with mounting dimensions, wheel diameter, and torque ratings in accordance with AISE Standard No. 11 and NEMA Standards, Section ICS 2-220.21.

Brakes shall be spring set and electrically released, by means of a DC coil, encapsulated in a weather resistant housing. Major brake structural parts (except 30" size) shall be ductile iron or steel castings. Brake shoes shall be fitted with either bonded or riveted non-asbestos linings. There shall be provisions for a simple check for lining wear and easy adjustment means. Torque shall be easily adjustable over a 2:1 torque range.

Brakes used with an AC power system will be provided with a separate brake rectifier panel designed to match the brake coil requirements.

Dimensions

Open Type



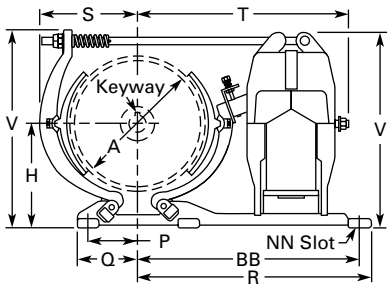


Figure 3-8. Brake Dimensions

Table 3-21. Approximate Dimensions in Inches (mm) and Shipping Weights — GH505 Brakes — Open Type

A	BB	H	L	M	N	NN	P	Q	R	S	T	U	V	Ship. ① Wt. Lbs. (kg)
8 (203)	16.0 (406)	7.0 (178)	2.88 (73)	3.69 (94)	.69 (17)	.75 x .88 (19 x 22)	3.25 (83)	3.88 (98)	16.81 (427)	6.5 (165)	15.38 (391)	5.0 (127)	13.63 (346)	153 (69)
10 (254)	17.63 (448)	8.38 (213)	3.13 (79)	3.94 (100)	.69 (17)	.75 x .875 (19 x 22)	4.0 (102)	4.88 (124)	18.44 (468)	8.0 (203)	17.0 (432)	5.63 (143)	15.75 (400)	223 (101)
13 (330)	20.31 (516)	9.88 (251)	4.5 (114)	5.5 (140)	.81 (21)	.88 x 1.0 (22 x 25)	5.75 (146)	6.75 (171)	21.25 (540)	9.88 (251)	19.88 (505)	6.75 (171)	19 (483)	420 (191)
16 (406)	22.63 (575)	12.13 (308)	5.38 (137)	6.5 (165)	1.06 (27)	1.13 x 1.38 (29 x 35)	7.5 (191)	8.75 (222)	23.88 (606)	12.25 (311)	21.88 (556)	7.75 (197)	22.75 (578)	565 (257)
19 (483)	26.38 (670)	13.25 (337)	6.5 (165)	7.88 (200)	1.06 (27)	1.13 x 1.38 (29 x 35)	9.25 (235)	10.63 (270)	27.63 (702)	14.5 (368)	26.5 (673)	9.25 (235)	25.63 (651)	1005 (456)
23 (584)	30.25 (768)	15.88 (403)	8.0 (203)	9.5 (241)	1.31 (33)	1.38 x 1.63 (35 x 41)	11.75 (298)	13.25 (337)	31.75 (806)	18.13 (460)	30.38 (772)	10.5 (267)	30.38 (772)	1480 (672)
30 (762)	42.5 (1080)	20.75 (527)	9.5 (241)	11.25 (286)	1.56 (40)	1.56 x 1.56 (40 x 40)	15.0 (381)	17.0 (432)	44.5 (1130)	24.25 (616)	42.63 (1083)	10.75 (273)	40.38 (1026)	3000 (1362)

① Does not include wheel.

Brake Wheel Dimensions. . . . . **Page 3-11**

Weather Resistant Enclosure

Brake shown set up for right hand mounting. More apparent if facing plate were removed.

Note: See Enclosures on **Page 3-7** for definition of right hand or left hand mounting.

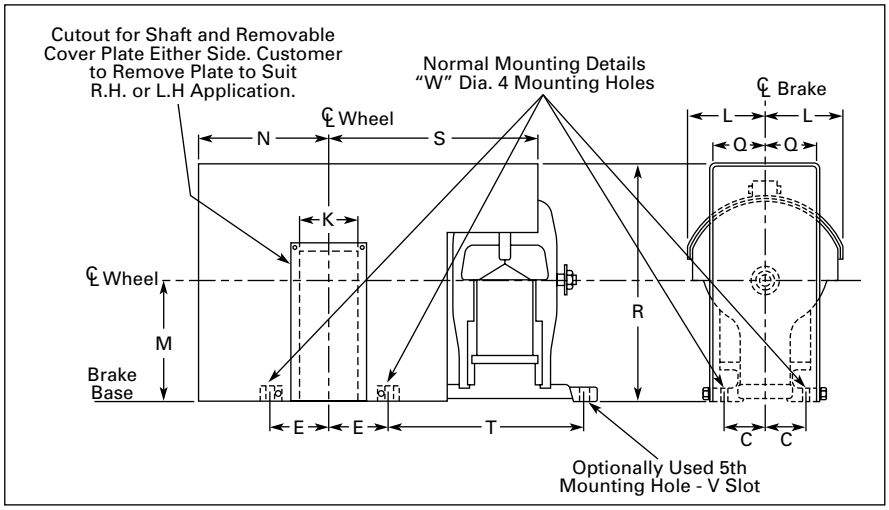


Figure 3-9. Weather Resistant Enclosure Dimensions

Table 3-22. GH505 Magnetic Weather Resistant Enclosure Dimensions in Inches (mm)

Brake Size Inches (mm)	Approximate Dimensions in Inches (mm)										
	C	E	K	L	M	N	Q	R	S	T	W
8 (203)	2.88 (73)	3.25 (83)	4.5 (114)	5.0 (127)	7.0 (178)	7.68 (195)	3.68 (93)	16.38 (416)	16.8 (427)	16.00 (406)	.69 (18)
10 (254)	3.12 (79)	4.0 (102)	5.25 (133)	5.6 (142)	8.38 (213)	9.18 (233)	3.94 (100)	18.62 (473)	18.4 (467)	17.62 (448)	.69 (18)
13 (330)	4.5 (114)	5.75 (146)	7.5 (191)	6.8 (173)	9.88 (251)	11.12 (282)	5.5 (140)	22.7 (577)	21.4 (544)	20.31 (516)	.81 (21)
16 (406)	5.38 (137)	7.5 (191)	7.5 (191)	7.8 (198)	12.13 (308)	13.5 (343)	6.5 (165)	26.5 (673)	24.0 (610)	22.62 (575)	1.06 (27)
19 (483)	6.5 (165)	9.25 (235)	9.0 (229)	9.3 (236)	13.25 (337)	15.75 (400)	7.9 (201)	29.3 (744)	27.6 (701)	26.37 (670)	1.06 (27)

NEMA 4 Enclosure

Brake shown set up for right hand mounting. More apparent if facing plate were removed.

Note: See Enclosures on **Page 3-7** for definition of right hand or left hand mounting.

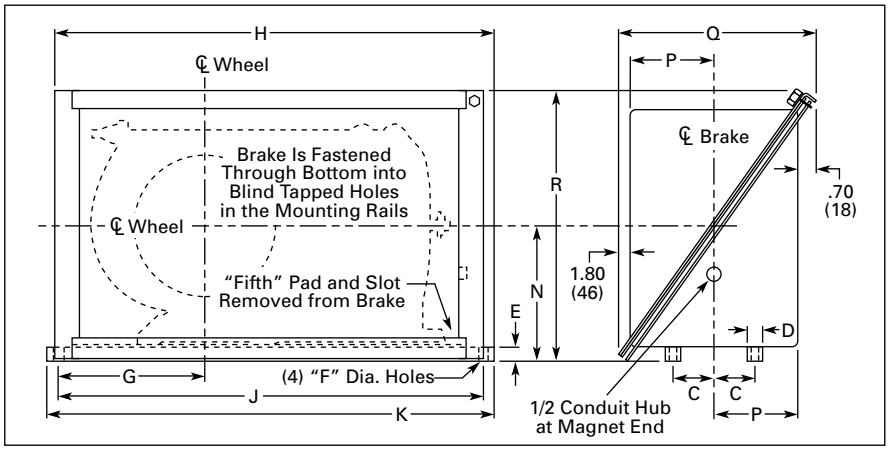


Figure 3-10. NEMA 4 Enclosure Dimensions in Inches (mm)

Table 3-23. GH505 Magnetic NEMA 4 Enclosure Dimensions in Inches (mm)

Brake Size Inches (mm	Approximate Dimensions in Inches (mm)											
	C	D	E	F	G	H	J	K	N	P	Q	R
8 (203)	2.88 (73)	1.5 (38)	1.5 (38)	.69 (18)	9.0 (229)	26.9 (683)	28.0 (711)	30.0 (762)	8.68 (220)	5.68 (144)	14.2 (361)	20.2 (513)
10 (254)	3.12 (79)	1.5 (38)	1.5 (38)	.69 (18)	10.62 (270)	29.9 (759)	31.0 (787)	33.0 (838)	10.06 (256)	6.32 (161)	15.3 (389)	22.7 (577)
13 (330)	4.5 (114)	1.5 (38)	1.5 (38)	.81 (21)	13.0 (330)	36.0 (914)	37.5 (953)	39.5 (1003)	11.56 (294)	7.44 (189)	18.0 (457)	26.2 (665)
16 (406)	5.38 (137)	3.0 (76)	2.0 (51)	1.06 (27)	15.62 (397)	40.5 (1029)	42.5 (1080)	45.0 (1143)	14.32 (364)	8.44 (214)	20.4 (518)	30.7 (780)
19 (483)	6.5 (165)	3.0 (76)	2.0 (51)	1.06 (27)	17.62 (448)	46.9 (1191)	49.0 (1245)	51.5 (1308)	15.44 (392)	9.94 (252)	23.0 (584)	34.0 (864)

3

Circuit Diagrams

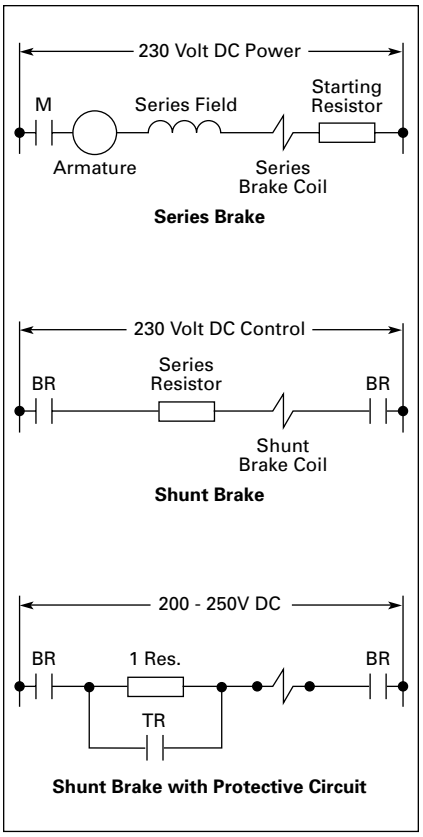


Figure 3-11. Elementary Diagrams for Standard Brake Circuits

Catalog Number Selection

Table 3-24. Brake Catalog Numbering System

GH505 A A A 1107 A01

Base Catalog Number

GH505 = Magnetic

Brake Size

A	= 8"	**E**	= 19"
B	= 10"	**F**	= 23"
C	= 13"	**G**	= 30"
D	= 16"		

Mechanical Options

A	=	No mechanical options
B	=	Riveted linings (standard on 19" and 23" brakes)
C	=	Manual release (lever type)
D	=	Maintained manual release (screw type)
N	=	Industrial torque rating (see **Page 3-7**)
S	=	Special, modified per customer application

Enclosure Options

A	=	Open type
C	=	Weather resistant
D	=	NEMA 4 L.H. w/o shaft seal
E	=	NEMA 4 R.H. w/o shaft seal
S	=	NEMA 4 w/shaft seal (consult factory)

Coil Suffix

See **Pages 3-20 – 3-21.**

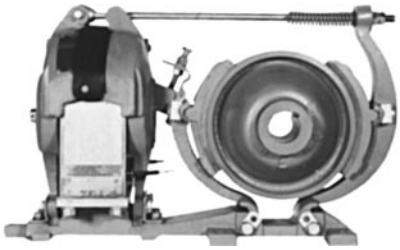
Wheel Suffix

N	=	No Wheel
_ _ _ _	=	Select Wheel Suffix Code from **Table 3-11.**

Product Selection

When Ordering Specify

- Base Catalog Number of standard brake from table below. Add coil and brake wheel suffixes from appropriate tables on **Pages 3-9**, **3-10**, **3-20** and **3-21**.
- For special mechanical, enclosure, coil or wheel modifications, see Optional Feature listing on **Page 3-7**. Change the completed Catalog Number of the standard brake to describe the feature required.
- If required modification is not listed, order standard brake and supply complete description of change(s).
- Rectifier panels for brake operation from an AC power supply are listed on **Page 3-13**.



GH505 Magnetic Shoe Brake

Table 3-25. GH505 Magnetic Brakes — Add Coil and Wheel Suffix Numbers

Brake Size inches (mm)	Wheel	Open Type		Weather Resistant	
		Catalog Number ①	Price U.S. $ ②③	Catalog Number ①	Price U.S. $ ②③
8 (203)	w/ Wheel	GH505AAA_ _ _ _ _ _ _	7,350.	GH505AAC_ _ _ _ _ _ _	8,360.
	w/o Wheel	GH505AAA_ _ _ _N	6,100.	GH505AAC_ _ _ _N	7,110.
10 (254)	w/ Wheel	GH505BAA_ _ _ _ _ _ _	8,440.	GH505BAC_ _ _ _ _ _ _	9,750.
	w/o Wheel	GH505BAA_ _ _ _N	6,950.	GH505BAC_ _ _ _N	8,260.
13 (330)	w/ Wheel	GH505CAA_ _ _ _ _ _ _	11,290.	GH505CAC_ _ _ _ _ _ _	12,820.
	w/o Wheel	GH505CAA_ _ _ _N	9,290.	GH505CAC_ _ _ _N	10,820.
16 (406)	w/ Wheel	GH505DAA_ _ _ _ _ _ _	13,930.	GH505DAC_ _ _ _ _ _ _	16,610.
	w/o Wheel	GH505DAA_ _ _ _N	11,330.	GH505DAC_ _ _ _N	14,010.
19 (483)	w/ Wheel	GH505EAA_ _ _ _ _ _ _	21,440.	GH505EAC_ _ _ _ _ _ _	24,640.
	w/o Wheel	GH505EAA_ _ _ _N	17,400.	GH505EAC_ _ _ _N	20,600.
23 (584)	w/ Wheel	GH505FAA_ _ _ _ _ _ _	32,160.	GH505FAC_ _ _ _ _ _ _	35,990.
	w/o Wheel	GH505FAA_ _ _ _N	25,380.	GH505FAC_ _ _ _N	29,210.
30 (762)	w/ Wheel	GH505GAA_ _ _ _ _ _ _	68,470.	GH505GAC_ _ _ _ _ _ _	Consult
	w/o Wheel	GH505GAA_ _ _ _N	55,820.	GH505GAC_ _ _ _N	Factory

① Listed Catalog Numbers are incomplete. Add Coil Suffix Number from **Pages 3-20**, **3-21** and Wheel Suffix Number (if required) from **Pages 3-9, 3-10**.

② Prices shown for brakes with wheel include standard wheels only. These are identified in the Brake Wheel Selection Tables on **Pages 3-9** and **3-10**. See **Page 3-11** for non-standard wheel prices.

③ Prices listed do NOT include separate required series for shunt coils. For price addition, refer to **Table 3-30** on **Page 3-21**.

Table 3-26. NEMA 4 GH505 Magnetic Brakes — Add Coil Suffix

Brake Size inches (mm)	Wheel	NEMA 4 Watertight & Dust-Tight ⑥		
		Left Hand w/o Shaft Seal ⑦ Catalog Number ⑤	Right Hand w/o Shaft Seal ⑦ Catalog Number ⑤	Price U.S. $ ④
8 (203)	w/ Wheel	—	—	—
	w/o Wheel	GH505AAD_ _ _ _N	GH505AAE_ _ _ _N	9,680.
10 (254)	w/ Wheel	—	—	—
	w/o Wheel	GH505BAD_ _ _ _N	GH505BAE_ _ _ _N	12,010.
13 (330)	w/ Wheel	—	—	—
	w/o Wheel	GH505CAD_ _ _ _N	GH505CAE_ _ _ _N	14,600.
16 (406)	w/ Wheel	—	—	—
	w/o Wheel	GH505DAD_ _ _ _N	GH505DAE_ _ _ _N	17,340.
19 (483)	w/ Wheel	—	—	—
	w/o Wheel	GH505EAD_ _ _ _N	GH505EAE_ _ _ _N	24,700.
23 (584)	w/ Wheel	—	—	—
	w/o Wheel	GH505FAD_ _ _ _N	GH505FAE_ _ _ _N	33,730.
30 (762)	w/ Wheel	—	—	Consult
	w/o Wheel	GH505GAD_ _ _ _N	GH505GAE_ _ _ _N	Factory

④ Prices listed do NOT include separate required series for shunt coils. For price addition, refer to **Table 3-30** on **Page 3-21**.

⑤ Listed Catalog Numbers are incomplete. Add Coil Suffix Number from **Pages 3-20**, **3-21**.

⑥ For NEMA 4 enclosure with shaft seal, see ordering instructions under Options, **Page 3-7**. NEMA 4 enclosed brakes normally require special wheel.

⑦ See **Figure 3-3** on **Page 3-7** for illustration of Left and Right Hand enclosures. Enclosure must be mounted against end bell of motor — no gasket is supplied. Specify diameter of shaft at point it enters enclosure. Enclosure will be drilled to fit motor when requested — bolt hole configuration must be supplied.

Table 3-27. Industrial Torque Rating Brakes — Add Coil Suffix

Brake Size Inches (mm)	Open Type	
	Catalog Number ⑧ ⑨	Price U.S. $
8 (203)	GH505ANA_ _ _ _N	6,910.
10 (254)	GH505BNA_ _ _ _N	8,160.
13 (330)	GH505CNA_ _ _ _N	10,010.
16 (406)	GH505DNA_ _ _ _N	13,690.
19 (483)	GH505ENA_ _ _ _N	20,360.
23 (584)	GH505FNA_ _ _ _N	29,740.

⑧ Order brake wheels separately from **Page 3-11**.

⑨ Incomplete Catalog Number — add Shunt Coil Suffix Number from **Table 3-30** on **Page 3-21**.

Coil Selection . . . . . **Pages 3-20, 3-21**
Brake Wheel Selection . . . . . **Pages 3-9, 3-10**
Discount Symbol **18CD-2**

Coil Selection

If series wound DC mill motors are being used at their full nameplate current rating, Standard coils may be chosen from **Table 3-28**. If not, use **Table 3-29**.

Table 3-28. GH505 Series Coil Selection Chart — Standard Mill Motors

Frame Size	Coil Suffix Number — Brake Size — Inches (mm)							Frame Size	Coil Suffix Number — Brake Size — Inches (mm)						
	8 (203)	10 (254)	13 (330)	16 (406)	19 (483)	23 (584)	30 (762)		8 (203)	10 (254)	13 (330)	16 (406)	19 (483)	23 (584)	30 (762)
402, 802A	**1107**	—	—	—	—	—	—	612	—	—	—	—	**1505**	—	—
602, 802B	**1109**	—	—	—	—	—	—	614, 812	—	—	—	—	**1507**	**1601**	—
603, 802C	**1110**	**1204**	—	—	—	—	—	616, 814	—	—	—	—	**1508**	**1603**	—
604, 803	**1112**	**1206**	**1311**	—	—	—	—	618, 816	—	—	—	—	**1509**	**1605**	—
804	—	**1207**	**1302**	—	—	—	—	818	—	—	—	—	—	—	**1703**
606	—	**1208**	**1302**	**1400**	—	—	—	620	—	—	—	—	—	—	**1704**
806	—	**1209**	**1304**	**1400**	—	—	—	622	—	—	—	—	—	—	**1705**
608	—	**1210**	**1304**	**1401**	—	—	—								
610, 808	—	—	**1305**	**1402**	**1504**	—	—								
810	—	—	—	**1403**	**1505**	—	—								

Table 3-29. GH505 Series Coil Selection Chart — By Load Current. Select so that full load current falls near middle of coil ampere range listed below. ①

Brake Size Inches (mm)	Ampere Range — 1/2 Hour Duty Minimum	1/2 Hour Duty Maximum	1 Hour Duty Minimum	1 Hour Duty Maximum	Coil Suffix Number
8 (203)	7	8.75	6	7.2	**1101**
	8.5	10.85	7.2	9	**1102**
	10.5	13.4	8.8	11.1	**1103**
	13	17	10.5	14	**1104**
	16	21	13.5	17	**1105**
	18	24	15	20	**1106**
	22	31	19	25	**1107**
	28	39	24	32	**1108**
	37	49	31	41	**1109**
	41	59	35	49	**1110**
	55	77	46	64	**1111**
	62	91	52	75	**1112**
	88	122	74	101	**1113**
	150	169	127	139	**1114**
	173	185	146	154	**1115**
10 (254)	20	28	16	25.5	**1201**
	28	38	23	34	**1202**
	35	47	29	42	**1203**
	45	60	37	54	**1204**
	58	77	49	70	**1205**
	66	91	55	82	**1206**
	88	113	73	103	**1211**
	107	137	70	125	**1212**
	124	152	101	125	**1209**
	147	185	121	154	**1210**
13 (330)	19	26	15	20	**1307**
	29	40	23	32	**1308**
	35	50	28	39	**1309**
	44	64	35	49	**1310**
	61	87	48	67	**1311**
	71	102	56	79	**1312**
	84	135	66	107	**1301**
	92	149	72	117	**1302**
	93	129	74	102	**1313**
13 (Cont.)	123	205	96	162	**1303**
	135	229	105	181	**1304**
	193	336	150	264	**1305**
	336	564	262	445	**1306**
16 (406)	123	165	92	132	**1400**
	148	244	120	193	**1401**
	162	268	131	213	**1402**
	258	432	210	343	**1403**
	345	578	280	458	**1404**
	235	395	191	314	**1405**
19 (483)	102	138	84	111	**1501**
	127	173	105	139	**1502**
	178	252	146	202	**1503**
	225	326	185	262	**1504**
	250	361	205	289	**1511**
	260	375	214	302	**1505**
	338	490	277	394	**1506**
	375	550	308	448	**1507**
	450	660	371	530	**1512**
	520	777	427	622	**1508**
	750	1108	618	890	**1509**
	965	1400	793	1128	**1510**
23 (584)	390	508	311	415	**1601**
	459	618	366	503	**1602**
	600	804	479	656	**1603**
	651	868	518	710	**1604**
	866	1200	693	980	**1605**
	975	1360	778	1110	**1606**
30 (762)	450	615	360	470	**1701**
	720	935	531	717	**1702**
	958	1260	709	965	**1703**
	1280	1688	934	1293	**1704**
	1643	2180	1214	1675	**1705**
	2300	3040	1700	2325	**1706**

① Coil selection chart is for 230V motors only. For other armature voltages, order special engineered coil and provide complete description. Coil Selection should be based on actual full load current and duty cycle of the motor rather than rated full load motor current.

Table 3-30. GH505 Shunt Coil Selection Chart

Brake Size Inches (mm)	Line Voltage	Duty Cycle	With Series Resistor ②		Shipped Without Resistor ②	Brake Size Inches (mm)	Line Voltage	Duty Cycle	With Series Resistor ②		Shipped Without Resistor ②
			Coil Suffix Number	Adder U.S. $	Coil Suffix Number				Coil Suffix Number	Adder U.S. $	Coil Suffix Number
8 (203)	230V DC 230V DC 208V DC	Intermittent Continuous Continuous	**2160** **2162** **—**	200. 200. —	**2161** **2163** **2164** ①	16 (406)	230V DC 230V DC 208V DC	Intermittent Continuous Continuous	**2460** **2462** **—**	200. 200. —	**2461** **2463** **2464** ①
10 (254)	230V DC 230V DC 208V DC	Intermittent Continuous Continuous	**2260** **2262** **—**	200. 200. —	**2261** **2263** **2264** ①	19 (483)	230V DC 230V DC 208V DC	Intermittent Continuous Continuous	**2560** **2562** **—**	200. 200. —	**2561** **2563** **2564** ①
13 (330)	230V DC 230V DC 208V DC	Intermittent Continuous Continuous	**2360** **2362** **—**	200. 200. —	**2361** **2363** **2364** ①	23 (584)	230V DC 230V DC 208V DC	Intermittent Continuous Continuous	**2660** **2662** **—**	250. 250. —	**2661** **2663** **2664** ①
						30 (762)	230V DC 230V DC	Intermittent Continuous	**2760** **2762**	625. 625.	**2761** **2763**

① For use with GH515 Rectifier Panel. Required resistor is located on and supplied with panel.

② Series resistor is shipped in package attached to brake pull rod. Coils shipped without series resistor still require a series resistor in the circuit. The resistor **MUST** be supplied separately.

Note: For multiple brake systems, shunt brake coils are normally connected in parallel.

Table 3-31. GH505 Shunt Coil Resistance and Series Resistor Resistance

Coil Suffix Numbers	Coil Ohms	Series ③ Resistor Ohms	Total Power (Watts)	Coil Suffix Numbers	Coil Ohms	Series ③ Resistor Ohms	Total Power (Watts)
2160	44.4	78.0	432	**2462**	38.0	52.0	588
2162	110.6	104.0	247	**2464**	24.5	④	—
2164	44.4	④	—	**2560**	14.9	21.0	1474
2260	44.6	66.0	478	**2562**	34.3	29.0	836
2262	102.2	94.0	270	**2564**	9.34	④	—
2264	44.6	④	—	**2660**	11.0	16.0	1959
2360	29.1	52.0	652	**2662**	28.8	38.0	792
2362	45.4	78.0	429	**2664**	11.0	④	—
2364	29.1	④	—	**2760**	3.71	9.0	4162
2460	24.5	38.0	846	**2762**	3.71	17.6	2482

③ Series resistor is shipped in package attached to brake pull rod. Coils shipped without series resistor still require a series resistor in the circuit. The resistor **MUST** be supplied separately.

④ Series resistor control on separate brake rectifier. Contact Eaton's Cutler-Hammer for data when using GH515 rectifier panel.

Discount Symbol **18CD-2**

Notes

Product	Catalog Number	Price U.S. $

Field Sales Contact:

Name: _____

Address: _____

_____

_____

_____

Phone: _____

Fax: _____

Email: _____

Business Card

Distributor Contact:

Name: _____

Address: _____

_____

_____

_____

Phone: _____

Fax: _____

Email: _____

Business Card