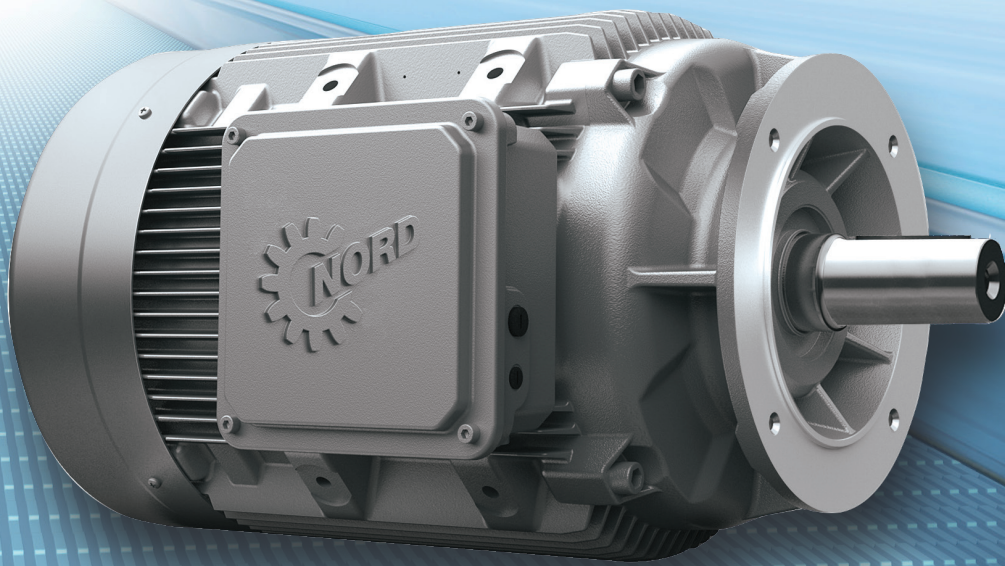


Intelligent Drivesystems, Worldwide Services



# Motors & Brakemotors

Standard, Energy and Premium Efficiency  
4 pole · 50 & 60Hz

63-250 Frame NEMA & IEC Motors and Brakemotors  
Order Preassembled or Customized to Your Requirements

**PRODUCT OVERVIEW**  
**M7000**





## Spanning the globe To serve you

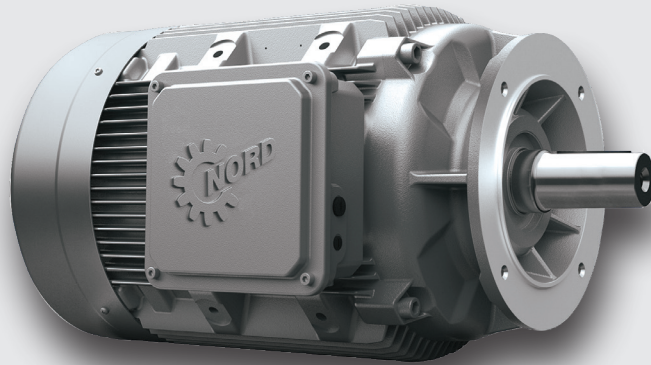
Since 1965, NORD has become well established in the power transmission industry and grown to global proportions on the strength of product performance, superior customer service, and intelligent drive solutions. NORD is constantly improving and expanding its products to meet a never-ending variety of industrial challenges.

NORD designs and manufactures drive systems engineered for adaptability. NORD's innovative drive solutions are specified and utilized for a range of applications in nearly every industry throughout the world.

NORD Drivesystems' product portfolio is extensive and continuously evolving in order to meet the needs of today's fast-changing markets. NORD's range of drive equipment includes: helical in-line, helical shaft-mount, helical-bevel, helical-worm and worm gear units with torques from 90 lb-in to 2,200,000 lb-in, readily available AC motors and from 1/6 HP to 250 HP, variable frequency drives up to 250 HP, and mechanical variable speed drives.

But NORD does far more than manufacture the world's finest drive components. We provide our customers with optimum drive configurations for their specific purposes, providing each and every one with truly complete and efficient systems at a price/quality ratio unmatched in today's competitive markets.

NORD makes its wide product range easily available through a global network that includes representation in over 60 countries. By providing all of our customers with prompt delivery, and expert support services, we are firmly committed to exceeding customer expectations and being responsive to the ideas and specifications of every customer, anywhere in the world.



### **NORD Motors & Brakemotors**

NORD supplies electric motors in the power range from 0.16 hp to 250 hp. NORD motors are well suited for constant torque applications and will safely operate over a frequency range of 0Hz to 120Hz. Each motor can be supplied with a wide range of options to customize the motor for a wide range of applications and operating demands.

This catalog contains standard NORD manufactured induction motors and brakemotors from 0.16 to 75 hp. Included are motors with standard NEMA and IEC mounting dimensions. For motors with higher powers, hazardous location, and other enclosures please contact NORD.

NORD fulfils all of the current efficiency regulations and supplies a wide range of energy saving motors for the international market, with which operating costs can be considerably reduced. In addition to reduced energy consumption, all energy NORD motors feature a very durable, low maintenance design.

NORD develops its own motors and supplies them to all the major markets throughout the world. Our own developments ensure a high level of independence from external suppliers and therefore provides our customers with the decisive advantage of short and highly dependable delivery times.

#### **Features and Benefits**

- Threaded cable entry holes
- Lip seals on both shaft ends
- Sealed and gasketed terminal boxes.
- Continuous Duty (S1) / Premium Efficient (IE3) / Non-ventilated (TENV).
- Common 50 Hz and 60 Hz voltages.
- Inverter/vector duty wiring and insulation.
- Rated for voltage spikes per NEMA MG1, section 31.4.4.2
- Moisture resistant varnished dipped windings.





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## Company Overview

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NORD does far more than manufacture the world's finest drive components. We provide our customers with optimum drive configurations for their specific purposes, providing each and every one with truly complete and efficient systems at a price/quality ratio unmatched in today's competitive markets.

## Short, On-Time Delivery

As a NORD customer, you can rest assured that your order will be delivered on time. Because NORD has both decentralized assembly and manufacturing operations and a linked global network, we offer our customers:

- Fast, reliable delivery
- Greater product versatility
- Shorter lead times
- Timely shipping
- Global Availability



## Global Availability

NORD makes its wide product range easily available through a global network that includes representation in over 60 countries. Providing all customers with prompt delivery, and expert support services, we are firmly committed to exceeding customer expectations and being totally responsive to the ideas and specifications of every customer, anywhere in the world.

## Increased North American Presence

NORD covers North America with over 30 district offices and over 500 distributor branches. NORD operates a manufacturing and assembly facility in Waukegan, WI, Charlotte, NC, Corona, CA, Brampton, ON, and Monterrey, Mexico, resulting in an ever-increasing capacity in the United States and Canada and giving our customers the shortest lead times in the industry.







## Manufacturing

NORD Gear continually invests in the latest research, manufacturing and automation technology. This ensures our ability to provide you with the utmost quality at an affordable price. Not only do we invest in our North American facilities, we invest in our factories throughout the world. We continually try to improve our practices to provide our customers with the most superior product available.

## Quality

Quality is assured at NORD assembly and manufacturing facilities, based on ISO 9000 standards — from careful inspection of incoming materials to closely monitored machining operations including gear cutting, turning, hardening & grinding as well as finishing and assembly.

## Worldwide Standards

NORD products are designed and manufactured based on the latest North American and global standards.

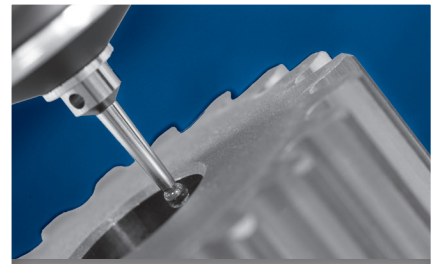


## Energy Efficiency

Lowering your operating costs is one of our greatest goals! NORD research and development focuses on energy efficiency, with gearboxes, motors, and frequency inverters designed for lower energy consumption. Our fully diverse line of in-line or right-angle units and motors has been developed to suit your needs.

## NORD 911

Trouble? Just call 715-NORD-911 (in Canada, 905-796-3606). Emergency service is available 24 hours a day, 7 days a week. We'll answer your call, ship the parts, or build a unit and have it shipped directly to you to provide what you need, when you need it.





# Motor Ordering Guide



Intro

**SK** Frame ① Size ② Poles ④ Mounting ③ Motor Options ⑤ Brake Size ⑥ Brake Options ⑦  
**OR** Part Number

Size & Frame Combinations ① ②					Available Mounting Combinations ③								Poles ④				
Frame	Size				NEMA Foot		NEMA C-face		IEC B3	IEC B5	IEC B14			Poles	60Hz [rpm]	50Hz [rpm]	
63	S	L	-	-	-	-	56C	-	-	A140	C90	C105	C120	-	4	1800	1500
71	S	-	-	-	56	-	56C	-	B3-71S	A160	C105	C120	C140	-	2	3600	3000
71	L	-	-	-	56	-	56C	-	B3-71L	A160	C105	C120	C140	-	6	1200	1000
80	S	-	-	-	56	-	56C	-	B3-80S	A200	C120	C140	C160	-	4-2	1800/3600	1500/3000
80	L	LP	-	-	56	143T	56C	143TC	B3-80L	A200	C120	C140	C160	-	8-2	1200/3600	1000/3000
90	S	SP	-	-	145T	-	145TC	-	B3-90S	A200	C120	C140	C160	-	Other		
100	L	LP	LA	AP	182T	-	182TC	-	B3-100L	A250	C120	C140	C160	C200	Duty		
112	M	MP	-	-	184T	-	184TC	-	B3-112M	A250	C140	C160	C200	-	Enclosure		
132	S	SP	-	-	213T	-	213TC	-	B3-132S	A300	C160	C200	-	-	<input type="radio"/> Continuous S1 <input type="radio"/> Time Rated S2 [min] <input type="radio"/> Intermittant S3 [%]		
132	M	MP	-	-	215T	-	215TC	-	B3-132M	A300	C160	C200	-	-	Country of Use		
160	S	SP	-	-	-	-	254TC	-	B3-160S	A300	C200	-	-	-	Power		
160	M	MP	-	-	-	-	256TC	-	B3-160M	A300	C200	-	-	-	[hp/kW]		
160	L	LP	-	-	-	-	256TC	-	B3-160L	A300	C200	-	-	-	Efficiency Class		
180	MX	-	-	-	-	-	284TC	-	-	A300	C200	-	-	-	<input type="radio"/> None <input type="radio"/> Premium Efficient (PE/IE3) (P)		
180	LX	-	-	-	-	-	286TC	-	-	A350	C200	-	-	-	Standards		
180	MP	-	-	-	-	-	284TC	-	B3-180M	A350	-	-	-	-	<input type="radio"/> North American [CUS] <input type="radio"/> International [IEC] <input type="radio"/> Other: _____		
180	LP	-	-	-	-	-	286TC	-	B3-180L	A350	-	-	-	-	Inverter Duty Speed Range		
200	X	-	-	-	-	-	-	-	-	A400	-	-	-	-	<input type="radio"/> 5:1 (60-12Hz) (VR) <input type="radio"/> 10:1 (60-6Hz) (VN) <input type="radio"/> 20:1 (80-4Hz) (VW) <input type="radio"/> 1000:1 (60-0Hz) (VZ-F)		
225	RP	-	-	-	-	-	-	-	-	-	-	-	-	-	Electrical Design		
225	SP	MP	-	-	-	-	-	-	-	-	-	-	-	-	<input type="radio"/> 3-Phase <input type="radio"/> Single Phase - ECR (60Hz) <input type="radio"/> Single Phase - EAR1 (50Hz) <input type="radio"/> Single Phase - EHB1 (50Hz) <input type="radio"/> Single Phase - EST (50Hz)		
250	WP	-	-	-	-	-	-	-	-	-	-	-	-	-	Hazardous Location		

**Motor Options ⑤**

**Electrical Motor Options**

- TW - Thermostat
- TF - Thermistor
- SH - Space Heater (select voltage)
  - 110 Volt  230 Volt  460 Volt
- ISO H - Class H insulation
- WU - High Resistance Rotor

**AC Drive Related Motor Options**

- F - Blower Fan (200-575V 1 & 3 Phase)
- FC - Blower Cooling Fan (115V, 1 Phase)
- IG\_\_ - Incremental Encoder
- IG\_\_P - Incremental Encoder with Plug

**IG & IG\_\_P Options:**

Logic:  TTL  HTL  Push-pull

Supply:  4-6V  10-30V  5-30V

PPR:  1024  2048  4096

AG - Absolute Encoder

AG Options: Turns \_\_\_\_\_ Step \_\_\_\_\_

AG Bus System: \_\_\_\_\_

MG - Magnetic Encoder PPR:  01  032  256

**Environmental Motor Options**

- RD - Canopy Drip Cover
- RDD - Double Fan Cover
- KB - Condensation Drain Holes (plugged)
- KBO - Condensation Drain Holes (open)
- IP66 - IP66 Enclosure Protection
- KKV - Terminal Box Sealed with Resin
- AICM - Additional Insulation
- EP - Epoxy Dipped Windings

**Additional Motor Options**

- OL - Totally Enclosed Non-Ventilated (TENV)
- OL/H - (TENV) Without Fan Cover
- WE - Second Shaft Extension (Fan Side)
- HR - Hand Wheel
- Z - High Inertia Cast Iron Fan
- RLS - Motor Backstop (rotation viewing fan)
  - Clockwise  Counter-Clockwise
- EKK - Small Terminal Box
- MS - Quick Power Plug Connector

**Brake Options ⑦**

- HL - Hand Release Lever
- FHL - Locking Hand Release Lever
- HLH - Hand Release Lever with Hole
- RG - Corrosion Protected Brake
- SR - Dust & Corrosion Protected Brake
- ADJ \_\_\_\_\_ Nm - Brake Torque Adjustment
- BIP66 - IP66 Brake Enclosure
- MIK - Micro-switch
- BSH - Brake Heating/Bifilar Coil
- NRB1 - Quiet Brake Release
- NRB2 - Quiet Brakemotor Operation
- DBR - Double Brake
- G...P - High Performance Rectifier (See Rectifier Selection Below)
- G...V - Sealed Rectifier (See Rectifier Selection Below)
- IR - Current Sensing Relay

**Country of Use**

\_\_\_\_\_

**Power**

\_\_\_\_\_ [hp/kW]

**Efficiency Class**

None  
 Premium Efficient (PE/IE3) (P)

**Standards**

North American [CUS]  
 International [IEC]  
 Other: \_\_\_\_\_

**Inverter Duty Speed Range**

5:1 (60-12Hz) (VR)  
 10:1 (60-6Hz) (VN)  
 20:1 (80-4Hz) (VW)  
 1000:1 (60-0Hz) (VZ-F)

**Electrical Design**

3-Phase  
 Single Phase - ECR (60Hz)  
 Single Phase - EAR1 (50Hz)  
 Single Phase - EHB1 (50Hz)  
 Single Phase - EST (50Hz)

**Hazardous Location**

None  
 Class 1 Div 2 - Gas  
 Class 2 Div 2 - Dust  
 Global - ATEX

**Paint Options**

- Unpainted Aluminum Alloy
- Stainless Steel Paint
- NSD+ (gray)
- NSD+W (white)
- NSD-X3 (gray)
- NSD-X3W (white)
- Special \_\_\_\_\_

**Brake Size ⑥**

BRE 5     BRE 100  
 BRE 10     BRE 150  
 BRE 20     BRE 250  
 BRE 40     BRE 400  
 BRE 60     BRE 800

**Rectifier Selection**

**Rectifier Wiring**

- Across the line (from terminal box)
- Separate power source (AC vector drive) (Soft starter)

**Brake Supply Voltage**

- 24 VDC     460 VAC
- 115 VAC     500 VAC
- 200 VAC     575 VAC
- 230 VAC     Other \_\_\_\_\_
- 400 VAC

**Braking Method\***

- Method 10     Method 35
- Method 15     Method 40
- Method 20     Method 45
- Method 25     Method 50
- Method 30     Method 55

\* More info on page 146

**Voltage & Frequency**

**Single Speed Motors**

- 230/460V-60Hz
- 208-230/460V-60Hz
- 575V-60Hz
- 400V-50Hz
- Other

**Two Speed Motors**

- 460V-60Hz
- 230V-60Hz
- 575V-60Hz
- 400V-50Hz
- Other

**Terminal Box Position**

- TB1
- TB2
- TB3
- TB4

Mtg. Pos. M1 Shown

**Conduit Entry Location**

- CE I \*
- CE II
- CE III \*
- CE IV

\*Brakemotor Mtg. Pos. M1 Shown

**Hand Release Position**

- HL1
- HL2
- HL3
- HL4





**DRIVESYSTEMS**

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# General Purpose Motors

## 230/460V - 60Hz



Motor Selection

NEMA C-Face 230/460V - 60Hz													
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type		Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]				
0.16	0.12	1700	56C	31110012	-	230/460	0.88/0.44	-	7.9	63S/4-56C CUS	172	218	
0.25	0.18	1680	56C	31610012	-	230/460	1.12/0.56	-	9.3	63L/4-56C CUS	172	218	
0.33	0.25	1710	56C	32110012	-	230/460	1.56/0.78	-	12	71S/4-56C CUS	172	218	
0.5	0.37	1720	56C	32610012	-	230/460	1.90/0.95	-	14	71L/4-56C CUS	172	218	
0.75	0.55	1710	56C	33110012	-	230/460	2.7/1.35	-	18	80S/4-56C CUS	172	218	
1	0.75	1730	56C	33610294	PE	230/460	3.14/1.57	TW	22	80LP/4-56C CUS TW	172	218	
1	0.75	1730	143TC	33610292	PE	230/460	3.14/1.57	TW	22	80LP/4-143TC CUS TW	172	218	
1.5	1.1	1740	145TC	34110292	PE	230/460	4.20/2.10	TW	33	90SP/4-145TC CUS TW	172	218	
2	1.5	1730	145TC	34610292	PE	230/460	5.60/2.80	TW	37	90LP/4-145TC CUS TW	172	218	
3	2.2	1770	182TC	35110292	PE	230/460	7.68/3.84	TW	56	100LP/4-182TC CUS TW	172	219	
5	3.7	1755	184TC	36110292	PE	230/460	13.0/6.50	TW	78	112MP/4-184TC CUS TW	172	219	
7.5	5.5	1770	213TC	36410292	PE	230/460	19.5/9.80	TW	121	132SP/4-213TC CUS TW	172	219	
10	7.5	1765	215TC	36710292	PE	230/460	26.7/13.4	TW	137	132MP/4-215TC CUS TW	172	219	
15	11	1770	254TC	37350292	PE	230/460	35.6/17.8	TW	205	160MP/4-254TC CUS TW	172	219	
20	15	1775	256C	37550292	PE	230/460	47.6/23.8	TW	269	160LP/4-256C CUS TW	172	219	
25	18.5	1780	286TC	37750272	PE	230/460	60.6/30.3	TW	342	180MP/4-286TC CUS TW	172	219	
30	22	1780	286TC	38050272	PE	230/460	69.6/34.8	TW	342	180LP/4-286TC CUS TW	172	219	

NEMA T Footed 230/460V - 60 Hz													
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type		Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]				
0.33	0.25	1710	56	32110112	-	230/460	1.56/0.78	-	12	71S/4-56 CUS	172	208	
0.5	0.37	1720	56	32610112	-	230/460	1.90/0.95	-	14	71L/4-56 CUS	172	208	
0.75	0.55	1710	56	33110112	-	230/460	2.7/1.35	-	18	80S/4-56 CUS	172	208	
1	0.75	1730	56	33610394	PE	230/460	3.14/1.57	TW	22	80LP/4-56 CUS TW	172	208	
1	0.75	1730	143T	33610392	PE	230/460	3.14/1.57	TW	22	80LP/4-143T CUS TW	172	208	
1.5	1.1	1740	145T	34110392	PE	230/460	4.20/2.10	TW	33	90SP/4-145T CUS TW	172	208	
2	1.5	1730	145T	34610392	PE	230/460	5.60/2.80	TW	37	90LP/4-145T CUS TW	172	208	
3	2.2	1770	182T	35110392	PE	230/460	7.68/3.84	TW	56	100LP/4-182T CUS TW	172	208	
5	3.7	1755	184T	36110392	PE	230/460	13.0/6.50	TW	78	112MP/4-184T CUS TW	172	208	
7.5	5.5	1770	213T	36410392	PE	230/460	19.5/9.80	TW	121	132SP/4-213T CUS TW	172	208	
10	7.5	1765	215T	36710392	PE	230/460	26.7/13.4	TW	137	132MP/4-215T CUS TW	172	208	



IEC B5 Flange 230/460V - 60 Hz												
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]			
0.16	0.12	1700	B5 A140	31010002	-	230/460	0.88/0.44	-	7.9	63S/4-B5 A140 CUS	172	242
0.25	0.18	1680	B5 A140	31510002	-	230/460	1.12/0.56	-	9.3	63L/4-B5 A140 CUS	172	242
0.33	0.25	1710	B5 A160	32010002	-	230/460	1.56/0.78	-	12	71S/4-B5 A160 CUS	172	242
0.5	0.37	1720	B5 A160	32510002	-	230/460	1.90/0.95	-	14	71L/4-B5 A160 CUS	172	242
0.75	0.55	1710	B5 A200	33010002	-	230/460	2.7/1.35	-	18	80S/4-B5 A200 CUS	172	242
1	0.75	1730	B5 A200	33510072	PE	230/460	3.14/1.57	TW	22	80LP/4-B5 A200 CUS TW	172	242
1.5	1.1	1740	B5 A200	34010072	PE	230/460	4.20/2.10	TW	33	90SP/4-B5 A200 CUS TW	172	242
2	1.5	1730	B5 A200	34510072	PE	230/460	5.60/2.80	TW	37	90LP/4-B5 A200 CUS TW	172	242
3	2.2	1770	B5 A250	35010072	PE	230/460	7.68/3.84	TW	56	100LP/4-B5 A250 CUS TW	172	242
5	3.7	1755	B5 A250	36010072	PE	230/460	13.0/6.50	TW	78	112MP/4-B5 A250 CUS TW	172	242
7.5	5.5	1770	B5 A300	36310072	PE	230/460	19.5/9.80	TW	121	132SP/4-B5 A300 CUS TW	172	243
10	7.5	1765	B5 A300	36610072	PE	230/460	26.7/13.4	TW	137	132MP/4-B5 A300 CUS TW	172	243
15	11	1770	B5 A350	37150072	PE	230/460	35.6/17.8	TW	205	160MP/4-B5 A350 CUS TW	172	243
20	15	1775	B5 A350	37450072	PE	230/460	47.6/23.8	TW	269	160LP/4-B5 A350 CUS TW	172	243
25	18.5	1780	B5 A350	37750072	PE	230/460	60.6/30.3	TW	342	180MP/4-B5 A350 CUS TW	172	243
30	22	1780	B5 A350	38050072	PE	230/460	69.6/34.8	TW	342	180LP/4-B5 A350 CUS TW	172	243

IEC B14 Flange 230/460V - 60Hz												
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]			
0.16	0.12	1700	B14 C90	31010022	-	230/460	0.88/0.44	-	7.9	63S/4-B14 C90 CUS	172	254
0.25	0.18	1680	B14 C90	31510022	-	230/460	1.12/0.56	-	9.3	63L/4-B14 C90 CUS	172	254
0.25	0.18	1680	B14 C120	31510012	-	230/460	1.12/0.56	-	9.3	63L/4-B14 C120 CUS	172	254
0.33	0.25	1710	B14 C105	32010053	-	230/460	1.56/0.78	-	12	71S/4-B14 C105 CUS	172	254
0.33	0.25	1710	B14 C140	32010012	-	230/460	1.56/0.78	-	12	71S/4-B14 C140 CUS	172	254
0.5	0.37	1720	B14 C105	32510022	-	230/460	1.90/0.95	-	14	71L/4-B14 C105 CUS	172	254
0.5	0.37	1720	B14 C140	32510012	-	230/460	1.90/0.95	-	14	71L/4-B14 C140 CUS	172	254
0.75	0.55	1710	B14 C120	33010022	-	230/460	2.7/1.35	-	18	80S/4-B14 C120 CUS	172	254
0.75	0.55	1710	B14 C160	33010012	-	230/460	2.7/1.35	-	18	80S/4-B14 C160 CUS	172	254
1	0.75	1730	B14 C120	33510096	PE	230/460	3.14/1.57	TW	22	80LP/4-B14 C120 CUS TW	172	254
1.5	1.1	1740	B14 C140	34010015	PE	230/460	4.20/2.10	TW	33	90SP/4-B14 C140 CUS TW	172	254
2	1.5	1730	B14 C140	34510015	PE	230/460	5.60/2.80	TW	37	90LP/4-B14 C140 CUS TW	172	254
3	2.2	1770	B14 C160	35010015	PE	230/460	7.68/3.84	TW	56	100LP/4-B14 C160 CUS TW	172	254
5	3.7	1755	B14 C160	36010015	PE	230/460	13.0/6.50	TW	78	112MP/4-B14 C160 CUS TW	172	254
7.5	5.5	1770	B14 C200	36310015	PE	230/460	19.5/9.80	TW	121	132SP/4-B14 C200 CUS TW	172	255
10	7.5	1765	B14 C200	36610015	PE	230/460	26.7/13.4	TW	137	132MP/4-B14 C200 CUS TW	172	255

Motor Selection



# General Purpose Motors

## 230/460V - 60Hz



### IEC Footed (B3) 230/460V - 60Hz







Motor Selection

Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]			
0.33	0.25	1710	B3-71	32010102	-	230/460	1.56/0.78	-	12	71S/4-B3 CUS	172	230
0.5	0.37	1720	B3-71	32510102	-	230/460	1.90/0.95	-	14	71L/4-B3 CUS	172	230
0.75	0.55	1710	B3-80	33010102	-	230/460	2.7/1.35	-	18	80S/4-B3 CUS	172	230
1	0.75	1730	B3-80	33510172	PE	230/460	3.14/1.57	TW	22	80LP/4-B3 CUS TW	172	230
1.5	1.1	1740	B3-90S	34010172	PE	230/460	4.20/2.10	TW	33	90SP/4-B3 CUS TW	172	230
2	1.5	1730	B3-90L	34510172	PE	230/460	5.60/2.80	TW	37	90LP/4-B3 CUS TW	172	230
3	2.2	1770	B3-100	35010172	PE	230/460	7.68/3.84	TW	56	100LP/4-B3 CUS TW	172	230
5	3.7	1755	B3-112	36010172	PE	230/460	13.0/6.50	TW	78	112MP/4-B3 CUS TW	172	230
7.5	5.5	1770	B3-132	36310172	PE	230/460	19.5/9.80	TW	121	132SP/4-B3 CUS TW	172	231
10	7.5	1765	B3-132	36610172	PE	230/460	26.7/13.4	TW	137	132MP/4-B3 CUS TW	172	231
15	11	1770	B3-160	37150172	PE	230/460	35.6/17.8	TW	205	160MP/4-B3 CUS TW	172	231
20	15	1775	B3-160	37450172	PE	230/460	47.6/23.8	TW	269	160LP/4-B3 CUS TW	172	231
25	18.5	1780	B3-180	37750172	PE	230/460	60.6/30.3	TW	342	180MP/4-B3 CUS TW	172	231
30	22	1780	B3-180	38050172	PE	230/460	69.6/34.8	TW	342	180LP/4-B3 CUS TW	172	231





 <b>NEMA C-Face</b> <b>575V - 60Hz</b> 													
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type		Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]				
0.16	0.12	1700	56C	31110013	-	575	0.37	-	7.9	63S/4-56C CUS	187	218	
0.25	0.18	1680	56C	31610013	-	575	0.46	-	9.3	63L/4-56C CUS	187	218	
0.33	0.25	1710	56C	32110013	-	575	0.66	-	12	71S/4-56C CUS	187	218	
0.5	0.37	1720	56C	32610013	-	575	0.80	-	14	71L/4-56C CUS	187	218	
0.75	0.55	1710	56C	33110013	-	575	1.12	-	18	80S/4-56C CUS	187	218	
1	0.75	1730	56C	33610295	PE	575	1.25	TW	22	80LP/4-56C CUS TW	187	218	
1	0.75	1730	143TC	33610293	PE	575	1.25	TW	22	80LP/4-143TC CUS TW	187	218	
1.5	1.1	1740	145TC	34110293	PE	575	1.68	TW	33	90SP/4-145TC CUS TW	187	218	
2	1.5	1730	145TC	34610293	PE	575	2.24	TW	37	90LP/4-145TC CUS TW	187	218	
3	2.2	1770	182TC	35110293	PE	575	3.07	TW	56	100LP/4-182TC CUS TW	187	219	
5	3.7	1755	184TC	36110293	PE	575	5.20	TW	78	112MP/4-184TC CUS TW	187	219	
7.5	5.5	1770	213TC	36410293	PE	575	7.80	TW	121	132SP/4-213TC CUS TW	187	219	
10	7.5	1765	215TC	36710293	PE	575	10.7	TW	137	132MP/4-215TC CUS TW	187	219	
15	11	1770	254TC	37350293	PE	575	14.2	TW	205	160MP/4-254TC CUS TW	187	219	
20	15	1775	256C	37550293	PE	575	19.0	TW	269	160LP/4-256C CUS TW	187	219	
25	18.5	1780	286TC	37750273	PE	575	24.2	TW	342	180MP/4-286TC CUS TW	187	219	
30	22	1780	286TC	38050273	PE	575	27.8	TW	342	180LP/4-286TC CUS TW	187	219	

 <b>NEMA T Footed</b> <b>575V - 60 Hz</b> 													
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type		Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]				
0.33	0.25	1710	56	32110113	-	575	0.66	-	12	71S/4-56 CUS	187	208	
0.5	0.37	1720	56	32610113	-	575	0.80	-	14	71L/4-56 CUS	187	208	
0.75	0.55	1710	56	33110113	-	575	1.12	-	18	80S/4-56 CUS	187	208	
1	0.75	1730	56	33610395	PE	575	1.25	TW	22	80LP/4-56 CUS TW	187	208	
1	0.75	1730	143T	33610393	PE	575	1.25	TW	22	80LP/4-143T CUS TW	187	208	
1.5	1.1	1740	145T	34110393	PE	575	1.68	TW	33	90SP/4-145T CUS TW	187	208	
2	1.5	1730	145T	34610393	PE	575	2.24	TW	37	90LP/4-145T CUS TW	187	208	
3	2.2	1770	182T	35110393	PE	575	3.07	TW	56	100LP/4-182T CUS TW	187	208	
5	3.7	1755	184T	36110393	PE	575	5.2	TW	78	112MP/4-184T CUS TW	187	208	
7.5	5.5	1770	213T	36410393	PE	575	7.8	TW	121	132SP/4-213T CUS TW	187	208	
10	7.5	1765	215T	36710393	PE	575	10.7	TW	137	132MP/4-215T CUS TW	187	208	



# General Purpose Motors

## 575V - 60Hz



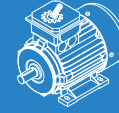
Motor Selection

IEC B5 Flange 575V - 60 Hz												
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]			
0.16	0.12	1700	B5 A140	31010003	-	575	0.37	-	7.9	63S/4-B5 A140 CUS	187	242
0.25	0.18	1680	B5 A140	31510003	-	575	0.46	-	9.3	63L/4-B5 A140 CUS	187	242
0.33	0.25	1710	B5 A160	32010003	-	575	0.66	-	12	71S/4-B5 A160 CUS	187	242
0.5	0.37	1720	B5 A160	32510003	-	575	0.80	-	14	71L/4-B5 A160 CUS	187	242
0.75	0.55	1710	B5 A200	33010003	-	575	1.12	-	18	80S/4-B5 A200 CUS	187	242
1	0.75	1730	B5 A200	33510074	PE	575	1.25	TW	22	80LP/4-B5 A200 CUS TW	187	242
1.5	1.1	1740	B5 A200	34010073	PE	575	1.68	TW	33	90SP/4-B5 A200 CUS TW	187	242
2	1.5	1730	B5 A200	34510073	PE	575	2.24	TW	37	90LP/4-B5 A200 CUS TW	187	242
3	2.2	1770	B5 A250	35010073	PE	575	3.07	TW	56	100LP/4-B5 A250 CUS TW	187	242
5	3.7	1755	B5 A250	36010073	PE	575	5.2	TW	78	112MP/4-B5 A250 CUS TW	187	242
7.5	5.5	1770	B5 A300	36310073	PE	575	7.8	TW	121	132SP/4-B5 A300 CUS TW	187	243
10	7.5	1765	B5 A300	36610073	PE	575	10.7	TW	137	132MP/4-B5 A300 CUS TW	187	243
15	11	1770	B5 A350	37150073	PE	575	14.2	TW	205	160MP/4-B5 A350 CUS TW	187	243
20	15	1775	B5 A350	37450073	PE	575	19	TW	269	160LP/4-B5 A350 CUS TW	187	243
25	18.5	1780	B5 A350	37750073	PE	575	24.2	TW	342	180MP/4-B5 A350 CUS TW	187	243
30	22	1780	B5 A350	38050073	PE	575	27.8	TW	342	180LP/4-B5 A350 CUS TW	187	243

IEC B14 Flange 575V - 60Hz												
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]			
0.16	0.12	1700	B14 C90	31010023	-	575	0.37	-	7.9	63S/4-B14 C90 CUS	187	254
0.25	0.18	1680	B14 C90	31510023	-	575	0.46	-	9.3	63L/4-B14 C90 CUS	187	254
0.33	0.25	1710	B14 C105	32010054	-	575	0.66	-	12	71S/4-B14 C105 CUS	187	254
0.5	0.37	1720	B14 C105	32510023	-	575	0.80	-	14	71L/4-B14 C105 CUS	187	254
0.75	0.55	1710	B14 C120	33010023	-	575	1.12	-	18	80S/4-B14 C120 CUS	187	254
1	0.75	1730	B14 C120	33510098	PE	575	1.25	TW	22	80LP/4-B14 C120 CUS TW	187	254
1.5	1.1	1740	B14 C140	34010016	PE	575	1.68	TW	33	90SP/4-B14 C140 CUS TW	187	254
2	1.5	1730	B14 C140	34510016	PE	575	2.24	TW	37	90LP/4-B14 C140 CUS TW	187	254
3	2.2	1770	B14 C160	35010016	PE	575	3.07	TW	56	100LP/4-B14 C160 CUS TW	187	254
5	3.7	1755	B14 C160	36010016	PE	575	5.2	TW	78	112MP/4-B14 C160 CUS TW	187	254
7.5	5.5	1770	B14 C200	36310016	PE	575	7.8	TW	121	132SP/4-B14 C200 CUS TW	187	255
10	7.5	1765	B14 C200	36610016	PE	575	10.7	TW	137	132MP/4-B14 C200 CUS TW	187	255



## IEC Footed (B3) 575V - 60Hz



Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]			
0.33	0.25	1710	B3-71	32010103	-	575	0.66	-	12	71S/4-B3 CUS	187	230
0.5	0.37	1720	B3-71	32510103	-	575	0.80	-	14	71L/4-B3 CUS	187	230
0.75	0.55	1710	B3-80	33010103	-	575	1.12	-	18	80S/4-B3 CUS	187	230
1	0.75	1730	B3-80	33510173	PE	575	1.25	TW	22	80LP/4-B3 CUS TW	187	230
1.5	1.1	1740	B3-90S	34010173	PE	575	1.68	TW	33	90SP/4-B3 CUS TW	187	230
2	1.5	1730	B3-90L	34510173	PE	575	2.24	TW	37	90LP/4-B3 CUS TW	187	230
3	2.2	1770	B3-100	35010173	PE	575	3.07	TW	56	100LP/4-B3 CUS TW	187	230
5	3.7	1755	B3-112	36010173	PE	575	5.2	TW	78	112MP/4-B3 CUS TW	187	230
7.5	5.5	1770	B3-132	36310173	PE	575	7.8	TW	121	132SP/4-B3 CUS TW	187	231
10	7.5	1765	B3-132	36610173	PE	575	10.7	TW	137	132MP/4-B3 CUS TW	187	231
15	11	1770	B3-160	37150173	PE	575	14.2	TW	205	160MP/4-B3 CUS TW	187	231
20	15	1775	B3-160	37450173	PE	575	19	TW	269	160LP/4-B3 CUS TW	187	231
25	18.5	1780	B3-180	37750173	PE	575	24.2	TW	342	180MP/4-B3 CUS TW	187	231
30	22	1780	B3-180	38050173	PE	575	27.8	TW	342	180LP/4-B3 CUS TW	187	231





# General Purpose Motors

## 400V - 50Hz



IEC B5 Flange 400V - 50 Hz												
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]			
0.16	0.12	1335	B5 A140	31010000	-	230/400	0.55	-	7.9	63S/4-B5 A140	200	242
0.25	0.18	1360	B5 A140	31510000	-	230/400	0.68	-	9.3	63L/4-B5 A140	200	242
0.33	0.25	1380	B5 A160	32010000	-	230/400	0.76	-	12	71S/4-B5 A160	200	242
0.5	0.37	1380	B5 A160	32510000	-	230/400	1.09	-	14	71L/4-B5 A160	200	242
0.75	0.55	1375	B5 A200	33010000	-	230/400	1.52	-	18	80S/4-B5 A200	200	242
1	0.75	1415	B5 A200	33510092	IE3	230/400	1.79	TF	22	80LP/4-B5 A200 TF	199	242
1.5	1.1	1430	B5 A200	34010094	IE3	230/400	2.38	TF	33	90SP/4-B5 A200 TF	199	242
2	1.5	1415	B5 A200	34510092	IE3	230/400	3.23	TF	37	90LP/4-B5 A200 TF	199	242
3	2.2	1465	B5 A250	35010092	IE3	230/400	4.27	TF	56	100LP/4-B5 A250 TF	199	242
4	3	1460	B5 A250	35010093	IE3	400/690	6.05	TF	62	100AP/4-B5 A250 TF	199	242
5.4	4	1440	B5 A250	36010092	IE3	400/690	7.85	TF	78	112MP/4-B5 A250 TF	199	242
7.5	5.5	1465	B5 A300	36310093	IE3	400/690	10.9	TF	121	132SP/4-B5 A300 TF	199	243
10	7.5	1460	B5 A300	36610094	IE3	400/690	15.7	TF	137	132MP/4-B5 A300 TF	199	243
15	11	1465	B5 A350	37150094	IE3	400/690	20.5	TF	205	160MP/4-B5 A350 TF	199	243
20	15	1465	B5 A350	37450095	IE3	400/690	27.9	TF	269	160LP/4-B5 A350 TF	199	243
25	18.5	1480	B5 A350	37750092	IE3	400/690	34.0	TF	342	180MP/4-B5 A350 TF	199	243
30	22	1475	B5 A350	38050092	IE3	400/690	39.3	TF	342	180LP/4-B5 A350 TF	199	243

IEC B14 Flange 400V - 50Hz												
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]			
0.16	0.12	1335	B14 C90	31010020	-	230/400	0.55	-	7.9	63S/4-B14 C90	200	254
0.16	0.12	1335	B14 C120	31010010	-	230/400	0.55	-	7.9	63S/4-B14 C120	200	254
0.25	0.18	1360	B14 C90	31510020	-	230/400	0.68	-	9.3	63L/4-B14 C90	200	254
0.25	0.18	1360	B14 C120	31510010	-	230/400	0.68	-	9.3	63L/4-B14 C120	200	254
0.33	0.25	1380	B14 C105	32010020	-	230/400	0.76	-	12	71S/4-B14 C105	200	254
0.33	0.25	1380	B14 C140	32010010	-	230/400	0.76	-	12	71S/4-B14 C140	200	254
0.5	0.37	1380	B14 C105	32510020	-	230/400	1.09	-	14	71L/4-B14 C105	200	254
0.5	0.37	1380	B14 C140	32510010	-	230/400	1.09	-	14	71L/4-B14 C140	200	254
0.75	0.55	1375	B14 C120	33010020	-	230/400	1.52	-	18	80S/4-B14 C120	200	254
0.75	0.55	1375	B14 C160	33010010	-	230/400	1.52	-	18	80S/4-B14 C160	200	254
1	0.75	1415	B14 C120	33510086	IE3	230/400	1.79	TF	22	80LP/4-B14 C120 TF	199	254
1.5	1.1	1430	B14 C140	34010097	IE3	230/400	2.38	TF	33	90SP/4-B14 C140 TF	199	254
2	1.5	1415	B14 C140	34510085	IE3	230/400	3.23	TF	37	90LP/4-B14 C140 TF	199	254
3	2.2	1465	B14 C160	35010087	IE3	230/400	4.27	TF	56	100LP/4-B14 C160 TF	199	254
4	3	1460	B14 C160	35510093	IE3	400/690	6.05	TF	62	100AP/4-B14 C160 TF	199	254
5.4	4	1440	B14 C160	36010093	IE3	400/690	7.85	TF	78	112MP/4-B14 C160 TF	199	254
7.5	5.5	1465	B14 C200	36310092	IE3	400/690	10.9	TF	121	132SP/4-B14 C200 TF	199	255
10	7.5	1460	B14 C200	36610091	IE3	400/690	15.7	TF	137	132MP/4-B14 C200 TF	199	255

\* Must be operated by a VFD in order to meet EU Efficiency standards.



## IEC Footed (B3) 400V - 50Hz



Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]							[lb]			
0.16	0.12	1335	B3-63	31010100	-	230/400	0.55	-	7.9	63S/4-B3	200	230
0.25	0.18	1360	B3-63	31510100	-	230/400	0.68	-	9.3	63L/4-B3	200	230
0.33	0.25	1380	B3-71	32010100	-	230/400	0.76	-	12	71S/4-B3	200	230
0.5	0.37	1380	B3-71	32510100	-	230/400	1.09	-	14	71L/4-B3	200	230
0.75	0.55	1375	B3-80	33010100	-	230/400	1.52	-	18	80S/4-B3	200	230
1	0.75	1415	B3-80	33510191	IE3	230/400	1.79	TF	22	80LP/4-B3 TF	199	230
1.5	1.1	1430	B3-90S	34010191	IE3	230/400	2.38	TF	33	90SP/4-B3 TF	199	230
2	1.5	1415	B3-90L	34510192	IE3	230/400	3.23	TF	37	90LP/4-B3 TF	199	230
3	2.2	1465	B3-100	35010192	IE3	230/400	4.27	TF	56	100LP/4-B3 TF	199	230
4	3	1460	B3-100	35010193	IE3	400/690	6.05	TF	62	100AP/4-B3 TF	199	230
5.4	4	1440	B3-112	36010194	IE3	400/690	7.85	TF	78	112MP/4-B3 TF	199	230
7.5	5.5	1465	B3-132	36310192	IE3	400/690	10.9	TF	121	132SP/4-B3 TF	199	231
10	7.5	1460	B3-132	36610193	IE3	400/690	15.7	TF	137	132MP/4-B3 TF	199	231
15	11	1465	B3-160	37150193	IE3	400/690	20.5	TF	205	160MP/4-B3 TF	199	231
20	15	1465	B3-160	37450193	IE3	400/690	27.9	TF	269	160LP/4-B3 TF	199	231
25	18.5	1480	B3-180	37750193	IE3	400/690	34	TF	342	180MP/4-B3 TF	199	231
30	22	1475	B3-180	38050193	IE3	400/690	39.3	TF	342	180LP/4-B3 TF	199	231

\* Must be operated by a VFD in order to meet EU Efficiency standards.





# Inverter Duty Motors

## 5:1 Constant Torque (VR)

### 230/460V 60-12Hz



Motor Selection

NEMA C-Face - 5:1 (VR)													
230/460V - 60-12Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.16	0.12	1700	340	56C	31110012-VR	-	230/460	0.88/0.44	-	7.9	63S/4-56C CUS VR	174	218
0.25	0.18	1680	336	56C	31610012-VR	-	230/460	1.12/0.56	-	9.3	63L/4-56C CUS VR	174	218
0.33	0.25	1710	342	56C	32110012-VR	-	230/460	1.56/0.78	-	12	71S/4-56C CUS VR	174	218
0.5	0.37	1720	344	56C	32610012-VR	-	230/460	1.90/0.95	-	14	71L/4-56C CUS VR	174	218
0.75	0.55	1710	342	56C	33110012-VR	-	230/460	2.70/1.35	-	18	80S/4-56C CUS VR	174	218
1	0.75	1730	346	56C	33610294-VR	PE	230/460	3.14/1.57	TW	22	80LP/4-56C CUS TW VR	174	218
1	0.75	1730	346	143TC	33610292-VR	PE	230/460	3.14/1.57	TW	22	80LP/4-143TC CUS TW VR	174	218
1.5	1.1	1740	348	145TC	34110292-VR	PE	230/460	4.20/2.10	TW	33	90SP/4-145TC CUS TW VR	174	218
2	1.5	1730	346	145TC	34610292-VR	PE	230/460	5.60/2.80	TW	37	90LP/4-145TC CUS TW VR	174	218
3	2.2	1770	354	182TC	35110292-VR	PE	230/460	7.68/3.84	TW	56	100LP/4-182TC CUS TW VR	174	219
5	3.7	1755	351	184TC	36110292-VR	PE	230/460	13.0/6.50	TW	78	112MP/4-184TC CUS TW VR	174	219
7.5	5.5	1770	354	213TC	36410292-VR	PE	230/460	19.5/9.75	TW	121	132SP/4-213TC CUS TW VR	174	219
10	7.5	1765	353	215TC	36710292-VR	PE	230/460	26.7/13.4	TW	137	132MP/4-215TC CUS TW VR	174	219
15	11	1770	354	254TC	37350292-VR	PE	230/460	35.6/17.8	TW	205	160MP/4-254TC CUS TW VR	174	219
20	15	1775	355	256C	37550292-VR	PE	230/460	47.6/23.8	TW	269	160LP/4-256C CUS TW VR	174	219
25	18.5	1780	356	286TC	37750272-VR	PE	230/460	60.6/30.3	TW	342	180MP/4-286TC CUS TW VR	174	219
30	22	1780	356	286TC	38050272-VR	PE	230/460	69.6/34.8	TW	342	180LP/4-286TC CUS TW VR	174	219

NEMA T Footed - 5:1 (VR)													
230/460V - 60-12Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.33	0.25	1710	342	56	32110112-VR	-	230/460	1.56/0.78	-	12	71S/4-56 CUS VR	174	208
0.5	0.37	1720	344	56	32610112-VR	-	230/460	1.90/0.95	-	14	71L/4-56 CUS VR	174	208
0.75	0.55	1710	342	56	33110112-VR	-	230/460	2.7/1.35	-	18	80S/4-56 CUS VR	174	208
1	0.75	1730	346	56	33610394-VR	PE	230/460	3.14/1.57	TW	22	80LP/4-56 CUS TW VR	174	208
1	0.75	1730	346	143T	33610392-VR	PE	230/460	3.14/1.57	TW	22	80LP/4-143T CUS TW VR	174	208
1.5	1.1	1740	348	145T	34110392-VR	PE	230/460	4.20/2.10	TW	33	90SP/4-145T CUS TW VR	174	208
2	1.5	1730	346	145T	34610392-VR	PE	230/460	5.60/2.80	TW	37	90LP/4-145T CUS TW VR	174	208
3	2.2	1770	354	182T	35110392-VR	PE	230/460	7.68/3.84	TW	56	100LP/4-182T CUS TW VR	174	208
5	3.7	1755	351	184T	36110392-VR	PE	230/460	13.0/6.50	TW	78	112MP/4-184T CUS TW VR	174	208
7.5	5.5	1770	354	213T	36410392-VR	PE	230/460	19.5/9.80	TW	121	132SP/4-213T CUS TW VR	174	208
10	7.5	1765	353	215T	36710392-VR	PE	230/460	26.7/13.4	TW	137	132MP/4-215T CUS TW VR	174	208



# Inverter Duty Motors

## 5:1 Constant Torque (VR)

### 230/460V 60-12Hz

IEC B5 Flange - 5:1 (VR) 230/460V - 60-12Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.16	0.12	1700	340	B5 A140	31010002-VR	-	230/460	0.88/0.44	-	7.9	63S/4-B5 A140 CUS VR	174	242
0.25	0.18	1680	336	B5 A140	31510002-VR	-	230/460	1.12/0.56	-	9.3	63L/4-B5 A140 CUS VR	174	242
0.33	0.25	1710	342	B5 A160	32010002-VR	-	230/460	1.56/0.78	-	12	71S/4-B5 A160 CUS VR	174	242
0.5	0.37	1720	344	B5 A160	32510002-VR	-	230/460	1.90/0.95	-	14	71L/4-B5 A160 CUS VR	174	242
0.75	0.55	1710	342	B5 A200	33010002-VR	-	230/460	2.70/1.35	-	18	80S/4-B5 A200 CUS VR	174	242
1	0.75	1730	346	B5 A200	33510072-VR	PE	230/460	3.14/1.57	TW	22	80LP/4-B5 A200 CUS TW VR	174	242
1.5	1.1	1740	348	B5 A200	34010072-VR	PE	230/460	4.20/2.10	TW	33	90SP/4-B5 A200 CUS TW VR	174	242
2	1.5	1730	346	B5 A200	34510072-VR	PE	230/460	5.60/2.80	TW	37	90LP/4-B5 A200 CUS TW VR	174	242
3	2.2	1770	354	B5 A250	35010072-VR	PE	230/460	7.68/3.84	TW	56	100LP/4-B5 A250 CUS TW VR	174	242
5	3.7	1755	351	B5 A250	36010072-VR	PE	230/460	13.0/6.50	TW	78	112MP/4-B5 A250 CUS TW VR	174	242
7.5	5.5	1770	354	B5 A300	36310072-VR	PE	230/460	19.5/9.75	TW	121	132SP/4-B5 A300 CUS TW VR	174	243
10	7.5	1765	353	B5 A300	36610072-VR	PE	230/460	26.7/13.4	TW	137	132MP/4-B5 A300 CUS TW VR	174	243
15	11	1770	354	B5 A350	37150072-VR	PE	230/460	35.6/17.8	TW	205	160MP/4-B5 A350 CUS TW VR	174	243
20	15	1775	355	B5 A350	37450072-VR	PE	230/460	47.6/23.8	TW	269	160LP/4-B5 A350 CUS TW VR	174	243
25	18.5	1780	356	B5 A350	37750072-VR	PE	230/460	60.6/30.3	TW	342	180MP/4-B5 A350 CUS TW VR	174	243
30	22	1780	356	B5 A350	38050072-VR	PE	230/460	69.6/34.8	TW	342	180LP/4-B5 A350 CUS TW VR	174	243

IEC B14 Flange - 5:1 (VR) 230/460V - 60-12Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.16	0.12	1700	340	B14 C90	31010022-VR	-	230/460	0.88/0.44	-	7.9	63S/4-B14 C90 CUS VR	174	254
0.25	0.18	1680	336	B14 C90	31510022-VR	-	230/460	1.12/0.56	-	9.3	63L/4-B14 C90 CUS VR	174	254
0.25	0.18	1680	336	B14 C120	31510012-VR	-	230/460	1.12/0.56	-	9.3	63L/4-B14 C120 CUS VR	174	254
0.33	0.25	1710	342	B14 C105	32010053-VR	-	230/460	1.56/0.78	-	12	71S/4-B14 C105 CUS VR	174	254
0.33	0.25	1710	342	B14 C140	32010012-VR	-	230/460	1.56/0.78	-	12	71S/4-B14 C140 CUS VR	174	254
0.5	0.37	1720	344	B14 C105	32510022-VR	-	230/460	1.90/0.95	-	14	71L/4-B14 C105 CUS VR	174	254
0.5	0.37	1720	344	B14 C140	32510012-VR	-	230/460	1.90/0.95	-	14	71L/4-B14 C140 CUS VR	174	254
0.75	0.55	1710	342	B14 C120	33010022-VR	-	230/460	2.70/1.35	-	18	80S/4-B14 C120 CUS VR	174	254
0.75	0.55	1710	342	B14 C160	33010012-VR	-	230/460	2.70/1.35	-	18	80S/4-B14 C160 CUS VR	174	254
1	0.75	1730	346	B14 C120	33510096-VR	PE	230/460	3.14/1.57	TW	22	80LP/4-B14 C120 CUS TW VR	174	254
1.5	1.1	1740	348	B14 C140	34010015-VR	PE	230/460	4.20/2.10	TW	33	90SP/4-B14 C140 CUS TW VR	174	254
2	1.5	1730	346	B14 C140	34510015-VR	PE	230/460	5.60/2.80	TW	37	90LP/4-B14 C140 CUS TW VR	174	254
3	2.2	1770	354	B14 C160	35010015-VR	PE	230/460	7.68/3.84	TW	56	100LP/4-B14 C160 CUS TW VR	174	254
5	3.7	1755	351	B14 C160	36010015-VR	PE	230/460	13.0/6.50	TW	78	112MP/4-B14 C160 CUS TW VR	174	254
7.5	5.5	1770	354	B14 C200	36310015-VR	PE	230/460	19.5/9.75	TW	121	132SP/4-B14 C200 CUS TW VR	174	255
10	7.5	1765	353	B14 C200	36610015-VR	PE	230/460	26.7/13.4	TW	137	132MP/4-B14 C200 CUS TW VR	174	255



# Inverter Duty Motors

## 5:1 Constant Torque (VR)

### 230/460V 60-12Hz



#### IEC Footed (B3) - 5:1 (VR)

#### 230/460V - 60-12Hz



Motor Selection

Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.33	0.25	1710	342	B3-71	32010102-VR	-	230/460	1.56/0.78	-	12	71S/4-B3 CUS VR	174	230
0.5	0.37	1720	344	B3-71	32510102-VR	-	230/460	1.90/0.95	-	14	71L/4-B3 CUS VR	174	230
0.75	0.55	1710	342	B3-80	33010102-VR	-	230/460	2.70/1.35	-	18	80S/4-B3 CUS VR	174	230
1	0.75	1730	346	B3-80	33510172-VR	PE	230/460	3.14/1.57	TW	22	80LP/4-B3 CUS TW VR	174	230
1.5	1.1	1740	348	B3-90S	34010172-VR	PE	230/460	4.20/2.10	TW	33	90SP/4-B3 CUS TW VR	174	230
2	1.5	1730	346	B3-90L	34510172-VR	PE	230/460	5.60/2.80	TW	37	90LP/4-B3 CUS TW VR	174	230
3	2.2	1770	354	B3-100	35010172-VR	PE	230/460	7.68/3.84	TW	56	100LP/4-B3 CUS TW VR	174	230
5	3.7	1755	351	B3-112	36010172-VR	PE	230/460	13.0/6.50	TW	78	112MP/4-B3 CUS TW VR	174	230
7.5	5.5	1770	354	B3-132	36310172-VR	PE	230/460	19.5/9.75	TW	121	132SP/4-B3 CUS TW VR	174	231
10	7.5	1765	353	B3-132	36610172-VR	PE	230/460	26.7/13.4	TW	137	132MP/4-B3 CUS TW VR	174	231
15	11	1770	354	B3-160	37150172-VR	PE	230/460	35.6/17.8	TW	205	160MP/4-B3 CUS TW VR	174	231
20	15	1775	355	B3-160	37450172-VR	PE	230/460	47.6/23.8	TW	269	160LP/4-B3 CUS TW VR	174	231
25	18.5	1780	356	B3-180	37750172-VR	PE	230/460	60.6/30.3	TW	342	180MP/4-B3 CUS TW VR	174	231
30	22	1780	356	B3-180	38050172-VR	PE	230/460	69.6/34.8	TW	342	180LP/4-B3 CUS TW VR	174	231





# Inverter Duty Motors

## 5:1 Constant Torque (VR)

### 575V 60-12Hz

NEMA C-Face - 5:1 (VR) 575V - 60-12Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.16	0.12	1700	340	56C	31110013-VR	-	575	0.35	-	7.9	63S/4-56C CUS	189	218
0.25	0.18	1680	336	56C	31610013-VR	-	575	0.45	-	9.3	63L/4-56C CUS	189	218
0.33	0.25	1710	342	56C	32110013-VR	-	575	0.62	-	12	71S/4-56C CUS	189	218
0.5	0.37	1720	344	56C	32610013-VR	-	575	0.76	-	14	71L/4-56C CUS	189	218
0.75	0.55	1710	342	56C	33110013-VR	-	575	1.08	-	18	80S/4-56C CUS	189	218
1	0.75	1730	346	56C	33610295-VR	PE	575	1.26	TW	22	80LP/4-56C CUS TW	189	218
1	0.75	1730	346	143TC	33610293-VR	PE	575	1.26	TW	22	80LP/4-143TC CUS TW	189	218
1.5	1.1	1740	348	145TC	34110293-VR	PE	575	1.68	TW	33	90SP/4-145TC CUS TW	189	218
2	1.5	1730	346	145TC	34610293-VR	PE	575	2.24	TW	37	90LP/4-145TC CUS TW	189	218
3	2.2	1770	354	182TC	35110293-VR	PE	575	3.07	TW	56	100LP/4-182TC CUS TW	189	219
5	3.7	1755	351	184TC	36110293-VR	PE	575	5.20	TW	78	112MP/4-184TC CUS TW	189	219
7.5	5.5	1770	354	213TC	36410293-VR	PE	575	7.80	TW	121	132SP/4-213TC CUS TW	189	219
10	7.5	1765	353	215TC	36710293-VR	PE	575	10.7	TW	137	132MP/4-215TC CUS TW	189	219
15	11	1770	354	254TC	37350293-VR	PE	575	14.2	TW	205	160MP/4-254TC CUS TW	189	219
20	15	1775	355	256C	37550293-VR	PE	575	19.0	TW	269	160LP/4-256C CUS TW	189	219
25	18.5	1780	356	286TC	37750273-VR	PE	575	24.2	TW	342	180MP/4-286TC CUS TW	189	219
30	22	1780	356	286TC	38050273-VR	PE	575	27.8	TW	342	180LP/4-286TC CUS TW	189	219

NEMA T Footed - 5:1 (VR) 575V - 60-12Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.33	0.25	1710	342	56	32110113-VR	-	575	0.62	-	12	71S/4-56 CUS	189	208
0.5	0.37	1720	344	56	32610113-VR	-	575	0.76	-	14	71L/4-56 CUS	189	208
0.75	0.55	1710	342	56	33110113-VR	-	575	1.08	-	18	80S/4-56 CUS	189	208
1	0.75	1730	346	56	33610395-VR	PE	575	1.26	TW	22	80LP/4-56 CUS TW	189	208
1	0.75	1730	346	143T	33610393-VR	PE	575	1.26	TW	22	80LP/4-143T CUS TW	189	208
1.5	1.1	1740	348	145T	34110393-VR	PE	575	1.68	TW	33	90SP/4-145T CUS TW	189	208
2	1.5	1730	346	145T	34610393-VR	PE	575	2.24	TW	37	90LP/4-145T CUS TW	189	208
3	2.2	1770	354	182T	35110393-VR	PE	575	3.07	TW	56	100LP/4-182T CUS TW	189	208
5	3.7	1755	351	184T	36110393-VR	PE	575	5.20	TW	78	112MP/4-184T CUS TW	189	208
7.5	5.5	1770	354	213T	36410393-VR	PE	575	7.80	TW	121	132SP/4-213T CUS TW	189	208
10	7.5	1765	353	215T	36710393-VR	PE	575	10.7	TW	137	132MP/4-215T CUS TW	189	208

Motor Selection

# Inverter Duty Motors

## 5:1 Constant Torque (VR)

### 575V 60-12Hz



Motor Selection



#### IEC B5 Flange - 5:1 (VR) 575V - 60-12Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.16	0.12	1700	340	B5 A140	31010003-VR	-	575	0.35	-	7.9	63S/4-B5 A140 CUS	189	242
0.25	0.18	1680	336	B5 A140	31510003-VR	-	575	0.45	-	9.3	63L/4-B5 A140 CUS	189	242
0.33	0.25	1710	342	B5 A160	32010003-VR	-	575	0.62	-	12	71S/4-B5 A160 CUS	189	242
0.5	0.37	1720	344	B5 A160	32510003-VR	-	575	0.76	-	14	71L/4-B5 A160 CUS	189	242
0.75	0.55	1710	342	B5 A200	33010003-VR	-	575	1.08	-	18	80S/4-B5 A200 CUS	189	242
1	0.75	1730	346	B5 A200	33510074-VR	PE	575	1.26	TW	22	80LP/4-B5 A200 CUS TW	189	242
1.5	1.1	1740	348	B5 A200	34010073-VR	PE	575	1.68	TW	33	90SP/4-B5 A200 CUS TW	189	242
2	1.5	1730	346	B5 A200	34510073-VR	PE	575	2.24	TW	37	90LP/4-B5 A200 CUS TW	189	242
3	2.2	1770	354	B5 A250	35010073-VR	PE	575	3.07	TW	56	100LP/4-B5 A250 CUS TW	189	242
5	3.7	1755	351	B5 A250	36010073-VR	PE	575	5.20	TW	78	112MP/4-B5 A250 CUS TW	189	242
7.5	5.5	1770	354	B5 A300	36310073-VR	PE	575	7.80	TW	121	132SP/4-B5 A300 CUS TW	189	243
10	7.5	1765	353	B5 A300	36610073-VR	PE	575	10.7	TW	137	132MP/4-B5 A300 CUS TW	189	243
15	11	1770	354	B5 A350	37150073-VR	PE	575	14.2	TW	205	160MP/4-B5 A350 CUS TW	189	243
20	15	1775	355	B5 A350	37450073-VR	PE	575	19.0	TW	269	160LP/4-B5 A350 CUS TW	189	243
25	18.5	1780	356	B5 A350	37750073-VR	PE	575	24.2	TW	342	180MP/4-B5 A350 CUS TW	189	243
30	22	1780	356	B5 A350	38050073-VR	PE	575	27.8	TW	342	180LP/4-B5 A350 CUS TW	189	243



#### IEC B14 Flange - 5:1 (VR) 575V - 60-12Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.16	0.12	1700	340	B14 C90	31010023-VR	-	575	0.35	-	7.9	63S/4-B14 C90 CUS	189	254
0.25	0.18	1680	336	B14 C90	31510023-VR	-	575	0.45	-	9.3	63L/4-B14 C90 CUS	189	254
0.33	0.25	1710	342	B14 C105	32010054-VR	-	575	0.62	-	12	71S/4-B14 C105 CUS	189	254
0.5	0.37	1720	344	B14 C105	32510023-VR	-	575	0.76	-	14	71L/4-B14 C105 CUS	189	254
0.75	0.55	1710	342	B14 C120	33010023-VR	-	575	1.08	-	18	80S/4-B14 C120 CUS	189	254
1	0.75	1730	346	B14 C120	33510098-VR	PE	575	1.26	TW	22	80LP/4-B14 C120 CUS TW	189	254
1.5	1.1	1740	348	B14 C140	34010016-VR	PE	575	1.68	TW	33	90SP/4-B14 C140 CUS TW	189	254
2	1.5	1730	346	B14 C140	34510016-VR	PE	575	2.24	TW	37	90LP/4-B14 C140 CUS TW	189	254
3	2.2	1770	354	B14 C160	35010016-VR	PE	575	3.07	TW	56	100LP/4-B14 C160 CUS TW	189	254
5	3.7	1755	351	B14 C160	36010016-VR	PE	575	5.20	TW	78	112MP/4-B14 C160 CUS TW	189	254
7.5	5.5	1770	354	B14 C200	36310016-VR	PE	575	7.80	TW	121	132SP/4-B14 C200 CUS TW	189	255
10	7.5	1765	353	B14 C200	36610016-VR	PE	575	10.7	TW	137	132MP/4-B14 C200 CUS TW	189	255





# Inverter Duty Motors

## 5:1 Constant Torque (VR)

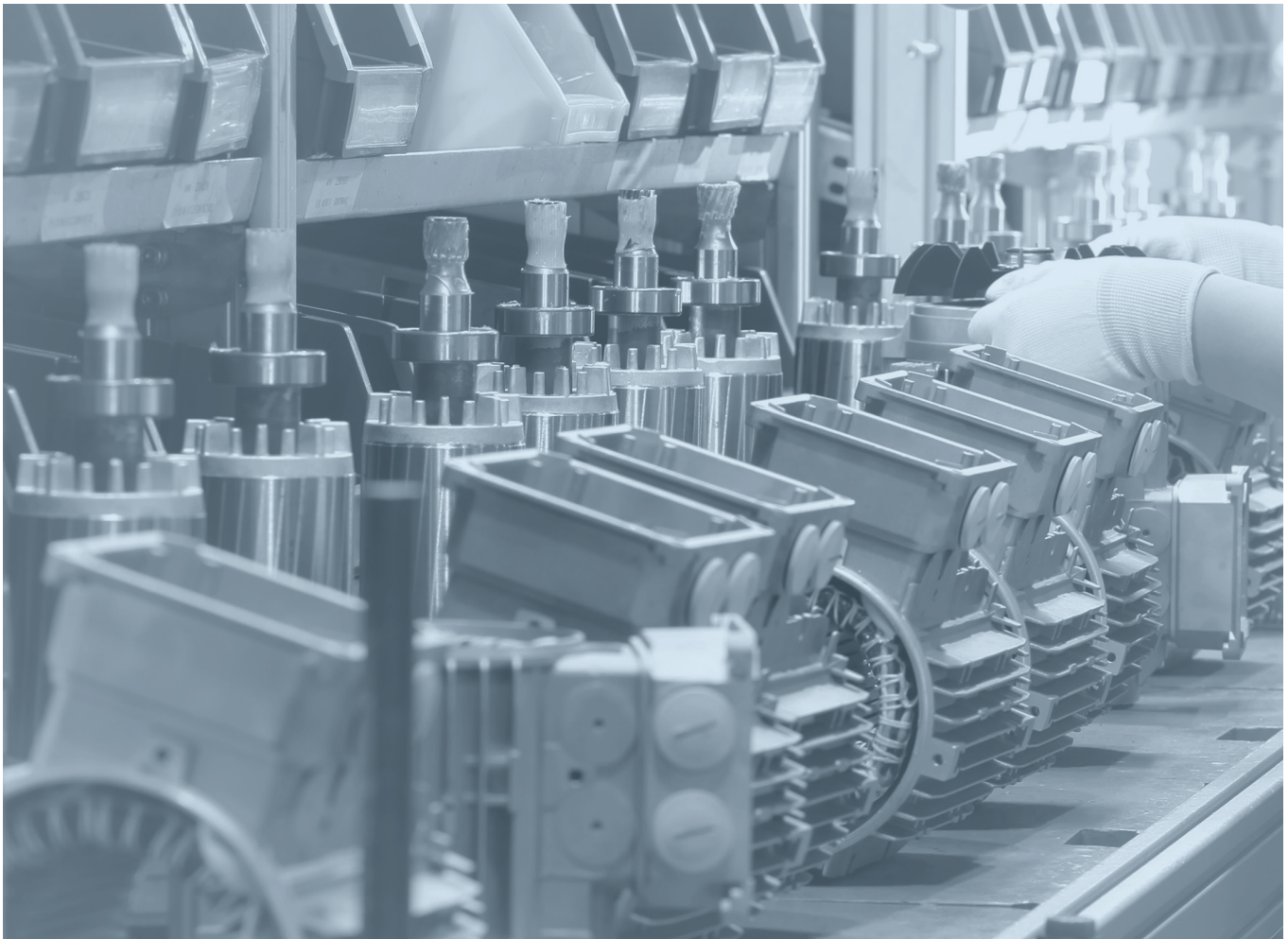
### 575V 60-12Hz



#### IEC Footed (B3) - 5:1 (VR) 575V - 60-12Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
0.33	0.25	1710	342	B3-71	32010103-VR	-	575	0.62	-	12	71S/4-B3 CUS	189	230
0.5	0.37	1720	344	B3-71	32510103-VR	-	575	0.76	-	14	71L/4-B3 CUS	189	230
0.75	0.55	1710	342	B3-80	33010103-VR	-	575	1.08	-	18	80S/4-B3 CUS	189	230
1	0.75	1730	346	B3-80	33510173-VR	PE	575	1.26	TW	22	80LP/4-B3 CUS TW	189	230
1.5	1.1	1740	348	B3-90S	34010173-VR	PE	575	1.68	TW	33	90SP/4-B3 CUS TW	189	230
2	1.5	1730	346	B3-90L	34510173-VR	PE	575	2.24	TW	37	90LP/4-B3 CUS TW	189	230
3	2.2	1770	354	B3-100	35010173-VR	PE	575	3.07	TW	56	100LP/4-B3 CUS TW	189	230
5	3.7	1755	351	B3-112	36010173-VR	PE	575	5.20	TW	78	112MP/4-B3 CUS TW	189	230
7.5	5.5	1770	354	B3-132	36310173-VR	PE	575	7.80	TW	121	132SP/4-B3 CUS TW	189	231
10	7.5	1765	353	B3-132	36610173-VR	PE	575	10.7	TW	137	132MP/4-B3 CUS TW	189	231
15	11	1770	354	B3-160	37150173-VR	PE	575	14.2	TW	205	160MP/4-B3 CUS TW	189	231
20	15	1775	355	B3-160	37450173-VR	PE	575	19.0	TW	269	160LP/4-B3 CUS TW	189	231
25	18.5	1780	356	B3-180	37750173-VR	PE	575	24.2	TW	342	180MP/4-B3 CUS TW	189	231
30	22	1780	356	B3-180	38050173-VR	PE	575	27.8	TW	342	180LP/4-B3 CUS TW	189	231



# Inverter Duty Motors

## 10:1 Constant Torque (VN)

### 230/460V 60-6Hz



Motor Selection

NEMA C-Face - 10:1 (VN)													
230/460V - 60-6Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.12	0.09	1720	172	56C	31110012-VN	-	230/460	0.76/0.38	-	7.9	63S/4-56C CUS VN	176	218
0.18	0.12	1720	172	56C	31610012-VN	-	230/460	0.90/0.45	-	9.3	63L/4-56C CUS VN	176	218
0.25	0.18	1740	174	56C	32110012-VN	-	230/460	1.06/0.53	-	12	71S/4-56C CUS VN	176	218
0.33	0.25	1745	175	56C	32610012-VN	-	230/460	1.48/0.74	-	14	71L/4-56C CUS VN	176	218
0.5	0.37	1745	175	56C	33110012-VN	-	230/460	2.79/1.40	-	18	80S/4-56C CUS VN	176	218
0.75	0.55	1740	174	56C	33610022-VN	-	230/460	3.84/1.92	-	20	80L/4-56C CUS VN	176	218
0.75	0.55	1750	175	56C	33610294-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-56C CUS TW VN	176	218
0.75	0.55	1750	175	143TC	33610292-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-143TC CUS TW VN	176	218
1	0.75	1760	176	145TC	34110292-VN	PE	230/460	3.34/1.67	TW	33	90SP/4-145TC CUS TW VN	176	218
1.5	1.1	1755	176	145TC	34610292-VN	PE	230/460	4.59/2.30	TW	37	90LP/4-145TC CUS TW VN	176	218
2	1.5	1780	178	182TC	35110292-VN	PE	230/460	5.72/2.86	TW	56	100LP/4-182TC CUS TW VN	176	219
3	2.2	1775	178	184TC	36110292-VN	PE	230/460	9.33/4.67	TW	78	112MP/4-184TC CUS TW VN	176	219
5	3.7	1780	178	213TC	36410292-VN	PE	230/460	15.7/7.86	TW	121	132SP/4-213TC CUS TW VN	176	219
7.5	5.5	1775	178	215TC	36710292-VN	PE	230/460	21.5/10.8	TW	137	132MP/4-215TC CUS TW VN	176	219
10	7.5	1780	178	254TC	37350292-VN	PE	230/460	27.6/13.8	TW	205	160MP/4-254TC CUS TW VN	176	219
15	11	1780	178	256C	37550292-VN	PE	230/460	38.4/19.2	TW	269	160LP/4-256C CUS TW VN	176	219
20	15	1785	179	286TC	37750272-VN	PE	230/460	49.6/24.8	TW	342	180MP/4-286TC CUS TW VN	176	219
25	18.5	1785	179	286TC	38050272-VN	PE	230/460	59.7/29.9	TW	342	180LP/4-286TC CUS TW VN	176	219

NEMA T Footed - 10:1 (VN)													
230/460V - 60-6Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.25	0.18	1740	174	56C	32110112-VN	-	230/460	1.06/0.53	-	12	71S/4-56 CUS VN	176	208
0.33	0.25	1745	175	56C	32610112-VN	-	230/460	1.48/0.74	-	14	71L/4-56 CUS VN	176	208
0.5	0.37	1745	175	56C	33110112-VN	-	230/460	2.79/1.40	-	18	80S/4-56 CUS VN	176	208
0.75	0.55	1740	174	56C	33610122-VN	-	230/460	3.84/1.92	-	20	80L/4-56 CUS VN	176	208
0.75	0.55	1750	175	56C	33610394-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-56 CUS TW VN	176	208
0.75	0.55	1750	175	143TC	33610392-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-143T CUS TW VN	176	208
1	0.75	1760	176	145TC	34110392-VN	PE	230/460	3.34/1.67	TW	33	90SP/4-145T CUS TW VN	176	208
1.5	1.1	1755	176	145TC	34610392-VN	PE	230/460	4.59/2.30	TW	37	90LP/4-145T CUS TW VN	176	208
2	1.5	1780	178	182TC	35110392-VN	PE	230/460	5.72/2.86	TW	56	100LP/4-182T CUS TW VN	176	208
3	2.2	1775	178	184TC	36110392-VN	PE	230/460	9.33/4.67	TW	78	112MP/4-184T CUS TW VN	176	208
5	3.7	1780	178	213TC	36410392-VN	PE	230/460	15.7/7.86	TW	121	132SP/4-213T CUS TW VN	176	208
7.5	5.5	1775	178	215TC	36710392-VN	PE	230/460	21.5/10.8	TW	137	132MP/4-215T CUS TW VN	176	208



# Inverter Duty Motors

## 10:1 Constant Torque (VN)

### 230/460V 60-6Hz

IEC B5 Flange - 10:1 (VN) 230/460V - 60-6Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.12	0.09	1720	172	B5 A140	31010002-VN	-	230/460	0.76/0.38	-	7.9	63S/4-B5 A140 CUS VN	176	242
0.18	0.12	1720	172	B5 A140	31510002-VN	-	230/460	0.90/0.45	-	9.3	63L/4-B5 A140 CUS VN	176	242
0.25	0.18	1740	174	B5 A160	32010002-VN	-	230/460	1.06/0.53	-	12	71S/4-B5 A160 CUS VN	176	242
0.33	0.25	1745	175	B5 A160	32510002-VN	-	230/460	1.48/0.74	-	14	71L/4-B5 A160 CUS VN	176	242
0.5	0.37	1745	175	B5 A200	33010002-VN	-	230/460	2.79/1.40	-	18	80S/4-B5 A200 CUS VN	176	242
0.75	0.55	1740	174	B5 A200	33510002-VN	-	230/460	3.84/1.92	-	20	80L/4-B5 A200 CUS VN	176	242
0.75	0.55	1750	175	B5 A200	33510072-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-B5 A200 CUS TW VN	176	242
1	0.75	1760	176	B5 A200	34010072-VN	PE	230/460	3.34/1.67	TW	33	90SP/4-B5 A200 CUS TW VN	176	242
1.5	1.1	1755	176	B5 A200	34510072-VN	PE	230/460	4.59/2.30	TW	37	90LP/4-B5 A200 CUS TW VN	176	242
2	1.5	1780	178	B5 A250	35010072-VN	PE	230/460	5.72/2.86	TW	56	100LP/4-B5 A250 CUS TW VN	176	242
3	2.2	1775	178	B5 A250	36010072-VN	PE	230/460	9.33/4.67	TW	78	112MP/4-B5 A250 CUS TW VN	176	242
5	3.7	1780	178	B5 A300	36310072-VN	PE	230/460	15.7/7.86	TW	121	132SP/4-B5 A300 CUS TW VN	176	243
7.5	5.5	1775	178	B5 A300	36610072-VN	PE	230/460	21.5/10.8	TW	137	132MP/4-B5 A300 CUS TW VN	176	243
10	7.5	1780	178	B5 A350	37150072-VN	PE	230/460	27.6/13.8	TW	205	160MP/4-B5 A350 CUS TW VN	176	243
15	11	1780	178	B5 A350	37450072-VN	PE	230/460	38.4/19.2	TW	269	160LP/4-B5 A350 CUS TW VN	176	243
20	15	1785	179	B5 A350	37750072-VN	PE	230/460	49.6/24.8	TW	342	180MP/4-B5 A350 CUS TW VN	176	243
25	18.5	1785	179	B5 A350	38050072-VN	PE	230/460	59.7/29.9	TW	342	180LP/4-B5 A350 CUS TW VN	176	243

Motor Selection

IEC B14 Flange - 10:1 (VN) 230/460V - 60-6Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.12	0.09	1720	172	B14 C90	31010022-VN	-	230/460	0.76/0.38	-	7.9	63S/4-B14 C90 CUS VN	176	254
0.18	0.12	1720	172	B14 C90	31510022-VN	-	230/460	0.90/0.45	-	9.3	63L/4-B14 C90 CUS VN	176	254
0.18	0.12	1720	172	B14 C120	31510012-VN	-	230/460	0.90/0.45	-	9.3	63L/4-B14 C120 CUS VN	176	254
0.25	0.18	1740	174	B14 C105	32010053-VN	-	230/460	1.06/0.53	-	12	71S/4-B14 C105 CUS VN	176	254
0.25	0.18	1740	174	B14 C140	32010012-VN	-	230/460	1.06/0.53	-	12	71S/4-B14 C140 CUS VN	176	254
0.33	0.25	1745	175	B14 C105	32510022-VN	-	230/460	1.48/0.74	-	14	71L/4-B14 C105 CUS VN	176	254
0.33	0.25	1745	175	B14 C140	32510012-VN	-	230/460	1.48/0.74	-	14	71L/4-B14 C140 CUS VN	176	254
0.5	0.37	1745	175	B14 C120	33010022-VN	-	230/460	2.79/1.40	-	18	80S/4-B14 C120 CUS VN	176	254
0.5	0.37	1745	175	B14 C160	33010012-VN	-	230/460	2.79/1.40	-	18	80S/4-B14 C160 CUS VN	176	254
0.75	0.55	1740	174	B14 C120	33510022-VN	-	230/460	3.84/1.92	-	20	80L/4-B14 C120 CUS VN	176	254
0.75	0.55	1740	174	B14 C160	33510012-VN	-	230/460	3.84/1.92	-	20	80L/4-B14 C160 CUS VN	176	254
0.75	0.55	1750	175	B14 C120	33510096-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-B14 C120 CUS TW VN	176	254
1	0.75	1760	176	B14 C140	34010015-VN	PE	230/460	3.34/1.67	TW	33	90SP/4-B14 C140 CUS TW VN	176	254
1.5	1.1	1755	176	B14 C140	34510015-VN	PE	230/460	4.59/2.30	TW	37	90LP/4-B14 C140 CUS TW VN	176	254
2	1.5	1780	178	B14 C160	35010015-VN	PE	230/460	5.72/2.86	TW	56	100LP/4-B14 C160 CUS TW VN	176	254
3	2.2	1775	178	B14 C160	36010015-VN	PE	230/460	9.33/4.67	TW	78	112MP/4-B14 C160 CUS TW VN	176	254
5	3.7	1780	178	B14 C200	36310015-VN	PE	230/460	15.7/7.86	TW	121	132SP/4-B14 C200 CUS TW VN	176	255
7.5	5.5	1775	178	B14 C200	36610015-VN	PE	230/460	21.5/10.8	TW	137	132MP/4-B14 C200 CUS TW VN	176	255



# Inverter Duty Motors

## 10:1 Constant Torque (VN)

### 230/460V 60-6Hz



#### IEC Footed (B3) - 10:1 (VN) 230/460V - 60-6Hz



Motor Selection

Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.33	0.25	1745	175	B3-71	32010102-VN	-	230/460	1.48/0.74	-	12	71L/4-B3 CUS VN	176	230
0.33	0.25	1745	175	B3-71	32510102-VN	-	230/460	1.48/0.74	-	14	71L/4-B3 CUS VN	176	230
0.5	0.37	1745	175	B3-80	33010102-VN	-	230/460	2.79/1.40	-	18	80S/4-B3 CUS VN	176	230
0.75	0.55	1740	174	B3-80	33510102-VN	-	230/460	3.84/1.92	-	20	80L/4-B3 CUS VN	176	230
0.75	0.55	1750	175	B3-80	33510172-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-B3 CUS TW VN	176	230
1	0.75	1760	176	B3-90S	34010172-VN	PE	230/460	3.34/1.67	TW	33	90SP/4-B3 CUS TW VN	176	230
1.5	1.1	1755	176	B3-90L	34510172-VN	PE	230/460	4.59/2.30	TW	37	90LP/4-B3 CUS TW VN	176	230
2	1.5	1780	178	B3-100	35010172-VN	PE	230/460	5.72/2.86	TW	56	100LP/4-B3 CUS TW VN	176	230
3	2.2	1775	178	B3-112	36010172-VN	PE	230/460	9.33/4.67	TW	78	112MP/4-B3 CUS TW VN	176	230
5	3.7	1780	178	B3-132	36310172-VN	PE	230/460	15.7/7.86	TW	121	132SP/4-B3 CUS TW VN	176	231
7.5	5.5	1775	178	B3-132	36610172-VN	PE	230/460	21.5/10.8	TW	137	132MP/4-B3 CUS TW VN	176	231
10	7.5	1780	178	B3-160	37150172-VN	PE	230/460	27.6/13.8	TW	205	160MP/4-B3 CUS TW VN	176	231
15	11	1780	178	B3-160	37450172-VN	PE	230/460	38.4/19.2	TW	269	160LP/4-B3 CUS TW VN	176	231
20	15	1785	179	B3-180	37750172-VN	PE	230/460	49.6/24.8	TW	342	180MP/4-B3 CUS TW VN	176	231
25	18.5	1785	179	B3-180	38050172-VN	PE	230/460	59.7/29.9	TW	342	180LP/4-B3 CUS TW VN	176	231





# Inverter Duty Motors

## 10:1 Constant Torque (VN)

### 575V 60-6Hz

NEMA C-Face - 10:1 (VN)													
575V - 60-6Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.12	0.09	1720	172	56C	31110013-VN	-	575	0.30	-	7.9	63S/4-56C CUS VN	191	218
0.18	0.12	1720	172	56C	31610013-VN	-	575	0.36	-	9.3	63L/4-56C CUS VN	191	218
0.25	0.18	1740	174	56C	32110013-VN	-	575	0.43	-	12	71S/4-56C CUS VN	191	218
0.33	0.25	1745	175	56C	32610013-VN	-	575	0.59	-	14	71L/4-56C CUS VN	191	218
0.5	0.37	1745	175	56C	33110013-VN	-	575	1.12	-	18	80S/4-56C CUS VN	191	218
0.75	0.55	1740	174	56C	33610023-VN	-	575	1.54	-	20	80L/4-56C CUS VN	191	218
0.75	0.55	1750	175	56C	33610295-VN	PE	575	0.93	TW	22	80LP/4-56C CUS TW VN	191	218
0.75	0.55	1750	175	143TC	33610293-VN	PE	575	0.93	TW	22	80LP/4-143TC CUS TW VN	191	218
1	0.75	1760	176	145TC	34110293-VN	PE	575	1.33	TW	33	90SP/4-145TC CUS TW VN	191	218
1.5	1.1	1755	176	145TC	34610293-VN	PE	575	1.84	TW	37	90LP/4-145TC CUS TW VN	191	218
2	1.5	1780	178	182TC	35110293-VN	PE	575	2.29	TW	56	100LP/4-182TC CUS TW VN	191	219
3	2.2	1775	178	184TC	36110293-VN	PE	575	3.73	TW	78	112MP/4-184TC CUS TW VN	191	219
5	3.7	1780	178	213TC	36410293-VN	PE	575	6.29	TW	121	132SP/4-213TC CUS TW VN	191	219
7.5	5.5	1775	178	215TC	36710293-VN	PE	575	8.60	TW	137	132MP/4-215TC CUS TW VN	191	219
10	7.5	1780	178	254TC	37350293-VN	PE	575	11.0	TW	205	160MP/4-254TC CUS TW VN	191	219
15	11	1780	178	256C	37550293-VN	PE	575	15.4	TW	269	160LP/4-256C CUS TW VN	191	219
20	15	1785	179	286TC	37750273-VN	PE	575	19.8	TW	342	180MP/4-286TC CUS TW VN	191	219
25	18.5	1785	179	286TC	38050273-VN	PE	575	23.9	TW	342	180LP/4-286TC CUS TW VN	191	219

NEMA T Footed - 10:1 (VN)													
575V - 60-6Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.25	0.18	1740	174	56	32110113-VN	-	575	0.43	-	12	71S/4-56 CUS VN	191	208
0.33	0.25	1745	175	56	32610113-VN	-	575	0.59	-	14	71L/4-56 CUS VN	191	208
0.5	0.37	1745	175	56	33110113-VN	-	575	1.12	-	18	80S/4-56 CUS VN	191	208
0.75	0.55	1740	174	56	33610123-VN	-	575	1.54	-	20	80L/4-56 CUS VN	191	208
0.75	0.55	1750	175	56	33610395-VN	PE	575	0.93	TW	22	80LP/4-56 CUS TW VN	191	208
0.75	0.55	1750	175	143T	33610393-VN	PE	575	0.93	TW	22	80LP/4-143T CUS TW VN	191	208
1	0.75	1760	176	145T	34110393-VN	PE	575	1.33	TW	33	90SP/4-145T CUS TW VN	191	208
1.5	1.1	1755	176	145T	34610393-VN	PE	575	1.84	TW	37	90LP/4-145T CUS TW VN	191	208
2	1.5	1780	178	182T	35110393-VN	PE	575	2.29	TW	56	100LP/4-182T CUS TW VN	191	208
3	2.2	1775	178	184T	36110393-VN	PE	575	3.73	TW	78	112MP/4-184T CUS TW VN	191	208
5	3.7	1780	178	213T	36410393-VN	PE	575	6.29	TW	121	132SP/4-213T CUS TW VN	191	208
7.5	5.5	1775	178	215T	36710393-VN	PE	575	8.60	TW	137	132MP/4-215T CUS TW VN	191	208

# Inverter Duty Motors

## 10:1 Constant Torque (VN)

### 575V 60-6Hz



Motor Selection

IEC B5 Flange - 10:1 (VN) 575V - 60-6Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.12	0.09	1720	172	B5 A140	31010003-VN	-	575	0.30	-	7.9	63S/4-B5 A140 CUS VN	191	242
0.18	0.12	1720	172	B5 A140	31510003-VN	-	575	0.36	-	9.3	63L/4-B5 A140 CUS VN	191	242
0.25	0.18	1740	174	B5 A160	32010003-VN	-	575	0.43	-	12	71S/4-B5 A160 CUS VN	191	242
0.33	0.25	1745	175	B5 A160	32510003-VN	-	575	0.59	-	14	71L/4-B5 A160 CUS VN	191	242
0.5	0.37	1745	175	B5 A200	33010003-VN	-	575	1.12	-	18	80S/4-B5 A200 CUS VN	191	242
0.75	0.55	1740	174	B5 A200	33510003-VN	-	575	1.54	-	20	80L/4-B5 A200 CUS VN	191	242
0.75	0.55	1750	175	B5 A200	33510074-VN	PE	575	0.93	TW	22	80LP/4-B5 A200 CUS TW VN	191	242
1	0.75	1760	176	B5 A200	34010073-VN	PE	575	1.33	TW	33	90SP/4-B5 A200 CUS TW VN	191	242
1.5	1.1	1755	176	B5 A200	34510073-VN	PE	575	1.84	TW	37	90LP/4-B5 A200 CUS TW VN	191	242
2	1.5	1780	178	B5 A250	35010073-VN	PE	575	2.29	TW	56	100LP/4-B5 A250 CUS TW VN	191	242
3	2.2	1775	178	B5 A250	36010073-VN	PE	575	3.73	TW	78	112MP/4-B5 A250 CUS TW VN	191	242
5	3.7	1780	178	B5 A300	36310073-VN	PE	575	6.29	TW	121	132SP/4-B5 A300 CUS TW VN	191	243
7.5	5.5	1775	178	B5 A300	36610073-VN	PE	575	8.60	TW	137	132MP/4-B5 A300 CUS TW VN	191	243
10	7.5	1780	178	B5 A350	37150073-VN	PE	575	11.0	TW	205	160MP/4-B5 A350 CUS TW VN	191	243
15	11	1780	178	B5 A350	37450073-VN	PE	575	15.4	TW	269	160LP/4-B5 A350 CUS TW VN	191	243
20	15	1785	179	B5 A350	37750073-VN	PE	575	19.8	TW	342	180MP/4-B5 A350 CUS TW VN	191	243
25	18.5	1785	179	B5 A350	38050073-VN	PE	575	23.9	TW	342	180LP/4-B5 A350 CUS TW VN	191	243

IEC B14 Flange - 10:1 (VN) 575V - 60-6Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.12	0.09	1720	172	B14 C90	31010023-VN	-	575	0.30	-	7.9	63S/4-B14 C90 CUS VN	191	254
0.18	0.12	1720	172	B14 C90	31510023-VN	-	575	0.36	-	9.3	63L/4-B14 C90 CUS VN	191	254
0.25	0.18	1740	174	B14 C105	32010054-VN	-	575	0.43	-	12	71S/4-B14 C105 CUS VN	191	254
0.33	0.25	1745	175	B14 C105	32510023-VN	-	575	0.59	-	14	71L/4-B14 C105 CUS VN	191	254
0.5	0.37	1745	175	B14 C120	33010023-VN	-	575	1.12	-	18	80S/4-B14 C120 CUS VN	191	254
0.75	0.55	1740	174	B14 C120	33510017-VN	-	575	1.54	-	20	80L/4-B14 C120 CUS VN	191	254
0.75	0.55	1750	175	B14 C120	33510098-VN	PE	575	0.93	TW	22	80LP/4-B14 C120 CUS TW VN	191	254
1	0.75	1760	176	B14 C140	34010016-VN	PE	575	1.33	TW	33	90SP/4-B14 C140 CUS TW VN	191	254
1.5	1.1	1755	176	B14 C140	34510016-VN	PE	575	1.84	TW	37	90LP/4-B14 C140 CUS TW VN	191	254
2	1.5	1780	178	B14 C160	35010016-VN	PE	575	2.29	TW	56	100LP/4-B14 C160 CUS TW VN	191	254
3	2.2	1775	178	B14 C160	36010016-VN	PE	575	3.73	TW	78	112MP/4-B14 C160 CUS TW VN	191	254
5	3.7	1780	178	B14 C200	36310016-VN	PE	575	6.29	TW	121	132SP/4-B14 C200 CUS TW VN	191	255
7.5	5.5	1775	178	B14 C200	36610016-VN	PE	575	8.60	TW	137	132MP/4-B14 C200 CUS TW VN	191	255





# Inverter Duty Motors

## 10:1 Constant Torque (VN)

### 575V 60-6Hz

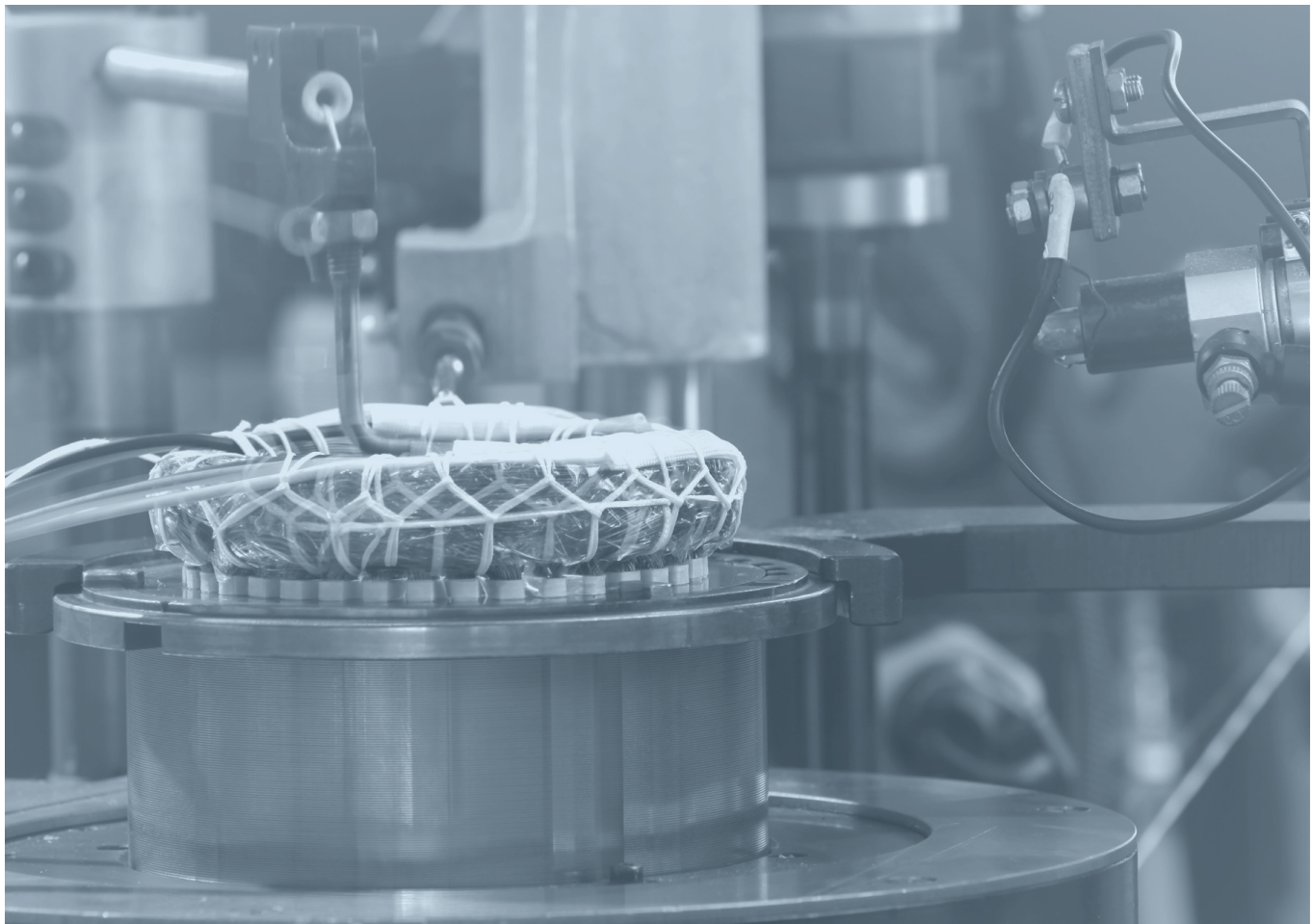


#### IEC Footed (B3) - 10:1 (VN)

#### 575V - 60-6Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.25	0.18	1740	174	B3-71	32010103-VN	-	575	0.43	-	12	71S/4-B3 CUS VN	191	230
0.33	0.25	1745	175	B3-71	32510103-VN	-	575	0.59	-	14	71L/4-B3 CUS VN	191	230
0.5	0.37	1745	175	B3-80	33010103-VN	-	575	1.12	-	18	80S/4-B3 CUS VN	191	230
0.75	0.55	1740	174	B3-80	33510103-VN	-	575	1.54	-	20	80L/4-B3 CUS VN	191	230
0.75	0.55	1750	175	B3-80	33510173-VN	PE	575	0.93	TW	22	80LP/4-B3 CUS TW VN	191	230
1	0.75	1760	176	B3-90S	34010173-VN	PE	575	1.33	TW	33	90SP/4-B3 CUS TW VN	191	230
1.5	1.1	1755	176	B3-90L	34510173-VN	PE	575	1.84	TW	37	90LP/4-B3 CUS TW VN	191	230
2	1.5	1780	178	B3-100	35010173-VN	PE	575	2.29	TW	56	100LP/4-B3 CUS TW VN	191	230
3	2.2	1775	178	B3-112	36010173-VN	PE	575	3.73	TW	78	112MP/4-B3 CUS TW VN	191	230
5	3.7	1780	178	B3-132	36310173-VN	PE	575	6.29	TW	121	132SP/4-B3 CUS TW VN	191	231
7.5	5.5	1775	178	B3-132	36610173-VN	PE	575	8.60	TW	137	132MP/4-B3 CUS TW VN	191	231
10	7.5	1780	178	B3-160	37150173-VN	PE	575	11.0	TW	205	160MP/4-B3 CUS TW VN	191	231
15	11	1780	178	B3-160	37450173-VN	PE	575	15.4	TW	269	160LP/4-B3 CUS TW VN	191	231
20	15	1785	179	B3-180	37750173-VN	PE	575	19.8	TW	342	180MP/4-B3 CUS TW VN	191	231
25	18.5	1785	179	B3-180	38050173-VN	PE	575	23.9	TW	342	180LP/4-B3 CUS TW VN	191	231



# Inverter Duty Motors

## 20:1 Constant Torque (VW)

### 230/460V 80-4Hz



Motor Selection

NEMA C-Face - 20:1 (VW)													
230/460V - 80-4Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.16	0.12	2250	113	56C	31110012-VW	-	230/460	0.88/0.44	-	7.9	63S/4-56C CUS VW	178	218
0.25	0.18	2220	111	56C	31610012-VW	-	230/460	1.12/0.56	-	9.3	63L/4-56C CUS VW	178	218
0.33	0.25	2285	114	56C	32110012-VW	-	230/460	1.56/0.78	-	12	71S/4-56C CUS VW	178	218
0.5	0.37	2280	114	56C	32610012-VW	-	230/460	1.90/0.95	-	14	71L/4-56C CUS VW	178	218
0.75	0.55	2285	114	56C	33110012-VW	-	230/460	2.70/1.35	-	18	80S/4-56C CUS VW	178	218
1	0.75	2230	112	56C	33610294-VW	PE	230/460	3.14/1.57	TW	22	80LP/4-56C CUS TW VW	178	218
1	0.75	2230	112	143TC	33610292-VW	PE	230/460	3.14/1.57	TW	22	80LP/4-143TC CUS TW VW	178	218
1.5	1.1	2320	116	145TC	34110292-VW	PE	230/460	4.20/2.10	TW	33	90SP/4-145TC CUS TW VW	178	218
2	1.5	2310	116	145TC	34610292-VW	PE	230/460	5.60/2.80	TW	37	90LP/4-145TC CUS TW VW	178	218
3	2.2	2360	118	182TC	35110292-VW	PE	230/460	7.68/3.84	TW	56	100LP/4-182TC CUS TW VW	178	219
5	3.7	2335	117	184TC	36110292-VW	PE	230/460	13.0/6.50	TW	78	112MP/4-184TC CUS TW VW	178	219
7.5	5.5	2355	118	213TC	36410292-VW	PE	230/460	19.5/9.75	TW	121	132SP/4-213TC CUS TW VW	178	219
10	7.5	2350	118	215TC	36710292-VW	PE	230/460	26.7/13.4	TW	137	132MP/4-215TC CUS TW VW	178	219
15	11	2360	118	254TC	37350292-VW	PE	230/460	35.6/17.8	TW	205	160MP/4-254TC CUS TW VW	178	219
20	15	2360	118	256C	37550292-VW	PE	230/460	47.6/23.8	TW	269	160LP/4-256C CUS TW VW	178	219
25	18.5	2380	119	286TC	37750272-VW	PE	230/460	60.6/30.3	TW	342	180MP/4-286TC CUS TW VW	178	219
30	22	2370	119	286TC	38050272-VW	PE	230/460	69.6/34.8	TW	342	180LP/4-286TC CUS TW VW	178	219

NEMA T Footed - 20:1 (VW)													
230/460V - 80-4Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.33	0.25	2285	114	56	32110112-VW	-	230/460	1.56/0.78	-	12	71S/4-56 CUS VW	178	208
0.5	0.37	2280	114	56	32610112-VW	-	230/460	1.90/0.95	-	14	71L/4-56 CUS VW	178	208
0.75	0.55	2285	114	56	33110112-VW	-	230/460	2.70/1.35	-	18	80S/4-56 CUS VW	178	208
1	0.75	2230	112	56	33610394-VW	PE	230/460	3.14/1.57	TW	22	80LP/4-56 CUS TW VW	178	208
1	0.75	2230	112	143T	33610392-VW	PE	230/460	3.14/1.57	TW	22	80LP/4-143T CUS TW VW	178	208
1.5	1.1	2320	116	145T	34110392-VW	PE	230/460	4.20/2.10	TW	33	90SP/4-145T CUS TW VW	178	208
2	1.5	2310	116	145T	34610392-VW	PE	230/460	5.60/2.80	TW	37	90LP/4-145T CUS TW VW	178	208
3	2.2	2360	118	182T	35110392-VW	PE	230/460	7.68/3.84	TW	56	100LP/4-182T CUS TW VW	178	208
5	3.7	2335	117	184T	36110392-VW	PE	230/460	13.0/6.50	TW	78	112MP/4-184T CUS TW VW	178	208
7.5	5.5	2355	118	213T	36410392-VW	PE	230/460	19.5/9.75	TW	121	132SP/4-213T CUS TW VW	178	208
10	7.5	2350	118	215T	36710392-VW	PE	230/460	26.7/13.4	TW	137	132MP/4-215T CUS TW VW	178	208



# Inverter Duty Motors

## 20:1 Constant Torque (VW)

### 230/460V 80-4Hz

IEC B5 Flange - 20:1 (VW) 230/460V - 80-4Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.16	0.12	2250	113	B5 A140	31010002-VW	-	230/460	0.88/0.44	-	7.9	63S/4-B5 A140 CUS VW	178	242
0.25	0.18	2220	111	B5 A140	31510002-VW	-	230/460	1.12/0.56	-	9.3	63L/4-B5 A140 CUS VW	178	242
0.33	0.25	2285	114	B5 A160	32010002-VW	-	230/460	1.56/0.78	-	12	71S/4-B5 A160 CUS VW	178	242
0.5	0.37	2280	114	B5 A160	32510002-VW	-	230/460	1.90/0.95	-	14	71L/4-B5 A160 CUS VW	178	242
0.75	0.55	2285	114	B5 A200	33010002-VW	-	230/460	2.70/1.35	-	18	80S/4-B5 A200 CUS VW	178	242
1	0.75	2230	112	B5 A200	33510072-VW	PE	230/460	3.14/1.57	TW	22	80LP/4-B5 A200 CUS TW VW	178	242
1.5	1.1	2320	116	B5 A200	34010072-VW	PE	230/460	4.20/2.10	TW	33	90SP/4-B5 A200 CUS TW VW	178	242
2	1.5	2310	116	B5 A200	34510072-VW	PE	230/460	5.60/2.80	TW	37	90LP/4-B5 A200 CUS TW VW	178	242
3	2.2	2360	118	B5 A250	35010072-VW	PE	230/460	7.68/3.84	TW	56	100LP/4-B5 A250 CUS TW VW	178	242
5	3.7	2335	117	B5 A250	36010072-VW	PE	230/460	13.0/6.50	TW	78	112MP/4-B5 A250 CUS TW VW	178	242
7.5	5.5	2355	118	B5 A300	36310072-VW	PE	230/460	19.5/9.75	TW	121	132SP/4-B5 A300 CUS TW VW	178	243
10	7.5	2350	118	B5 A300	36610072-VW	PE	230/460	26.7/13.4	TW	137	132MP/4-B5 A300 CUS TW VW	178	243
15	11	2360	118	B5 A350	37150072-VW	PE	230/460	35.6/17.8	TW	205	160MP/4-B5 A350 CUS TW VW	178	243
20	15	2360	118	B5 A350	37450072-VW	PE	230/460	47.6/23.8	TW	269	160LP/4-B5 A350 CUS TW VW	178	243
25	18.5	2380	119	B5 A350	37750072-VW	PE	230/460	60.6/30.3	TW	342	180MP/4-B5 A350 CUS TW VW	178	243
30	22	2370	119	B5 A350	38050072-VW	PE	230/460	69.6/34.8	TW	342	180LP/4-B5 A350 CUS TW VW	178	243

IEC B14 Flange - 20:1 (VW) 230/460V - 80-4Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.16	0.12	2250	113	B14 C90	31010022-VW	-	230/460	0.88/0.44	-	7.9	63S/4-B14 C90 CUS VW	178	254
0.25	0.18	2220	111	B14 C90	31510022-VW	-	230/460	1.12/0.56	-	9.3	63L/4-B14 C90 CUS VW	178	254
0.25	0.18	2220	111	B14 C120	31510012-VW	-	230/460	1.12/0.56	-	9.3	63L/4-B14 C120 CUS VW	178	254
0.33	0.25	2285	114	B14 C105	32010053-VW	-	230/460	1.56/0.78	-	12	71S/4-B14 C105 CUS VW	178	254
0.33	0.25	2285	114	B14 C140	32010012-VW	-	230/460	1.56/0.78	-	12	71S/4-B14 C140 CUS VW	178	254
0.5	0.37	2280	114	B14 C105	32510022-VW	-	230/460	1.90/0.95	-	14	71L/4-B14 C105 CUS VW	178	254
0.5	0.37	2280	114	B14 C140	32510012-VW	-	230/460	1.90/0.95	-	14	71L/4-B14 C140 CUS VW	178	254
0.75	0.55	2285	114	B14 C120	33010022-VW	-	230/460	2.70/1.35	-	18	80S/4-B14 C120 CUS VW	178	254
0.75	0.55	2285	114	B14 C160	33010012-VW	-	230/460	2.70/1.35	-	18	80S/4-B14 C160 CUS VW	178	254
1	0.75	2230	112	B14 C120	33510096-VW	PE	230/460	3.14/1.57	TW	22	80LP/4-B14 C120 CUS TW VW	178	254
1.5	1.1	2320	116	B14 C140	34010015-VW	PE	230/460	4.20/2.10	TW	33	90SP/4-B14 C140 CUS TW VW	178	254
2	1.5	2310	116	B14 C140	34510015-VW	PE	230/460	5.60/2.80	TW	37	90LP/4-B14 C140 CUS TW VW	178	254
3	2.2	2360	118	B14 C160	35010015-VW	PE	230/460	7.68/3.84	TW	56	100LP/4-B14 C160 CUS TW VW	178	254
5	3.7	2335	117	B14 C160	36010015-VW	PE	230/460	13.0/6.50	TW	78	112MP/4-B14 C160 CUS TW VW	178	254
7.5	5.5	2355	118	B14 C200	36310015-VW	PE	230/460	19.5/9.75	TW	121	132SP/4-B14 C200 CUS TW VW	178	255
10	7.5	2350	118	B14 C200	36610015-VW	PE	230/460	26.7/13.4	TW	137	132MP/4-B14 C200 CUS TW VW	178	255



# Inverter Duty Motors

## 20:1 Constant Torque (VW)

### 230/460V 80-4Hz



#### IEC Footed (B3) - 20:1 (VW) 230/460V - 80-4Hz



Motor Selection

Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.33	0.25	2285	114	B3-71	32010102-VW	-	230/460	1.56/0.78	-	12	71S/4-B3 CUS VW	178	230
0.5	0.37	2280	114	B3-71	32510102-VW	-	230/460	1.90/0.95	-	14	71L/4-B3 CUS VW	178	230
0.75	0.55	2285	114	B3-80	33010102-VW	-	230/460	2.70/1.35	-	18	80S/4-B3 CUS VW	178	230
1	0.75	2230	112	B3-80	33510172-VW	PE	230/460	3.14/1.57	TW	22	80LP/4-B3 CUS TW VW	178	230
1.5	1.1	2320	116	B3-90S	34010172-VW	PE	230/460	4.20/2.10	TW	33	90SP/4-B3 CUS TW VW	178	230
2	1.5	2310	116	B3-90L	34510172-VW	PE	230/460	5.60/2.80	TW	37	90LP/4-B3 CUS TW VW	178	230
3	2.2	2360	118	B3-100	35010172-VW	PE	230/460	7.68/3.84	TW	56	100LP/4-B3 CUS TW VW	178	230
5	3.7	2335	117	B3-112	36010172-VW	PE	230/460	13.0/6.50	TW	78	112MP/4-B3 CUS TW VW	178	230
7.5	5.5	2355	118	B3-132	36310172-VW	PE	230/460	19.5/9.75	TW	121	132SP/4-B3 CUS TW VW	178	231
10	7.5	2350	118	B3-132	36610172-VW	PE	230/460	26.7/13.4	TW	137	132MP/4-B3 CUS TW VW	178	231
15	11	2360	118	B3-160	37150172-VW	PE	230/460	35.6/17.8	TW	205	160MP/4-B3 CUS TW VW	178	231
20	15	2360	118	B3-160	37450172-VW	PE	230/460	47.6/23.8	TW	269	160LP/4-B3 CUS TW VW	178	231
25	18.5	2380	119	B3-180	37750172-VW	PE	230/460	60.6/30.3	TW	342	180MP/4-B3 CUS TW VW	178	231
30	22	2370	119	B3-180	38050172-VW	PE	230/460	69.6/34.8	TW	342	180LP/4-B3 CUS TW VW	178	231





# Inverter Duty Motors

## 20:1 Constant Torque (VW)

### 575V 80-4Hz

NEMA C-Face - 20:1 (VW) 575V - 80-4Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.16	0.12	2250	113	56C	31110013-VW	-	575	0.35	-	7.9	63S/4-56C CUS VW	193	218
0.25	0.18	2220	111	56C	31610013-VW	-	575	0.45	-	9.3	63L/4-56C CUS VW	193	218
0.33	0.25	2284	114	56C	32110013-VW	-	575	0.62	-	12	71S/4-56C CUS VW	193	218
0.5	0.37	2280	114	56C	32610013-VW	-	575	0.76	-	14	71L/4-56C CUS VW	193	218
0.75	0.55	2285	114	56C	33110013-VW	-	575	1.08	-	18	80S/4-56C CUS VW	193	218
1	0.75	2230	112	56C	33610295-VW	PE	575	1.26	TW	22	80LP/4-56C CUS TW VW	193	218
1	0.75	2230	112	143TC	33610293-VW	PE	575	1.26	TW	22	80LP/4-143TC CUS TW VW	193	218
1.5	1.1	2320	116	145TC	34110293-VW	PE	575	1.68	TW	33	90SP/4-145TC CUS TW VW	193	218
2	1.5	2310	116	145TC	34610293-VW	PE	575	2.24	TW	37	90LP/4-145TC CUS TW VW	193	218
3	2.2	2360	118	182TC	35110293-VW	PE	575	3.07	TW	56	100LP/4-182TC CUS TW VW	193	219
5	3.7	2335	117	184TC	36110293-VW	PE	575	5.20	TW	78	112MP/4-184TC CUS TW VW	193	219
7.5	5.5	2355	118	213TC	36410293-VW	PE	575	7.80	TW	121	132SP/4-213TC CUS TW VW	193	219
10	7.5	2350	118	215TC	36710293-VW	PE	575	10.7	TW	137	132MP/4-215TC CUS TW VW	193	219
15	11	2360	118	254TC	37350293-VW	PE	575	14.2	TW	205	160MP/4-254TC CUS TW VW	193	219
20	15	2360	118	256C	37550293-VW	PE	575	19.0	TW	269	160LP/4-256C CUS TW VW	193	219
25	18.5	2380	119	286TC	37750273-VW	PE	575	24.2	TW	342	180MP/4-286TC CUS TW VW	193	219
30	22	2370	119	286TC	38050273-VW	PE	575	27.8	TW	342	180LP/4-286TC CUS TW VW	193	219

NEMA T Footed - 20:1 (VW) 575V - 80-4Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.33	0.25	2284	114	56	32110113-VW	-	575	0.62	-	12	71S/4-56 CUS VW	193	208
0.5	0.37	2280	114	56	32610113-VW	-	575	0.76	-	14	71L/4-56 CUS VW	193	208
0.75	0.55	2285	114	56	33110113-VW	-	575	1.08	-	18	80S/4-56 CUS VW	193	208
1	0.75	2230	112	56	33610395-VW	PE	575	1.26	TW	22	80LP/4-56 CUS TW VW	193	208
1	0.75	2230	112	143T	33610393-VW	PE	575	1.26	TW	22	80LP/4-143T CUS TW VW	193	208
1.5	1.1	2320	116	145T	34110393-VW	PE	575	1.68	TW	33	90SP/4-145T CUS TW VW	193	208
2	1.5	2310	116	145T	34610393-VW	PE	575	2.24	TW	37	90LP/4-145T CUS TW VW	193	208
3	2.2	2360	118	182T	35110393-VW	PE	575	3.07	TW	56	100LP/4-182T CUS TW VW	193	208
5	3.7	2335	117	184T	36110393-VW	PE	575	5.20	TW	78	112MP/4-184T CUS TW VW	193	208
7.5	5.5	2355	118	213T	36410393-VW	PE	575	7.80	TW	121	132SP/4-213T CUS TW VW	193	208
10	7.5	2350	118	215T	36710393-VW	PE	575	10.7	TW	137	132MP/4-215T CUS TW VW	193	208

Motor Selection

# Inverter Duty Motors

## 20:1 Constant Torque (VW)

### 575V 80-4Hz



Motor Selection

IEC B5 Flange - 20:1 (VW)													
575V - 80-4Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.16	0.12	2250	113	B5 A140	31010003-VW	-	575	0.35	-	7.9	63S/4-B5 A140 CUS VW	193	242
0.25	0.18	2220	111	B5 A140	31510003-VW	-	575	0.45	-	9.3	63L/4-B5 A140 CUS VW	193	242
0.33	0.25	2284	114	B5 A160	32010003-VW	-	575	0.62	-	12	71S/4-B5 A160 CUS VW	193	242
0.5	0.37	2280	114	B5 A160	32510003-VW	-	575	0.76	-	14	71L/4-B5 A160 CUS VW	193	242
0.75	0.55	2285	114	B5 A200	33010003-VW	-	575	1.08	-	18	80S/4-B5 A200 CUS VW	193	242
1	0.75	2230	112	B5 A200	33510074-VW	PE	575	1.26	TW	22	80LP/4-B5 A200 CUS TW VW	193	242
1.5	1.1	2320	116	B5 A200	34010073-VW	PE	575	1.68	TW	33	90SP/4-B5 A200 CUS TW VW	193	242
2	1.5	2310	116	B5 A200	34510073-VW	PE	575	2.24	TW	37	90LP/4-B5 A200 CUS TW VW	193	242
3	2.2	2360	118	B5 A250	35010073-VW	PE	575	3.07	TW	56	100LP/4-B5 A250 CUS TW VW	193	242
5	3.7	2335	117	B5 A250	36010073-VW	PE	575	5.20	TW	78	112MP/4-B5 A250 CUS TW VW	193	242
7.5	5.5	2355	118	B5 A300	36310073-VW	PE	575	7.80	TW	121	132SP/4-B5 A300 CUS TW VW	193	243
10	7.5	2350	118	B5 A300	36610073-VW	PE	575	10.7	TW	137	132MP/4-B5 A300 CUS TW VW	193	243
15	11	2360	118	B5 A350	37150073-VW	PE	575	14.2	TW	205	160MP/4-B5 A350 CUS TW VW	193	243
20	15	2360	118	B5 A350	37450073-VW	PE	575	19.0	TW	269	160LP/4-B5 A350 CUS TW VW	193	243
25	18.5	2380	119	B5 A350	37750073-VW	PE	575	24.2	TW	342	180MP/4-B5 A350 CUS TW VW	193	243
30	22	2370	119	B5 A350	38050073-VW	PE	575	27.8	TW	342	180LP/4-B5 A350 CUS TW VW	193	243

IEC B14 Flange - 20:1 (VW)													
575V - 80-4Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.16	0.12	2250	113	B14 C90	31010023-VW	-	575	0.35	-	7.9	63S/4-B14 C90 CUS VW	193	254
0.25	0.18	2220	111	B14 C90	31510023-VW	-	575	0.45	-	9.3	63L/4-B14 C90 CUS VW	193	254
0.33	0.25	2284	114	B14 C105	32010054-VW	-	575	0.62	-	12	71S/4-B14 C105 CUS VW	193	254
0.5	0.37	2280	114	B14 C105	32510023-VW	-	575	0.76	-	14	71L/4-B14 C105 CUS VW	193	254
0.75	0.55	2285	114	B14 C120	33010023-VW	-	575	1.08	-	18	80S/4-B14 C120 CUS VW	193	254
1	0.75	2230	112	B14 C120	33510098-VW	PE	575	1.26	TW	22	80LP/4-B14 C120 CUS TW VW	193	254
1.5	1.1	2320	116	B14 C140	34010016-VW	PE	575	1.68	TW	33	90SP/4-B14 C140 CUS TW VW	193	254
2	1.5	2310	116	B14 C140	34510016-VW	PE	575	2.24	TW	37	90LP/4-B14 C140 CUS TW VW	193	254
3	2.2	2360	118	B14 C160	35010016-VW	PE	575	3.07	TW	56	100LP/4-B14 C160 CUS TW VW	193	254
5	3.7	2335	117	B14 C160	36010016-VW	PE	575	5.20	TW	78	112MP/4-B14 C160 CUS TW VW	193	254
7.5	5.5	2355	118	B14 C200	36310016-VW	PE	575	7.80	TW	121	132SP/4-B14 C200 CUS TW VW	193	255
10	7.5	2350	118	B14 C200	36610016-VW	PE	575	10.7	TW	137	132MP/4-B14 C200 CUS TW VW	193	255





# Inverter Duty Motors

## 20:1 Constant Torque (VW)

### 575V 80-4Hz



#### IEC Footed (B3) - 20:1 (VW) 575V - 80-4Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
0.33	0.25	2284	114	B3-71	32010103-VW	-	575	0.62	-	12	71S/4-B3 CUS VW	193	230
0.5	0.37	2280	114	B3-71	32510103-VW	-	575	0.76	-	14	71L/4-B3 CUS VW	193	230
0.75	0.55	2285	114	B3-80	33010103-VW	-	575	1.08	-	18	80S/4-B3 CUS VW	193	230
1	0.75	2230	112	B3-80	33510173-VW	PE	575	1.26	TW	22	80LP/4-B3 CUS TW VW	193	230
1.5	1.1	2320	116	B3-90S	34010173-VW	PE	575	1.68	TW	33	90SP/4-B3 CUS TW VW	193	230
2	1.5	2310	116	B3-90L	34510173-VW	PE	575	2.24	TW	37	90LP/4-B3 CUS TW VW	193	230
3	2.2	2360	118	B3-100	35010173-VW	PE	575	3.07	TW	56	100LP/4-B3 CUS TW VW	193	230
5	3.7	2335	117	B3-112	36010173-VW	PE	575	5.20	TW	78	112MP/4-B3 CUS TW VW	193	230
7.5	5.5	2355	118	B3-132	36310173-VW	PE	575	7.80	TW	121	132SP/4-B3 CUS TW VW	193	231
10	7.5	2350	118	B3-132	36610173-VW	PE	575	10.7	TW	137	132MP/4-B3 CUS TW VW	193	231
15	11	2360	118	B3-160	37150173-VW	PE	575	14.2	TW	205	160MP/4-B3 CUS TW VW	193	231
20	15	2360	118	B3-160	37450173-VW	PE	575	19.0	TW	269	160LP/4-B3 CUS TW VW	193	231
25	18.5	2380	119	B3-180	37750173-VW	PE	575	24.2	TW	342	180MP/4-B3 CUS TW VW	193	231
30	22	2370	119	B3-180	38050173-VW	PE	575	27.8	TW	342	180LP/4-B3 CUS TW VW	193	231



# Inverter Duty Motors

## 1000:1 Constant Torque (F VZ)

### 230/460V 60-0Hz



Motor Selection

NEMA C-Face - 1000:1 (F VZ) 230/460V - 60-0Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.16	0.12	1700	0	56C	31110012-F VZ	-	230/460	0.88/0.44	-	7.9	63S/4-56C CUS F VZ	180	218
0.25	0.18	1680	0	56C	31610012-F VZ	-	230/460	1.12/0.56	-	9.3	63L/4-56C CUS F VZ	180	218
0.33	0.25	1710	0	56C	32110012-F VZ	-	230/460	1.56/0.78	-	12	71S/4-56C CUS F VZ	180	218
0.5	0.37	1720	0	56C	32610012-F VZ	-	230/460	1.90/0.95	-	14	71L/4-56C CUS F VZ	180	218
0.75	0.55	1710	0	56C	33110012-F VZ	-	230/460	2.70/1.35	-	18	80S/4-56C CUS F VZ	180	218
1	0.75	1730	0	56C	33610294-F VZ	PE	230/460	3.14/1.57	TW	22	80LP/4-56C CUS TW F VZ	180	218
1	0.75	1730	0	143TC	33610292-F VZ	PE	230/460	3.14/1.57	TW	22	80LP/4-143TC CUS TW F VZ	180	218
1.5	1.1	1740	0	145TC	34110292-F VZ	PE	230/460	4.20/2.10	TW	33	90SP/4-145TC CUS TW F VZ	180	218
2	1.5	1730	0	145TC	34610292-F VZ	PE	230/460	5.60/2.80	TW	37	90LP/4-145TC CUS TW F VZ	180	218
3	2.2	1770	0	182TC	35110292-F VZ	PE	230/460	7.68/3.84	TW	56	100LP/4-182TC CUS TW F VZ	180	219
5	3.7	1755	0	184TC	36110292-F VZ	PE	230/460	13.0/6.50	TW	78	112MP/4-184TC CUS TW F VZ	180	219
7.5	5.5	1770	0	213TC	36410292-F VZ	PE	230/460	19.5/9.75	TW	121	132SP/4-213TC CUS TW F VZ	180	219
10	7.5	1765	0	215TC	36710292-F VZ	PE	230/460	26.7/13.4	TW	137	132MP/4-215TC CUS TW F VZ	180	219
15	11	1770	0	254TC	37350292-F VZ	PE	230/460	35.6/17.8	TW	205	160MP/4-254TC CUS TW F VZ	180	219
20	15	1775	0	256C	37550292-F VZ	PE	230/460	47.6/23.8	TW	269	160LP/4-256C CUS TW F VZ	180	219
25	18.5	1780	0	286TC	37750272-F VZ	PE	230/460	60.6/30.3	TW	342	180MP/4-286TC CUS TW F VZ	180	219
30	22	1780	0	286TC	38050272-F VZ	PE	230/460	69.6/34.8	TW	342	180LP/4-286TC CUS TW F VZ	180	219

NEMA T Footed - 1000:1 (F VZ) 230/460V - 60-0Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.33	0.25	1710	0	56	32110112-F VZ	-	230/460	1.56/0.78	-	12	71S/4-56 CUS F VZ	180	208
0.5	0.37	1720	0	56	32610112-F VZ	-	230/460	1.90/0.95	-	14	71L/4-56 CUS F VZ	180	208
0.75	0.55	1710	0	56	33110112-F VZ	-	230/460	2.70/1.35	-	18	80S/4-56 CUS F VZ	180	208
1	0.75	1730	0	56	33610394-F VZ	PE	230/460	3.14/1.57	TW	22	80LP/4-56 CUS TW F VZ	180	208
1	0.75	1730	0	143T	33610392-F VZ	PE	230/460	3.14/1.57	TW	22	80LP/4-143T CUS TW F VZ	180	208
1.5	1.1	1740	0	145T	34110392-F VZ	PE	230/460	4.20/2.10	TW	33	90SP/4-145T CUS TW F VZ	180	208
2	1.5	1730	0	145T	34610392-F VZ	PE	230/460	5.60/2.80	TW	37	90LP/4-145T CUS TW F VZ	180	208
3	2.2	1770	0	182T	35110392-F VZ	PE	230/460	7.68/3.84	TW	56	100LP/4-182T CUS TW F VZ	180	208
5	3.7	1755	0	184T	36110392-F VZ	PE	230/460	13.0/6.50	TW	78	112MP/4-184T CUS TW F VZ	180	208
7.5	5.5	1770	0	213T	36410392-F VZ	PE	230/460	19.5/9.75	TW	121	132SP/4-213T CUS TW F VZ	180	208
10	7.5	1765	0	215T	36710392-F VZ	PE	230/460	26.7/13.4	TW	137	132MP/4-215T CUS TW F VZ	180	208



# Inverter Duty Motors

## 1000:1 Constant Torque (F VZ)

### 230/460V 60-0Hz

IEC B5 Flange - 1000:1 (F VZ) 230/460V - 60-0Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.16	0.12	1700	0	B5 A140	31010002-F VZ	-	230/460	0.88/0.44	-	7.9	63S/4-B5 A140 CUS F VZ	180	242
0.25	0.18	1680	0	B5 A140	31510002-F VZ	-	230/460	1.12/0.56	-	9.3	63L/4-B5 A140 CUS F VZ	180	242
0.33	0.25	1710	0	B5 A160	32010002-F VZ	-	230/460	1.56/0.78	-	12	71S/4-B5 A160 CUS F VZ	180	242
0.5	0.37	1720	0	B5 A160	32510002-F VZ	-	230/460	1.90/0.95	-	14	71L/4-B5 A160 CUS F VZ	180	242
0.75	0.55	1710	0	B5 A200	33010002-F VZ	-	230/460	2.70/1.35	-	18	80S/4-B5 A200 CUS F VZ	180	242
1	0.75	1730	0	B5 A200	33510072-F VZ	PE	230/460	3.14/1.57	TW	22	80LP/4-B5 A200 CUS TW F VZ	180	242
1.5	1.1	1740	0	B5 A200	34010072-F VZ	PE	230/460	4.20/2.10	TW	33	90SP/4-B5 A200 CUS TW F VZ	180	242
2	1.5	1730	0	B5 A200	34510072-F VZ	PE	230/460	5.60/2.80	TW	37	90LP/4-B5 A200 CUS TW F VZ	180	242
3	2.2	1770	0	B5 A250	35010072-F VZ	PE	230/460	7.68/3.84	TW	56	100LP/4-B5 A250 CUS TW F VZ	180	242
5	3.7	1755	0	B5 A250	36010072-F VZ	PE	230/460	13.0/6.50	TW	78	112MP/4-B5 A250 CUS TW F VZ	180	242
7.5	5.5	1770	0	B5 A300	36310072-F VZ	PE	230/460	19.5/9.75	TW	121	132SP/4-B5 A300 CUS TW F VZ	180	243
10	7.5	1765	0	B5 A300	36610072-F VZ	PE	230/460	26.7/13.4	TW	137	132MP/4-B5 A300 CUS TW F VZ	180	243
15	11	1770	0	B5 A350	37150072-F VZ	PE	230/460	35.6/17.8	TW	205	160MP/4-B5 A350 CUS TW F VZ	180	243
20	15	1775	0	B5 A350	37450072-F VZ	PE	230/460	47.6/23.8	TW	269	160LP/4-B5 A350 CUS TW F VZ	180	243
25	18.5	1780	0	B5 A350	37750072-F VZ	PE	230/460	60.6/30.3	TW	342	180MP/4-B5 A350 CUS TW F VZ	180	243
30	22	1780	0	B5 A350	38050072-F VZ	PE	230/460	69.6/34.8	TW	342	180LP/4-B5 A350 CUS TW F VZ	180	243

IEC B14 Flange - 1000:1 (F VZ) 230/460V - 60-0Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.16	0.12	1700	0	B14 C90	31010022-F VZ	-	230/460	0.88/0.44	-	7.9	63S/4-B14 C90 CUS F VZ	180	254
0.25	0.18	1680	0	B14 C90	31510022-F VZ	-	230/460	1.12/0.56	-	9.3	63L/4-B14 C90 CUS F VZ	180	254
0.25	0.18	1680	0	B14 C120	31510012-F VZ	-	230/460	1.12/0.56	-	9.3	63L/4-B14 C120 CUS F VZ	180	254
0.33	0.25	1710	0	B14 C105	32010053-F VZ	-	230/460	1.56/0.78	-	12	71S/4-B14 C105 CUS F VZ	180	254
0.33	0.25	1710	0	B14 C140	32010012-F VZ	-	230/460	1.56/0.78	-	12	71S/4-B14 C140 CUS F VZ	180	254
0.5	0.37	1720	0	B14 C105	32510022-F VZ	-	230/460	1.90/0.95	-	14	71L/4-B14 C105 CUS F VZ	180	254
0.5	0.37	1720	0	B14 C140	32510012-F VZ	-	230/460	1.90/0.95	-	14	71L/4-B14 C140 CUS F VZ	180	254
0.75	0.55	1710	0	B14 C120	33010022-F VZ	-	230/460	2.70/1.35	-	18	80S/4-B14 C120 CUS F VZ	180	254
0.75	0.55	1710	0	B14 C160	33010012-F VZ	-	230/460	2.70/1.35	-	18	80S/4-B14 C160 CUS F VZ	180	254
1	0.75	1730	0	B14 C120	33510096-F VZ	PE	230/460	3.14/1.57	TW	22	80LP/4-B14 C120 CUS TW F VZ	180	254
1.5	1.1	1740	0	B14 C140	34010015-F VZ	PE	230/460	4.20/2.10	TW	33	90SP/4-B14 C140 CUS TW F VZ	180	254
2	1.5	1730	0	B14 C140	34510015-F VZ	PE	230/460	5.60/2.80	TW	37	90LP/4-B14 C140 CUS TW F VZ	180	254
3	2.2	1770	0	B14 C160	35010015-F VZ	PE	230/460	7.68/3.84	TW	56	100LP/4-B14 C160 CUS TW F VZ	180	254
5	3.7	1755	0	B14 C160	36010015-F VZ	PE	230/460	13.0/6.50	TW	78	112MP/4-B14 C160 CUS TW F VZ	180	254
7.5	5.5	1770	0	B14 C200	36310015-F VZ	PE	230/460	19.5/9.75	TW	121	132SP/4-B14 C200 CUS TW F VZ	180	255
10	7.5	1765	0	B14 C200	36610015-F VZ	PE	230/460	26.7/13.4	TW	137	132MP/4-B14 C200 CUS TW F VZ	180	255



# Inverter Duty Motors

## 1000:1 Constant Torque (F VZ)

### 230/460V 60-0Hz



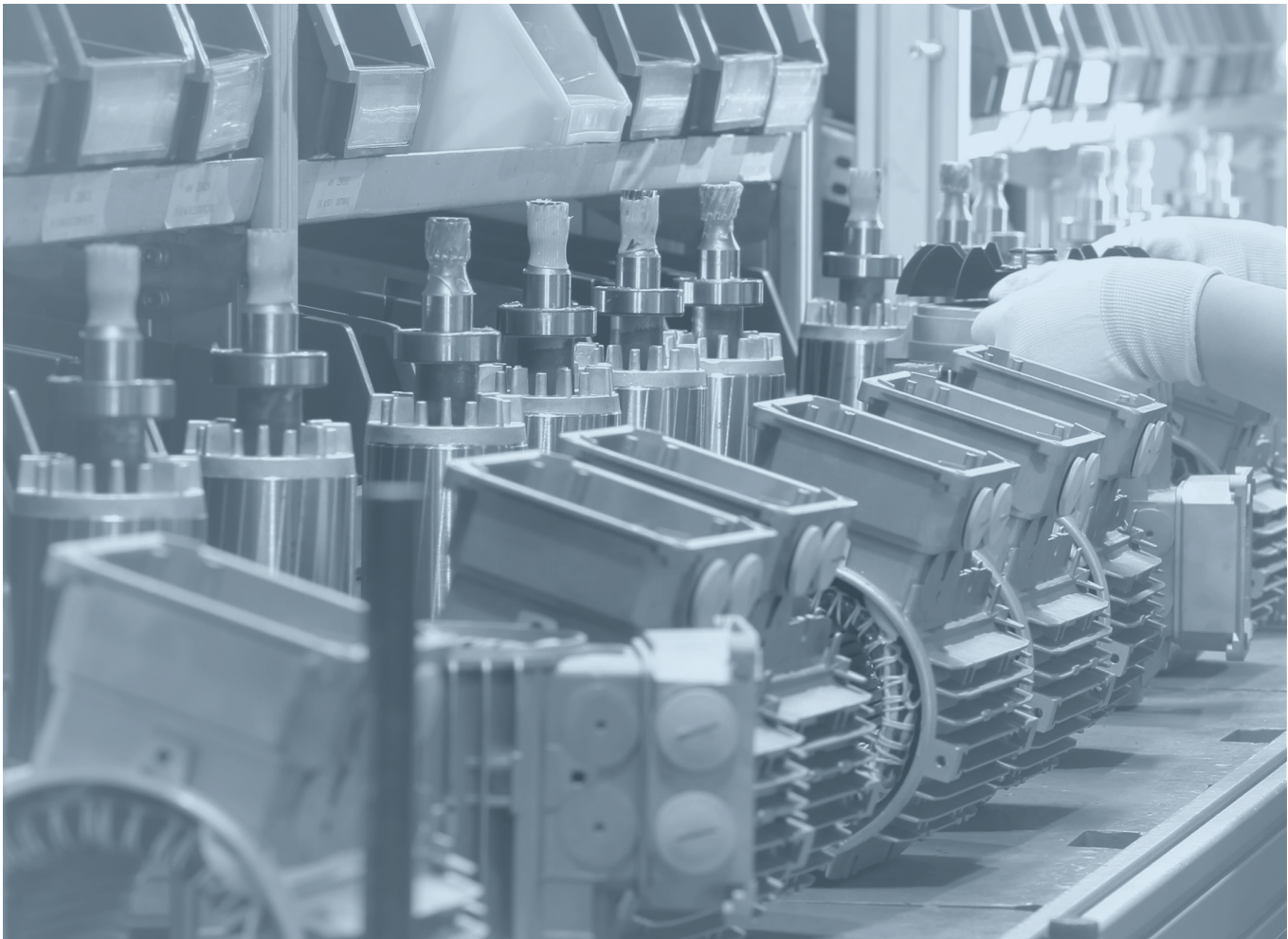
#### IEC Footed (B3) - 1000:1 (F VZ)

#### 230/460V - 60-0Hz



Motor Selection

Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.33	0.25	1710	0	B3-71	32010102-F VZ	-	230/460	1.56/0.78	-	12	71S/4-B3 CUS F VZ	180	230
0.5	0.37	1720	0	B3-71	32510102-F VZ	-	230/460	1.90/0.95	-	14	71L/4-B3 CUS F VZ	180	230
0.75	0.55	1710	0	B3-80	33010102-F VZ	-	230/460	2.70/1.35	-	18	80S/4-B3 CUS F VZ	180	230
1	0.75	1730	0	B3-80	33510172-F VZ	PE	230/460	3.14/1.57	TW	22	80LP/4-B3 CUS TW F VZ	180	230
1.5	1.1	1740	0	B3-90S	34010172-F VZ	PE	230/460	4.20/2.10	TW	33	90SP/4-B3 CUS TW F VZ	180	230
2	1.5	1730	0	B3-90L	34510172-F VZ	PE	230/460	5.60/2.80	TW	37	90LP/4-B3 CUS TW F VZ	180	230
3	2.2	1770	0	B3-100	35010172-F VZ	PE	230/460	7.68/3.84	TW	56	100LP/4-B3 CUS TW F VZ	180	230
5	3.7	1755	0	B3-112	36010172-F VZ	PE	230/460	13.0/6.50	TW	78	112MP/4-B3 CUS TW F VZ	180	230
7.5	5.5	1770	0	B3-132	36310172-F VZ	PE	230/460	19.5/9.75	TW	121	132SP/4-B3 CUS TW F VZ	180	231
10	7.5	1765	0	B3-132	36610172-F VZ	PE	230/460	26.7/13.4	TW	137	132MP/4-B3 CUS TW F VZ	180	231
15	11	1770	0	B3-160	37150172-F VZ	PE	230/460	35.6/17.8	TW	205	160MP/4-B3 CUS TW F VZ	180	231
20	15	1775	0	B3-160	37450172-F VZ	PE	230/460	47.6/23.8	TW	269	160LP/4-B3 CUS TW F VZ	180	231
25	18.5	1780	0	B3-180	37750172-F VZ	PE	230/460	60.6/30.3	TW	342	180MP/4-B3 CUS TW F VZ	180	231
30	22	1780	0	B3-180	38050172-F VZ	PE	230/460	69.6/34.8	TW	342	180LP/4-B3 CUS TW F VZ	180	231





# Inverter Duty Motors

## 1000:1 Constant Torque (F VZ)

### 575V 60-0Hz

NEMA C-Face - 1000:1 (F VZ) 575V - 60-0Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.16	0.12	1700	0	56C	31110013-F VZ	-	575	0.35	-	7.9	63S/4-56C CUS F VZ	195	218
0.25	0.18	1680	0	56C	31610013-F VZ	-	575	0.45	-	9.3	63L/4-56C CUS F VZ	195	218
0.33	0.25	1710	0	56C	32110013-F VZ	-	575	0.62	-	12	71S/4-56C CUS F VZ	195	218
0.5	0.37	1720	0	56C	32610013-F VZ	-	575	0.76	-	14	71L/4-56C CUS F VZ	195	218
0.75	0.55	1710	0	56C	33110013-F VZ	-	575	1.08	-	18	80S/4-56C CUS F VZ	195	218
1	0.75	1730	0	56C	33610295-F VZ	PE	575	1.26	TW	22	80LP/4-56C CUS TW F VZ	195	218
1	0.75	1730	0	143TC	33610293-F VZ	PE	575	1.26	TW	22	80LP/4-143TC CUS TW F VZ	195	218
1.5	1.1	1740	0	145TC	34110293-F VZ	PE	575	1.68	TW	33	90SP/4-145TC CUS TW F VZ	195	218
2	1.5	1730	0	145TC	34610293-F VZ	PE	575	2.24	TW	37	90LP/4-145TC CUS TW F VZ	195	218
3	2.2	1770	0	182TC	35110293-F VZ	PE	575	3.07	TW	56	100LP/4-182TC CUS TW F VZ	195	219
5	3.7	1755	0	184TC	36110293-F VZ	PE	575	5.20	TW	78	112MP/4-184TC CUS TW F VZ	195	219
7.5	5.5	1770	0	213TC	36410293-F VZ	PE	575	7.80	TW	121	132SP/4-213TC CUS TW F VZ	195	219
10	7.5	1765	0	215TC	36710293-F VZ	PE	575	10.7	TW	137	132MP/4-215TC CUS TW F VZ	195	219
15	11	1770	0	254TC	37350293-F VZ	PE	575	14.2	TW	205	160MP/4-254TC CUS TW F VZ	195	219
20	15	1775	0	256C	37550293-F VZ	PE	575	19.0	TW	269	160LP/4-256C CUS TW F VZ	195	219
25	18.5	1780	0	286TC	37750273-F VZ	PE	575	24.2	TW	342	180MP/4-286TC CUS TW F VZ	195	219
30	22	1780	0	286TC	38050273-F VZ	PE	575	27.8	TW	342	180LP/4-286TC CUS TW F VZ	195	219

NEMA T Footed - 1000:1 (F VZ) 575V - 60-0Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.33	0.25	1710	0	56	32110113-F VZ	-	575	0.62	-	12	71S/4-56 CUS F VZ	195	208
0.5	0.37	1720	0	56	32610113-F VZ	-	575	0.76	-	14	71L/4-56 CUS F VZ	195	208
0.75	0.55	1710	0	56	33110113-F VZ	-	575	1.08	-	18	80S/4-56 CUS F VZ	195	208
1	0.75	1730	0	56	33610395-F VZ	PE	575	1.26	TW	22	80LP/4-56 CUS TW F VZ	195	208
1	0.75	1730	0	143T	33610393-F VZ	PE	575	1.26	TW	22	80LP/4-143T CUS TW F VZ	195	208
1.5	1.1	1740	0	145T	34110393-F VZ	PE	575	1.68	TW	33	90SP/4-145T CUS TW F VZ	195	208
2	1.5	1730	0	145T	34610393-F VZ	PE	575	2.24	TW	37	90LP/4-145T CUS TW F VZ	195	208
3	2.2	1770	0	182T	35110393-F VZ	PE	575	3.07	TW	56	100LP/4-182T CUS TW F VZ	195	208
5	3.7	1755	0	184T	36110393-F VZ	PE	575	5.20	TW	78	112MP/4-184T CUS TW F VZ	195	208
7.5	5.5	1770	0	213T	36410393-F VZ	PE	575	7.80	TW	121	132SP/4-213T CUS TW F VZ	195	208
10	7.5	1765	0	215T	36710393-F VZ	PE	575	10.7	TW	137	132MP/4-215T CUS TW F VZ	195	208

Motor Selection

# Inverter Duty Motors

## 1000:1 Constant Torque (F VZ)

### 575V 60-0Hz



Motor Selection

IEC B5 Flange - 1000:1 (F VZ) 575V - 60-0Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.16	0.12	1700	0	B5 A140	31010003-F VZ	-	575	0.35	-	7.9	63S/4-B5 A140 CUS FVZ	195	242
0.25	0.18	1680	0	B5 A140	31510003-F VZ	-	575	0.45	-	9.3	63L/4-B5 A140 CUS FVZ	195	242
0.33	0.25	1710	0	B5 A160	32010003-F VZ	-	575	0.62	-	12	71S/4-B5 A160 CUS FVZ	195	242
0.5	0.37	1720	0	B5 A160	32510003-F VZ	-	575	0.76	-	14	71L/4-B5 A160 CUS FVZ	195	242
0.75	0.55	1710	0	B5 A200	33010003-F VZ	-	575	1.08	-	18	80S/4-B5 A200 CUS FVZ	195	242
1	0.75	1730	0	B5 A200	33510074-F VZ	PE	575	1.26	TW	22	80LP/4-B5 A200 CUS TW FVZ	195	242
1.5	1.1	1740	0	B5 A200	34010073-F VZ	PE	575	1.68	TW	33	90SP/4-B5 A200 CUS TW FVZ	195	242
2	1.5	1730	0	B5 A200	34510073-F VZ	PE	575	2.24	TW	37	90LP/4-B5 A200 CUS TW FVZ	195	242
3	2.2	1770	0	B5 A250	35010073-F VZ	PE	575	3.07	TW	56	100LP/4-B5 A250 CUS TW FVZ	195	242
5	3.7	1755	0	B5 A250	36010073-F VZ	PE	575	5.20	TW	78	112MP/4-B5 A250 CUS TW FVZ	195	242
7.5	5.5	1770	0	B5 A300	36310073-F VZ	PE	575	7.80	TW	121	132SP/4-B5 A300 CUS TW FVZ	195	243
10	7.5	1765	0	B5 A300	36610073-F VZ	PE	575	10.7	TW	137	132MP/4-B5 A300 CUS TW FVZ	195	243
15	11	1770	0	B5 A350	37150073-F VZ	PE	575	14.2	TW	205	160MP/4-B5 A350 CUS TW FVZ	195	243
20	15	1775	0	B5 A350	37450073-F VZ	PE	575	19.0	TW	269	160LP/4-B5 A350 CUS TW FVZ	195	243
25	18.5	1780	0	B5 A350	37750073-F VZ	PE	575	24.2	TW	342	180MP/4-B5 A350 CUS TW FVZ	195	243
30	22	1780	0	B5 A350	38050073-F VZ	PE	575	27.8	TW	342	180LP/4-B5 A350 CUS TW FVZ	195	243

IEC B14 Flange - 1000:1 (F VZ) 575V - 60-0Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.16	0.12	1700	0	B14 C90	31010023-F VZ	-	575	0.35	-	7.9	63S/4-B14 C90 CUS FVZ	195	254
0.25	0.18	1680	0	B14 C90	31510023-F VZ	-	575	0.45	-	9.3	63L/4-B14 C90 CUS FVZ	195	254
0.33	0.25	1710	0	B14 C105	32010054-F VZ	-	575	0.62	-	12	71S/4-B14 C105 CUS FVZ	195	254
0.5	0.37	1720	0	B14 C105	32510023-F VZ	-	575	0.76	-	14	71L/4-B14 C105 CUS FVZ	195	254
0.75	0.55	1710	0	B14 C120	33010023-F VZ	-	575	1.08	-	18	80S/4-B14 C120 CUS FVZ	195	254
1	0.75	1730	0	B14 C120	33510098-F VZ	PE	575	1.26	TW	22	80LP/4-B14 C120 CUS TW FVZ	195	254
1.5	1.1	1740	0	B14 C140	34010016-F VZ	PE	575	1.68	TW	33	90SP/4-B14 C140 CUS TW FVZ	195	254
2	1.5	1730	0	B14 C140	34510016-F VZ	PE	575	2.24	TW	37	90LP/4-B14 C140 CUS TW FVZ	195	254
3	2.2	1770	0	B14 C160	35010016-F VZ	PE	575	3.07	TW	56	100LP/4-B14 C160 CUS TW FVZ	195	254
5	3.7	1755	0	B14 C160	36010016-F VZ	PE	575	5.20	TW	78	112MP/4-B14 C160 CUS TW FVZ	195	254
7.5	5.5	1770	0	B14 C200	36310016-F VZ	PE	575	7.80	TW	121	132SP/4-B14 C200 CUS TW FVZ	195	255
10	7.5	1765	0	B14 C200	36610016-F VZ	PE	575	10.7	TW	137	132MP/4-B14 C200 CUS TW FVZ	195	255





# Inverter Duty Motors

## 1000:1 Constant Torque (F VZ)

### 575V 60-0Hz



#### IEC Footed (B3) - 1000:1 (F VZ)

#### 575V - 60-0Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
0.33	0.25	1710	0	B3-71	32010103-F VZ	-	575	0.62	-	12	71S/4-B3 CUS F VZ	195	230
0.5	0.37	1720	0	B3-71	32510103-F VZ	-	575	0.76	-	14	71L/4-B3 CUS F VZ	195	230
0.75	0.55	1710	0	B3-80	33010103-F VZ	-	575	1.08	-	18	80S/4-B3 CUS F VZ	195	230
1	0.75	1730	0	B3-80	33510173-F VZ	PE	575	1.26	TW	22	80LP/4-B3 CUS TW F VZ	195	230
1.5	1.1	1740	0	B3-90S	34010173-F VZ	PE	575	1.68	TW	33	90SP/4-B3 CUS TW F VZ	195	230
2	1.5	1730	0	B3-90L	34510173-F VZ	PE	575	2.24	TW	37	90LP/4-B3 CUS TW F VZ	195	230
3	2.2	1770	0	B3-100	35010173-F VZ	PE	575	3.07	TW	56	100LP/4-B3 CUS TW F VZ	195	230
5	3.7	1755	0	B3-112	36010173-F VZ	PE	575	5.20	TW	78	112MP/4-B3 CUS TW F VZ	195	230
7.5	5.5	1770	0	B3-132	36310173-F VZ	PE	575	7.80	TW	121	132SP/4-B3 CUS TW F VZ	195	231
10	7.5	1765	0	B3-132	36610173-F VZ	PE	575	10.7	TW	137	132MP/4-B3 CUS TW F VZ	195	231
15	11	1770	0	B3-160	37150173-F VZ	PE	575	14.2	TW	205	160MP/4-B3 CUS TW F VZ	195	231
20	15	1775	0	B3-160	37450173-F VZ	PE	575	19.0	TW	269	160LP/4-B3 CUS TW F VZ	195	231
25	18.5	1780	0	B3-180	37750173-F VZ	PE	575	24.2	TW	342	180MP/4-B3 CUS TW F VZ	195	231
30	22	1780	0	B3-180	38050173-F VZ	PE	575	27.8	TW	342	180LP/4-B3 CUS TW F VZ	195	231



# Brakemotors 230/460V 60Hz



NEMA C-Face 230/460V - 60Hz														
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type		Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]			[lb-ft]		
0.16	0.12	1700	56C	31110034	-	230/460	0.88/0.44	-	12.3	63S/4-56C CUS BRE 5 HL	3.7	172	224	
0.25	0.18	1680	56C	31610034	-	230/460	1.12/0.56	-	13.7	63L/4-56C CUS BRE 5 HL	3.7	172	224	
0.33	0.25	1710	56C	32110034	-	230/460	1.56/0.78	-	16.4	71S/4-56C CUS BRE 5 HL	3.7	172	224	
0.5	0.37	1720	56C	32610034	-	230/460	1.90/0.95	-	18.4	71L/4-56C CUS BRE 5 HL	3.7	172	224	
0.75	0.55	1710	56C	33110034	-	230/460	2.7/1.35	-	24.6	80S/4-56C CUS BRE 10 HL	7.4	172	224	
1	0.75	1730	56C	33610282	PE	230/460	3.14/1.57	TW	28.6	80LP/4-56C CUS BRE 10 HL TW	7.4	172	224	
1	0.75	1730	143TC	33610284	PE	230/460	3.14/1.57	TW	28.6	80LP/4-143TC CUS BRE 10 HL TW	7.4	172	224	
1.5	1.1	1740	145TC	34110284	PE	230/460	4.20/2.10	TW	45	90SP/4-145TC CUS BRE 20 HL TW	14.8	172	224	
2	1.5	1730	145TC	34610284	PE	230/460	5.60/2.80	TW	49	90LP/4-145TC CUS BRE 20 HL TW	14.8	172	224	
3	2.2	1770	182TC	35110284	PE	230/460	7.68/3.84	TW	71	100LP/4-182TC CUS BRE 40 HL TW	29.5	172	225	
5	3.7	1755	184TC	36110284	PE	230/460	13.0/6.50	TW	93	112MP/4-184TC CUS BRE 40 HL TW	29.5	172	225	
7.5	5.5	1770	213TC	36410284	PE	230/460	19.5/9.80	TW	144	132SP/4-213TC CUS BRE 60 HL TW	44.3	172	225	
10	7.5	1765	215TC	36710284	PE	230/460	26.7/13.4	TW	173	132MP/4-215TC CUS BRE 100 HL TW	73.8	172	225	
15	11	1770	254TC	37350284	PE	230/460	35.6/17.8	TW	256	160MP/4-254TC CUS BRE 150 HL TW	111	172	225	
20	15	1775	256C	37550284	PE	230/460	47.6/23.8	TW	342	160LP/4-256C CUS BRE 250 HL TW	184	172	225	
25	18.5	1780	286TC	37750232	PE	230/460	60.6/30.3	TW	415	180MP/4-286TC CUS BRE 250 HL TW	184	172	225	
30	22	1780	286TC	38050232	PE	230/460	69.6/34.8	TW	415	180LP/4-286TC CUS BRE 250 HL TW	184	172	225	

NEMA T Footed 230/460V - 60Hz														
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type		Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]			[lb-ft]		
0.33	0.25	1710	56	32110134	-	230/460	1.56/0.78	-	16.4	71S/4-56 CUS BRE 5 HL	3.7	172	213	
0.5	0.37	1720	56	32610134	-	230/460	1.90/0.95	-	18.4	71L/4-56 CUS BRE 5 HL	3.7	172	213	
0.75	0.55	1710	56	33110134	-	230/460	2.7/1.35	-	24.6	80S/4-56 CUS BRE 10 HL	7.4	172	213	
1	0.75	1730	56	33610382	PE	230/460	3.14/1.57	TW	28.6	80LP/4-56 CUS BRE 10 HL TW	7.4	172	213	
1	0.75	1730	143T	33610384	PE	230/460	3.14/1.57	TW	28.6	80LP/4-143T CUS BRE 10 HL TW	7.4	172	213	
1.5	1.1	1740	145T	34110384	PE	230/460	4.20/2.10	TW	45	90SP/4-145T CUS BRE 20 HL TW	14.8	172	213	
2	1.5	1730	145T	34610384	PE	230/460	5.60/2.80	TW	49	90LP/4-145T CUS BRE 20 HL TW	14.8	172	213	
3	2.2	1770	182T	35110384	PE	230/460	7.68/3.84	TW	71	100LP/4-182T CUS BRE 40 HL TW	29.5	172	213	
5	3.7	1755	184T	36110384	PE	230/460	13.0/6.50	TW	93	112MP/4-184T CUS BRE 40 HL TW	29.5	172	213	
7.5	5.5	1770	213T	36410384	PE	230/460	19.5/9.80	TW	144	132SP/4-213T CUS BRE 60 HL TW	44.3	172	213	
10	7.5	1765	215T	36710384	PE	230/460	26.7/13.4	TW	173	132MP/4-215T CUS BRE 100 HL TW	73.8	172	213	

◇ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.



IEC B5 Flange 230/460V - 60Hz															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]			[lb-ft]			
0.16	0.12	1700	B5 A140	31010019	-	230/460	0.88/0.44	-	12.3	63S/4-B5 A140 CUS BRE 5 HL	3.7	172	248		
0.25	0.18	1680	B5 A140	31510019	-	230/460	1.12/0.56	-	12.3	63L/4-B5 A140 CUS BRE 5 HL	3.7	172	248		
0.33	0.25	1710	B5 A160	32010019	-	230/460	1.56/0.78	-	16.4	71S/4-B5 A160 CUS BRE 5 HL	3.7	172	248		
0.5	0.37	1720	B5 A160	32510019	-	230/460	1.90/0.95	-	18.4	71L/4-B5 A160 CUS BRE 5 HL	3.7	172	248		
0.75	0.55	1710	B5 A200	33010019	-	230/460	2.7/1.35	-	24.6	80S/4-B5 A200 CUS BRE 10 HL	7.4	172	248		
1	0.75	1730	B5 A200	33510032	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B5 A200 CUS BRE 10 HL TW	7.4	172	248		
1.5	1.1	1740	B5 A200	34010032	PE	230/460	4.20/2.10	TW	45	90SP/4-B5 A200 CUS BRE 20 HL TW	14.8	172	248		
2	1.5	1730	B5 A200	34510032	PE	230/460	5.60/2.80	TW	49	90LP/4-B5 A200 CUS BRE 20 HL TW	14.8	172	248		
3	2.2	1770	B5 A250	35010034	PE	230/460	7.68/3.84	TW	71	100LP/4-B5 A250 CUS BRE 40 HL TW	29.5	172	248		
5	3.7	1755	B5 A250	36010032	PE	230/460	13.0/6.50	TW	93	112MP/4-B5 A250 CUS BRE 40 HL TW	29.5	172	248		
7.5	5.5	1770	B5 A300	36310032	PE	230/460	19.5/9.80	TW	144	132SP/4-B5 A300 CUS BRE 60 HL TW	44.3	172	249		
10	7.5	1765	B5 A300	36610032	PE	230/460	26.7/13.4	TW	173	132MP/4-B5 A300 CUS BRE 100 HL TW	73.8	172	249		
15	11	1770	B5 A350	37150032	PE	230/460	35.6/17.8	TW	256	160MP/4-B5 A350 CUS BRE 150 HL TW	111	172	249		
20	15	1775	B5 A350	37450032	PE	230/460	47.6/23.8	TW	342	160LP/4-B5 A350 CUS BRE 250 HL TW	184	172	249		
25	18.5	1780	B5 A350	37750032	PE	230/460	60.6/30.3	TW	415	180MP/4-B5 A350 CUS BRE 250 HL TW	184	172	249		
30	22	1780	B5 A350	38050032	PE	230/460	69.6/34.8	TW	415	180LP/4-B5 A350 CUS BRE 250 HL TW	184	172	249		

IEC B14 Flange 230/460V - 60Hz															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]			[lb-ft]			
0.16	0.12	1700	B14 C90	31010046	-	230/460	0.88/0.44	-	12.3	63S/4-B14 C90 CUS BRE 5 HL	3.7	172	260		
0.25	0.18	1680	B14 C90	31510045	-	230/460	1.12/0.56	-	13.7	63L/4-B14 C90 CUS BRE 5 HL	3.7	172	260		
0.33	0.25	1710	B14 C105	32010045	-	230/460	1.56/0.78	-	16.4	71S/4-B14 C105 CUS BRE 5 HL	3.7	172	260		
0.5	0.37	1720	B14 C105	32510046	-	230/460	1.90/0.95	-	18.4	71L/4-B14 C105 CUS BRE 5 HL	3.7	172	260		
0.75	0.55	1710	B14 C120	33010047	-	230/460	2.7/1.35	-	24.6	80S/4-B14 C120 CUS BRE 10 HL	7.4	172	260		
1	0.75	1730	B14 C120	33510041	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW	7.4	172	260		
1.5	1.1	1740	B14 C140	34010041	PE	230/460	4.20/2.10	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW	14.8	172	260		
2	1.5	1730	B14 C140	34510041	PE	230/460	5.60/2.80	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW	14.8	172	260		
3	2.2	1770	B14 C160	35010044	PE	230/460	7.68/3.84	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW	29.5	172	260		
5	3.7	1755	B14 C160	36010044	PE	230/460	13.0/6.50	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW	29.5	172	260		
7.5	5.5	1770	B14 C200	36310041	PE	230/460	19.5/9.80	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW	44.3	172	261		
10	7.5	1765	B14 C200	36610041	PE	230/460	26.7/13.4	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW	73.8	172	261		

◇ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.



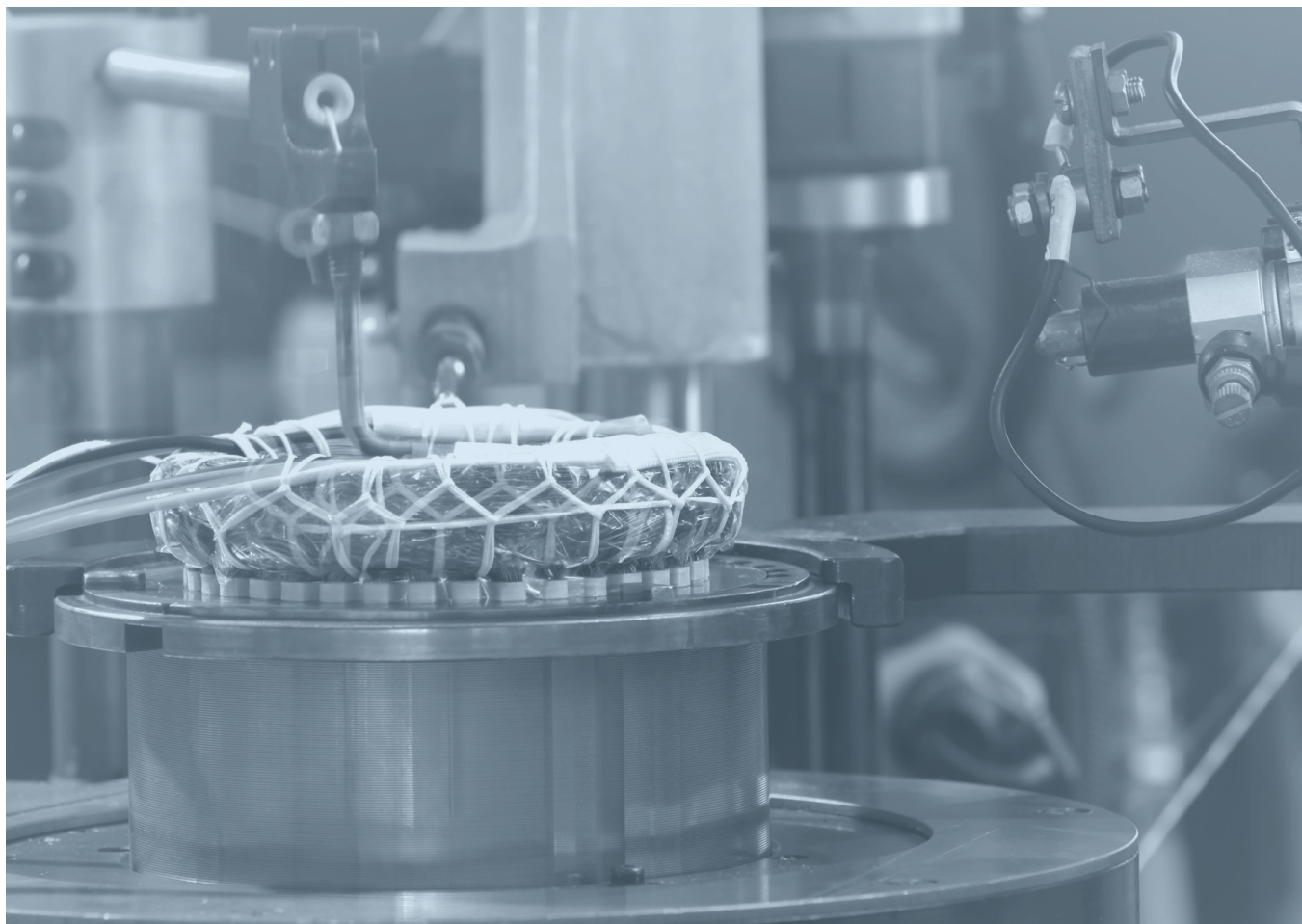
# Brakemotors 230/460V 60Hz





Motor Selection



Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]		[lb-ft]		
0.33	0.25	1710	B3-71	32010120	-	230/460	1.56/0.78	-	16.4	71S/4-B3 CUS BRE 5 HL	3.7	172	236
0.5	0.37	1720	B3-71	32510120	-	230/460	1.90/0.95	-	18.4	71L/4-B3 CUS BRE 5 HL	3.7	172	236
0.75	0.55	1710	B3-80	33010120	-	230/460	2.7/1.35	-	24.6	80S/4-B3 CUS BRE 10 HL	7.4	172	236
1	0.75	1730	B3-80	33510132	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW	7.4	172	236
1.5	1.1	1740	B3-90S	34010132	PE	230/460	4.20/2.10	TW	45	90SP/4-B3 CUS BRE 20 HL TW	14.8	172	236
2	1.5	1730	B3-90L	34510132	PE	230/460	5.60/2.80	TW	49	90LP/4-B3 CUS BRE 20 HL TW	14.8	172	236
3	2.2	1770	B3-100	35010132	PE	230/460	7.68/3.84	TW	71	100LP/4-B3 CUS BRE 40 HL TW	29.5	172	236
5	3.7	1755	B3-112	36010132	PE	230/460	13.0/6.50	TW	93	112MP/4-B3 CUS BRE 40 HL TW	29.5	172	236
7.5	5.5	1770	B3-132	36310132	PE	230/460	19.5/9.80	TW	144	132SP/4-B3 CUS BRE 60 HL TW	44.3	172	237
10	7.5	1765	B3-132	36610132	PE	230/460	26.7/13.4	TW	173	132MP/4-B3 CUS BRE 100 HL TW	73.8	172	237
15	11	1770	B3-160	37150132	PE	230/460	35.6/17.8	TW	256	160MP/4-B3 CUS BRE 150 HL TW	111	172	237
20	15	1775	B3-160	37450132	PE	230/460	47.6/23.8	TW	342	160LP/4-B3 CUS BRE 250 HL TW	184	172	237
25	18.5	1780	B3-180	37750132	PE	230/460	60.6/30.3	TW	415	180MP/4-B3 CUS BRE 250 HL TW	184	172	237
30	22	1780	B3-180	38050132	PE	230/460	69.6/34.8	TW	415	180LP/4-B3 CUS BRE 250 HL TW	184	172	237

◇ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.





 <b>NEMA C-Face</b> <b>575V - 60Hz</b> 															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]			[lb-ft]			
0.16	0.12	1700	56C	31110035	-	575	0.37	-	12.3	63S/4-56C CUS BRE 5 HL		3.7	187	224	
0.25	0.18	1680	56C	31610035	-	575	0.46	-	13.7	63L/4-56C CUS BRE 5 HL		3.7	187	224	
0.33	0.25	1710	56C	32110035	-	575	0.66	-	16.4	71S/4-56C CUS BRE 5 HL		3.7	187	224	
0.5	0.37	1720	56C	32610035	-	575	0.80	-	18.4	71L/4-56C CUS BRE 5 HL		3.7	187	224	
0.75	0.55	1710	56C	33110035	-	575	1.12	-	24.6	80S/4-56C CUS BRE 10 HL		7.4	187	224	
1	0.75	1730	56C	33610283	PE	575	1.25	TW	28.6	80LP/4-56C CUS BRE 10 HL TW		7.4	187	224	
1	0.75	1730	143TC	33610285	PE	575	1.25	TW	28.6	80LP/4-143TC CUS BRE 10 HL TW		7.4	187	224	
1.5	1.1	1740	145TC	34110285	PE	575	1.68	TW	45	90SP/4-145TC CUS BRE 20 HL TW		14.8	187	224	
2	1.5	1730	145TC	34610285	PE	575	2.24	TW	49	90LP/4-145TC CUS BRE 20 HL TW		14.8	187	224	
3	2.2	1770	182TC	35110285	PE	575	3.07	TW	71	100LP/4-182TC CUS BRE 40 HL TW		29.5	187	225	
5	3.7	1755	184TC	36110285	PE	575	5.2	TW	93	112MP/4-184TC CUS BRE 40 HL TW		29.5	187	225	
7.5	5.5	1770	213TC	36410285	PE	575	7.8	TW	144	132SP/4-213TC CUS BRE 60 HL TW		44.3	187	225	
10	7.5	1765	215TC	36710285	PE	575	10.7	TW	173	132MP/4-215TC CUS BRE 100 HL TW		73.8	187	225	
15	11	1770	254TC	37350285	PE	575	14.2	TW	256	160MP/4-254TC CUS BRE 150 HL TW		111	187	225	
20	15	1775	256C	37550285	PE	575	19	TW	342	160LP/4-256C CUS BRE 250 HL TW		184	187	225	
25	18.5	1780	286TC	37750233	PE	575	24.2	TW	415	180MP/4-286TC CUS BRE 250 HL TW		184	187	225	
30	22	1780	286TC	38050233	PE	575	27.8	TW	415	180LP/4-286TC CUS BRE 250 HL TW		184	187	225	

 <b>NEMA T Footed</b> <b>575V - 60Hz</b> 															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]			[lb-ft]			
0.33	0.25	1710	56	32110135	-	575	0.66	-	16.4	71S/4-56 CUS BRE 5 HL		3.7	187	213	
0.5	0.37	1720	56	32610135	-	575	0.80	-	18.4	71L/4-56 CUS BRE 5 HL		3.7	187	213	
0.75	0.55	1710	56	33110135	-	575	1.12	-	24.6	80S/4-56 CUS BRE 10 HL		7.4	187	213	
1	0.75	1730	56	33610383	PE	575	1.25	TW	28.6	80LP/4-56 CUS BRE 10 HL TW		7.4	187	213	
1	0.75	1730	143T	33610385	PE	575	1.25	TW	28.6	80LP/4-143T CUS BRE 10 HL TW		7.4	187	213	
1.5	1.1	1740	145T	34110385	PE	575	1.68	TW	45	90SP/4-145T CUS BRE 20 HL TW		14.8	187	213	
2	1.5	1730	145T	34610385	PE	575	2.24	TW	49	90LP/4-145T CUS BRE 20 HL TW		14.8	187	213	
3	2.2	1770	182T	35110385	PE	575	3.07	TW	71	100LP/4-182T CUS BRE 40 HL TW		29.5	187	213	
5	3.7	1755	184T	36110385	PE	575	5.2	TW	93	112MP/4-184T CUS BRE 40 HL TW		29.5	187	213	
7.5	5.5	1770	213T	36410385	PE	575	7.8	TW	144	132SP/4-213T CUS BRE 60 HL TW		44.3	187	213	
10	7.5	1765	215T	36710385	PE	575	10.7	TW	173	132MP/4-215T CUS BRE 100 HL TW		73.8	187	213	

◇ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.

# Brakemotors

## 575V 60Hz

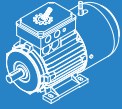


IEC B5 Flange 575V - 60Hz															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]				[lb-ft]		
0.16	0.12	1700	B5 A140	31010021	-	575	0.37	-	12.3	63S/4-B5 A140 CUS BRE 5 HL		3.7	187	248	
0.25	0.18	1680	B5 A140	31510021	-	575	0.46	-	12.3	63L/4-B5 A140 CUS BRE 5 HL		3.7	187	248	
0.33	0.25	1710	B5 A160	32010021	-	575	0.66	-	16.4	71S/4-B5 A160 CUS BRE 5 HL		3.7	187	248	
0.5	0.37	1720	B5 A160	32510021	-	575	0.80	-	18.4	71L/4-B5 A160 CUS BRE 5 HL		3.7	187	248	
0.75	0.55	1710	B5 A200	33010021	-	575	1.12	-	24.6	80S/4-B5 A200 CUS BRE 10 HL		7.4	187	248	
1	0.75	1730	B5 A200	33510033	PE	575	1.25	TW	28.6	80LP/4-B5 A200 CUS BRE 10 HL TW		7.4	187	248	
1.5	1.1	1740	B5 A200	34010033	PE	575	1.68	TW	45	90SP/4-B5 A200 CUS BRE 20 HL TW		14.8	187	248	
2	1.5	1730	B5 A200	34510033	PE	575	2.24	TW	49	90LP/4-B5 A200 CUS BRE 20 HL TW		14.8	187	248	
3	2.2	1770	B5 A250	35010035	PE	575	3.07	TW	71	100LP/4-B5 A250 CUS BRE 40 HL TW		29.5	187	248	
5	3.7	1755	B5 A250	36010033	PE	575	5.2	TW	93	112MP/4-B5 A250 CUS BRE 40 HL TW		29.5	187	248	
7.5	5.5	1770	B5 A300	36310033	PE	575	7.8	TW	144	132SP/4-B5 A300 CUS BRE 60 HL TW		44.3	187	249	
10	7.5	1765	B5 A300	36610033	PE	575	10.7	TW	173	132MP/4-B5 A300 CUS BRE 100 HL TW		73.8	187	249	
15	11	1770	B5 A350	37150033	PE	575	14.2	TW	256	160MP/4-B5 A350 CUS BRE 150 HL TW		111	187	249	
20	15	1775	B5 A350	37450033	PE	575	19	TW	342	160LP/4-B5 A350 CUS BRE 250 HL TW		184	187	249	
25	18.5	1780	B5 A350	37750033	PE	575	24.2	TW	415	180MP/4-B5 A350 CUS BRE 250 HL TW		184	187	249	
30	22	1780	B5 A350	38050033	PE	575	27.8	TW	415	180LP/4-B5 A350 CUS BRE 250 HL TW		184	187	249	

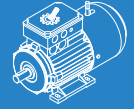
IEC B14 Flange 575V - 60Hz															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]				[lb-ft]		
0.16	0.12	1700	B14 C90	31010047	-	575	0.37	-	12.3	63S/4-B14 C90 CUS BRE 5 HL		3.7	187	260	
0.25	0.18	1680	B14 C90	31510046	-	575	0.46	-	13.7	63L/4-B14 C90 CUS BRE 5 HL		3.7	187	260	
0.33	0.25	1710	B14 C105	32010046	-	575	0.66	-	16.4	71S/4-B14 C105 CUS BRE 5 HL		3.7	187	260	
0.5	0.37	1720	B14 C105	32510043	-	575	0.80	-	18.4	71L/4-B14 C105 CUS BRE 5 HL		3.7	187	260	
0.75	0.55	1710	B14 C120	33010049	-	575	1.12	-	24.6	80S/4-B14 C120 CUS BRE 10 HL		7.4	187	260	
1	0.75	1730	B14 C120	33510042	PE	575	1.25	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW		7.4	187	260	
1.5	1.1	1740	B14 C140	34010042	PE	575	1.68	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW		14.8	187	260	
2	1.5	1730	B14 C140	34510042	PE	575	2.24	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW		14.8	187	260	
3	2.2	1770	B14 C160	35010042	PE	575	3.07	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW		29.5	187	260	
5	3.7	1755	B14 C160	36010042	PE	575	5.2	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW		29.5	187	260	
7.5	5.5	1770	B14 C200	36310042	PE	575	7.8	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW		44.3	187	261	
10	7.5	1765	B14 C200	36610042	PE	575	10.7	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW		73.8	187	261	

◇ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.





### IEC Footed (B3) 575V - 60Hz



Power	Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]			◇			[lb]		[lb-ft]		
0.33	0.25	1710	B3-71	32010121	-	575	0.66	-	16.4	71S/4-B3 CUS BRE 5 HL	3.7	187 236
0.5	0.37	1720	B3-71	32510121	-	575	0.80	-	18.4	71L/4-B3 CUS BRE 5 HL	3.7	187 236
0.75	0.55	1710	B3-80	33010121	-	575	1.12	-	24.6	80S/4-B3 CUS BRE 10 HL	7.4	187 236
1	0.75	1730	B3-80	33510133	PE	575	1.25	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW	7.4	187 236
1.5	1.1	1740	B3-90S	34010133	PE	575	1.68	TW	45	90SP/4-B3 CUS BRE 20 HL TW	14.8	187 236
2	1.5	1730	B3-90L	34510133	PE	575	2.24	TW	49	90LP/4-B3 CUS BRE 20 HL TW	14.8	187 236
3	2.2	1770	B3-100	35010133	PE	575	3.07	TW	71	100LP/4-B3 CUS BRE 40 HL TW	29.5	187 236
5	3.7	1755	B3-112	36010133	PE	575	5.2	TW	93	112MP/4-B3 CUS BRE 40 HL TW	29.5	187 236
7.5	5.5	1770	B3-132	36310133	PE	575	7.8	TW	144	132SP/4-B3 CUS BRE 60 HL TW	44.3	187 237
10	7.5	1765	B3-132	36610133	PE	575	10.7	TW	173	132MP/4-B3 CUS BRE 100 HL TW	73.8	187 237
15	11	1770	B3-160	37150133	PE	575	14.2	TW	256	160MP/4-B3 CUS BRE 150 HL TW	111	187 237
20	15	1775	B3-160	37450133	PE	575	19	TW	342	160LP/4-B3 CUS BRE 250 HL TW	184	187 237
25	18.5	1780	B3-180	37750133	PE	575	24.2	TW	415	180MP/4-B3 CUS BRE 250 HL TW	184	187 237
30	22	1780	B3-180	38050133	PE	575	27.8	TW	415	180LP/4-B3 CUS BRE 250 HL TW	184	187 237

Motor Selection

◇ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



# Brakemotors 400V 50Hz

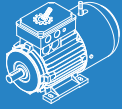


Motor Selection

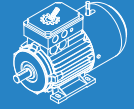
IEC B5 Flange 400V - 50Hz															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]				[lb-ft]		
0.16	0.12	1335	B5 A140	31010035	-	230/400	0.55	-	12.3	63S/4-B5 A140 BRE 5			3.7	200	248
0.25	0.18	1360	B5 A140	31510035	-	230/400	0.68	-	13.7	63L/4-B5 A140 BRE 5			3.7	200	248
0.33	0.25	1380	B5 A160	32010035	-	230/400	0.76	-	16.4	71S/4-B5 A160 BRE 5			3.7	200	248
0.5	0.37	1380	B5 A160	32510035	-	230/400	1.09	-	18.4	71L/4-B5 A160 BRE 5			3.7	200	248
0.75	0.55	1375	B5 A200	33010036	-	230/400	1.52	-	24.6	80S/4-B5 A200 BRE 10			7.4	200	248
1	0.75	1415	B5 A200	33510029	IE3	230/400	1.79	TF	28.6	80LP/4-B5 A200 BRE 10 TF			7.4	199	248
1.5	1.1	1430	B5 A200	34010030	IE3	230/400	2.38	TF	45	90SP/4-B5 A200 BRE 20 TF			14.8	199	248
2	1.5	1415	B5 A200	34510028	IE3	230/400	3.23	TF	49	90LP/4-B5 A200 BRE 20 TF			14.8	199	248
3	2.2	1465	B5 A250	35010028	IE3	230/400	4.27	TF	71	100LP/4-B5 A250 BRE 40 TF			29.5	199	248
4	3	1460	B5 A250	35010029	IE3	400/690	6.05	TF	77	100AP/4-B5 A250 BRE 40 TF			29.5	199	248
5.4	4	1440	B5 A250	36010029	IE3	400/690	7.85	TF	93	112MP/4-B5 A250 BRE 40 TF			29.5	199	248
7.5	5.5	1465	B5 A300	36310029	IE3	400/690	10.9	TF	143	132SP/4-B5 A300 BRE 60 TF			44.3	199	249
10	7.5	1460	B5 A300	36610029	IE3	400/690	15.7	TF	172	132MP/4-B5 A300 BRE 100 TF			73.8	199	249
15	11	1465	B5 A350	37150029	IE3	400/690	20.5	TF	254	160MP/4-B5 A350 BRE 150 TF			111	199	249
20	15	1465	B5 A350	37450029	IE3	400/690	27.9	TF	340	160LP/4-B5 A350 BRE 250 TF			184	199	249
25	18.5	1480	B5 A350	37750029	IE3	400/690	34	TF	413	180MP/4-B5 A350 BRE 250 TF			184	199	249
30	22	1475	B5 A350	38050029	IE3	400/690	39.3	TF	413	180LP/4-B5 A350 BRE 250 TF			184	199	249

IEC B14 Flange 400V - 50Hz															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]				[lb-ft]		
0.16	0.12	1335	B14 C90	31010044	-	230/400	0.55	-	12.3	63S/4-B14 C90 BRE 5			3.7	200	260
0.16	0.12	1335	B14 C120	31010034	-	230/400	0.55	-	12.3	63S/4-B14 C120 BRE 5			3.7	200	260
0.25	0.18	1360	B14 C90	31510044	-	230/400	0.68	-	13.7	63L/4-B14 C90 BRE 5			3.7	200	260
0.25	0.18	1360	B14 C120	31510034	-	230/400	0.68	-	13.7	63L/4-B14 C120 BRE 5			3.7	200	260
0.33	0.25	1380	B14 C105	32010044	-	230/400	0.76	-	16.4	71S/4-B14 C105 BRE 5			3.7	200	260
0.33	0.25	1380	B14 C140	32010034	-	230/400	0.76	-	16.4	71S/4-B14 C140 BRE 5			3.7	200	260
0.5	0.37	1380	B14 C105	32510044	-	230/400	1.09	-	18.4	71L/4-B14 C105 BRE 5			3.7	200	260
0.5	0.37	1380	B14 C140	32510034	-	230/400	1.09	-	18.4	71L/4-B14 C140 BRE 5			3.7	200	260
0.75	0.55	1375	B14 C120	33010044	-	230/400	1.52	-	24.6	80S/4-B14 C120 BRE 10			7.4	200	260
0.75	0.55	1375	B14 C160	33010034	-	230/400	1.52	-	24.6	80S/4-B14 C160 BRE 10			7.4	200	260
1	0.75	1415	B14 C120	33510035	IE3	230/400	1.79	TF	28.6	80LP/4-B14 C120 BRE 10 TF			7.4	199	260
1	0.75	1375	B14 C160	33510034	IE1	230/400	2.1	-	26.6	80L/4-B14 C160 BRE 10			7.4	200	260
1.5	1.1	1430	B14 C140	34010035	IE3	230/400	2.38	TF	45	90SP/4-B14 C140 BRE 20 TF			14.8	199	260
2	1.5	1415	B14 C140	34510035	IE3	230/400	3.23	TF	49	90LP/4-B14 C140 BRE 20 TF			14.8	199	260
3	2.2	1465	B14 C160	35010036	IE3	230/400	4.27	TF	71	100LP/4-B14 C160 BRE 40 TF			29.5	199	260
4	3	1460	B14 C160	35510035	IE3	400/690	6.05	TF	77	100AP/4-B14 C160 BRE 40 TF			29.5	199	260
5.4	4	1440	B14 C160	36010035	IE3	400/690	7.85	TF	93	112MP/4-B14 C160 BRE 40 TF			29.5	199	260
7.5	5.5	1465	B14 C200	36310035	IE3	400/690	10.9	TF	143	132SP/4-B14 C200 BRE 60 TF			44.3	199	261
10	7.5	1460	B14 C200	36610035	IE3	400/690	15.7	TF	172	132MP/4-B14 C200 BRE 100 TF			73.8	199	261

- ◆ 230/400V motors have a brake system supplied with 230VAC including a GVE20L rectifier with a 205VDC brake coil.
- ◆ 400/690V motors have a brake system supplied with 400VAC including a GHE20L rectifier with a 180VDC brake coil.



## IEC Footed (B3) 400V - 50Hz



Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇					[lb-ft]		
0.16	0.12	1335	B3-63	31010135	-	230/400	0.55	-	12.3	63S/4-B3 BRE 5	3.7	200	236
0.25	0.18	1360	B3-63	31510135	-	230/400	0.68	-	13.7	63L/4-B3 BRE 5	3.7	200	236
0.33	0.25	1380	B3-71	32010135	-	230/400	0.76	-	16.4	71S/4-B3 BRE 5	3.7	200	236
0.5	0.37	1380	B3-71	32510135	-	230/400	1.09	-	18.4	71L/4-B3 BRE 5	3.7	200	236
0.75	0.55	1375	B3-80	33010136	-	230/400	1.52	-	24.6	80S/4-B3 BRE 10	7.4	200	236
1	0.75	1375	B3-80	33510135	-	230/400	2.1	-	26.6	80L/4-B3 BRE 10	7.4	200	236
1	0.75	1415	B3-80	33510128	IE3	230/400	1.79	TF	28.6	80LP/4-B3 BRE 10 TF	7.4	199	236
1.5	1.1	1430	B3-90S	34010128	IE3	230/400	2.38	TF	45	90SP/4-B3 BRE 20 TF	14.8	199	236
2	1.5	1415	B3-90L	34510128	IE3	230/400	3.23	TF	49	90LP/4-B3 BRE 20 TF	14.8	199	236
3	2.2	1465	B3-100	35010128	IE3	230/400	4.27	TF	71	100LP/4-B3 BRE 40 TF	29.5	199	236
4	3	1460	B3-100	35010129	IE3	400/690	6.05	TF	77	100AP/4-B3 BRE 40 TF	29.5	199	236
5.4	4	1440	B3-112	36010129	IE3	400/690	7.85	TF	93	112MP/4-B3 BRE 40 TF	29.5	199	236
7.5	5.5	1465	B3-132	36310129	IE3	400/690	10.9	TF	143	132SP/4-B3 BRE 60 TF	44.3	199	237
10	7.5	1460	B3-132	36610129	IE3	400/690	15.7	TF	172	132MP/4-B3 BRE 100 TF	73.8	199	237
15	11	1465	B3-160	37150129	IE3	400/690	20.5	TF	254	160MP/4-B3 BRE 150 TF	111	199	237
20	15	1465	B3-160	37450129	IE3	400/690	27.9	TF	340	160LP/4-B3 BRE 250 TF	184	199	237
25	18.5	1480	B3-180	37750129	IE3	400/690	34	TF	413	180MP/4-B3 BRE 250 TF	184	199	237
30	22	1475	B3-180	38050129	IE3	400/690	39.3	TF	413	180LP/4-B3 BRE 250 TF	184	199	237

- ◇ 230/400V motors have a brake system supplied with 230VAC including a GVE20L rectifier with a 205VDC brake coil.
- ◇ 400/690V motors have a brake system supplied with 400VAC including a GHE20L rectifier with a 180VDC brake coil.





# Inverter Duty Brakemotors

## 5:1 Constant Torque (VR)

### 230/460V 60-12Hz



Motor Selection

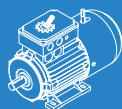


#### NEMA C-Face - 5:1 (VR)

#### 230/460V - 60-12Hz

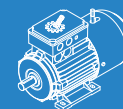


Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]											
0.16	0.12	1700	340	56C	31110034-VR	-	230/460	0.88/0.44	-	12.3	63S/4-56C CUS BRE 5 HL VR	3.7	174	224
0.25	0.18	1680	336	56C	31610034-VR	-	230/460	1.12/0.56	-	13.7	63L/4-56C CUS BRE 5 HL VR	3.7	174	224
0.33	0.25	1710	342	56C	32110034-VR	-	230/460	1.56/0.78	-	16.4	71S/4-56C CUS BRE 5 HL VR	3.7	174	224
0.5	0.37	1720	344	56C	32610034-VR	-	230/460	1.90/0.95	-	18.4	71L/4-56C CUS BRE 5 HL VR	3.7	174	224
0.75	0.55	1710	342	56C	33110034-VR	-	230/460	2.7/1.35	-	24.6	80S/4-56C CUS BRE 10 HL VR	7.4	174	224
1	0.75	1730	346	56C	33610282-VR	PE	230/460	3.14/1.57	TW	28.6	80LP/4-56C CUS BRE 10 HL TW VR	7.4	174	224
1	0.75	1730	346	143TC	33610284-VR	PE	230/460	3.14/1.57	TW	28.6	80LP/4-143TC CUS BRE 10 HL TW VR	7.4	174	224
1.5	1.1	1740	348	145TC	34110284-VR	PE	230/460	4.20/2.10	TW	45	90SP/4-145TC CUS BRE 20 HL TW VR	14.8	174	224
2	1.5	1730	346	145TC	34610284-VR	PE	230/460	5.60/2.80	TW	49	90LP/4-145TC CUS BRE 20 HL TW VR	14.8	174	224
3	2.2	1770	354	182TC	35110284-VR	PE	230/460	7.68/3.84	TW	71	100LP/4-182TC CUS BRE 40 HL TW VR	29.5	174	225
5	3.7	1755	351	184TC	36110284-VR	PE	230/460	13.0/6.50	TW	93	112MP/4-184TC CUS BRE 40 HL TW VR	29.5	174	225
7.5	5.5	1770	354	213TC	36410284-VR	PE	230/460	19.5/9.80	TW	144	132SP/4-213TC CUS BRE 60 HL TW VR	44.3	174	225
10	7.5	1765	353	215TC	36710284-VR	PE	230/460	26.7/13.4	TW	173	132MP/4-215TC CUS BRE 100 HL TW VR	73.8	174	225
15	11	1770	354	254TC	37350284-VR	PE	230/460	35.6/17.8	TW	256	160MP/4-254TC CUS BRE 150 HL TW VR	111	174	225
20	15	1775	355	256C	37550284-VR	PE	230/460	47.6/23.8	TW	342	160LP/4-256C CUS BRE 250 HL TW VR	184	174	225
25	18.5	1780	356	286TC	37750232-VR	PE	230/460	60.6/30.3	TW	415	180MP/4-286TC CUS BRE 250 HL TW VR	184	174	225
30	22	1780	356	286TC	38050232-VR	PE	230/460	69.6/34.8	TW	415	180LP/4-286TC CUS BRE 250 HL TW VR	184	174	225



#### NEMA T Footed - 5:1 (VR)

#### 230/460V - 60-12Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]											
0.33	0.25	1710	342	56	32110134-VR	-	230/460	1.56/0.78	-	16.4	71S/4-56 CUS BRE 5 HL VR	3.7	174	213
0.5	0.37	1720	344	56	32610134-VR	-	230/460	1.90/0.95	-	18.4	71L/4-56 CUS BRE 5 HL VR	3.7	174	213
0.75	0.55	1710	342	56	33110134-VR	-	230/460	2.7/1.35	-	24.6	80S/4-56 CUS BRE 10 HL VR	7.4	174	213
1	0.75	1730	346	56	33610382-VR	PE	230/460	3.14/1.57	TW	28.6	80LP/4-56 CUS BRE 10 HL TW VR	7.4	174	213
1	0.75	1730	346	143T	33610384-VR	PE	230/460	3.14/1.57	TW	28.6	80LP/4-143T CUS BRE 10 HL TW VR	7.4	174	213
1.5	1.1	1740	348	145T	34110384-VR	PE	230/460	4.20/2.10	TW	45	90SP/4-145T CUS BRE 20 HL TW VR	14.8	174	213
2	1.5	1730	346	145T	34610384-VR	PE	230/460	5.60/2.80	TW	49	90LP/4-145T CUS BRE 20 HL TW VR	14.8	174	213
3	2.2	1770	354	182T	35110384-VR	PE	230/460	7.68/3.84	TW	71	100LP/4-182T CUS BRE 40 HL TW VR	29.5	174	213
5	3.7	1755	351	184T	36110384-VR	PE	230/460	13.0/6.50	TW	93	112MP/4-184T CUS BRE 40 HL TW VR	29.5	174	213
7.5	5.5	1770	354	213T	36410384-VR	PE	230/460	19.5/9.80	TW	144	132SP/4-213T CUS BRE 60 HL TW VR	44.3	174	213
10	7.5	1765	353	215T	36710384-VR	PE	230/460	26.7/13.4	TW	173	132MP/4-215T CUS BRE 100 HL TW VR	73.8	174	213

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.



# Inverter Duty Brakemotors

## 5:1 Constant Torque (VR)

### 230/460V 60-12Hz

IEC B5 Flange - 5:1 (VR)														
230/460V - 60-12Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]											
0.16	0.12	1700	340	B5 A140	31010019-VR	-	230/460	0.88/0.44	-	12.3	63S/4-B5 A140 CUS BRE 5 HL VR	3.7	174	248
0.25	0.18	1680	336	B5 A140	31510019-VR	-	230/460	1.12/0.56	-	12.3	63L/4-B5 A140 CUS BRE 5 HL VR	3.7	174	248
0.33	0.25	1710	342	B5 A160	32010019-VR	-	230/460	1.56/0.78	-	16.4	71S/4-B5 A160 CUS BRE 5 HL VR	3.7	174	248
0.5	0.37	1720	344	B5 A160	32510019-VR	-	230/460	1.90/0.95	-	18.4	71L/4-B5 A160 CUS BRE 5 HL VR	3.7	174	248
0.75	0.55	1710	342	B5 A200	33010019-VR	-	230/460	2.7/1.35	-	24.6	80S/4-B5 A200 CUS BRE 10 HL VR	7.4	174	248
1	0.75	1730	346	B5 A200	33510032-VR	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B5 A200 CUS BRE 10 HL TW VR	7.4	174	248
1.5	1.1	1740	348	B5 A200	34010032-VR	PE	230/460	4.20/2.10	TW	45	90SP/4-B5 A200 CUS BRE 20 HL TW VR	14.8	174	248
2	1.5	1730	346	B5 A200	34510032-VR	PE	230/460	5.60/2.80	TW	49	90LP/4-B5 A200 CUS BRE 20 HL TW VR	14.8	174	248
3	2.2	1770	354	B5 A250	35010034-VR	PE	230/460	7.68/3.84	TW	71	100LP/4-B5 A250 CUS BRE 40 HL TW VR	29.5	174	248
5	3.7	1755	351	B5 A250	36010032-VR	PE	230/460	13.0/6.50	TW	93	112MP/4-B5 A250 CUS BRE 40 HL TW VR	29.5	174	248
7.5	5.5	1770	354	B5 A300	36310032-VR	PE	230/460	19.5/9.80	TW	144	132SP/4-B5 A300 CUS BRE 60 HL TW VR	44.3	174	249
10	7.5	1765	353	B5 A300	36610032-VR	PE	230/460	26.7/13.4	TW	173	132MP/4-B5 A300 CUS BRE 100 HL TW VR	73.8	174	249
15	11	1770	354	B5 A350	37150032-VR	PE	230/460	35.6/17.8	TW	256	160MP/4-B5 A350 CUS BRE 150 HL TW VR	111	174	249
20	15	1775	355	B5 A350	37450032-VR	PE	230/460	47.6/23.8	TW	342	160LP/4-B5 A350 CUS BRE 250 HL TW VR	184	174	249
25	18.5	1780	356	B5 A350	37750032-VR	PE	230/460	60.6/30.3	TW	415	180MP/4-B5 A350 CUS BRE 250 HL TW VR	184	174	249
30	22	1780	356	B5 A350	38050032-VR	PE	230/460	69.6/34.8	TW	415	180LP/4-B5 A350 CUS BRE 250 HL TW VR	184	174	249

IEC B14 Flange - 5:1 (VR)														
230/460V - 60-12Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]											
0.16	0.12	1700	340	B14 C90	31010046-VR	-	230/460	0.88/0.44	-	12.3	63S/4-B14 C90 CUS BRE 5 HL VR	3.7	174	260
0.25	0.18	1680	336	B14 C90	31510045-VR	-	230/460	1.12/0.56	-	13.7	63L/4-B14 C90 CUS BRE 5 HL VR	3.7	174	260
0.33	0.25	1710	342	B14 C105	32010045-VR	-	230/460	1.56/0.78	-	16.4	71S/4-B14 C105 CUS BRE 5 HL VR	3.7	174	260
0.5	0.37	1720	344	B14 C105	32510046-VR	-	230/460	1.90/0.95	-	18.4	71L/4-B14 C105 CUS BRE 5 HL VR	3.7	174	260
0.75	0.55	1710	342	B14 C120	33010047-VR	-	230/460	2.7/1.35	-	24.6	80S/4-B14 C120 CUS BRE 10 HL VR	7.4	174	260
1	0.75	1730	346	B14 C120	33510041-VR	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW VR	7.4	174	260
1.5	1.1	1740	348	B14 C140	34010041-VR	PE	230/460	4.20/2.10	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW VR	14.8	174	260
2	1.5	1730	346	B14 C140	34510041-VR	PE	230/460	5.60/2.80	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW VR	14.8	174	260
3	2.2	1770	354	B14 C160	35010044-VR	PE	230/460	7.68/3.84	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW VR	29.5	174	260
5	3.7	1755	351	B14 C160	36010044-VR	PE	230/460	13.0/6.50	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW VR	29.5	174	260
7.5	5.5	1770	354	B14 C200	36310041-VR	PE	230/460	19.5/9.80	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW VR	44.3	174	261
10	7.5	1765	353	B14 C200	36610041-VR	PE	230/460	26.7/13.4	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW VR	73.8	174	261

Motor Selection

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.

# Inverter Duty Brakemotors

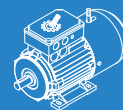
## 5:1 Constant Torque (VR)

### 230/460V 60-12Hz



#### IEC Footed (B3) - 5:1 (VR)

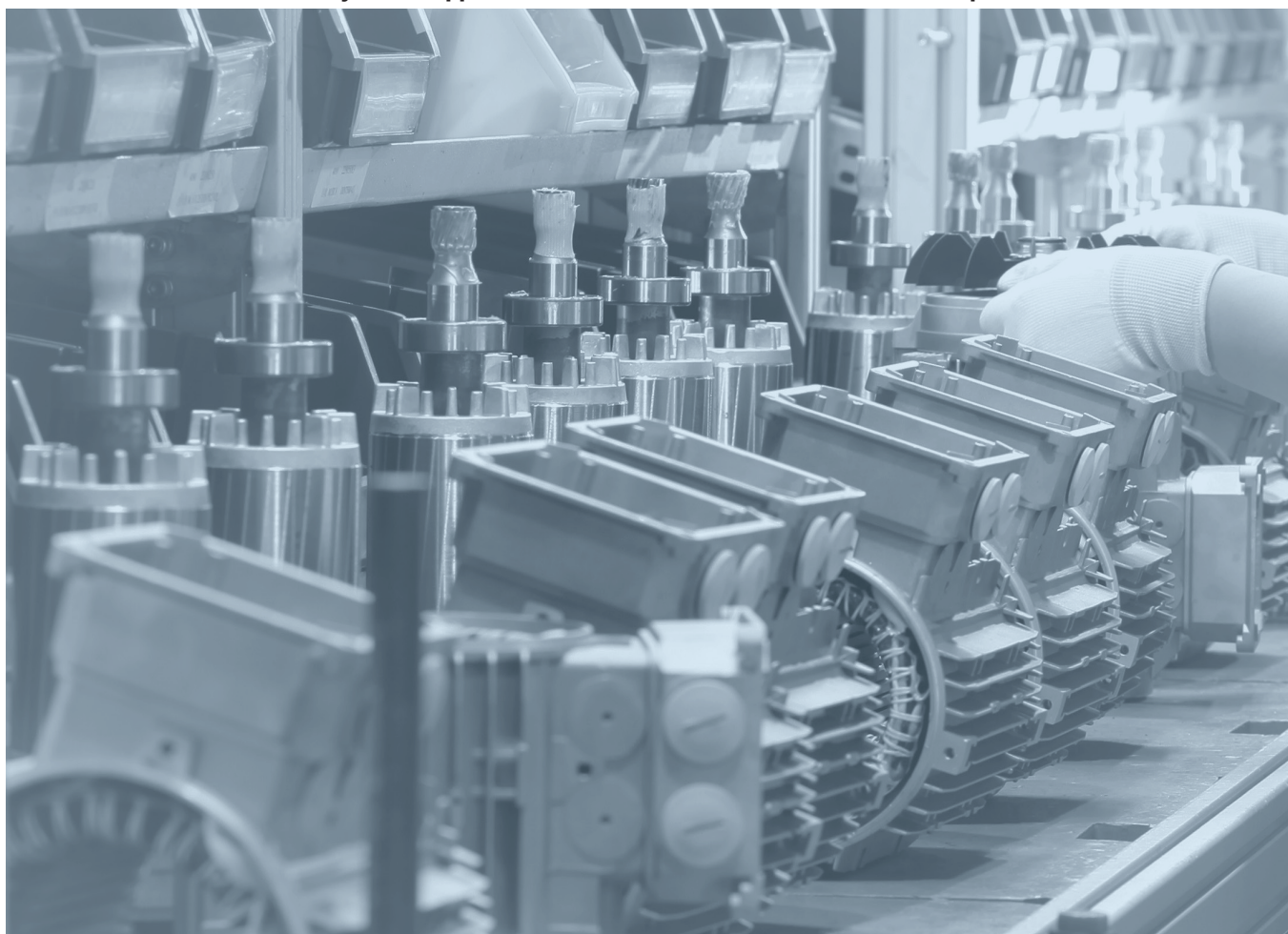
#### 230/460V - 60-12Hz



Motor Selection

Power [hp]	Power [kW]	Speed		Frame	Motor Part Number	Class	Voltage ◇	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
		60Hz [rpm]	12Hz [rpm]											
0.33	0.25	1710	342	B3-71	32010120-VR	-	230/460	1.56/0.78	-	16.4	71S/4-B3 CUS BRE 5 HL VR	3.7	174	236
0.5	0.37	1720	344	B3-71	32510120-VR	-	230/460	1.90/0.95	-	18.4	71L/4-B3 CUS BRE 5 HL VR	3.7	174	236
0.75	0.55	1710	342	B3-80	33010120-VR	-	230/460	2.7/1.35	-	24.6	80S/4-B3 CUS BRE 10 HL VR	7.4	174	236
1	0.75	1730	346	B3-80	33510132-VR	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW VR	7.4	174	236
1.5	1.1	1740	348	B3-90S	34010132-VR	PE	230/460	4.20/2.10	TW	45	90SP/4-B3 CUS BRE 20 HL TW VR	14.8	174	236
2	1.5	1730	346	B3-90L	34510132-VR	PE	230/460	5.60/2.80	TW	49	90LP/4-B3 CUS BRE 20 HL TW VR	14.8	174	236
3	2.2	1770	354	B3-100	35010132-VR	PE	230/460	7.68/3.84	TW	71	100LP/4-B3 CUS BRE 40 HL TW VR	29.5	174	236
5	3.7	1755	351	B3-112	36010132-VR	PE	230/460	13.0/6.50	TW	93	112MP/4-B3 CUS BRE 40 HL TW VR	29.5	174	236
7.5	5.5	1770	354	B3-132	36310132-VR	PE	230/460	19.5/9.80	TW	144	132SP/4-B3 CUS BRE 60 HL TW VR	44.3	174	237
10	7.5	1765	353	B3-132	36610132-VR	PE	230/460	26.7/13.4	TW	173	132MP/4-B3 CUS BRE 100 HL TW VR	73.8	174	237
15	11	1770	354	B3-160	37150132-VR	PE	230/460	35.6/17.8	TW	256	160MP/4-B3 CUS BRE 150 HL TW VR	111	174	237
20	15	1775	355	B3-160	37450132-VR	PE	230/460	47.6/23.8	TW	342	160LP/4-B3 CUS BRE 250 HL TW VR	184	174	237
25	18.5	1780	356	B3-180	37750132-VR	PE	230/460	60.6/30.3	TW	415	180MP/4-B3 CUS BRE 250 HL TW VR	184	174	237
30	22	1780	356	B3-180	38050132-VR	PE	230/460	69.6/34.8	TW	415	180LP/4-B3 CUS BRE 250 HL TW VR	184	174	237

◇ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.







# Inverter Duty Brakemotors

## 5:1 Constant Torque (VR)

### 575V 60-12Hz

NEMA C-Face - 5:1 (VR)														
575V - 60-12Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]											
0.16	0.12	1700	340	56C	31110035-VR	-	575	0.37	-	12.3	63S/4-56C CUS BRE 5 HL VR	3.7	189	224
0.25	0.18	1680	336	56C	31610035-VR	-	575	0.46	-	13.7	63L/4-56C CUS BRE 5 HL VR	3.7	189	224
0.33	0.25	1710	342	56C	32110035-VR	-	575	0.66	-	16.4	71S/4-56C CUS BRE 5 HL VR	3.7	189	224
0.5	0.37	1720	344	56C	32610035-VR	-	575	0.80	-	18.4	71L/4-56C CUS BRE 5 HL VR	3.7	189	224
0.75	0.55	1710	342	56C	33110035-VR	-	575	1.12	-	24.6	80S/4-56C CUS BRE 10 HL VR	7.4	189	224
1	0.75	1730	346	56C	33610283-VR	PE	575	1.25	TW	28.6	80LP/4-56C CUS BRE 10 HL TW VR	7.4	189	224
1	0.75	1730	346	143TC	33610285-VR	PE	575	1.25	TW	28.6	80LP/4-143TC CUS BRE 10 HL TW VR	7.4	189	224
1.5	1.1	1740	348	145TC	34110285-VR	PE	575	1.68	TW	45	90SP/4-145TC CUS BRE 20 HL TW VR	14.8	189	224
2	1.5	1730	346	145TC	34610285-VR	PE	575	2.24	TW	49	90LP/4-145TC CUS BRE 20 HL TW VR	14.8	189	224
3	2.2	1770	354	182TC	35110285-VR	PE	575	3.07	TW	71	100LP/4-182TC CUS BRE 40 HL TW VR	29.5	189	225
5	3.7	1755	351	184TC	36110285-VR	PE	575	5.2	TW	93	112MP/4-184TC CUS BRE 40 HL TW VR	29.5	189	225
7.5	5.5	1770	354	213TC	36410285-VR	PE	575	7.8	TW	144	132SP/4-213TC CUS BRE 60 HL TW VR	44.3	189	225
10	7.5	1765	353	215TC	36710285-VR	PE	575	10.7	TW	173	132MP/4-215TC CUS BRE 100 HL TW VR	73.8	189	225
15	11	1770	354	254TC	37350285-VR	PE	575	14.2	TW	256	160MP/4-254TC CUS BRE 150 HL TW VR	111	189	225
20	15	1775	355	256C	37550285-VR	PE	575	19	TW	342	160LP/4-256C CUS BRE 250 HL TW VR	184	189	225
25	18.5	1780	356	286TC	37750233-VR	PE	575	24.2	TW	415	180MP/4-286TC CUS BRE 250 HL TW VR	184	189	225
30	22	1780	356	286TC	38050233-VR	PE	575	27.8	TW	415	180LP/4-286TC CUS BRE 250 HL TW VR	184	189	225

NEMA T Footed - 5:1 (VR)														
575V - 60-12Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]											
0.33	0.25	1710	342	56	32110135-VR	-	575	0.66	-	16.4	71S/4-56 CUS BRE 5 HL VR	3.7	189	213
0.5	0.37	1720	344	56	32610135-VR	-	575	0.80	-	18.4	71L/4-56 CUS BRE 5 HL VR	3.7	189	213
0.75	0.55	1710	342	56	33110135-VR	-	575	1.12	-	24.6	80S/4-56 CUS BRE 10 HL VR	7.4	189	213
1	0.75	1730	346	56	33610383-VR	PE	575	1.25	TW	28.6	80LP/4-56 CUS BRE 10 HL TW VR	7.4	189	213
1	0.75	1730	346	143T	33610385-VR	PE	575	1.25	TW	28.6	80LP/4-143T CUS BRE 10 HL TW VR	7.4	189	213
1.5	1.1	1740	348	145T	34110385-VR	PE	575	1.68	TW	45	90SP/4-145T CUS BRE 20 HL TW VR	14.8	189	213
2	1.5	1730	346	145T	34610385-VR	PE	575	2.24	TW	49	90LP/4-145T CUS BRE 20 HL TW VR	14.8	189	213
3	2.2	1770	354	182T	35110385-VR	PE	575	3.07	TW	71	100LP/4-182T CUS BRE 40 HL TW VR	29.5	189	213
5	3.7	1755	351	184T	36110385-VR	PE	575	5.2	TW	93	112MP/4-184T CUS BRE 40 HL TW VR	29.5	189	213
7.5	5.5	1770	354	213T	36410385-VR	PE	575	7.8	TW	144	132SP/4-213T CUS BRE 60 HL TW VR	44.3	189	213
10	7.5	1765	353	215T	36710385-VR	PE	575	10.7	TW	173	132MP/4-215T CUS BRE 100 HL TW VR	73.8	189	213

Motor Selection

◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.

# Inverter Duty Brakemotors

## 5:1 Constant Torque (VR)

### 575V 60-12Hz



Motor Selection

IEC B5 Flange - 5:1 (VR)														
575V - 60-12Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]											
0.16	0.12	1700	340	B5 A140	31010021-VR	-	575	0.37	-	12.3	63S/4-B5 A140 CUS BRE 5 HL VR	3.7	189	248
0.25	0.18	1680	336	B5 A140	31510021-VR	-	575	0.46	-	12.3	63L/4-B5 A140 CUS BRE 5 HL VR	3.7	189	248
0.33	0.25	1710	342	B5 A160	32010021-VR	-	575	0.66	-	16.4	71S/4-B5 A160 CUS BRE 5 HL VR	3.7	189	248
0.5	0.37	1720	344	B5 A160	32510021-VR	-	575	0.80	-	18.4	71L/4-B5 A160 CUS BRE 5 HL VR	3.7	189	248
0.75	0.55	1710	342	B5 A200	33010021-VR	-	575	1.12	-	24.6	80S/4-B5 A200 CUS BRE 10 HL VR	7.4	189	248
1	0.75	1730	346	B5 A200	33510033-VR	PE	575	1.25	TW	28.6	80LP/4-B5 A200 CUS BRE 10 HL TW VR	7.4	189	248
1.5	1.1	1740	348	B5 A200	34010033-VR	PE	575	1.68	TW	45	90SP/4-B5 A200 CUS BRE 20 HL TW VR	14.8	189	248
2	1.5	1730	346	B5 A200	34510033-VR	PE	575	2.24	TW	49	90LP/4-B5 A200 CUS BRE 20 HL TW VR	14.8	189	248
3	2.2	1770	354	B5 A250	35010035-VR	PE	575	3.07	TW	71	100LP/4-B5 A250 CUS BRE 40 HL TW VR	29.5	189	248
5	3.7	1755	351	B5 A250	36010033-VR	PE	575	5.2	TW	93	112MP/4-B5 A250 CUS BRE 40 HL TW VR	29.5	189	248
7.5	5.5	1770	354	B5 A300	36310033-VR	PE	575	7.8	TW	144	132SP/4-B5 A300 CUS BRE 60 HL TW VR	44.3	189	249
10	7.5	1765	353	B5 A300	36610033-VR	PE	575	10.7	TW	173	132MP/4-B5 A300 CUS BRE 100 HL TW VR	73.8	189	249
15	11	1770	354	B5 A350	37150033-VR	PE	575	14.2	TW	256	160MP/4-B5 A350 CUS BRE 150 HL TW VR	111	189	249
20	15	1775	355	B5 A350	37450033-VR	PE	575	19	TW	342	160LP/4-B5 A350 CUS BRE 250 HL TW VR	184	189	249
25	18.5	1780	356	B5 A350	37750033-VR	PE	575	24.2	TW	415	180MP/4-B5 A350 CUS BRE 250 HL TW VR	184	189	249
30	22	1780	356	B5 A350	38050033-VR	PE	575	27.8	TW	415	180LP/4-B5 A350 CUS BRE 250 HL TW VR	184	189	249

IEC B14 Flange - 5:1 (VR)														
575V - 60-12Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]											
0.16	0.12	1700	340	B14 C90	31010047-VR	-	575	0.37	-	12.3	63S/4-B14 C90 CUS BRE 5 HL VR	3.7	189	260
0.25	0.18	1680	336	B14 C90	31510046-VR	-	575	0.46	-	13.7	63L/4-B14 C90 CUS BRE 5 HL VR	3.7	189	260
0.33	0.25	1710	342	B14 C105	32010046-VR	-	575	0.66	-	16.4	71S/4-B14 C105 CUS BRE 5 HL VR	3.7	189	260
0.5	0.37	1720	344	B14 C105	32510043-VR	-	575	0.80	-	18.4	71L/4-B14 C105 CUS BRE 5 HL VR	3.7	189	260
0.75	0.55	1710	342	B14 C120	33010049-VR	-	575	1.12	-	24.6	80S/4-B14 C120 CUS BRE 10 HL VR	7.4	189	260
1	0.75	1730	346	B14 C120	33510042-VR	PE	575	1.25	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW VR	7.4	189	260
1.5	1.1	1740	348	B14 C140	34010042-VR	PE	575	1.68	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW VR	14.8	189	260
2	1.5	1730	346	B14 C140	34510042-VR	PE	575	2.24	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW VR	14.8	189	260
3	2.2	1770	354	B14 C160	35010042-VR	PE	575	3.07	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW VR	29.5	189	260
5	3.7	1755	351	B14 C160	36010042-VR	PE	575	5.2	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW VR	29.5	189	260
7.5	5.5	1770	354	B14 C200	36310042-VR	PE	575	7.8	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW VR	44.3	189	261
10	7.5	1765	353	B14 C200	36610042-VR	PE	575	10.7	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW VR	73.8	189	261

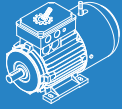
◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



# Inverter Duty Brakemotors

## 5:1 Constant Torque (VR)

### 575V 60-12Hz



#### IEC Footed (B3) - 5:1 (VR)

#### 575V - 60-12Hz



Power	Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data	
	[hp]	[kW]												60Hz [rpm]
0.33	0.25	1710	342	B3-71	32010121-VR	-	575	0.66	-	16.4	71S/4-B3 CUS BRE 5 HL VR	3.7	189	236
0.5	0.37	1720	344	B3-71	32510121-VR	-	575	0.80	-	18.4	71L/4-B3 CUS BRE 5 HL VR	3.7	189	236
0.75	0.55	1710	342	B3-80	33010121-VR	-	575	1.12	-	24.6	80S/4-B3 CUS BRE 10 HL VR	7.4	189	236
1	0.75	1730	346	B3-80	33510133-VR	PE	575	1.25	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW VR	7.4	189	236
1.5	1.1	1740	348	B3-90S	34010133-VR	PE	575	1.68	TW	45	90SP/4-B3 CUS BRE 20 HL TW VR	14.8	189	236
2	1.5	1730	346	B3-90L	34510133-VR	PE	575	2.24	TW	49	90LP/4-B3 CUS BRE 20 HL TW VR	14.8	189	236
3	2.2	1770	354	B3-100	35010133-VR	PE	575	3.07	TW	71	100LP/4-B3 CUS BRE 40 HL TW VR	29.5	189	236
5	3.7	1755	351	B3-112	36010133-VR	PE	575	5.2	TW	93	112MP/4-B3 CUS BRE 40 HL TW VR	29.5	189	236
7.5	5.5	1770	354	B3-132	36310133-VR	PE	575	7.8	TW	144	132SP/4-B3 CUS BRE 60 HL TW VR	44.3	189	237
10	7.5	1765	353	B3-132	36610133-VR	PE	575	10.7	TW	173	132MP/4-B3 CUS BRE 100 HL TW VR	73.8	189	237
15	11	1770	354	B3-160	37150133-VR	PE	575	14.2	TW	256	160MP/4-B3 CUS BRE 150 HL TW VR	111	189	237
20	15	1775	355	B3-160	37450133-VR	PE	575	19	TW	342	160LP/4-B3 CUS BRE 250 HL TW VR	184	189	237
25	18.5	1780	356	B3-180	37750133-VR	PE	575	24.2	TW	415	180MP/4-B3 CUS BRE 250 HL TW VR	184	189	237
30	22	1780	356	B3-180	38050133-VR	PE	575	27.8	TW	415	180LP/4-B3 CUS BRE 250 HL TW VR	184	189	237

Motor Selection

◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.





# Inverter Duty Brakemotors

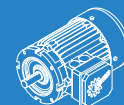
## 10:1 Constant Torque (VN)

### 230/460V 60-6Hz

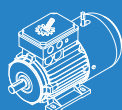


#### NEMA C-Face - 10:1 (VN)

#### 230/460V - 60-6Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.12	0.09	1720	172	56C	31110034-VN	-	230/460	0.76/0.38	-	12.3	63S/4-56C CUS BRE 5 HL	3.7	176	224
0.18	0.12	1720	172	56C	31610034-VN	-	230/460	0.90/0.45	-	13.7	63L/4-56C CUS BRE 5 HL	3.7	176	224
0.25	0.18	1740	174	56C	32110034-VN	-	230/460	1.06/0.53	-	16.4	71S/4-56C CUS BRE 5 HL	3.7	176	224
0.33	0.25	1745	175	56C	32610034-VN	-	230/460	1.48/0.74	-	18.4	71L/4-56C CUS BRE 5 HL	3.7	176	224
0.5	0.37	1745	175	56C	33110034-VN	-	230/460	2.79/1.40	-	24.6	80S/4-56C CUS BRE 10 HL	7.4	176	224
0.75	0.55	1740	174	56C	33610282-VN	PE	230/460	3.84/1.92	TW	22	80LP/4-56C CUS TW BRE 10 HL	7.4	176	224
0.75	0.55	1750	175	143TC	33610284-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-143TC CUS TW BRE 10 HL	14.8	176	224
1	0.75	1760	176	145TC	34110284-VN	PE	230/460	3.34/1.67	TW	33	90SP/4-145TC CUS TW BRE 20 HL	14.8	176	224
1.5	1.1	1755	176	145TC	34610284-VN	PE	230/460	4.59/2.30	TW	37	90LP/4-145TC CUS TW BRE 20 HL	29.5	176	225
2	1.5	1780	178	182TC	35110284-VN	PE	230/460	5.72/2.86	TW	56	100LP/4-182TC CUS TW BRE 40 HL	29.5	176	225
3	2.2	1775	178	184TC	36110284-VN	PE	230/460	9.33/4.67	TW	78	112MP/4-184TC CUS TW BRE 40 HL	44.3	176	225
5	3.7	1780	178	213TC	36410284-VN	PE	230/460	15.7/7.86	TW	121	132SP/4-213TC CUS TW BRE 60 HL	73.8	176	225
7.5	5.5	1775	178	215TC	36710284-VN	PE	230/460	21.5/10.8	TW	137	132MP/4-215TC CUS TW BRE 100 HL	111	176	225
10	7.5	1780	178	254TC	37350284-VN	PE	230/460	27.6/13.8	TW	205	160MP/4-254TC CUS TW BRE 150 HL	184	176	225
15	11	1780	178	256C	37550284-VN	PE	230/460	38.4/19.2	TW	269	160LP/4-256C CUS TW BRE 250 HL	184	176	225
20	15	1785	179	286TC	37750232-VN	PE	230/460	49.6/24.8	TW	342	180MP/4-286TC CUS TW BRE 250 HL	184	176	225
25	18.5	1785	179	286TC	38050232-VN	PE	230/460	59.7/29.9	TW	342	180LP/4-286TC CUS TW BRE 250 HL	184	176	225



#### NEMA T Footed - 10:1 (VN)

#### 230/460V - 60-6Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.25	0.18	1740	174	56C	32110134-VN	-	230/460	1.06/0.53	-	16.4	71S/4-56C CUS BRE 5 HL	3.7	176	213
0.33	0.25	1745	175	56C	32610134-VN	-	230/460	1.48/0.74	-	18.4	71L/4-56C CUS BRE 5 HL	3.7	176	213
0.5	0.37	1745	175	56C	33110134-VN	-	230/460	2.79/1.40	-	24.6	80S/4-56C CUS BRE 10 HL	7.4	176	213
0.75	0.55	1740	174	56C	33610382-VN	PE	230/460	3.84/1.92	TW	22	80LP/4-56C CUS TW BRE 10 HL	7.4	176	213
0.75	0.55	1750	175	143TC	33610384-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-143TC CUS TW BRE 10 HL	14.8	176	213
1	0.75	1760	176	145TC	34110384-VN	PE	230/460	3.34/1.67	TW	33	90SP/4-145TC CUS TW BRE 20 HL	14.8	176	213
1.5	1.1	1755	176	145TC	34610384-VN	PE	230/460	4.59/2.30	TW	37	90LP/4-145TC CUS TW BRE 20 HL	29.5	176	213
2	1.5	1780	178	182TC	35110384-VN	PE	230/460	5.72/2.86	TW	56	100LP/4-182TC CUS TW BRE 40 HL	29.5	176	213
3	2.2	1775	178	184TC	36110384-VN	PE	230/460	9.33/4.67	TW	78	112MP/4-184TC CUS TW BRE 40 HL	44.3	176	213
5	3.7	1780	178	213TC	36410384-VN	PE	230/460	15.7/7.86	TW	121	132SP/4-213TC CUS TW BRE 60 HL	73.8	176	213
7.5	5.5	1775	178	215TC	36710384-VN	PE	230/460	21.5/10.8	TW	137	132MP/4-215TC CUS TW BRE 100 HL	111	176	213

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.



# Inverter Duty Brakemotors 10:1 Constant Torque (VN) 230/460V 60-6Hz

IEC B5 Flange - 10:1 (VN) 230/460V - 60-6Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.12	0.09	1720	172	B5 A140	31010019-VN	-	230/460	0.76/0.38	-	12.3	63S/4-B5 A140 CUS BRE 5 HL VN	3.7	176	248
0.18	0.12	1720	172	B5 A140	31510019-VN	-	230/460	0.90/0.45	-	13.7	63L/4-B5 A140 CUS BRE 5 HL VN	3.7	176	248
0.25	0.18	1740	174	B5 A160	32010019-VN	-	230/460	1.06/0.53	-	16.4	71S/4-B5 A160 CUS BRE 5 HL VN	3.7	176	248
0.33	0.25	1745	175	B5 A160	32510019-VN	-	230/460	1.48/0.74	-	18.4	71L/4-B5 A160 CUS BRE 5 HL VN	3.7	176	248
0.5	0.37	1745	175	B5 A200	33010019-VN	-	230/460	2.79/1.40	-	24.6	80S/4-B5 A200 CUS BRE 10 HL VN	7.4	176	248
0.75	0.55	1750	175	B5 A200	33510032-VN	PE	230/460	2.32/1.16	TW	22	80LP/4-B5 A200 CUS BRE 10 HL TW VN	7.4	176	248
1	0.75	1760	176	B5 A200	34010032-VN	PE	230/460	3.34/1.67	TW	33	90SP/4-B5 A200 CUS BRE 20 HL TW VN	14.8	176	248
1.5	1.1	1755	176	B5 A200	34510032-VN	PE	230/460	4.59/2.30	TW	37	90LP/4-B5 A200 CUS BRE 20 HL TW VN	14.8	176	248
2	1.5	1780	178	B5 A250	35010034-VN	PE	230/460	5.72/2.86	TW	56	100LP/4-B5 A250 CUS BRE 40 HL TW VN	29.5	176	248
3	2.2	1775	178	B5 A250	36010032-VN	PE	230/460	9.33/4.67	TW	78	112MP/4-B5 A250 CUS BRE 40 HL TW VN	29.5	176	248
5	3.7	1780	178	B5 A300	36310032-VN	PE	230/460	15.7/7.86	TW	121	132SP/4-B5 A300 CUS BRE 60 HL TW VN	44.3	176	249
7.5	5.5	1775	178	B5 A300	36610032-VN	PE	230/460	21.5/10.8	TW	137	132MP/4-B5 A300 CUS BRE 100 HL TW VN	73.8	176	249
10	7.5	1780	178	B5 A350	37150032-VN	PE	230/460	27.6/13.8	TW	205	160MP/4-B5 A350 CUS BRE 150 HL TW VN	111	176	249
15	11	1780	178	B5 A350	37450032-VN	PE	230/460	38.4/19.2	TW	269	160LP/4-B5 A350 CUS BRE 250 HL TW VN	184	176	249
20	15	1785	179	B5 A350	37750032-VN	PE	230/460	49.6/24.8	TW	342	180MP/4-B5 A350 CUS BRE 250 HL TW VN	184	176	249
25	18.5	1785	179	B5 A350	38050032-VN	PE	230/460	59.7/29.9	TW	342	180LP/4-B5 A350 CUS BRE 250 HL TW VN	184	176	249

IEC B14 Flange - 10:1 (VN) 230/460V - 60-6Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.12	0.09	1720	172	B14 C90	31010046-VN	-	230/460	0.76/0.38	-	12.3	63S/4-B14 C90 CUS BRE 5 HL VN	3.7	176	260
0.18	0.12	1720	172	B14 C90	31510045-VN	-	230/460	0.90/0.45	-	13.7	63L/4-B14 C90 CUS BRE 5 HL VN	3.7	176	260
0.25	0.18	1740	174	B14 C105	32010045-VN	-	230/460	1.06/0.53	-	16.4	71S/4-B14 C105 CUS BRE 5 HL VN	3.7	176	260
0.33	0.25	1745	175	B14 C105	32510046-VN	-	230/460	1.48/0.74	-	18.4	71L/4-B14 C105 CUS BRE 5 HL VN	3.7	176	260
0.5	0.37	1745	175	B14 C120	33010047-VN	-	230/460	2.79/1.40	-	24.6	80S/4-B14 C120 CUS BRE 10 HL VN	7.4	176	260
0.75	0.55	1750	175	B14 C120	33510041-VN	PE	230/460	2.32/1.16	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW VN	7.4	176	260
1	0.75	1760	176	B14 C140	34010041-VN	PE	230/460	3.34/1.67	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW VN	14.8	176	260
1.5	1.1	1755	176	B14 C140	34510041-VN	PE	230/460	4.59/2.30	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW VN	14.8	176	260
2	1.5	1780	178	B14 C160	35010044-VN	PE	230/460	5.72/2.86	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW VN	29.5	176	260
3	2.2	1775	178	B14 C160	36010044-VN	PE	230/460	9.33/4.67	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW VN	29.5	176	260
5	3.7	1780	178	B14 C200	36310041-VN	PE	230/460	15.7/7.86	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW VN	44.3	176	261
7.5	5.5	1775	178	B14 C200	36610041-VN	PE	230/460	21.5/10.8	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW VN	73.8	176	261

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.

# Inverter Duty Brakemotors

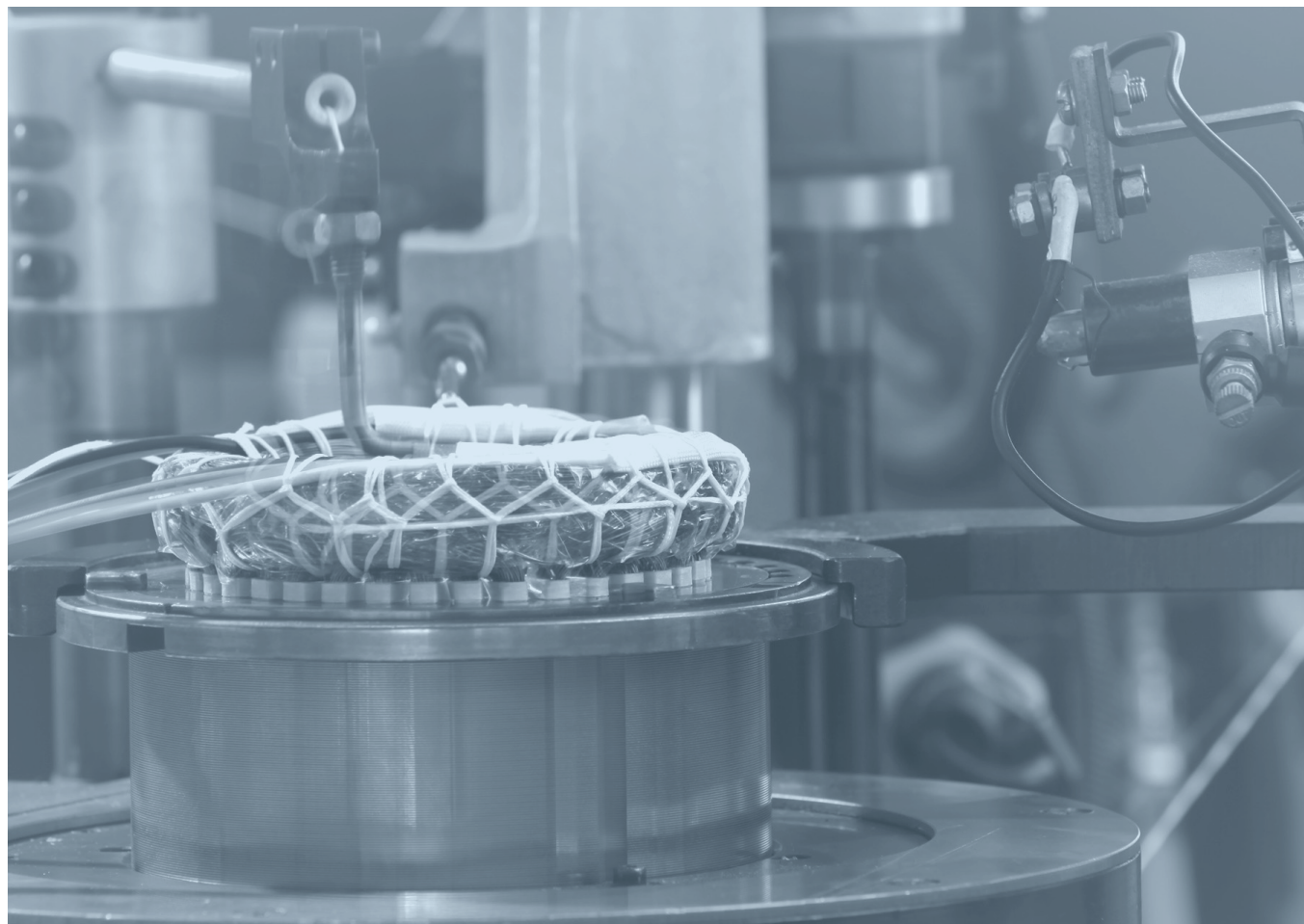
## 10:1 Constant Torque (VN)

### 230/460V 60-6Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.25	0.18	1745	175	B3-71	32010120-VN	-	230/460	1.48/0.74	-	16.4	71S/4-B3 CUS BRE 5 HL VN	3.7	176	236
0.33	0.25	1745	175	B3-71	32510120-VN	-	230/460	1.48/0.74	-	18.4	71L/4-B3 CUS BRE 5 HL VN	3.7	176	236
0.5	0.37	1745	175	B3-80	33010120-VN	-	230/460	2.79/1.40	-	24.6	80S/4-B3 CUS BRE 10 HL VN	7.4	176	236
0.75	0.55	1750	175	B3-80	33510132-VN	PE	230/460	2.32/1.16	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW VN	7.4	176	236
1	0.75	1760	176	B3-90S	34010132-VN	PE	230/460	3.34/1.67	TW	45	90SP/4-B3 CUS BRE 20 HL TW VN	14.8	176	236
1.5	1.1	1755	176	B3-90L	34510132-VN	PE	230/460	4.59/2.30	TW	49	90LP/4-B3 CUS BRE 20 HL TW VN	14.8	176	236
2	1.5	1780	178	B3-100	35010132-VN	PE	230/460	5.72/2.86	TW	71	100LP/4-B3 CUS BRE 40 HL TW VN	29.5	176	236
3	2.2	1775	178	B3-112	36010132-VN	PE	230/460	9.33/4.67	TW	93	112MP/4-B3 CUS BRE 40 HL TW VN	29.5	176	236
5	3.7	1780	178	B3-132	36310132-VN	PE	230/460	15.7/7.86	TW	144	132SP/4-B3 CUS BRE 60 HL TW VN	44.3	176	237
7.5	5.5	1775	178	B3-132	36610132-VN	PE	230/460	21.5/10.8	TW	173	132MP/4-B3 CUS BRE 100 HL TW VN	73.8	176	237
10	7.5	1780	178	B3-160	37150132-VN	PE	230/460	27.6/13.8	TW	256	160MP/4-B3 CUS BRE 150 HL TW VN	111	176	237
15	11	1780	178	B3-160	37450132-VN	PE	230/460	38.4/19.2	TW	342	160LP/4-B3 CUS BRE 250 HL TW VN	184	176	237
20	15	1785	179	B3-180	37750132-VN	PE	230/460	49.6/24.8	TW	415	180MP/4-B3 CUS BRE 250 HL TW VN	184	176	237
25	18.5	1785	179	B3-180	38050132-VN	PE	230/460	59.7/29.9	TW	415	180LP/4-B3 CUS BRE 250 HL TW VN	184	176	237

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.







# Inverter Duty Brakemotors 10:1 Constant Torque (VN) 575V 60-6Hz

NEMA C-Face - 10:1 (VN) 575V - 60-6Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.12	0.09	1720	172	56C	31110035-VN	-	575	0.30	-	12.3	63S/4-56C CUS BRE 5 HL VN	3.7	191	224
0.18	0.12	1720	172	56C	31610035-VN	-	575	0.36	-	13.7	63L/4-56C CUS BRE 5 HL VN	3.7	191	224
0.25	0.18	1740	174	56C	32110035-VN	-	575	0.43	-	16.4	71S/4-56C CUS BRE 5 HL VN	3.7	191	224
0.33	0.25	1745	175	56C	32610035-VN	-	575	0.59	-	18.4	71L/4-56C CUS BRE 5 HL VN	3.7	191	224
0.5	0.37	1745	175	56C	33110035-VN	-	575	1.12	-	24.6	80S/4-56C CUS BRE 10 HL VN	7.4	191	224
0.75	0.55	1750	175	56C	33610283-VN	PE	575	0.93	TW	28.6	80LP/4-56C CUS BRE 10 HL TW VN	7.4	191	224
0.75	0.55	1750	175	143TC	33610285-VN	PE	575	0.93	TW	28.6	80LP/4-143TC CUS BRE 10 HL TW VN	7.4	191	224
1	0.75	1760	176	145TC	34110285-VN	PE	575	1.33	TW	45	90SP/4-145TC CUS BRE 20 HL TW VN	14.8	191	224
1.5	1.1	1755	176	145TC	34610285-VN	PE	575	1.84	TW	49	90LP/4-145TC CUS BRE 20 HL TW VN	14.8	191	224
2	1.5	1780	178	182TC	35110285-VN	PE	575	2.29	TW	71	100LP/4-182TC CUS BRE 40 HL TW VN	29.5	191	225
3	2.2	1775	178	184TC	36110285-VN	PE	575	3.73	TW	93	112MP/4-184TC CUS BRE 40 HL TW VN	29.5	191	225
5	3.7	1780	178	213TC	36410285-VN	PE	575	6.29	TW	144	132SP/4-213TC CUS BRE 60 HL TW VN	44.3	191	225
7.5	5.5	1775	178	215TC	36710285-VN	PE	575	8.60	TW	173	132MP/4-215TC CUS BRE 100 HL TW VN	73.8	191	225
10	7.5	1780	178	254TC	37350285-VN	PE	575	11.0	TW	256	160MP/4-254TC CUS BRE 150 HL TW VN	111	191	225
15	11	1780	178	256C	37550285-VN	PE	575	15.4	TW	342	160LP/4-256C CUS BRE 250 HL TW VN	184	191	225
20	15	1785	179	286TC	37750233-VN	PE	575	19.8	TW	415	180MP/4-286TC CUS BRE 250 HL TW VN	184	191	225
25	18.5	1785	179	286TC	38050233-VN	PE	575	23.9	TW	415	180LP/4-286TC CUS BRE 250 HL TW VN	184	191	225

NEMA T Footed - 10:1 (VN) 575V - 60-6Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.25	0.18	1740	174	56C	32110135-VN	-	575	0.43	-	16.4	71S/4-56 CUS BRE 5 HL VN	3.7	191	213
0.33	0.25	1745	175	56C	32610135-VN	-	575	0.59	-	18.4	71L/4-56 CUS BRE 5 HL VN	3.7	191	213
0.5	0.37	1745	175	56C	33110135-VN	-	575	1.12	-	24.6	80S/4-56 CUS BRE 10 HL VN	7.4	191	213
0.75	0.55	1750	175	56C	33610383-VN	PE	575	0.93	TW	28.6	80LP/4-56 CUS BRE 10 HL TW VN	7.4	191	213
0.75	0.55	1750	175	143TC	33610385-VN	PE	575	0.93	TW	28.6	80LP/4-143T CUS BRE 10 HL TW VN	7.4	191	213
1	0.75	1760	176	145TC	34110385-VN	PE	575	1.33	TW	45	90SP/4-145T CUS BRE 20 HL TW VN	14.8	191	213
1.5	1.1	1755	176	145TC	34610385-VN	PE	575	1.84	TW	49	90LP/4-145T CUS BRE 20 HL TW VN	14.8	191	213
2	1.5	1780	178	182TC	35110385-VN	PE	575	2.29	TW	71	100LP/4-182T CUS BRE 40 HL TW VN	29.5	191	213
3	2.2	1775	178	184TC	36110385-VN	PE	575	3.73	TW	93	112MP/4-184T CUS BRE 40 HL TW VN	29.5	191	213
5	3.7	1780	178	213TC	36410385-VN	PE	575	6.29	TW	144	132SP/4-213T CUS BRE 60 HL TW VN	44.3	191	213
7.5	5.5	1775	178	215TC	36710385-VN	PE	575	8.60	TW	173	132MP/4-215T CUS BRE 100 HL TW VN	73.8	191	213

Motor Selection

◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.

# Inverter Duty Brakemotors

## 10:1 Constant Torque (VN)

### 575V 60-6Hz



Motor Selection

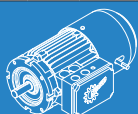


#### IEC B5 Flange - 10:1 (VN)

##### 575V - 60-6Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.12	0.09	1720	172	B5 A140	31010021-VN	-	575	0.30	-	12.3	63S/4-B5 A140 CUS BRE 5 HL VN	3.7	191	248
0.18	0.12	1720	172	B5 A140	31510021-VN	-	575	0.36	-	12.3	63L/4-B5 A140 CUS BRE 5 HL VN	3.7	191	248
0.25	0.18	1740	174	B5 A160	32010021-VN	-	575	0.43	-	16.4	71S/4-B5 A160 CUS BRE 5 HL VN	3.7	191	248
0.33	0.25	1745	175	B5 A160	32510021-VN	-	575	0.59	-	18.4	71L/4-B5 A160 CUS BRE 5 HL VN	3.7	191	248
0.5	0.37	1745	175	B5 A200	33010021-VN	-	575	1.12	-	24.6	80S/4-B5 A200 CUS BRE 10 HL VN	7.4	191	248
0.75	0.55	1750	175	B5 A200	33510033-VN	PE	575	0.93	TW	28.6	80LP/4-B5 A200 CUS BRE 10 HL TW VN	7.4	191	248
1	0.75	1760	176	B5 A200	34010033-VN	PE	575	1.33	TW	45	90SP/4-B5 A200 CUS BRE 20 HL TW VN	14.8	191	248
1.5	1.1	1755	176	B5 A200	34510033-VN	PE	575	1.84	TW	49	90LP/4-B5 A200 CUS BRE 20 HL TW VN	14.8	191	248
2	1.5	1780	178	B5 A250	35010035-VN	PE	575	2.29	TW	71	100LP/4-B5 A250 CUS BRE 40 HL TW VN	29.5	191	248
3	2.2	1775	178	B5 A250	36010033-VN	PE	575	3.73	TW	93	112MP/4-B5 A250 CUS BRE 40 HL TW VN	29.5	191	248
5	3.7	1780	178	B5 A300	36310033-VN	PE	575	6.29	TW	144	132SP/4-B5 A300 CUS BRE 60 HL TW VN	44.3	191	249
7.5	5.5	1775	178	B5 A300	36610033-VN	PE	575	8.60	TW	173	132MP/4-B5 A300 CUS BRE 100 HL TW VN	73.8	191	249
10	7.5	1780	178	B5 A350	37150033-VN	PE	575	11.0	TW	256	160MP/4-B5 A350 CUS BRE 150 HL TW VN	111	191	249
15	11	1780	178	B5 A350	37450033-VN	PE	575	15.4	TW	342	160LP/4-B5 A350 CUS BRE 250 HL TW VN	184	191	249
20	15	1785	179	B5 A350	37750033-VN	PE	575	19.8	TW	415	180MP/4-B5 A350 CUS BRE 250 HL TW VN	184	191	249
25	18.5	1785	179	B5 A350	38050033-VN	PE	575	23.9	TW	415	180LP/4-B5 A350 CUS BRE 250 HL TW VN	184	191	249



#### IEC B14 Flange - 10:1 (VN)

##### 575V - 60-6Hz

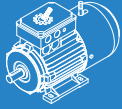


Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.12	0.09	1720	172	B14 C90	31010047-VN	-	575	0.30	-	12.3	63S/4-B14 C90 CUS BRE 5 HL VN	3.7	191	260
0.18	0.12	1720	172	B14 C90	31510046-VN	-	575	0.36	-	13.7	63L/4-B14 C90 CUS BRE 5 HL VN	3.7	191	260
0.25	0.18	1740	174	B14 C105	32010046-VN	-	575	0.43	-	16.4	71S/4-B14 C105 CUS BRE 5 HL VN	3.7	191	260
0.33	0.25	1745	175	B14 C105	32510043-VN	-	575	0.59	-	18.4	71L/4-B14 C105 CUS BRE 5 HL VN	3.7	191	260
0.5	0.37	1745	175	B14 C120	33010049-VN	-	575	1.12	-	24.6	80S/4-B14 C120 CUS BRE 10 HL VN	7.4	191	260
0.75	0.55	1750	175	B14 C120	33510042-VN	PE	575	0.93	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW VN	7.4	191	260
1	0.75	1760	176	B14 C140	34010042-VN	PE	575	1.33	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW VN	14.8	191	260
1.5	1.1	1755	176	B14 C140	34510042-VN	PE	575	1.84	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW VN	14.8	191	260
2	1.5	1780	178	B14 C160	35010042-VN	PE	575	2.29	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW VN	29.5	191	260
3	2.2	1775	178	B14 C160	36010042-VN	PE	575	3.73	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW VN	29.5	191	260
5	3.7	1780	178	B14 C200	36310042-VN	PE	575	6.29	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW VN	44.3	191	261
7.5	5.5	1775	178	B14 C200	36610042-VN	PE	575	8.60	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW VN	73.8	191	261

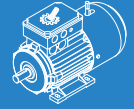
◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



# Inverter Duty Brakemotors 10:1 Constant Torque (VN) 575V 60-6Hz



## IEC Footed (B3) - 10:1 (VN) 575V - 60-6Hz



Power [hp]	Power [kW]	Speed		Frame	Motor Part Number	Class	Voltage ◇	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
		60Hz [rpm]	6Hz [rpm]											
0.25	0.18	1740	174	B3-71	32010121-VN	-	575	0.43	-	16.4	71S/4-B3 CUS BRE 5 HL VN	3.7	191	236
0.33	0.25	1745	175	B3-71	32510121-VN	-	575	0.59	-	18.4	71L/4-B3 CUS BRE 5 HL VN	3.7	191	236
0.5	0.37	1745	175	B3-80	33010121-VN	-	575	1.12	-	24.6	80S/4-B3 CUS BRE 10 HL VN	7.4	191	236
0.75	0.55	1750	175	B3-80	33510133-VN	PE	575	0.93	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW VN	7.4	191	236
1	0.75	1760	176	B3-90S	34010133-VN	PE	575	1.33	TW	45	90SP/4-B3 CUS BRE 20 HL TW VN	14.8	191	236
1.5	1.1	1755	176	B3-90L	34510133-VN	PE	575	1.84	TW	49	90LP/4-B3 CUS BRE 20 HL TW VN	14.8	191	236
2	1.5	1780	178	B3-100	35010133-VN	PE	575	2.29	TW	71	100LP/4-B3 CUS BRE 40 HL TW VN	29.5	191	236
3	2.2	1775	178	B3-112	36010133-VN	PE	575	3.73	TW	93	112MP/4-B3 CUS BRE 40 HL TW VN	29.5	191	236
5	3.7	1780	178	B3-132	36310133-VN	PE	575	6.29	TW	144	132SP/4-B3 CUS BRE 60 HL TW VN	44.3	191	237
7.5	5.5	1775	178	B3-132	36610133-VN	PE	575	8.60	TW	173	132MP/4-B3 CUS BRE 100 HL TW VN	73.8	191	237
10	7.5	1780	178	B3-160	37150133-VN	PE	575	11.0	TW	256	160MP/4-B3 CUS BRE 150 HL TW VN	111	191	237
15	11	1780	178	B3-160	37450133-VN	PE	575	15.4	TW	342	160LP/4-B3 CUS BRE 250 HL TW VN	184	191	237
20	15	1785	179	B3-180	37750133-VN	PE	575	19.8	TW	415	180MP/4-B3 CUS BRE 250 HL TW VN	184	191	237
25	18.5	1785	179	B3-180	38050133-VN	PE	575	23.9	TW	415	180LP/4-B3 CUS BRE 250 HL TW VN	184	191	237

Motor Selection

◇ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.





# Inverter Duty Brakemotors

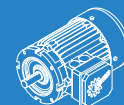
## 20:1 Constant Torque (VW)

### 230/460V 80-4Hz

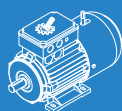


#### NEMA C-Face - 20:1 (VW)

##### 230/460V - 80-4Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.16	0.12	2250	113	56C	31110034-VW	-	230/460	0.88/0.44	-	12.3	63S/4-56C CUS BRE 5 HL VW	3.7	178	224
0.25	0.18	2220	111	56C	31610034-VW	-	230/460	1.12/0.56	-	13.7	63L/4-56C CUS BRE 5 HL VW	3.7	178	224
0.33	0.25	2285	114	56C	32110034-VW	-	230/460	1.56/0.78	-	16.4	71S/4-56C CUS BRE 5 HL VW	3.7	178	224
0.5	0.37	2280	114	56C	32610034-VW	-	230/460	1.90/0.95	-	18.4	71L/4-56C CUS BRE 5 HL VW	3.7	178	224
0.75	0.55	2285	114	56C	33110034-VW	-	230/460	2.70/1.35	-	24.6	80S/4-56C CUS BRE 10 HL VW	7.4	178	224
1	0.75	2230	112	56C	33610282-VW	PE	230/460	3.14/1.57	TW	28.6	80LP/4-56C CUS BRE 10 HL TW VW	7.4	178	224
1	0.75	2230	112	143TC	33610284-VW	PE	230/460	3.14/1.57	TW	28.6	80LP/4-143TC CUS BRE 10 HL TW VW	7.4	178	224
1.5	1.1	2320	116	145TC	34110284-VW	PE	230/460	4.20/2.10	TW	45	90SP/4-145TC CUS BRE 20 HL TW VW	14.8	178	224
2	1.5	2310	116	145TC	34610284-VW	PE	230/460	5.60/2.80	TW	49	90LP/4-145TC CUS BRE 20 HL TW VW	14.8	178	224
3	2.2	2360	118	182TC	35110284-VW	PE	230/460	7.68/3.84	TW	71	100LP/4-182TC CUS BRE 40 HL TW VW	29.5	178	225
5	3.7	2335	117	184TC	36110284-VW	PE	230/460	13.0/6.50	TW	93	112MP/4-184TC CUS BRE 40 HL TW VW	29.5	178	225
7.5	5.5	2355	118	213TC	36410284-VW	PE	230/460	19.5/9.75	TW	144	132SP/4-213TC CUS BRE 60 HL TW VW	44.3	178	225
10	7.5	2350	118	215TC	36710284-VW	PE	230/460	26.7/13.4	TW	173	132MP/4-215TC CUS BRE 100 HL TW VW	73.8	178	225
15	11	2360	118	254TC	37350284-VW	PE	230/460	35.6/17.8	TW	256	160MP/4-254TC CUS BRE 150 HL TW VW	111	178	225
20	15	2360	118	256TC	37550284-VW	PE	230/460	47.6/23.8	TW	342	160LP/4-256C CUS BRE 250 HL TW VW	184	178	225
25	18.5	2380	119	286TC	37750232-VW	PE	230/460	60.6/30.3	TW	415	180MP/4-286TC CUS BRE 250 HL TW VW	184	178	225
30	22	2370	119	286TC	38050232-VW	PE	230/460	69.6/34.8	TW	415	180LP/4-286TC CUS BRE 250 HL TW VW	184	178	225



#### NEMA T Footed - 20:1 (VW)

##### 230/460V - 80-4Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.33	0.25	2285	114	56	32110134-VW	-	230/460	1.56/0.78	-	16.4	71S/4-56 CUS BRE 5 HL VW	3.7	178	213
0.5	0.37	2280	114	56	32610134-VW	-	230/460	1.90/0.95	-	18.4	71L/4-56 CUS BRE 5 HL VW	3.7	178	213
0.75	0.55	2285	114	56	33110134-VW	-	230/460	2.70/1.35	-	24.6	80S/4-56 CUS BRE 10 HL VW	7.4	178	213
1	0.75	2230	112	56	33610382-VW	PE	230/460	3.14/1.57	TW	28.6	80LP/4-56 CUS BRE 10 HL TW VW	7.4	178	213
1	0.75	2230	112	143T	33610384-VW	PE	230/460	3.14/1.57	TW	28.6	80LP/4-143T CUS BRE 10 HL TW VW	7.4	178	213
1.5	1.1	2320	116	145T	34110384-VW	PE	230/460	4.20/2.10	TW	45	90SP/4-145T CUS BRE 20 HL TW VW	14.8	178	213
2	1.5	2310	116	145T	34610384-VW	PE	230/460	5.60/2.80	TW	49	90LP/4-145T CUS BRE 20 HL TW VW	14.8	178	213
3	2.2	2360	118	182T	35110384-VW	PE	230/460	7.68/3.84	TW	71	100LP/4-182T CUS BRE 40 HL TW VW	29.5	178	213
5	3.7	2335	117	184T	36110384-VW	PE	230/460	13.0/6.50	TW	93	112MP/4-184T CUS BRE 40 HL TW VW	29.5	178	213
7.5	5.5	2355	118	213T	36410384-VW	PE	230/460	19.5/9.75	TW	144	132SP/4-213T CUS BRE 60 HL TW VW	44.3	178	213
10	7.5	2350	118	215T	36710384-VW	PE	230/460	26.7/13.4	TW	173	132MP/4-215T CUS BRE 100 HL TW VW	73.8	178	213

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.



# Inverter Duty Brakemotors 20:1 Constant Torque (VW) 230/460V 80-4Hz

IEC B5 Flange - 20:1 (VW) 230/460V - 80-4Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.16	0.12	2250	113	B5 A140	31010019-VW	-	230/460	0.88/0.44	-	12.3	63S/4-B5 A140 CUS BRE 5 HL VW	3.7	178	248
0.25	0.18	2220	111	B5 A140	31510019-VW	-	230/460	1.12/0.56	-	12.3	63L/4-B5 A140 CUS BRE 5 HL VW	3.7	178	248
0.33	0.25	2285	114	B5 A160	32010019-VW	-	230/460	1.56/0.78	-	16.4	71S/4-B5 A160 CUS BRE 5 HL VW	3.7	178	248
0.5	0.37	2280	114	B5 A160	32510019-VW	-	230/460	1.90/0.95	-	18.4	71L/4-B5 A160 CUS BRE 5 HL VW	3.7	178	248
0.75	0.55	2285	114	B5 A200	33010019-VW	-	230/460	2.70/1.35	-	24.6	80S/4-B5 A200 CUS BRE 10 HL VW	7.4	178	248
1	0.75	2230	112	B5 A200	33510032-VW	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B5 A200 CUS BRE 10 HL TW VW	7.4	178	248
1.5	1.1	2320	116	B5 A200	34010032-VW	PE	230/460	4.20/2.10	TW	45	90SP/4-B5 A200 CUS BRE 20 HL TW VW	14.8	178	248
2	1.5	2310	116	B5 A200	34510032-VW	PE	230/460	5.60/2.80	TW	49	90LP/4-B5 A200 CUS BRE 20 HL TW VW	14.8	178	248
3	2.2	2360	118	B5 A250	35010034-VW	PE	230/460	7.68/3.84	TW	71	100LP/4-B5 A250 CUS BRE 40 HL TW VW	29.5	178	248
5	3.7	2335	117	B5 A250	36010032-VW	PE	230/460	13.0/6.50	TW	93	112MP/4-B5 A250 CUS BRE 40 HL TW VW	29.5	178	248
7.5	5.5	2355	118	B5 A300	36310032-VW	PE	230/460	19.5/9.75	TW	144	132SP/4-B5 A300 CUS BRE 60 HL TW VW	44.3	178	249
10	7.5	2350	118	B5 A300	36610032-VW	PE	230/460	26.7/13.4	TW	173	132MP/4-B5 A300 CUS BRE 100 HL TW VW	73.8	178	249
15	11	2360	118	B5 A350	37150032-VW	PE	230/460	35.6/17.8	TW	256	160MP/4-B5 A350 CUS BRE 150 HL TW VW	111	178	249
20	15	2360	118	B5 A350	37450032-VW	PE	230/460	47.6/23.8	TW	342	160LP/4-B5 A350 CUS BRE 250 HL TW VW	184	178	249
25	18.5	2380	119	B5 A350	37750032-VW	PE	230/460	60.6/30.3	TW	415	180MP/4-B5 A350 CUS BRE 250 HL TW VW	184	178	249
30	22	2370	119	B5 A350	38050032-VW	PE	230/460	69.6/34.8	TW	415	180LP/4-B5 A350 CUS BRE 250 HL TW VW	184	178	249

IEC B14 Flange - 20:1 (VW) 230/460V - 80-4Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.16	0.12	2250	113	B14 C90	31010046-VW	-	230/460	0.88/0.44	-	12.3	63S/4-B14 C90 CUS BRE 5 HL VW	3.7	178	260
0.25	0.18	2220	111	B14 C90	31510045-VW	-	230/460	1.12/0.56	-	13.7	63L/4-B14 C90 CUS BRE 5 HL VW	3.7	178	260
0.33	0.25	2285	114	B14 C105	32010045-VW	-	230/460	1.56/0.78	-	16.4	71S/4-B14 C105 CUS BRE 5 HL VW	3.7	178	260
0.5	0.37	2280	114	B14 C105	32510046-VW	-	230/460	1.90/0.95	-	18.4	71L/4-B14 C105 CUS BRE 5 HL VW	3.7	178	260
0.75	0.55	2285	114	B14 C120	33010047-VW	-	230/460	2.70/1.35	-	24.6	80S/4-B14 C120 CUS BRE 10 HL VW	7.4	178	260
1	0.75	2230	112	B14 C120	33510041-VW	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW VW	7.4	178	260
1.5	1.1	2320	116	B14 C140	34010041-VW	PE	230/460	4.20/2.10	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW VW	14.8	178	260
2	1.5	2310	116	B14 C140	34510041-VW	PE	230/460	5.60/2.80	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW VW	14.8	178	260
3	2.2	2360	118	B14 C160	35010044-VW	PE	230/460	7.68/3.84	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW VW	29.5	178	260
5	3.7	2335	117	B14 C160	36010044-VW	PE	230/460	13.0/6.50	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW VW	29.5	178	260
7.5	5.5	2355	118	B14 C200	36310041-VW	PE	230/460	19.5/9.75	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW VW	44.3	178	261
10	7.5	2350	118	B14 C200	36610041-VW	PE	230/460	26.7/13.4	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW VW	73.8	178	261

Motor Selection

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.

# Inverter Duty Brakemotors

## 20:1 Constant Torque (VW)

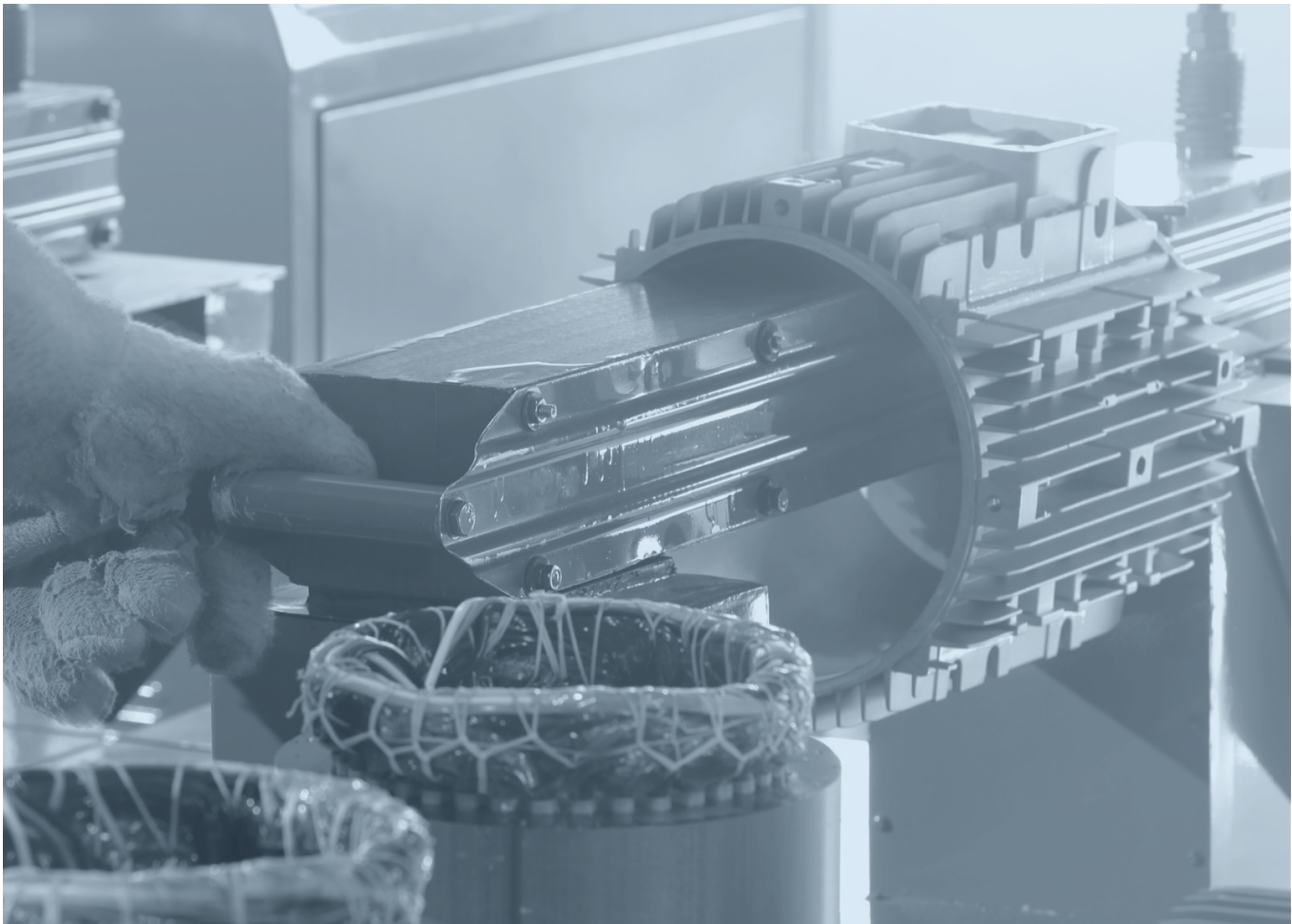
### 230/460V 80-4Hz



Motor Selection

Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.33	0.25	2285	114	B3-71	32010120-VW	-	230/460	1.56/0.78	-	16.4	71S/4-B3 CUS BRE 5 HL VW	3.7	178	236
0.5	0.37	2280	114	B3-71	32510120-VW	-	230/460	1.90/0.95	-	18.4	71L/4-B3 CUS BRE 5 HL VW	3.7	178	236
0.75	0.55	2285	114	B3-80	33010120-VW	-	230/460	2.70/1.35	-	24.6	80S/4-B3 CUS BRE 10 HL VW	7.4	178	236
1	0.75	2230	112	B3-80	33510132-VW	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW VW	7.4	178	236
1.5	1.1	2320	116	B3-90S	34010132-VW	PE	230/460	4.20/2.10	TW	45	90SP/4-B3 CUS BRE 20 HL TW VW	14.8	178	236
2	1.5	2310	116	B3-90L	34510132-VW	PE	230/460	5.60/2.80	TW	49	90LP/4-B3 CUS BRE 20 HL TW VW	14.8	178	236
3	2.2	2360	118	B3-100	35010132-VW	PE	230/460	7.68/3.84	TW	71	100LP/4-B3 CUS BRE 40 HL TW VW	29.5	178	236
5	3.7	2335	117	B3-112	36010132-VW	PE	230/460	13.0/6.50	TW	93	112MP/4-B3 CUS BRE 40 HL TW VW	29.5	178	236
7.5	5.5	2355	118	B3-132	36310132-VW	PE	230/460	19.5/9.75	TW	144	132SP/4-B3 CUS BRE 60 HL TW VW	44.3	178	237
10	7.5	2350	118	B3-132	36610132-VW	PE	230/460	26.7/13.4	TW	173	132MP/4-B3 CUS BRE 100 HL TW VW	73.8	178	237
15	11	2360	118	B3-160	37150132-VW	PE	230/460	35.6/17.8	TW	256	160MP/4-B3 CUS BRE 150 HL TW VW	111	178	237
20	15	2360	118	B3-160	37450132-VW	PE	230/460	47.6/23.8	TW	342	160LP/4-B3 CUS BRE 250 HL TW VW	184	178	237
25	18.5	2380	119	B3-180	37750132-VW	PE	230/460	60.6/30.3	TW	415	180MP/4-B3 CUS BRE 250 HL TW VW	184	178	237
30	22	2370	119	B3-180	38050132-VW	PE	230/460	69.6/34.8	TW	415	180LP/4-B3 CUS BRE 250 HL TW VW	184	178	237

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.







# Inverter Duty Brakemotors 20:1 Constant Torque (VW) 575V 80-4Hz

NEMA C-Face - 20:1 (VW) 575V - 80-4Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.16	0.12	2250	113	56C	31110035-VW	-	575	0.35	-	12.3	63S/4-56C CUS BRE 5 HL VW	3.7	193	224
0.25	0.18	2220	111	56C	31610035-VW	-	575	0.45	-	13.7	63L/4-56C CUS BRE 5 HL VW	3.7	193	224
0.33	0.25	2284	114	56C	32110035-VW	-	575	0.62	-	16.4	71S/4-56C CUS BRE 5 HL VW	3.7	193	224
0.5	0.37	2280	114	56C	32610035-VW	-	575	0.76	-	18.4	71L/4-56C CUS BRE 5 HL VW	3.7	193	224
0.75	0.55	2285	114	56C	33110035-VW	-	575	1.08	-	24.6	80S/4-56C CUS BRE 10 HL VW	7.4	193	224
1	0.75	2230	112	56C	33610283-VW	PE	575	1.26	TW	28.6	80LP/4-56C CUS BRE 10 HL TW VW	7.4	193	224
1	0.75	2230	112	143TC	33610285-VW	PE	575	1.26	TW	28.6	80LP/4-143TC CUS BRE 10 HL TW VW	7.4	193	224
1.5	1.1	2320	116	145TC	34110285-VW	PE	575	1.68	TW	45	90SP/4-145TC CUS BRE 20 HL TW VW	14.8	193	224
2	1.5	2310	116	145TC	34610285-VW	PE	575	2.24	TW	49	90LP/4-145TC CUS BRE 20 HL TW VW	14.8	193	224
3	2.2	2360	118	182TC	35110285-VW	PE	575	3.07	TW	71	100LP/4-182TC CUS BRE 40 HL TW VW	29.5	193	225
5	3.7	2335	117	184TC	36110285-VW	PE	575	5.20	TW	93	112MP/4-184TC CUS BRE 40 HL TW VW	29.5	193	225
7.5	5.5	2355	118	213TC	36410285-VW	PE	575	7.80	TW	144	132SP/4-213TC CUS BRE 60 HL TW VW	44.3	193	225
10	7.5	2350	118	215TC	36710285-VW	PE	575	10.7	TW	173	132MP/4-215TC CUS BRE 100 HL TW VW	73.8	193	225
15	11	2360	118	254TC	37350285-VW	PE	575	14.2	TW	256	160MP/4-254TC CUS BRE 150 HL TW VW	111	193	225
20	15	2360	118	256C	37550285-VW	PE	575	19.0	TW	342	160LP/4-256C CUS BRE 250 HL TW VW	184	193	225
25	18.5	2380	119	286TC	37750233-VW	PE	575	24.2	TW	415	180MP/4-286TC CUS BRE 250 HL TW VW	184	193	225
30	22	2370	119	286TC	38050233-VW	PE	575	27.8	TW	415	180LP/4-286TC CUS BRE 250 HL TW VW	184	193	225

NEMA T Footed - 20:1 (VW) 575V - 80-4Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.33	0.25	2284	114	56	32110135-VW	-	575	0.62	-	16.4	71S/4-56 CUS BRE 5 HL VW	3.7	193	213
0.5	0.37	2280	114	56	32610135-VW	-	575	0.76	-	18.4	71L/4-56 CUS BRE 5 HL VW	3.7	193	213
0.75	0.55	2285	114	56	33110135-VW	-	575	1.08	-	24.6	80S/4-56 CUS BRE 10 HL VW	7.4	193	213
1	0.75	2230	112	56	33610383-VW	PE	575	1.26	TW	28.6	80LP/4-56 CUS BRE 10 HL TW VW	7.4	193	213
1	0.75	2230	112	143T	33610385-VW	PE	575	1.26	TW	28.6	80LP/4-143T CUS BRE 10 HL TW VW	7.4	193	213
1.5	1.1	2320	116	145T	34110385-VW	PE	575	1.68	TW	45	90SP/4-145T CUS BRE 20 HL TW VW	14.8	193	213
2	1.5	2310	116	145T	34610385-VW	PE	575	2.24	TW	49	90LP/4-145T CUS BRE 20 HL TW VW	14.8	193	213
3	2.2	2360	118	182T	35110385-VW	PE	575	3.07	TW	71	100LP/4-182T CUS BRE 40 HL TW VW	29.5	193	213
5	3.7	2335	117	184T	36110385-VW	PE	575	5.20	TW	93	112MP/4-184T CUS BRE 40 HL TW VW	29.5	193	213
7.5	5.5	2355	118	213T	36410385-VW	PE	575	7.80	TW	144	132SP/4-213T CUS BRE 60 HL TW VW	44.3	193	213
10	7.5	2350	118	215T	36710385-VW	PE	575	10.7	TW	173	132MP/4-215T CUS BRE 100 HL TW VW	73.8	193	213

Motor Selection

◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.

# Inverter Duty Brakemotors

## 20:1 Constant Torque (VW)

### 575V 80-4Hz



Motor Selection

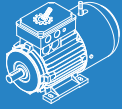
IEC B5 Flange - 20:1 (VW)														
575V - 80-4Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.16	0.12	2250	113	B5 A140	31010021-VW	-	575	0.35	-	12.3	63S/4-B5 A140 CUS BRE 5 HL VW	3.7	193	248
0.25	0.18	2220	111	B5 A140	31510021-VW	-	575	0.45	-	12.3	63L/4-B5 A140 CUS BRE 5 HL VW	3.7	193	248
0.33	0.25	2284	114	B5 A160	32010021-VW	-	575	0.62	-	16.4	71S/4-B5 A160 CUS BRE 5 HL VW	3.7	193	248
0.5	0.37	2280	114	B5 A160	32510021-VW	-	575	0.76	-	18.4	71L/4-B5 A160 CUS BRE 5 HL VW	3.7	193	248
0.75	0.55	2285	114	B5 A200	33010021-VW	-	575	1.08	-	24.6	80S/4-B5 A200 CUS BRE 10 HL VW	7.4	193	248
1	0.75	2230	112	B5 A200	33510033-VW	PE	575	1.26	TW	28.6	80LP/4-B5 A200 CUS BRE 10 HL TW VW	7.4	193	248
1.5	1.1	2320	116	B5 A200	34010033-VW	PE	575	1.68	TW	45	90SP/4-B5 A200 CUS BRE 20 HL TW VW	14.8	193	248
2	1.5	2310	116	B5 A200	34510033-VW	PE	575	2.24	TW	49	90LP/4-B5 A200 CUS BRE 20 HL TW VW	14.8	193	248
3	2.2	2360	118	B5 A250	35010035-VW	PE	575	3.07	TW	71	100LP/4-B5 A250 CUS BRE 40 HL TW VW	29.5	193	248
5	3.7	2335	117	B5 A250	36010033-VW	PE	575	5.20	TW	93	112MP/4-B5 A250 CUS BRE 40 HL TW VW	29.5	193	248
7.5	5.5	2355	118	B5 A300	36310033-VW	PE	575	7.80	TW	144	132SP/4-B5 A300 CUS BRE 60 HL TW VW	44.3	193	249
10	7.5	2350	118	B5 A300	36610033-VW	PE	575	10.7	TW	173	132MP/4-B5 A300 CUS BRE 100 HL TW VW	73.8	193	249
15	11	2360	118	B5 A350	37150033-VW	PE	575	14.2	TW	256	160MP/4-B5 A350 CUS BRE 150 HL TW VW	111	193	249
20	15	2360	118	B5 A350	37450033-VW	PE	575	19.0	TW	342	160LP/4-B5 A350 CUS BRE 250 HL TW VW	184	193	249
25	18.5	2380	119	B5 A350	37750033-VW	PE	575	24.2	TW	415	180MP/4-B5 A350 CUS BRE 250 HL TW VW	184	193	249
30	22	2370	119	B5 A350	38050033-VW	PE	575	27.8	TW	415	180LP/4-B5 A350 CUS BRE 250 HL TW VW	184	193	249

IEC B14 Flange - 20:1 (VW)														
575V - 80-4Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.16	0.12	2250	113	B14 C90	31010047-VW	-	575	0.35	-	12.3	63S/4-B14 C90 CUS BRE 5 HL VW	3.7	193	260
0.25	0.18	2220	111	B14 C90	31510046-VW	-	575	0.45	-	13.7	63L/4-B14 C90 CUS BRE 5 HL VW	3.7	193	260
0.33	0.25	2284	114	B14 C105	32010046-VW	-	575	0.62	-	16.4	71S/4-B14 C105 CUS BRE 5 HL VW	3.7	193	260
0.5	0.37	2280	114	B14 C105	32510043-VW	-	575	0.76	-	18.4	71L/4-B14 C105 CUS BRE 5 HL VW	3.7	193	260
0.75	0.55	2285	114	B14 C120	33010049-VW	-	575	1.08	-	24.6	80S/4-B14 C120 CUS BRE 10 HL VW	7.4	193	260
1	0.75	2230	112	B14 C120	33510042-VW	PE	575	1.26	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW VW	7.4	193	260
1.5	1.1	2320	116	B14 C140	34010042-VW	PE	575	1.68	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW VW	14.8	193	260
2	1.5	2310	116	B14 C140	34510042-VW	PE	575	2.24	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW VW	14.8	193	260
3	2.2	2360	118	B14 C160	35010042-VW	PE	575	3.07	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW VW	29.5	193	260
5	3.7	2335	117	B14 C160	36010042-VW	PE	575	5.20	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW VW	29.5	193	260
7.5	5.5	2355	118	B14 C200	36310042-VW	PE	575	7.80	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW VW	44.3	193	261
10	7.5	2350	118	B14 C200	36610042-VW	PE	575	10.7	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW VW	73.8	193	261

◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



# Inverter Duty Brakemotors 20:1 Constant Torque (VW) 575V 80-4Hz



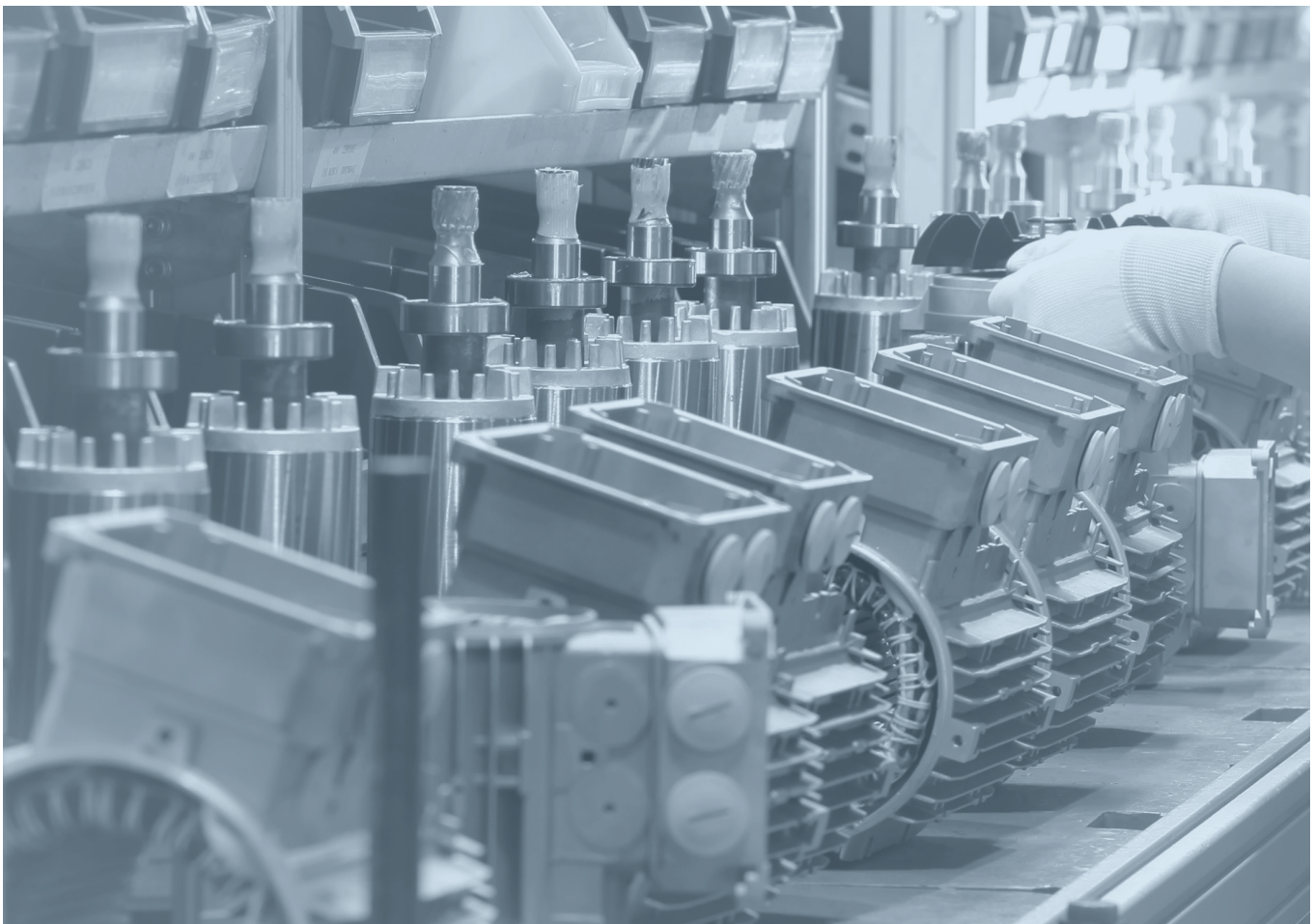
## IEC Footed (B3) - 20:1 (VW) 575V - 80-4Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
0.33	0.25	2284	114	B3-71	32010121-VW	-	575	0.62	-	16.4	71S/4-B3 CUS BRE 5 HL VW	3.7	193	236
0.5	0.37	2280	114	B3-71	32510121-VW	-	575	0.76	-	18.4	71L/4-B3 CUS BRE 5 HL VW	3.7	193	236
0.75	0.55	2285	114	B3-80	33010121-VW	-	575	1.08	-	24.6	80S/4-B3 CUS BRE 10 HL VW	7.4	193	236
1	0.75	2230	112	B3-80	33510133-VW	PE	575	1.26	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW VW	7.4	193	236
1.5	1.1	2320	116	B3-90S	34010133-VW	PE	575	1.68	TW	45	90SP/4-B3 CUS BRE 20 HL TW VW	14.8	193	236
2	1.5	2310	116	B3-90L	34510133-VW	PE	575	2.24	TW	49	90LP/4-B3 CUS BRE 20 HL TW VW	14.8	193	236
3	2.2	2360	118	B3-100	35010133-VW	PE	575	3.07	TW	71	100LP/4-B3 CUS BRE 40 HL TW VW	29.5	193	236
5	3.7	2335	117	B3-112	36010133-VW	PE	575	5.20	TW	93	112MP/4-B3 CUS BRE 40 HL TW VW	29.5	193	236
7.5	5.5	2355	118	B3-132	36310133-VW	PE	575	7.80	TW	144	132SP/4-B3 CUS BRE 60 HL TW VW	44.3	193	237
10	7.5	2350	118	B3-132	36610133-VW	PE	575	10.7	TW	173	132MP/4-B3 CUS BRE 100 HL TW VW	73.8	193	237
15	11	2360	118	B3-160	37150133-VW	PE	575	14.2	TW	256	160MP/4-B3 CUS BRE 150 HL TW VW	111	193	237
20	15	2360	118	B3-160	37450133-VW	PE	575	19.0	TW	342	160LP/4-B3 CUS BRE 250 HL TW VW	184	193	237
25	18.5	2380	119	B3-180	37750133-VW	PE	575	24.2	TW	415	180MP/4-B3 CUS BRE 250 HL TW VW	184	193	237
30	22	2370	119	B3-180	38050133-VW	PE	575	27.8	TW	415	180LP/4-B3 CUS BRE 250 HL TW VW	184	193	237

Motor Selection

◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.





# Inverter Duty Brakemotors

## 1000:1 Constant Torque (F VZ)

### 230/460V 60-0Hz

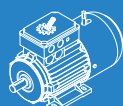


#### NEMA C-Face - 1000:1 (F VZ)

##### 230/460V - 60-0Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.16	0.12	1700	0	56C	31110034-F VZ	-	230/460	0.88/0.44	-	12.3	63S/4-56C CUS BRE 5 HL F VZ	3.7	180	224
0.25	0.18	1680	0	56C	31610034-F VZ	-	230/460	1.12/0.56	-	13.7	63L/4-56C CUS BRE 5 HL F VZ	3.7	180	224
0.33	0.25	1710	0	56C	32110034-F VZ	-	230/460	1.56/0.78	-	16.4	71S/4-56C CUS BRE 5 HL F VZ	3.7	180	224
0.5	0.37	1720	0	56C	32610034-F VZ	-	230/460	1.90/0.95	-	18.4	71L/4-56C CUS BRE 5 HL F VZ	3.7	180	224
0.75	0.55	1710	0	56C	33110034-F VZ	-	230/460	2.7/1.35	-	24.6	80S/4-56C CUS BRE 10 HL F VZ	7.4	180	224
1	0.75	1730	0	56C	33610282-F VZ	PE	230/460	3.14/1.57	TW	28.6	80LP/4-56C CUS BRE 10 HL TW F VZ	7.4	180	224
1	0.75	1730	0	143TC	33610284-F VZ	PE	230/460	3.14/1.57	TW	28.6	80LP/4-143TC CUS BRE 10 HL TW F VZ	7.4	180	224
1.5	1.1	1740	0	145TC	34110284-F VZ	PE	230/460	4.20/2.10	TW	45	90SP/4-145TC CUS BRE 20 HL TW F VZ	14.8	180	224
2	1.5	1730	0	145TC	34610284-F VZ	PE	230/460	5.60/2.80	TW	49	90LP/4-145TC CUS BRE 20 HL TW F VZ	14.8	180	224
3	2.2	1770	0	182TC	35110284-F VZ	PE	230/460	7.68/3.84	TW	71	100LP/4-182TC CUS BRE 40 HL TW F VZ	29.5	180	225
5	3.7	1755	0	184TC	36110284-F VZ	PE	230/460	13.0/6.50	TW	93	112MP/4-184TC CUS BRE 40 HL TW F VZ	29.5	180	225
7.5	5.5	1770	0	213TC	36410284-F VZ	PE	230/460	19.5/9.80	TW	144	132SP/4-213TC CUS BRE 60 HL TW F VZ	44.3	180	225
10	7.5	1765	0	215TC	36710284-F VZ	PE	230/460	26.7/13.4	TW	173	132MP/4-215TC CUS BRE 100 HL TW F VZ	73.8	180	225
15	11	1770	0	254TC	37350284-F VZ	PE	230/460	35.6/17.8	TW	256	160MP/4-254TC CUS BRE 150 HL TW F VZ	111	180	225
20	15	1775	0	256C	37550284-F VZ	PE	230/460	47.6/23.8	TW	342	160LP/4-256C CUS BRE 250 HL TW F VZ	184	180	225
25	18.5	1780	0	286TC	37750232-F VZ	PE	230/460	60.6/30.3	TW	415	180MP/4-286TC CUS BRE 250 HL TW F VZ	184	180	225
30	22	1780	0	286TC	38050232-F VZ	PE	230/460	69.6/34.8	TW	415	180LP/4-286TC CUS BRE 250 HL TW F VZ	184	180	225



#### NEMA T Footed - 1000:1 (F VZ)

##### 230/460V - 60-0Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.33	0.25	1710	0	56	32110134-F VZ	-	230/460	1.56/0.78	-	16.4	71S/4-56 CUS BRE 5 HL F VZ	3.7	180	213
0.5	0.37	1720	0	56	32610134-F VZ	-	230/460	1.90/0.95	-	18.4	71L/4-56 CUS BRE 5 HL F VZ	3.7	180	213
0.75	0.55	1710	0	56	33110134-F VZ	-	230/460	2.7/1.35	-	24.6	80S/4-56 CUS BRE 10 HL F VZ	7.4	180	213
1	0.75	1730	0	56	33610382-F VZ	PE	230/460	3.14/1.57	TW	28.6	80LP/4-56 CUS BRE 10 HL TW F VZ	7.4	180	213
1	0.75	1730	0	143T	33610384-F VZ	PE	230/460	3.14/1.57	TW	28.6	80LP/4-143T CUS BRE 10 HL TW F VZ	7.4	180	213
1.5	1.1	1740	0	145T	34110384-F VZ	PE	230/460	4.20/2.10	TW	45	90SP/4-145T CUS BRE 20 HL TW F VZ	14.8	180	213
2	1.5	1730	0	145T	34610384-F VZ	PE	230/460	5.60/2.80	TW	49	90LP/4-145T CUS BRE 20 HL TW F VZ	14.8	180	213
3	2.2	1770	0	182T	35110384-F VZ	PE	230/460	7.68/3.84	TW	71	100LP/4-182T CUS BRE 40 HL TW F VZ	29.5	180	213
5	3.7	1755	0	184T	36110384-F VZ	PE	230/460	13.0/6.50	TW	93	112MP/4-184T CUS BRE 40 HL TW F VZ	29.5	180	213
7.5	5.5	1770	0	213T	36410384-F VZ	PE	230/460	19.5/9.80	TW	144	132SP/4-213T CUS BRE 60 HL TW F VZ	44.3	180	213
10	7.5	1765	0	215T	36710384-F VZ	PE	230/460	26.7/13.4	TW	173	132MP/4-215T CUS BRE 100 HL TW F VZ	73.8	180	213

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.



# Inverter Duty Brakemotors 1000:1 Constant Torque (F VZ) 230/460V 60-0Hz

IEC B5 Flange - 1000:1 (F VZ) 230/460V - 60-0Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.16	0.12	1700	0	B5 A140	31010019-F VZ	-	230/460	0.88/0.44	-	12.3	63S/4-B5 A140 CUS BRE 5 HL F VZ	3.7	180	248
0.25	0.18	1680	0	B5 A140	31510019-F VZ	-	230/460	1.12/0.56	-	12.3	63L/4-B5 A140 CUS BRE 5 HL F VZ	3.7	180	248
0.33	0.25	1710	0	B5 A160	32010019-F VZ	-	230/460	1.56/0.78	-	16.4	71S/4-B5 A160 CUS BRE 5 HL F VZ	3.7	180	248
0.5	0.37	1720	0	B5 A160	32510019-F VZ	-	230/460	1.90/0.95	-	18.4	71L/4-B5 A160 CUS BRE 5 HL F VZ	3.7	180	248
0.75	0.55	1710	0	B5 A200	33010019-F VZ	-	230/460	2.7/1.35	-	24.6	80S/4-B5 A200 CUS BRE 10 HL F VZ	7.4	180	248
1	0.75	1730	0	B5 A200	33510032-F VZ	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B5 A200 CUS BRE 10 HL TW F VZ	7.4	180	248
1.5	1.1	1740	0	B5 A200	34010032-F VZ	PE	230/460	4.20/2.10	TW	45	90SP/4-B5 A200 CUS BRE 20 HL TW F VZ	14.8	180	248
2	1.5	1730	0	B5 A200	34510032-F VZ	PE	230/460	5.60/2.80	TW	49	90LP/4-B5 A200 CUS BRE 20 HL TW F VZ	14.8	180	248
3	2.2	1770	0	B5 A250	35010034-F VZ	PE	230/460	7.68/3.84	TW	71	100LP/4-B5 A250 CUS BRE 40 HL TW F VZ	29.5	180	248
5	3.7	1755	0	B5 A250	36010032-F VZ	PE	230/460	13.0/6.50	TW	93	112MP/4-B5 A250 CUS BRE 40 HL TW F VZ	29.5	180	248
7.5	5.5	1770	0	B5 A300	36310032-F VZ	PE	230/460	19.5/9.80	TW	144	132SP/4-B5 A300 CUS BRE 60 HL TW F VZ	44.3	180	249
10	7.5	1765	0	B5 A300	36610032-F VZ	PE	230/460	26.7/13.4	TW	173	132MP/4-B5 A300 CUS BRE 100 HL TW F VZ	73.8	180	249
15	11	1770	0	B5 A350	37150032-F VZ	PE	230/460	35.6/17.8	TW	256	160MP/4-B5 A350 CUS BRE 150 HL TW F VZ	111	180	249
20	15	1775	0	B5 A350	37450032-F VZ	PE	230/460	47.6/23.8	TW	342	160LP/4-B5 A350 CUS BRE 250 HL TW F VZ	184	180	249
25	18.5	1780	0	B5 A350	37750032-F VZ	PE	230/460	60.6/30.3	TW	415	180MP/4-B5 A350 CUS BRE 250 HL TW F VZ	184	180	249
30	22	1780	0	B5 A350	38050032-F VZ	PE	230/460	69.6/34.8	TW	415	180LP/4-B5 A350 CUS BRE 250 HL TW F VZ	184	180	249

IEC B14 Flange - 1000:1 (F VZ) 230/460V - 60-0Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.16	0.12	1700	0	B14 C90	31010046-F VZ	-	230/460	0.88/0.44	-	12.3	63S/4-B14 C90 CUS BRE 5 HL F VZ	3.7	180	260
0.25	0.18	1680	0	B14 C90	31510045-F VZ	-	230/460	1.12/0.56	-	13.7	63L/4-B14 C90 CUS BRE 5 HL F VZ	3.7	180	260
0.33	0.25	1710	0	B14 C105	32010045-F VZ	-	230/460	1.56/0.78	-	16.4	71S/4-B14 C105 CUS BRE 5 HL F VZ	3.7	180	260
0.5	0.37	1720	0	B14 C105	32510046-F VZ	-	230/460	1.90/0.95	-	18.4	71L/4-B14 C105 CUS BRE 5 HL F VZ	3.7	180	260
0.75	0.55	1710	0	B14 C120	33010047-F VZ	-	230/460	2.7/1.35	-	24.6	80S/4-B14 C120 CUS BRE 10 HL F VZ	7.4	180	260
1	0.75	1730	0	B14 C120	33510041-F VZ	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW F VZ	7.4	180	260
1.5	1.1	1740	0	B14 C140	34010041-F VZ	PE	230/460	4.20/2.10	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW F VZ	14.8	180	260
2	1.5	1730	0	B14 C140	34510041-F VZ	PE	230/460	5.60/2.80	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW F VZ	14.8	180	260
3	2.2	1770	0	B14 C160	35010044-F VZ	PE	230/460	7.68/3.84	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW F VZ	29.5	180	260
5	3.7	1755	0	B14 C160	36010044-F VZ	PE	230/460	13.0/6.50	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW F VZ	29.5	180	260
7.5	5.5	1770	0	B14 C200	36310041-F VZ	PE	230/460	19.5/9.80	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW F VZ	44.3	180	261
10	7.5	1765	0	B14 C200	36610041-F VZ	PE	230/460	26.7/13.4	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW F VZ	73.8	180	261

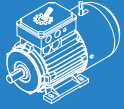
Motor Selection

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.

# Inverter Duty Brakemotors

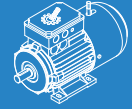
## 1000:1 Constant Torque (F VZ)

### 230/460V 60-0Hz



#### IEC Footed (B3) - 1000:1 (F VZ)

#### 230/460V - 60-0Hz



Motor Selection

Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.33	0.25	1710	0	B3-71	32010120-F VZ	-	230/460	1.56/0.78	-	16.4	71S/4-B3 CUS BRE 5 HL F VZ	3.7	180	236
0.5	0.37	1720	0	B3-71	32510120-F VZ	-	230/460	1.90/0.95	-	18.4	71L/4-B3 CUS BRE 5 HL F VZ	3.7	180	236
0.75	0.55	1710	0	B3-80	33010120-F VZ	-	230/460	2.7/1.35	-	24.6	80S/4-B3 CUS BRE 10 HL F VZ	7.4	180	236
1	0.75	1730	0	B3-80	33510132-F VZ	PE	230/460	3.14/1.57	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW F VZ	7.4	180	236
1.5	1.1	1740	0	B3-90S	34010132-F VZ	PE	230/460	4.20/2.10	TW	45	90SP/4-B3 CUS BRE 20 HL TW F VZ	14.8	180	236
2	1.5	1730	0	B3-90L	34510132-F VZ	PE	230/460	5.60/2.80	TW	49	90LP/4-B3 CUS BRE 20 HL TW F VZ	14.8	180	236
3	2.2	1770	0	B3-100	35010132-F VZ	PE	230/460	7.68/3.84	TW	71	100LP/4-B3 CUS BRE 40 HL TW F VZ	29.5	180	236
5	3.7	1755	0	B3-112	36010132-F VZ	PE	230/460	13.0/6.50	TW	93	112MP/4-B3 CUS BRE 40 HL TW F VZ	29.5	180	236
7.5	5.5	1770	0	B3-132	36310132-F VZ	PE	230/460	19.5/9.80	TW	144	132SP/4-B3 CUS BRE 60 HL TW F VZ	44.3	180	237
10	7.5	1765	0	B3-132	36610132-F VZ	PE	230/460	26.7/13.4	TW	173	132MP/4-B3 CUS BRE 100 HL TW F VZ	73.8	180	237
15	11	1770	0	B3-160	37150132-F VZ	PE	230/460	35.6/17.8	TW	256	160MP/4-B3 CUS BRE 150 HL TW F VZ	111	180	237
20	15	1775	0	B3-160	37450132-F VZ	PE	230/460	47.6/23.8	TW	342	160LP/4-B3 CUS BRE 250 HL TW F VZ	184	180	237
25	18.5	1780	0	B3-180	37750132-F VZ	PE	230/460	60.6/30.3	TW	415	180MP/4-B3 CUS BRE 250 HL TW F VZ	184	180	237
30	22	1780	0	B3-180	38050132-F VZ	PE	230/460	69.6/34.8	TW	415	180LP/4-B3 CUS BRE 250 HL TW F VZ	184	180	237

◆ 230/460 motors have brake systems supplied with 230VAC to a GVE20L rectifier that outputs 205VDC to the brake coil.







# Inverter Duty Brakemotors

## 1000:1 Constant Torque (F VZ)

### 575V 60-0Hz

NEMA C-Face - 1000:1 (F VZ) 575V - 60-0Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.16	0.12	1700	0	56C	31110035-F VZ	-	575	0.37	-	12.3	63S/4-56C CUS BRE 5 HL F VZ	3.7	195	224
0.25	0.18	1680	0	56C	31610035-F VZ	-	575	0.46	-	13.7	63L/4-56C CUS BRE 5 HL F VZ	3.7	195	224
0.33	0.25	1710	0	56C	32110035-F VZ	-	575	0.66	-	16.4	71S/4-56C CUS BRE 5 HL F VZ	3.7	195	224
0.5	0.37	1720	0	56C	32610035-F VZ	-	575	0.80	-	18.4	71L/4-56C CUS BRE 5 HL F VZ	3.7	195	224
0.75	0.55	1710	0	56C	33110035-F VZ	-	575	1.12	-	24.6	80S/4-56C CUS BRE 10 HL F VZ	7.4	195	224
1	0.75	1730	0	56C	33610283-F VZ	PE	575	1.25	TW	28.6	80LP/4-56C CUS BRE 10 HL TW F VZ	7.4	195	224
1	0.75	1730	0	143TC	33610285-F VZ	PE	575	1.25	TW	28.6	80LP/4-143TC CUS BRE 10 HL TW F VZ	7.4	195	224
1.5	1.1	1740	0	145TC	34110285-F VZ	PE	575	1.68	TW	45	90SP/4-145TC CUS BRE 20 HL TW F VZ	14.8	195	224
2	1.5	1730	0	145TC	34610285-F VZ	PE	575	2.24	TW	49	90LP/4-145TC CUS BRE 20 HL TW F VZ	14.8	195	224
3	2.2	1770	0	182TC	35110285-F VZ	PE	575	3.07	TW	71	100LP/4-182TC CUS BRE 40 HL TW F VZ	29.5	195	225
5	3.7	1755	0	184TC	36110285-F VZ	PE	575	5.2	TW	93	112MP/4-184TC CUS BRE 40 HL TW F VZ	29.5	195	225
7.5	5.5	1770	0	213TC	36410285-F VZ	PE	575	7.8	TW	144	132SP/4-213TC CUS BRE 60 HL TW F VZ	44.3	195	225
10	7.5	1765	0	215TC	36710285-F VZ	PE	575	10.7	TW	173	132MP/4-215TC CUS BRE 100 HL TW F VZ	73.8	195	225
15	11	1770	0	254TC	37350285-F VZ	PE	575	14.2	TW	256	160MP/4-254TC CUS BRE 150 HL TW F VZ	111	195	225
20	15	1775	0	256C	37550285-F VZ	PE	575	19	TW	342	160LP/4-256C CUS BRE 250 HL TW F VZ	184	195	225
25	18.5	1780	0	286TC	37750233-F VZ	PE	575	24.2	TW	415	180MP/4-286TC CUS BRE 250 HL TW F VZ	184	195	225
30	22	1780	0	286TC	38050233-F VZ	PE	575	27.8	TW	415	180LP/4-286TC CUS BRE 250 HL TW F VZ	184	195	225

NEMA T Footed - 1000:1 (F VZ) 575V - 60-0Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.33	0.25	1710	0	56	32110135-F VZ	-	575	0.66	-	16.4	71S/4-56 CUS BRE 5 HL F VZ	3.7	195	213
0.5	0.37	1720	0	56	32610135-F VZ	-	575	0.80	-	18.4	71L/4-56 CUS BRE 5 HL F VZ	3.7	195	213
0.75	0.55	1710	0	56	33110135-F VZ	-	575	1.12	-	24.6	80S/4-56 CUS BRE 10 HL F VZ	7.4	195	213
1	0.75	1730	0	56	33610383-F VZ	PE	575	1.25	TW	28.6	80LP/4-56 CUS BRE 10 HL TW F VZ	7.4	195	213
1	0.75	1730	0	143T	33610385-F VZ	PE	575	1.25	TW	28.6	80LP/4-143T CUS BRE 10 HL TW F VZ	7.4	195	213
1.5	1.1	1740	0	145T	34110385-F VZ	PE	575	1.68	TW	45	90SP/4-145T CUS BRE 20 HL TW F VZ	14.8	195	213
2	1.5	1730	0	145T	34610385-F VZ	PE	575	2.24	TW	49	90LP/4-145T CUS BRE 20 HL TW F VZ	14.8	195	213
3	2.2	1770	0	182T	35110385-F VZ	PE	575	3.07	TW	71	100LP/4-182T CUS BRE 40 HL TW F VZ	29.5	195	213
5	3.7	1755	0	184T	36110385-F VZ	PE	575	5.2	TW	93	112MP/4-184T CUS BRE 40 HL TW F VZ	29.5	195	213
7.5	5.5	1770	0	213T	36410385-F VZ	PE	575	7.8	TW	144	132SP/4-213T CUS BRE 60 HL TW F VZ	44.3	195	213
10	7.5	1765	0	215T	36710385-F VZ	PE	575	10.7	TW	173	132MP/4-215T CUS BRE 100 HL TW F VZ	73.8	195	213

Motor Selection

◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.

# Inverter Duty Brakemotors

## 1000:1 Constant Torque (F VZ)

### 575V 60-0Hz



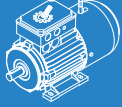
IEC B5 Flange - 1000:1 (F VZ) 575V - 60-0Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.16	0.12	1700	0	B5 A140	31010021-F VZ	-	575	0.37	-	12.3	63S/4-B5 A140 CUS BRE 5 HL F VZ	3.7	195	248
0.25	0.18	1680	0	B5 A140	31510021-F VZ	-	575	0.46	-	12.3	63L/4-B5 A140 CUS BRE 5 HL F VZ	3.7	195	248
0.33	0.25	1710	0	B5 A160	32010021-F VZ	-	575	0.66	-	16.4	71S/4-B5 A160 CUS BRE 5 HL F VZ	3.7	195	248
0.5	0.37	1720	0	B5 A160	32510021-F VZ	-	575	0.80	-	18.4	71L/4-B5 A160 CUS BRE 5 HL F VZ	3.7	195	248
0.75	0.55	1710	0	B5 A200	33010021-F VZ	-	575	1.12	-	24.6	80S/4-B5 A200 CUS BRE 10 HL F VZ	7.4	195	248
1	0.75	1730	0	B5 A200	33510033-F VZ	PE	575	1.25	TW	28.6	80LP/4-B5 A200 CUS BRE 10 HL TW F VZ	7.4	195	248
1.5	1.1	1740	0	B5 A200	34010033-F VZ	PE	575	1.68	TW	45	90SP/4-B5 A200 CUS BRE 20 HL TW F VZ	14.8	195	248
2	1.5	1730	0	B5 A200	34510033-F VZ	PE	575	2.24	TW	49	90LP/4-B5 A200 CUS BRE 20 HL TW F VZ	14.8	195	248
3	2.2	1770	0	B5 A250	35010035-F VZ	PE	575	3.07	TW	71	100LP/4-B5 A250 CUS BRE 40 HL TW F VZ	29.5	195	248
5	3.7	1755	0	B5 A250	36010033-F VZ	PE	575	5.2	TW	93	112MP/4-B5 A250 CUS BRE 40 HL TW F VZ	29.5	195	248
7.5	5.5	1770	0	B5 A300	36310033-F VZ	PE	575	7.8	TW	144	132SP/4-B5 A300 CUS BRE 60 HL TW F VZ	44.3	195	249
10	7.5	1765	0	B5 A300	36610033-F VZ	PE	575	10.7	TW	173	132MP/4-B5 A300 CUS BRE 100 HL TW F VZ	73.8	195	249
15	11	1770	0	B5 A350	37150033-F VZ	PE	575	14.2	TW	256	160MP/4-B5 A350 CUS BRE 150 HL TW F VZ	111	195	249
20	15	1775	0	B5 A350	37450033-F VZ	PE	575	19	TW	342	160LP/4-B5 A350 CUS BRE 250 HL TW F VZ	184	195	249
25	18.5	1780	0	B5 A350	37750033-F VZ	PE	575	24.2	TW	415	180MP/4-B5 A350 CUS BRE 250 HL TW F VZ	184	195	249
30	22	1780	0	B5 A350	38050033-F VZ	PE	575	27.8	TW	415	180LP/4-B5 A350 CUS BRE 250 HL TW F VZ	184	195	249

IEC B14 Flange - 1000:1 (F VZ) 575V - 60-0Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.16	0.12	1700	0	B14 C90	31010047-F VZ	-	575	0.37	-	12.3	63S/4-B14 C90 CUS BRE 5 HL F VZ	3.7	195	260
0.25	0.18	1680	0	B14 C90	31510046-F VZ	-	575	0.46	-	13.7	63L/4-B14 C90 CUS BRE 5 HL F VZ	3.7	195	260
0.33	0.25	1710	0	B14 C105	32010046-F VZ	-	575	0.66	-	16.4	71S/4-B14 C105 CUS BRE 5 HL F VZ	3.7	195	260
0.5	0.37	1720	0	B14 C105	32510043-F VZ	-	575	0.80	-	18.4	71L/4-B14 C105 CUS BRE 5 HL F VZ	3.7	195	260
0.75	0.55	1710	0	B14 C120	33010049-F VZ	-	575	1.12	-	24.6	80S/4-B14 C120 CUS BRE 10 HL F VZ	7.4	195	260
1	0.75	1730	0	B14 C120	33510042-F VZ	PE	575	1.25	TW	28.6	80LP/4-B14 C120 CUS BRE 10 HL TW F VZ	7.4	195	260
1.5	1.1	1740	0	B14 C140	34010042-F VZ	PE	575	1.68	TW	45	90SP/4-B14 C140 CUS BRE 20 HL TW F VZ	14.8	195	260
2	1.5	1730	0	B14 C140	34510042-F VZ	PE	575	2.24	TW	49	90LP/4-B14 C140 CUS BRE 20 HL TW F VZ	14.8	195	260
3	2.2	1770	0	B14 C160	35010042-F VZ	PE	575	3.07	TW	71	100LP/4-B14 C160 CUS BRE 40 HL TW F VZ	29.5	195	260
5	3.7	1755	0	B14 C160	36010042-F VZ	PE	575	5.2	TW	93	112MP/4-B14 C160 CUS BRE 40 HL TW F VZ	29.5	195	260
7.5	5.5	1770	0	B14 C200	36310042-F VZ	PE	575	7.8	TW	144	132SP/4-B14 C200 CUS BRE 60 HL TW F VZ	44.3	195	261
10	7.5	1765	0	B14 C200	36610042-F VZ	PE	575	10.7	TW	173	132MP/4-B14 C200 CUS BRE 100 HL TW F VZ	73.8	195	261

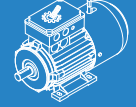
◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



# Inverter Duty Brakemotors 1000:1 Constant Torque (F VZ) 575V 60-0Hz



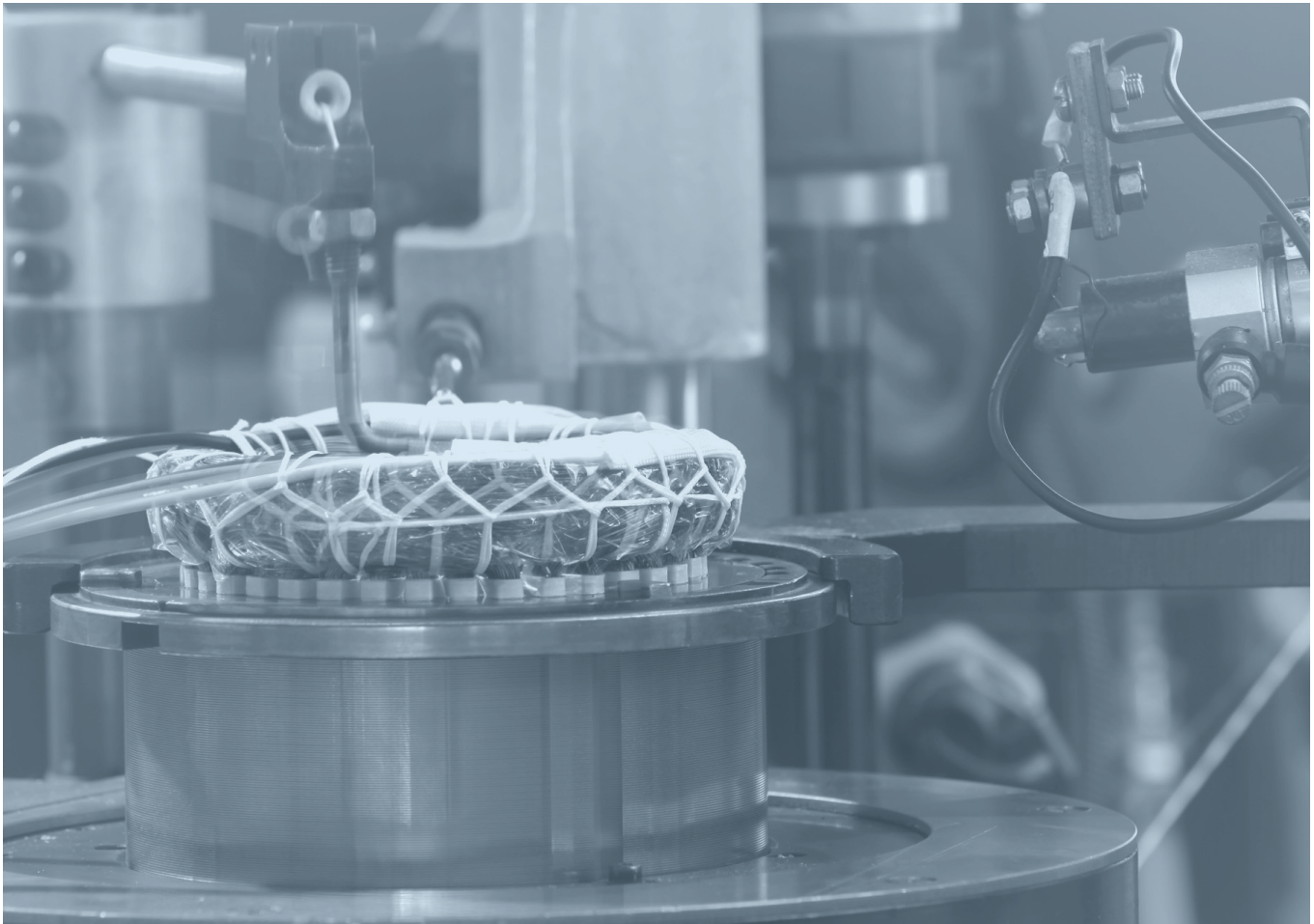
## IEC Footed (B3) - 1000:1 (F VZ) 575V - 60-0Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]											
0.33	0.25	1710	0	B3-71	32010121-FVZ	-	575	0.66	-	16.4	71S/4-B3 CUS BRE 5 HL FVZ	3.7	195	236
0.5	0.37	1720	0	B3-71	32510121-FVZ	-	575	0.80	-	18.4	71L/4-B3 CUS BRE 5 HL FVZ	3.7	195	236
0.75	0.55	1710	0	B3-80	33010121-FVZ	-	575	1.12	-	24.6	80S/4-B3 CUS BRE 10 HL FVZ	7.4	195	236
1	0.75	1730	0	B3-80	33510133-FVZ	PE	575	1.25	TW	28.6	80LP/4-B3 CUS BRE 10 HL TW FVZ	7.4	195	236
1.5	1.1	1740	0	B3-90S	34010133-FVZ	PE	575	1.68	TW	45	90SP/4-B3 CUS BRE 20 HL TW FVZ	14.8	195	236
2	1.5	1730	0	B3-90L	34510133-FVZ	PE	575	2.24	TW	49	90LP/4-B3 CUS BRE 20 HL TW FVZ	14.8	195	236
3	2.2	1770	0	B3-100	35010133-FVZ	PE	575	3.07	TW	71	100LP/4-B3 CUS BRE 40 HL TW FVZ	29.5	195	236
5	3.7	1755	0	B3-112	36010133-FVZ	PE	575	5.2	TW	93	112MP/4-B3 CUS BRE 40 HL TW FVZ	29.5	195	236
7.5	5.5	1770	0	B3-132	36310133-FVZ	PE	575	7.8	TW	144	132SP/4-B3 CUS BRE 60 HL TW FVZ	44.3	195	237
10	7.5	1765	0	B3-132	36610133-FVZ	PE	575	10.7	TW	173	132MP/4-B3 CUS BRE 100 HL TW FVZ	73.8	195	237
15	11	1770	0	B3-160	37150133-FVZ	PE	575	14.2	TW	256	160MP/4-B3 CUS BRE 150 HL TW FVZ	111	195	237
20	15	1775	0	B3-160	37450133-FVZ	PE	575	19	TW	342	160LP/4-B3 CUS BRE 250 HL TW FVZ	184	195	237
25	18.5	1780	0	B3-180	37750133-FVZ	PE	575	24.2	TW	415	180MP/4-B3 CUS BRE 250 HL TW FVZ	184	195	237
30	22	1780	0	B3-180	38050133-FVZ	PE	575	27.8	TW	415	180LP/4-B3 CUS BRE 250 HL TW FVZ	184	195	237

Motor Selection

◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.





# 60 Minute Duty Motors 230/460V & 575V 60 Hz



Motor Selection

60 Minute Duty NEMA C-Face 230/460V - 60Hz												
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]										
1.0	0.75	1650	143TC	33610012	60/min	230/460	3.66/1.83	-	20.0	80L/4-56C	173	224
1.5	1.1	1660	145TC	34110012	60/min	230/460	4.84/2.42	-	26.5	90S/4-145TC	173	224
2	1.5	1660	145TC	34610012	60/min	230/460	6.34/3.17	-	30.9	90L/4-145TC	173	224
3	2.2	1705	182TC	35110012	60/min	230/460	9.00/4.50	-	39.7	100L/4-182TC	173	225
5	3.7	1725	184TC	35610012	60/min	230/460	15.2/7.62	-	46.3	100LA/4-184TC	173	225
7.5	5.5	1735	213TC	36410012	60/min	230/460	19.80/9.9	-	97.0	132S/4-213TC	173	225
10	7.5	1735	215TC	36710012	60/min	230/460	25.8/12.9	-	121.3	132M/4-215TC	173	225
15	11	1770	254TC	37350012	60/min	230/460	38.4/19.2	TW	160.9	160M/4-254TC TW	173	225
20	15	1765	256TC	37550012	60/min	230/460	49.0/24.5	TW	178.6	160L/4-256TC TW	173	225
25	18.5	1750	284TC	37650012	60/min	230/460	60.0/30.0	TW	276.3	180MX/4-284TC TW	173	225
30	22	1755	286TC	37850012	60/min	230/460	71.0/35.5	TW	307.2	180LX/4-286TC TW	173	225

60 Minute Duty NEMA C-Face 575V - 60Hz												
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]										
1.0	0.75	1650	143TC	33610013	60/min	575	1.46	-	20.0	80L/4-56C	188	224
1.5	1.1	1660	145TC	34110013	60/min	575	1.94	-	26.5	90S/4-145TC	188	224
2	1.5	1660	145TC	34610013	60/min	575	2.54	-	30.9	90L/4-145TC	188	224
3	2.2	1705	182TC	35110013	60/min	575	3.60	-	39.7	100L/4-182TC	188	225
5	3.7	1725	184TC	35610013	60/min	575	6.10	-	46.3	100LA/4-184TC	188	225
7.5	5.5	1735	213TC	36410013	60/min	575	7.92	-	97.0	132S/4-213TC	188	225
10	7.5	1735	215TC	36710013	60/min	575	10.3	-	121.3	132M/4-215TC	188	225
15	11	1770	254TC	37350013	60/min	575	14.7	TW	160.9	160M/4-254TC TW	188	225
20	15	1765	256TC	37550013	60/min	575	19.5	TW	178.6	160L/4-256TC TW	188	225
25	18.5	1750	284TC	37650013	60/min	575	24.0	TW	276.3	180MX/4-284TC TW	188	225
30	22	1755	286TC	37850013	60/min	575	28.4	TW	307.2	180LX/4-286TC TW	188	225

60 Minute Duty NEMA C-Face - 5:1 (VR) 230/460V - 60-12Hz													
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
1.0	0.75	1650	330	143TC	33610012-VR	60/min	230/460	3.66/1.83	-	20.0	80L/4-56C VR	175	224
1.5	1.1	1660	332	145TC	34110012-VR	60/min	230/460	4.84/2.42	-	26.5	90S/4-145TC VR	175	224
2	1.5	1660	332	145TC	34610012-VR	60/min	230/460	6.34/3.17	-	30.9	90L/4-145TC VR	175	224
3	2.2	1705	341	182TC	35110012-VR	60/min	230/460	9.00/4.50	-	39.7	100L/4-182TC VR	175	225
5	3.7	1725	345	184TC	35610012-VR	60/min	230/460	15.2/7.62	-	46.3	100LA/4-184TC VR	175	225
7.5	5.5	1735	347	213TC	36410012-VR	60/min	230/460	19.80/9.9	-	97.0	132S/4-213TC VR	175	225
10	7.5	1735	347	215TC	36710012-VR	60/min	230/460	25.8/12.9	-	121.3	132M/4-215TC VR	175	225
15	11	1770	354	254TC	37350012-VR	60/min	230/460	38.4/19.2	TW	160.9	160M/4-254TC TW VR	175	225
20	15	1765	353	256TC	37550012-VR	60/min	230/460	49.0/24.5	TW	178.6	160L/4-256TC TW VR	175	225
25	18.5	1750	350	284TC	37650012-VR	60/min	230/460	60.0/30.0	TW	276.3	180MX/4-284TC TW VR	175	225
30	22	1755	351	286TC	37850012-VR	60/min	230/460	71.0/35.5	TW	307.2	180LX/4-286TC TW VR	175	225

- ◆ 230/400V motors have a brake system supplied with 230VAC including a GVE20L rectifier with a 205VDC brake coil.
- ◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



## 60 Minute Duty NEMA C-Face - 5:1 (VR) 575V - 60-12Hz

Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]										
1.0	0.75	1650	330	143TC	33610013-VR	60/min	575	1.46	-	20.0	80L/4-56C VR	190	224
1.5	1.1	1660	332	145TC	34110013-VR	60/min	575	1.94	-	26.5	90S/4-145TC VR	190	224
2	1.5	1660	332	145TC	34610013-VR	60/min	575	2.54	-	30.9	90L/4-145TC VR	190	224
3	2.2	1705	341	182TC	35110013-VR	60/min	575	3.60	-	39.7	100L/4-182TC VR	190	225
5	3.7	1725	345	184TC	35610013-VR	60/min	575	6.10	-	46.3	100LA/4-184TC	190	225
7.5	5.5	1735	347	213TC	36410013-VR	60/min	575	7.92	-	97.0	132S/4-213TC	190	225
10	7.5	1735	347	215TC	36710013-VR	60/min	575	10.3	-	121.3	132M/4-215TC	190	225
15	11	1770	354	254TC	37350013-VR	60/min	575	14.7	TW	160.9	160M/4-254TC TW	190	225
20	15	1765	353	256TC	37550013-VR	60/min	575	19.5	TW	178.6	160L/4-256TC TW	190	225
25	18.5	1750	350	284TC	37650013-VR	60/min	575	24.0	TW	276.3	180MX/4-284TC TW	190	225
30	22	1755	351	286TC	37850013-VR	60/min	575	28.4	TW	307.2	180LX/4-286TC TW	190	225

## 60 Minute Duty NEMA C-Face - 10:1 (VN) 230/460V - 60-6Hz

Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.75	0.55	1740	174	143TC	33610012-VN	60/min	230/460	3.84/1.92	-	20.0	80L/4-56C VN	177	224
1.0	0.75	1760	176	145TC	34110012-VN	60/min	230/460	3.90/1.95	-	26.5	90S/4-145TC VN	177	224
1.5	1.1	1750	175	145TC	34610012-VN	60/min	230/460	4.86/2.43	-	30.9	90L/4-145TC VN	177	224
2	1.5	1760	176	182TC	35110012-VN	60/min	230/460	7.26/3.63	-	39.7	100L/4-182TC VN	177	225
3	2.2	1760	176	184TC	35610012-VN	60/min	230/460	13.0/6.48	-	46.3	100LA/4-184TC VN	177	225
5	3.7	1775	178	213TC	36410012-VN	60/min	230/460	13.9/6.96	-	97.0	132S/4-213TC VN	177	225
7.5	5.5	1770	177	215TC	36710012-VN	60/min	230/460	20.5/10.2	-	121.3	132M/4-215TC VN	177	225
10	7.5	1780	178	254TC	37350012-VN	60/min	230/460	26.9/13.4	TW	160.9	160M/4-254TC TW VN	177	225
15	11	1775	178	256TC	37550012-VN	60/min	230/460	37.9/18.9	TW	178.6	160L/4-256TC TW VN	177	225
20	15	1775	178	284TC	37650012-VN	60/min	230/460	51.1/25.6	TW	276.3	180MX/4-284TC TW VN	177	225
25	18.5	1775	178	286TC	37850012-VN	60/min	230/460	69.1/34.5	TW	307.2	180LX/4-286TC TW VN	177	225

## 60 Minute Duty NEMA C-Face - 10:1 (VN) 575V - 60-6Hz

Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]										
0.75	0.55	1740	174	143TC	33610013-VN	60/min	575	1.54	-	20.0	80L/4-56C VN	192	224
1.0	0.75	1760	176	145TC	34110013-VN	60/min	575	1.56	-	26.5	90S/4-145TC VN	192	224
1.5	1.1	1750	175	145TC	34610013-VN	60/min	575	1.94	-	30.9	90L/4-145TC VN	192	224
2	1.5	1760	176	182TC	35110013-VN	60/min	575	2.9	-	39.7	100L/4-182TC VN	192	225
3	2.2	1760	176	184TC	35610013-VN	60/min	575	5.19	-	46.3	100LA/4-184TC VN	192	225
5	3.7	1775	178	213TC	36410013-VN	60/min	575	5.57	-	97.0	132S/4-213TC VN	192	225
7.5	5.5	1770	177	215TC	36710013-VN	60/min	575	8.19	-	121.3	132M/4-215TC VN	192	225
10	7.5	1780	178	254TC	37350013-VN	60/min	575	10.8	TW	160.9	160M/4-254TC TW VN	192	225
15	11	1775	178	256TC	37550013-VN	60/min	575	15.2	TW	178.6	160L/4-256TC TW VN	192	225
20	15	1775	178	284TC	37650013-VN	60/min	575	20.5	TW	276.3	180MX/4-284TC TW VN	192	225
25	18.5	1775	178	286TC	37850013-VN	60/min	575	27.6	TW	307.2	180LX/4-286TC TW VN	192	225

- ◆ 230/400V motors have a brake system supplied with 230VAC including a GVE20L rectifier with a 205VDC brake coil.
- ◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.

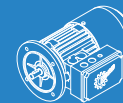
# 60 Minute Duty Motors 230/460V & 575V 60 Hz



Motor Selection



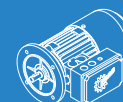
## 60 Minute Duty NEMA C-Face - 20:1 (VW) 230/460V - 80-4Hz



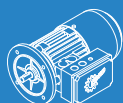
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
1.0	0.75	2290	115	143TC	33610012-VW	60/min	230/460	3.66/1.83	-	20.0	80L/4-56C VR	179	224
1.5	1.1	2310	116	145TC	34110012-VW	60/min	230/460	4.84/2.42	-	26.5	90S/4-145TC VW	179	224
2	1.5	2305	115	145TC	34610012-VW	60/min	230/460	6.34/3.17	-	30.9	90L/4-145TC VW	179	224
3	2.2	2310	116	182TC	35110012-VW	60/min	230/460	9.00/4.50	-	39.7	100L/4-182TC VW	179	225
5	3.7	2295	115	184TC	35610012-VW	60/min	230/460	15.2/7.62	-	46.3	100LA/4-184TC VW	179	225
7.5	5.5	2340	117	213TC	36410012-VW	60/min	230/460	19.80/9.9	-	97.0	132S/4-213TC VW	179	225
10	7.5	2340	117	215TC	36710012-VW	60/min	230/460	25.8/12.9	-	121.3	132M/4-215TC VW	179	225
15	11	2350	118	254TC	37350012-VW	60/min	230/460	35.8/17.9	TW	160.9	160M/4-254TC TW VW	179	225
20	15	2350	118	256TC	37550012-VW	60/min	230/460	48.4/24.2	TW	178.6	160L/4-256TC TW VW	179	225
25	18.5	2354	118	284TC	37650012-VW	60/min	230/460	59.0/29.5	TW	276.3	180MX/4-284TC TW VW	179	225
30	22	2360	118	286TC	37850012-VW	60/min	230/460	74.4/37.2	TW	307.2	180LX/4-286TC TW VW	179	225



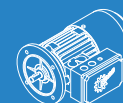
## 60 Minute Duty NEMA C-Face - 20:1 (VW) 575V - 80-4Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]										
1.0	0.75	2290	115	143TC	33610013-VW	60/min	575	1.46	-	20.0	80L/4-56C VR	193	224
1.5	1.1	2310	116	145TC	34110013-VW	60/min	575	1.94	-	26.5	90S/4-145TC VW	193	224
2	1.5	2305	115	145TC	34610013-VW	60/min	575	2.54	-	30.9	90L/4-145TC VW	193	224
3	2.2	2310	116	182TC	35110013-VW	60/min	575	3.60	-	39.7	100L/4-182TC VW	193	225
5	3.7	2295	115	184TC	35610013-VW	60/min	575	6.10	-	46.3	100LA/4-184TC VW	193	225
7.5	5.5	2340	117	213TC	36410013-VW	60/min	575	7.92	-	97.0	132S/4-213TC VW	193	225
10	7.5	2340	117	215TC	36710013-VW	60/min	575	10.3	-	121.3	132M/4-215TC VW	193	225
15	11	2350	118	254TC	37350013-VW	60/min	575	14.3	TW	160.9	160M/4-254TC TW VW	193	225
20	15	2350	118	256TC	37550013-VW	60/min	575	19.4	TW	178.6	160L/4-256TC TW VW	193	225
25	18.5	2354	118	284TC	37650013-VW	60/min	575	23.6	TW	276.3	180MX/4-284TC TW VW	193	225
30	22	2360	118	286TC	37850013-VW	60/min	575	29.8	TW	307.2	180LX/4-286TC TW VW	193	225



## 60 Minute Duty NEMA C-Face - 1000:1 (F VZ) 230/460V - 60-0Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
1.0	0.75	1650	0	143TC	33610012-F VZ	60/min	230/460	3.66/1.83	-	20.0	80L/4-56C VR	181	224
1.5	1.1	1660	0	145TC	34110012-F VZ	60/min	230/460	4.84/2.42	-	26.5	90S/4-145TC F VZ	181	224
2	1.5	1660	0	145TC	34610012-F VZ	60/min	230/460	6.34/3.17	-	30.9	90L/4-145TC F VZ	181	224
3	2.2	1705	0	182TC	35110012-F VZ	60/min	230/460	9.00/4.50	-	39.7	100L/4-182TC F VZ	181	225
5	3.7	1725	0	184TC	35610012-F VZ	60/min	230/460	15.2/7.62	-	46.3	100LA/4-184TC F VZ	181	225
7.5	5.5	1735	0	213TC	36410012-F VZ	60/min	230/460	19.80/9.9	-	97.0	132S/4-213TC F VZ	181	225
10	7.5	1735	0	215TC	36710012-F VZ	60/min	230/460	25.8/12.9	-	121.3	132M/4-215TC F VZ	181	225
15	11	1770	0	254TC	37350012-F VZ	60/min	230/460	38.4/19.2	TW	160.9	160M/4-254TC TW F VZ	181	225
20	15	1760	0	256TC	37550012-F VZ	60/min	230/460	49.0/24.5	TW	178.6	160L/4-256TC TW F VZ	181	225
25	18.5	1760	0	284TC	37650012-F VZ	60/min	230/460	60.0/30.0	TW	276.3	180MX/4-284TC TW F VZ	181	225
30	22	1765	0	286TC	37850012-F VZ	60/min	230/460	71.0/35.5	TW	307.2	180LX/4-286TC TW F VZ	181	225

- ◆ 230/400V motors have a brake system supplied with 230VAC including a GVE20L rectifier with a 205VDC brake coil.
- ◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



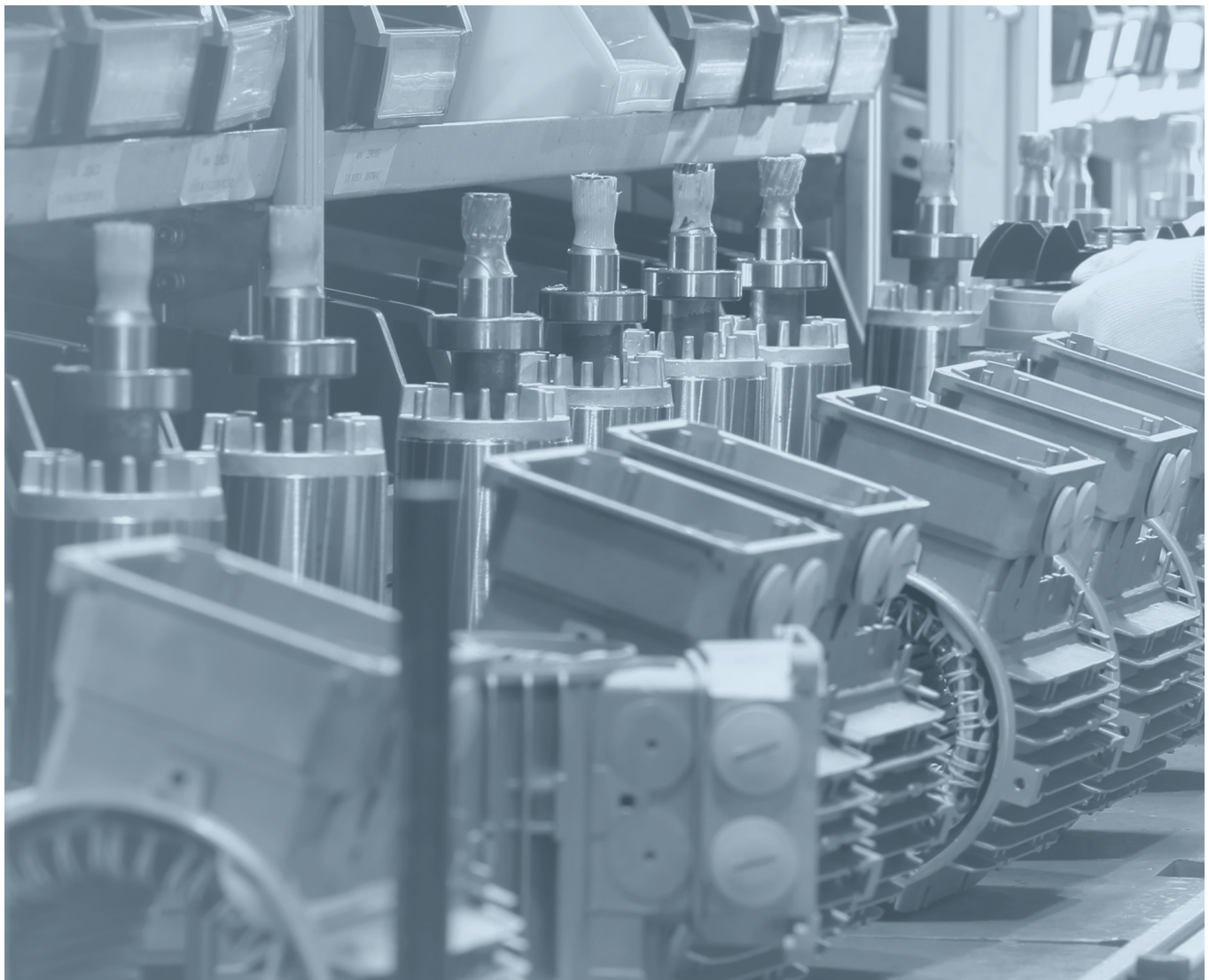


## 60 Minute Duty NEMA C-Face - 1000:1 (F VZ) 575V - 60-0Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	0Hz [rpm]										
1.0	0.75	1650	0	143TC	33610013-F VZ	60/min	575	1.46	-	20.0	80L/4-56C VR	196	224
1.5	1.1	1660	0	145TC	34110013-F VZ	60/min	575	1.94	-	26.5	90S/4-145TC F VZ	196	224
2	1.5	1660	0	145TC	34610013-F VZ	60/min	575	2.54	-	30.9	90L/4-145TC F VZ	196	224
3	2.2	1705	0	182TC	35110013-F VZ	60/min	575	3.60	-	39.7	100L/4-182TC F VZ	196	225
5	3.7	1725	0	184TC	35610013-F VZ	60/min	575	6.10	-	46.3	100LA/4-184TC F VZ	196	225
7.5	5.5	1735	0	213TC	36410013-F VZ	60/min	575	7.92	-	97.0	132S/4-213TC F VZ	196	225
10	7.5	1735	0	215TC	36710013-F VZ	60/min	575	10.3	-	121.3	132M/4-215TC F VZ	196	225
15	11	1770	0	254TC	37310053-F VZ	60/min	575	14.7	TW	160.9	160M/4-254TC TW F VZ	196	225
20	15	1760	0	256TC	37510053-F VZ	60/min	575	19.5	TW	178.6	160L/4-256TC TW F VZ	196	225
25	18.5	1760	0	284TC	37610053-F VZ	60/min	575	24.0	TW	276.3	180MX/4-284TC TW F VZ	196	225
30	22	1765	0	286TC	37810053-F VZ	60/min	575	28.4	TW	307.2	180LX/4-286TC TW F VZ	196	225

- ◆ 230/400V motors have a brake system supplied with 230VAC including a GVE20L rectifier with a 205VDC brake coil.
- ◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



# 60 Minute Duty Brakemotors

## 230/460V & 575V 60 Hz



60 Minute Duty NEMA C-Face 230/460V - 60Hz															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]				[lb-ft]		
1.0	0.75	1650	143TC	33610034	60/min	230/460	3.66/1.83	-	24	80L/4-56C BRE10 HL		7.4	173	224	
1.5	1.1	1660	145TC	34110034	60/min	230/460	4.84/2.42	-	36	90S/4-145TC BRE20 HL		14.8	173	224	
2	1.5	1660	145TC	34610034	60/min	230/460	6.34/3.17	-	41	90L/4-145TC BRE20 HL		14.8	173	224	
3	2.2	1705	182TC	35110034	60/min	230/460	9.00/4.50	-	55	100L/4-182TC BRE40 HL		29.5	173	225	
5	3.7	1725	184TC	35610034	60/min	230/460	15.2/7.62	-	62	100LA/4-184TC BRE40 HL		29.5	173	225	
7.5	5.5	1735	213TC	36410034	60/min	230/460	19.80/9.9	-	124	132S/4-213TC BRE60 HL		44.3	173	225	
10	7.5	1735	215TC	36710034	60/min	230/460	25.8/12.9	-	157	132M/4-215TC BRE100 HL		73.8	173	225	
15	11	1770	254TC	37350034	60/min	230/460	38.4/19.2	TW	221	160M/4-254TC BRE 150 HL TW		110	173	225	
20	15	1765	256TC	37550034	60/min	230/460	49.0/24.5	TW	243	160L/4-256TC BRE 250 HL TW		185	173	225	

60 Minute Duty NEMA C-Face 575V - 60Hz															
Power		Speed	Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	[rpm]				◇			[lb]				[lb-ft]		
1.0	0.75	1650	143TC	33610035	60/min	575	1.46	-	24	80L/4-56C BRE10 HL		7.4	188	224	
1.5	1.1	1660	145TC	35110035	60/min	575	1.94	-	36	90S/4-145TC BRE20 HL		14.8	188	224	
2	1.5	1660	145TC	35610035	60/min	575	2.54	-	41	90L/4-145TC BRE20 HL		14.8	188	224	
3	2.2	1705	182TC	35110035	60/min	575	3.60	-	55	100L/4-182TC BRE40 HL		29.5	188	225	
5	3.7	1725	184TC	35610035	60/min	575	6.10	-	62	100LA/4-184TC BRE40 HL		29.5	188	225	
7.5	5.5	1735	213TC	36410035	60/min	575	7.92	-	124	132S/4-213TC BRE60 HL		44.3	188	225	
10	7.5	1735	215TC	36710035	60/min	575	10.3	-	157	132M/4-215TC BRE100 HL		73.8	188	225	
15	11	1770	254TC	37350035	60/min	575	14.7	TW	221	160M/4-254TC BRE 150 HL TW		110	188	225	
20	15	1765	256TC	37550035	60/min	575	19.5	TW	243	160L/4-256TC BRE 250 HL TW		185	188	225	

60 Minute Duty NEMA C-Face - 5:1 (VR) 230/460V - 60-12Hz																
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type			Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]				◇			[lb]						
1.0	0.75	1650	330	143TC	33610034-VR	60/min	230/460	3.66/1.83	-	24	80L/4-56C BRE10 HL VR		7.4	173	224	
1.5	1.1	1660	332	145TC	34110034-VR	60/min	230/460	4.84/2.42	-	36	90S/4-145TC BRE20 HL VR		14.8	173	224	
2	1.5	1660	332	145TC	34610034-VR	60/min	230/460	6.34/3.17	-	41	90L/4-145TC BRE20 HL VR		14.8	173	224	
3	2.2	1705	341	182TC	35110034-VR	60/min	230/460	9.00/4.50	-	55	100L/4-182TC BRE40 HL VR		29.5	173	225	
5	3.7	1725	345	184TC	35610034-VR	60/min	230/460	15.2/7.62	-	62	100LA/4-184TC BRE40 HL VR		29.5	173	225	
7.5	5.5	1735	347	213TC	36410034-VR	60/min	230/460	19.80/9.9	-	124	132S/4-213TC BRE60 HL VR		44.3	173	225	
10	7.5	1735	347	215TC	36710034-VR	60/min	230/460	25.8/12.9	-	157	132M/4-215TC BRE100 HL VR		73.8	173	225	
15	11	1770	354	254TC	37350034-VR	60/min	230/460	38.4/19.2	TW	221	160M/4-254TC BRE 150 HL TW VR		110	173	225	
20	15	1765	353	256TC	37550034-VR	60/min	230/460	49.0/24.5	TW	243	160L/4-256TC BRE 250 HL TW VR		185	173	225	

- ◆ 230/400V motors have a brake system supplied with 230VAC including a GVE20L rectifier with a 205VDC brake coil.
- ◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



# 60 Minute Duty Brakemotors 230/460V & 575V 60 Hz

60 Minute Duty NEMA C-Face - 5:1 (VR) 575V - 60-12Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	12Hz [rpm]											
1.0	0.75	1650	330	143TC	33610035-VR	60/min	575	1.46	-	24	80L/4-56C BRE10 HL VR	7.4	188	224
1.5	1.1	1660	332	145TC	35110035-VR	60/min	575	1.94	-	36	90S/4-145TC BRE20 HL VR	14.8	188	224
2	1.5	1660	332	145TC	35610035-VR	60/min	575	2.54	-	41	90L/4-145TC BRE20 HL VR	14.8	188	224
3	2.2	1705	341	182TC	35110035-VR	60/min	575	3.60	-	55	100L/4-182TC BRE40 HL VR	29.5	188	225
5	3.7	1725	345	184TC	35610035-VR	60/min	575	6.10	-	62	100LA/4-184TC BRE40 HL VR	29.5	188	225
7.5	5.5	1735	347	213TC	36410035-VR	60/min	575	7.92	-	124	132S/4-213TC BRE60 HL VR	44.3	188	225
10	7.5	1735	347	215TC	36710035-VR	60/min	575	10.3	-	157	132M/4-215TC BRE100 HL VR	73.8	188	225
15	11	1770	354	254TC	37350035-VR	60/min	575	14.7	TW	221	160M/4-254TC BRE 150 HL TW VR	110	188	225
20	15	1765	353	256TC	37550035-VR	60/min	575	19.5	TW	243	160L/4-256TC BRE 250 HL TW VR	185	188	225

60 Minute Duty NEMA C-Face - 10:1 (VN) 230/460V - 60-6Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.75	0.55	1740	174	143TC	33610034-VN	60/min	230/460	3.84/1.92	-	24	80L/4-56C BRE10 HL VN	7.4	173	224
1.0	0.75	1760	176	145TC	34110034-VN	60/min	230/460	3.90/1.95	-	36	90S/4-145TC BRE20 HL VN	14.8	173	224
1.5	1.1	1750	175	145TC	34610034-VN	60/min	230/460	4.86/2.43	-	41	90L/4-145TC BRE20 HL VN	14.8	173	224
2	1.5	1760	176	182TC	35110034-VN	60/min	230/460	7.26/3.63	-	55	100L/4-182TC BRE40 HL VN	29.5	173	225
3	2.2	1760	176	184TC	35610034-VN	60/min	230/460	13.0/6.48	-	62	100LA/4-184TC BRE40 HL VN	29.5	173	225
5	3.7	1775	178	213TC	36410034-VN	60/min	230/460	13.9/6.96	-	124	132S/4-213TC BRE60 HL VN	44.3	173	225
7.5	5.5	1770	177	215TC	36710034-VN	60/min	230/460	20.5/10.2	-	157	132M/4-215TC BRE100 HL VN	73.8	173	225
10	7.5	1780	178	254TC	37350034-VN	60/min	230/460	26.9/13.4	TW	221	160M/4-254TC BRE 150 HL TW VN	110	173	225
15	11	1775	178	256TC	37550034-VN	60/min	230/460	37.9/18.9	TW	243	160L/4-256TC BRE 250 HL TW VN	185	173	225

60 Minute Duty NEMA C-Face - 10:1 (VN) 575V - 60-6Hz														
Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
0.75	0.55	1740	174	143TC	33610035-VN	60/min	575	1.54	-	24	80L/4-56C BRE10 HL VN	7.4	188	224
1.0	0.75	1760	176	145TC	35110035-VN	60/min	575	1.56	-	36	90S/4-145TC BRE20 HL VN	14.8	188	224
1.5	1.1	1750	175	145TC	35610035-VN	60/min	575	1.94	-	41	90L/4-145TC BRE20 HL VN	14.8	188	224
2	1.5	1760	176	182TC	35110035-VN	60/min	575	2.9	-	55	100L/4-182TC BRE40 HL VN	29.5	188	225
3	2.2	1760	176	184TC	35610035-VN	60/min	575	5.19	-	62	100LA/4-184TC BRE40 HL VN	29.5	188	225
5	3.7	1775	178	213TC	36410035-VN	60/min	575	5.57	-	124	132S/4-213TC BRE60 HL VN	44.3	188	225
7.5	5.5	1770	177	215TC	36710035-VN	60/min	575	8.19	-	157	132M/4-215TC BRE100 HL VN	73.8	188	225
10	7.5	1780	178	254TC	37350035-VN	60/min	575	10.8	TW	221	160M/4-254TC BRE 150 HL TW VN	110	188	225
15	11	1775	178	256TC	37550035-VN	60/min	575	15.2	TW	243	160L/4-256TC BRE 250 HL TW VN	185	188	225

- ◆ 230/400V motors have a brake system supplied with 230VAC including a GVE20L rectifier with a 205VDC brake coil.
- ◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



# 60 Minute Duty Brakemotors

## 230/460V & 575V 60 Hz



### 60 Minute Duty NEMA C-Face - 20:1 (VW)

#### 230/460V - 80-4Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
1.0	0.75	2290	115	143TC	33610034-VW	60/min	230/460	3.66/1.83	-	24	80L/4-56C BRE10 HL VW	7.4	173	224
1.5	1.1	2310	116	145TC	34110034-VW	60/min	230/460	4.84/2.42	-	36	90S/4-145TC BRE20 HL VW	14.8	173	224
2	1.5	2305	115	145TC	34610034-VW	60/min	230/460	6.34/3.17	-	41	90L/4-145TC BRE20 HL VW	14.8	173	224
3	2.2	2310	116	182TC	35110034-VW	60/min	230/460	9.00/4.50	-	55	100L/4-182TC BRE40 HL VW	29.5	173	225
5	3.7	2295	115	184TC	35610034-VW	60/min	230/460	15.2/7.62	-	62	100LA/4-184TC BRE40 HL VW	29.5	173	225
7.5	5.5	2340	117	213TC	36410034-VW	60/min	230/460	19.80/9.9	-	124	132S/4-213TC BRE60 HL VW	44.3	173	225
10	7.5	2340	117	215TC	36710034-VW	60/min	230/460	25.8/12.9	-	157	132M/4-215TC BRE100 HL VW	73.8	173	225
15	11	2350	118	254TC	37350034-VW	60/min	230/460	35.8/17.9	TW	221	160M/4-254TC BRE 150 HL TW VW	110	173	225
20	15	2350	118	256TC	37550034-VW	60/min	230/460	48.4/24.2	TW	243	160L/4-256TC BRE 250 HL TW VW	185	173	225



### 60 Minute Duty NEMA C-Face - 20:1 (VW)

#### 575V - 80-4Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	80Hz [rpm]	4Hz [rpm]											
1.0	0.75	2290	115	143TC	33610035-VW	60/min	575	1.46	-	24	80L/4-56C BRE10 HL VW	7.4	188	224
1.5	1.1	2310	116	145TC	35110035-VW	60/min	575	1.94	-	36	90S/4-145TC BRE20 HL VW	14.8	188	224
2	1.5	2305	115	145TC	35610035-VW	60/min	575	2.54	-	41	90L/4-145TC BRE20 HL VW	14.8	188	224
3	2.2	2310	116	182TC	35110035-VW	60/min	575	3.60	-	55	100L/4-182TC BRE40 HL VW	29.5	188	225
5	3.7	2295	115	184TC	35610035-VW	60/min	575	6.10	-	62	100LA/4-184TC BRE40 HL VW	29.5	188	225
7.5	5.5	2340	117	213TC	36410035-VW	60/min	575	7.92	-	124	132S/4-213TC BRE60 HL VW	44.3	188	225
10	7.5	2340	117	215TC	36710035-VW	60/min	575	10.3	-	157	132M/4-215TC BRE100 HL VW	73.8	188	225
15	11	2350	118	254TC	37350035-VW	60/min	575	14.3	TW	221	160M/4-254TC BRE 150 HL TW VW	110	188	225
20	15	2350	118	256TC	37550035-VW	60/min	575	19.4	TW	243	160L/4-256TC BRE 250 HL TW VW	185	188	225



### 60 Minute Duty NEMA C-Face - 1000:1 (F VZ)

#### 230/460V - 60-0Hz

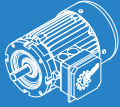


Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt. [lb]	Model Type	Brake Torque [lb-ft]	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
1.0	0.75	1650	330	143TC	33610034-F VZ	60/min	230/460	3.66/1.83	-	24	80L/4-56C BRE10 HL VR	7.4	173	224
1.5	1.1	1660	166	145TC	34110034-F VZ	60/min	230/460	4.84/2.42	-	36	90S/4-145TC BRE20 HL F VZ	14.8	173	224
2	1.5	1660	166	145TC	34610034-F VZ	60/min	230/460	6.34/3.17	-	41	90L/4-145TC BRE20 HL F VZ	14.8	173	224
3	2.2	1705	171	182TC	35110034-F VZ	60/min	230/460	9.00/4.50	-	55	100L/4-182TC BRE40 HL F VZ	29.5	173	225
5	3.7	1725	173	184TC	35610034-F VZ	60/min	230/460	15.2/7.62	-	62	100LA/4-184TC BRE40 HL F VZ	29.5	173	225
7.5	5.5	1735	174	213TC	36410034-F VZ	60/min	230/460	19.80/9.9	-	124	132S/4-213TC BRE60 HL F VZ	44.3	173	225
10	7.5	1735	174	215TC	36710034-F VZ	60/min	230/460	25.8/12.9	-	157	132M/4-215TC BRE100 HL F VZ	73.8	173	225
15	11	1770	177	254TC	37350034-F VZ	60/min	230/460	38.4/19.2	TW	221	160M/4-254TC BRE 150 HL TW F VZ	110	173	225
20	15	1765	177	256TC	37550034-F VZ	60/min	230/460	49.0/24.5	TW	243	160L/4-256TC BRE 250 HL TW F VZ	185	173	225

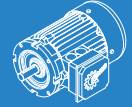
- ◆ 230/400V motors have a brake system supplied with 230VAC including a GVE20L rectifier with a 205VDC brake coil.
- ◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.



# 60 Minute Duty Brakemotors 230/460V & 575V 60 Hz

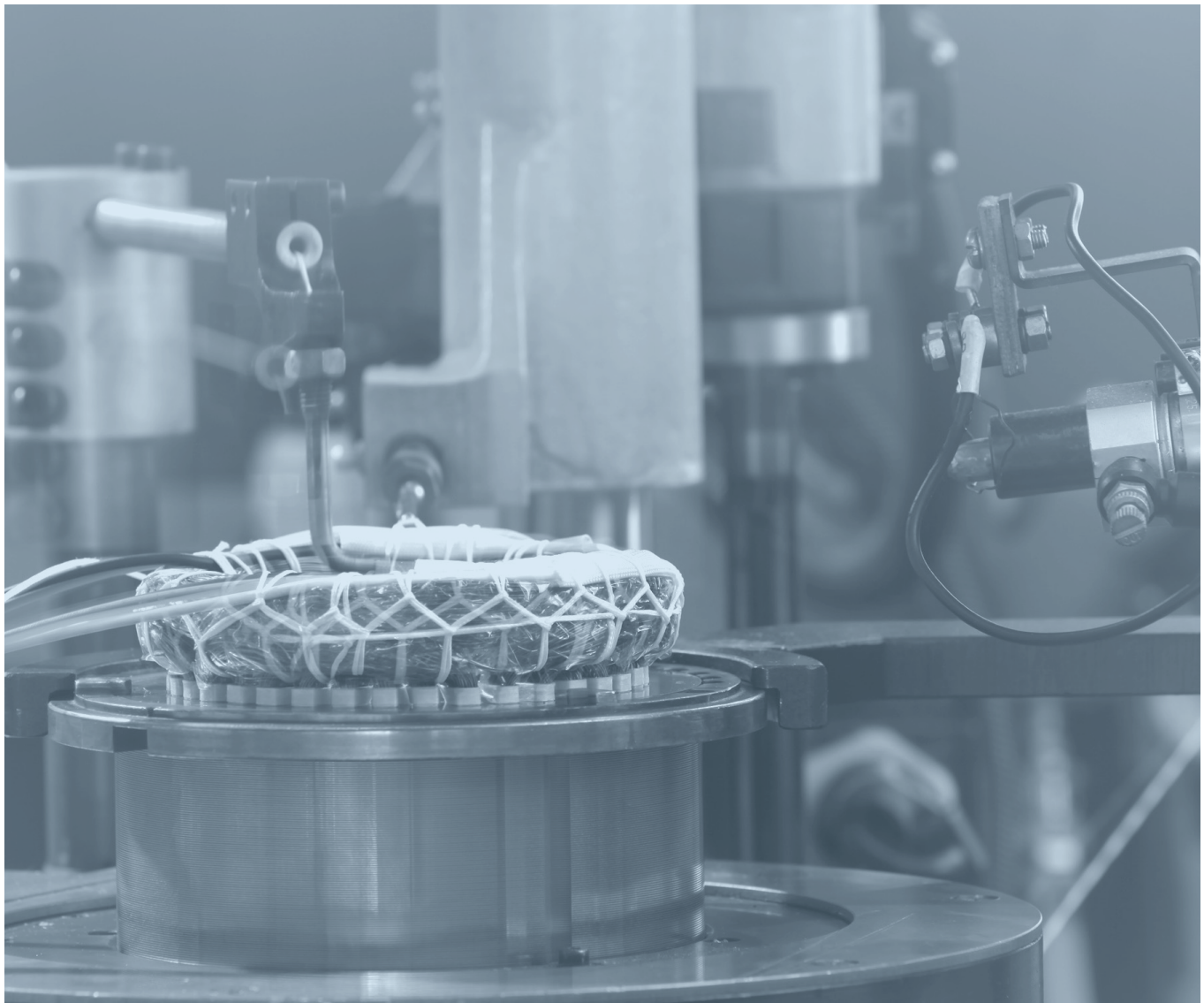


## 60 Minute Duty NEMA C-Face - 1000:1 (F VZ) 575V - 60-0Hz



Power		Speed		Frame	Motor Part Number	Class	Voltage	Full Load Amps	Therm. Prot.	Wgt.	Model Type	Brake Torque	Perf. Data	Dim. Data
[hp]	[kW]	60Hz [rpm]	6Hz [rpm]											
1.0	0.75	1650	330	143TC	33610035-F VZ	60/min	575	1.46	-	24	80L/4-56C BRE10 HL VR	7.4	188	224
1.5	1.1	1660	166	145TC	35110035-F VZ	60/min	575	1.94	-	36	90S/4-145TC BRE20 HL F VZ	14.8	188	224
2	1.5	1660	166	145TC	35610035-F VZ	60/min	575	2.54	-	41	90L/4-145TC BRE20 HL F VZ	14.8	188	224
3	2.2	1705	171	182TC	35110035-F VZ	60/min	575	3.60	-	55	100L/4-182TC BRE40 HL F VZ	29.5	188	225
5	3.7	1725	173	184TC	35610035-F VZ	60/min	575	6.10	-	62	100LA/4-184TC BRE40 HL F VZ	29.5	188	225
7.5	5.5	1735	174	213TC	36410035-F VZ	60/min	575	7.92	-	124	132S/4-213TC BRE60 HL F VZ	44.3	188	225
10	7.5	1735	174	215TC	36710035-F VZ	60/min	575	10.3	-	157	132M/4-215TC BRE100 HL F VZ	73.8	188	225
15	11	1770	177	254TC	37350035-F VZ	60/min	575	14.7	TW	221	160M/4-254TC BRE 150 HL TW F VZ	110	188	225
20	15	1765	177	256TC	37550035-F VZ	60/min	575	19.5	TW	243	160L/4-256TC BRE 250 HL TW F VZ	185	188	225

◆ 575V motors have brake systems supplied with 575VAC to a GHE50L rectifier that outputs 250VDC to the brake coil.









**DRIVESYSTEMS**

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## Standards

All motors are in accordance with existing standards and regulations:

### NEMA MG 1 - Motors and Generators:

- Electrical performance
- Motors for operation on variable AC vector drive

### UL 1004 – Electric Motors

### CSA C22.2 No. 100-04 - Motors and Generators:

### Industrial Products IEC 60034 - parts 1, 5, 6, 8, 9, 11, 12 and 14.

- Part 1 – General rules
- Part 5 – Types of enclosures
- Part 6 – Types of cooling
- Part 8 – Terminal lead designations and sense of rotation
- Part 9 – Noise limits
- Part 11 – Integrated thermal protection
- Part 12 – Starting Performance
- Part 14 – Mechanical vibration

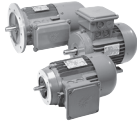
## Inverter/Vector Duty

NORD single-speed motors are Inverter/Vector Duty. The construction of the NORD motors insulating system takes into account the non-sinusoidal wave forms produced by variable frequency drives. NORD uses high grade insulating components and extra first turn protection as well as double coated wire to ensure long service life when connected to AC vector drives. NORD motors can produce full torque at zero speed if properly sized, selected and controlled.



## IEC 60038 – Standard voltages

	NORD motors carry the CE mark in accordance with the Low Voltage Directive and, if installed properly, the Electromagnetic Compatibility Directive (EMC). The CE mark is required for installation in European Union (EU) states.
	Many NORD motors from frame size 63 to 315 are an Underwriters Laboratories Recognized component per UL standard 1004. <ul style="list-style-type: none"> <li>■ File number E191510</li> </ul>
	The Canadian Standards Association CUS mark indicates that CSA has tested and approved NORD motors according to both US and Canadian standards. It is equivalent to the Underwriters Laboratories RU recognition mark (UL standard 1004) and the CSA mark according to CSA Standard C22.2 No. 100-04 <ul style="list-style-type: none"> <li>■ File number LR112560</li> </ul>
	NORD Energy Efficient motors up to frame 180 have been evaluated by the United States Department of Energy and received a Certificate of Compliance to certify the efficiency ratings. The certificate of compliance is CC 092B.
	NORD Premium Efficient motors up to frame 180 have been evaluated by the United States Department of Energy and received a Certificate of Compliance to certify the efficiency ratings. The certificate of compliance is CC 092B.
	NORD energy efficient motors carry the CSA energy efficiency verification mark. This mark ensures that CSA has verified that NORD motors are designed and manufactured to meet energy efficiency requirements number EEV112560.
	China Compulsory Certification Nr.: 200 701 040 125 842 9
	GOST® certificate for the import of motors into Russia.



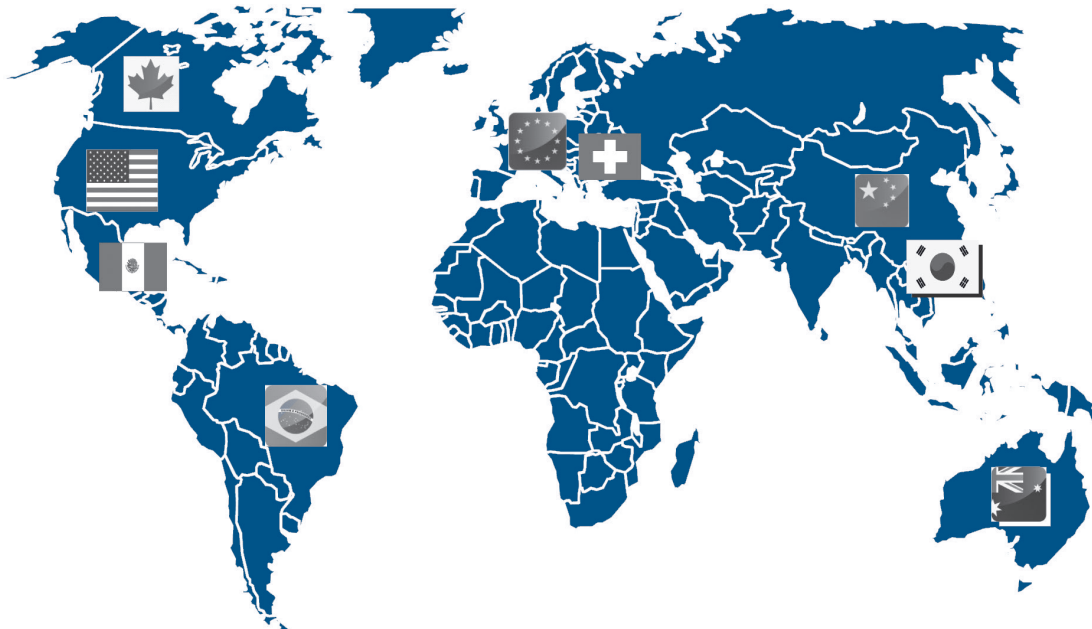
## Global Standards and Directives

The following tables summarize the essential facts about energy efficient motors for the global market. Motors listed under the sub-heading “Exceptions” are those for which the use of energy efficient motors is not mandatory.

In addition, the regulations for energy efficiency only apply to motors which are operated in S1 mode (continuous operation). The reason for this is that frequent starting of motors is not energy-efficient.

All energy directive overviews may be found at on the NORD website.

Engineering



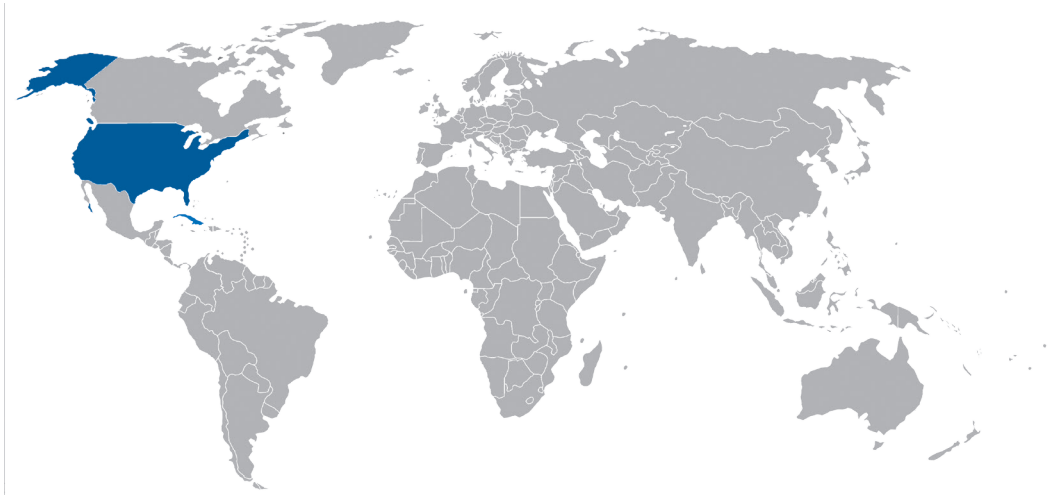
This catalogue has been produced with the greatest care on the basis of the current most legislation. However, NORD cannot accept liability for technical changes.




# Global Efficiency Standards & Requirements



## United States of America - Effective June 1, 2016




Engineering

United States of America - Effective June 1, 2016	
<b>Efficiency Standard</b>	NEMA MG-1
<b>Efficiency Regulations</b>	EISA 2007 + 2014 EISA Expansion Ruling (DOE Amendment 10 CFR Part 431)
<b>Minimum Efficiency Level</b>	Premium Efficient (with few exceptions)
<b>Applicable to</b>  <i>NEMA MG-1, Table 12-12 (IEC 60034-30, Class IE3)</i>	1-500 hp (0.75 – 375 kW) <ul style="list-style-type: none"> <li>▪ All voltages ≤ 600V</li> <li>▪ 60 Hz (AC) line power</li> <li>▪ Rated continuous duty (S1)</li> <li>▪ Single-speed, induction motor</li> <li>▪ 2, 4, 6, 8 pole</li> <li>▪ Frames: NEMA 56 (IEC 80) and larger</li> <li>▪ Design: NEMA design A, B or C or IEC Design N or H</li> <li>▪ VFD rated motors that can also operate DOL</li> <li>▪ Includes: integral gearmotors and brakemotors, partial electric motors, TENV designs, U-frame, NEMA or IEC Flange Mount</li> </ul>
<b>Standard Efficiency Motors [Exemptions]</b>	<ul style="list-style-type: none"> <li>▪ Multi-speed motors</li> <li>▪ Single-phase motors</li> <li>▪ Motors labelled for intermittent or periodic duty (S2-S8)</li> <li>▪ Motors designed for VFD operation (that cannot be line-powered)</li> <li>▪ Submersible, and water-cooled motors</li> </ul>
<b>Required Efficiency Labelling</b>	 Efficiency level must appear on nameplate
<b>Future</b>	Additional rulings are expected to mandate higher efficiency requirements for motors in frame sizes NEMA 42-48-56 (IEC-63-71-80). Efficiency mandates already exists for small open drip-proof motors per DOE rule 10 CFR Part 31.



## United States of America - Previous Standards

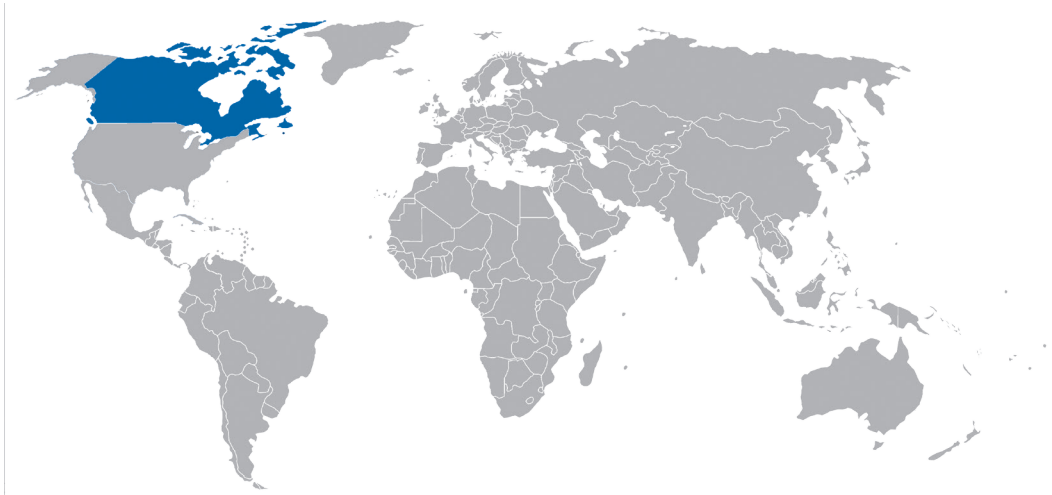


United States of America - Current Standards	
<b>Efficiency Standard</b>	NEMA MG-1
<b>Efficiency Regulations</b>	EISA 2007
<b>Minimum Efficiency Level</b>	Premium Efficient [Subtype I Motors] Energy Efficient [Subtype II Motors] Standard Efficient – See Exceptions
<b>Applicable to</b>	1-500 hp (0.75 – 375 kW) as noted by [Subtype I] or [Subtype II] <ul style="list-style-type: none"> <li>▪ Rated continuous duty (S1)</li> <li>▪ Single-speed, Induction motor</li> <li>▪ VFD rated motors that can also be line-powered</li> </ul>
<b>Premium Efficient [Subtype I]</b>  NEMA MG-1, Table 12-12 (IEC 600034-30, Class IE3)	1-200 hp (0.75 - 150 kW) <ul style="list-style-type: none"> <li>▪ Is foot or foot/flange mounted</li> <li>▪ 2, 4, 6 pole</li> <li>▪ 230V, 460V, or 230/460V-60Hz</li> <li>▪ Frames: NEMA 143 (or IEC Frame 90) and larger</li> <li>▪ Design : NEMA A or B (IEC Design N)</li> <li>▪ Includes: brakemotors</li> </ul>
<b>Energy Efficient [Subtype II]</b>  NEMA MG-1, Table 12-11 (IEC 600034-30, Class IE2)	201-500 hp (151 – 375 kW) / NEMA Design A or B (IEC Design N) ...or... 1-200 hp (0.75 – 150 kW) / NEMA Design C (IEC Design H) ...and... <ul style="list-style-type: none"> <li>▪ Like Subtype I motors configured in one or more of the following ways...</li> <li>▪ Footless motors (includes brakemotors)</li> <li>▪ NEMA or IEC flange-mount (includes brakemotors)</li> <li>▪ 8 pole</li> <li>▪ Other 60 Hz motors ≤ 600V (includes 208V and 575V)</li> <li>▪ U-Frame motors</li> <li>▪ Close coupled pump motors</li> <li>▪ Fire-pump motors (1-500 hp)</li> </ul>
<b>Standard Efficiency Motors [Exemptions]</b>	<ul style="list-style-type: none"> <li>▪ Integral gearmotors with or without integral brake (until 6/1/2016)</li> <li>▪ Enclosed motors with NEMA 56 (IEC 80) frame and smaller</li> <li>▪ Multi-speed motors</li> <li>▪ Single-phase motors</li> <li>▪ TENV motors, TEAO motors and submersible motors</li> <li>▪ Motors designed for VFD operation (that cannot be line-powered)</li> <li>▪ Motors labelled for intermittent or periodic duty</li> </ul>
<b>Required Efficiency Labelling</b>	 Efficiency level must appear on nameplate
<b>Future</b>	EISA 2007 with 2014 EISA expansion ruling (Amendment 10CFR Part 431) Effective: July 28, 2014 Full Compliance Required: June 1st, 2016 Most EISA 2007 exceptions will be eliminated



# Global Efficiency Standards & Requirements



## Canada



Engineering

Canada	
<b>Efficiency Standard</b>	CSA C390-10
<b>Efficiency Regulations</b>	Energy Efficiency Regulations (EER 2017)
<b>Minimum Efficiency Level</b>	Premium Efficient [IE3]
<b>Applicable to</b>	1-500 hp (0.75 – 375 kW) <ul style="list-style-type: none"> <li>▪ Rated continuous duty (S1)</li> <li>▪ Single-speed, Induction motor</li> <li>▪ VFD rated motors that can also be line-powered</li> <li>▪ All voltages &lt; 600V</li> <li>▪ 50/60 Hz (AC) line power</li> <li>▪ Rated continuous duty (S1)</li> </ul>
<b>Premium Efficient</b> <i>NEMA MG-1, Table 12-12</i> <i>(IEC 60034-30, Class IE3)</i>	1-500 hp (0.75 - 375 kW) <ul style="list-style-type: none"> <li>▪ Is of a caged or squirrel caged design</li> <li>▪ 2, 4, 6, or 8 pole</li> <li>▪ Is a NEMA design A, B or C with a three or four digit frame number</li> <li>▪ An enclosed NEMA design A, B or C with a NEMA frame number of 56 or</li> <li>▪ An IEC design N or H with an IEC frame number or 80 or above</li> <li>▪ Has an IP code from 00 to 67</li> </ul>
<b>Standard Efficiency Motors [Exemptions]</b>	<ul style="list-style-type: none"> <li>▪ Multi-speed motors</li> <li>▪ Single-phase motors</li> <li>▪ Motors designed for VFD operation (that cannot be line-powered)</li> <li>▪ Motors labelled for intermittent or periodic duty</li> <li>▪ Intermittant operation and ratings</li> </ul>
<b>Required Efficiency Labelling</b>	  Efficiency level must appear on nameplate





## Mexico

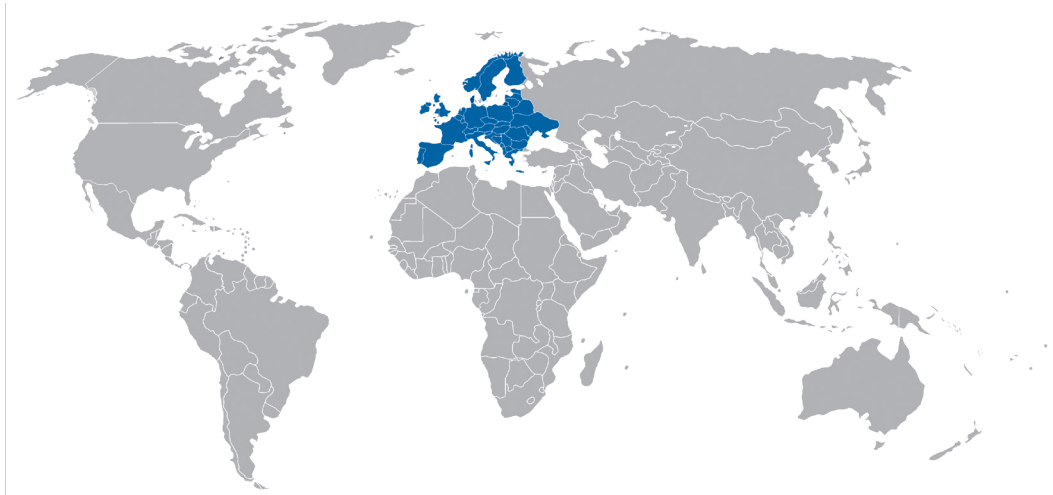


Mexico	
<b>Efficiency Standard</b>	NOM-016-ENER-2010 (3 phase motors)
<b>Efficiency Regulations</b>	NOM-016-ENER-2010
<b>Minimum Efficiency Level</b>	Premium Efficiency
<b>Applicable to</b>	1 to 500 hp (0.75 to 373 kW) <ul style="list-style-type: none"> <li>▪ 2, 4, 6 and 8 pole motors</li> <li>▪ All voltages &lt; 600 V</li> <li>▪ Motors rated for continuous operation</li> </ul>
<b>Standard Efficiency Motors [Exemptions]</b>	<ul style="list-style-type: none"> <li>▪ Gearmotors</li> <li>▪ Brakemotors</li> <li>▪ 2-speed motors</li> <li>▪ Motors designed for inverter operation</li> <li>▪ NEMA C design motors</li> <li>▪ Motors labelled for intermittent duty</li> </ul>
<b>Required Efficiency Labelling</b>	Efficiency level must appear on nameplate.

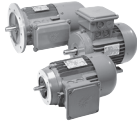
# Global Efficiency Standards & Requirements



## Europe




Europe	
<b>Efficiency Standard</b>	IEC 60034-30
<b>Efficiency Regulations</b>	Directive 2009/125/EC Ecodesign Directive Regulation (EC) 640/2009 Regulation (EU) 4/2014
<b>Minimum Efficiency Level</b>	IE3 - 0.75 - 375 kW IE2 - 7.5 - 375 kW (controlled with VFD)
<b>Applicable to</b>	0.75 to 375 kW <ul style="list-style-type: none"> <li>▪ 2, 4 and 6 pole motors</li> <li>▪ 50 to 1000 V</li> <li>▪ 50 and 60 Hz</li> <li>▪ Motors rated for continuous operation</li> </ul>
<b>Exception</b>	<ul style="list-style-type: none"> <li>▪ Brakemotors</li> <li>▪ 2-speed motors</li> <li>▪ Single-phase motors</li> <li>▪ Explosion proof motors</li> <li>▪ Motors designed for inverter operation (that cannot be line-powered)</li> <li>▪ Motors designed for ambient temperature &lt; -30°C or &gt; +60°C</li> <li>▪ Motors designed for altitude &gt; 4,000 meters above sea level</li> </ul>
<b>Required Efficiency Labelling</b>	CE mark and IE class on nameplate
<b>Switzerland</b>	Also adopted Reg 640/2009 in its Energy Ordinances 730.01
<b>Turkey</b>	Also adopted Reg 640/2009 in Gazette No. 28197



## China



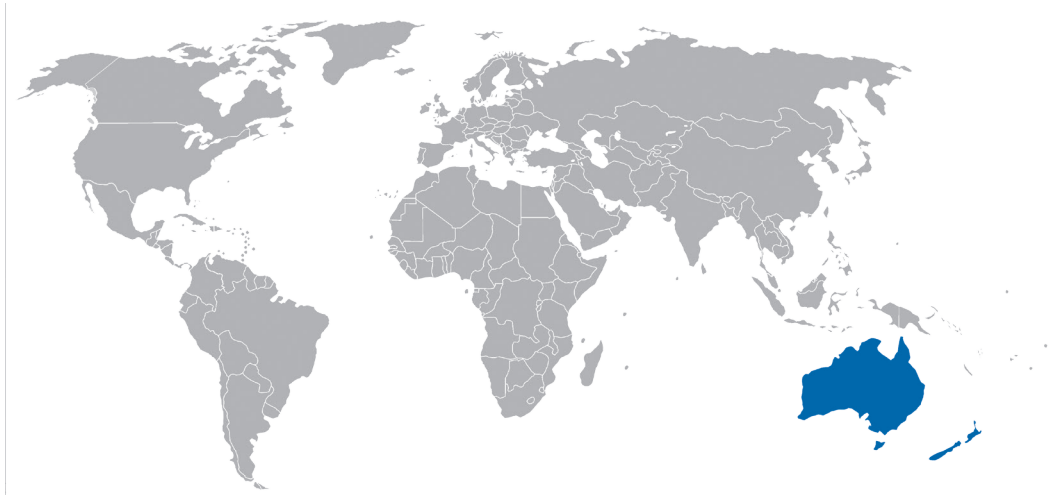
China	
<b>Efficiency Standard</b>	GB 18613-2012
<b>Efficiency Regulations</b>	GB 18613-2012
<b>Minimum Efficiency Level</b>	High Efficiency Grade 3 (IE2)
<b>Applicable to</b>	1 to 500 hp (0.75 to 150 kW) <ul style="list-style-type: none"> <li>▪ Up to 690V @ 50Hz</li> <li>▪ 2, 4 and 6 pole motors</li> <li>▪ Motors rated for continuous operation</li> </ul>
<b>Standard Efficiency Motors [Exemptions]</b>	<ul style="list-style-type: none"> <li>▪ Brakemotors</li> <li>▪ TENV and open motors</li> <li>▪ 2-speed motors</li> <li>▪ Single-phase motors</li> <li>▪ Hazardous duty motors</li> <li>▪ Submersible motors</li> <li>▪ Motors designed for inverter operation (that cannot be line-started)</li> <li>▪ Motors labelled for intermittent duty</li> </ul>
<b>Required Efficiency Labelling</b>	 <p>Efficiency level must appear on nameplate            CCC label for 2 pole motors <math>\leq 2,2</math> kW, 4 pole motors <math>\leq 1,1</math> kW,            6 pole motors <math>\leq 0,75</math> kW and 8 pole motors <math>\leq 0,55</math> kW</p>



# Global Efficiency Standards & Requirements



## Australia / New Zealand



Engineering

Australia / New Zealand	
<b>Efficiency Standard</b>	AS/NZS 1359.5
<b>Efficiency Regulations</b>	MEPS 2
<b>Minimum Efficiency Level</b>	High Efficiency (IE2) / Market may specify Premium Efficiency (IE3)
<b>Applicable to</b>	0.73 to 185 kW <ul style="list-style-type: none"> <li>▪ Up to 1100V @ 50Hz</li> <li>▪ 2, 4, 6 and 8 pole motors</li> </ul>
<b>Standard Efficiency Motors [Exemptions]</b>	<ul style="list-style-type: none"> <li>▪ Duty Type S2</li> <li>▪ Motors designed for inverter operation (that cannot be line-started)</li> <li>▪ Motors labelled for intermittent duty</li> <li>▪ 2-Speed motors</li> <li>▪ Single-phase motors</li> <li>▪ Submersible motors</li> </ul>
<b>Required Efficiency Labelling</b>	Efficiency level must appear on nameplate Motor must be listed on <a href="http://reg.energyrating.gov.au/comparator/product_types">http://reg.energyrating.gov.au/comparator/product_types</a>



## Brazil



Brazil	
<b>Efficiency Standard</b>	ABNT NBR 17094-1
<b>Efficiency Regulations</b>	Lei No 10.295 Decreto No 4.508 Portaria No 553
<b>Minimum Efficiency Level</b>	Alto Rendimento (IE2)
<b>Applicable to</b>	0.75 to 110 kW <ul style="list-style-type: none"> <li>▪ 0.75 to 185 kW (2 and 4 pole motors)</li> <li>▪ 0.75 to 150 k (6 pole motors)</li> <li>▪ 0.75 to 110 kW (8 pole motors)</li> <li>▪ Up to 1000V @ 60Hz</li> <li>▪ Continuous duty motors</li> <li>▪ TEFC motors</li> </ul>
<b>Standard Efficiency Motors [Exemptions]</b>	<ul style="list-style-type: none"> <li>▪ Brakemotors</li> <li>▪ Intermittant duty</li> <li>▪ 2-speed motors</li> <li>▪ Single-phase motors</li> <li>▪ Increased safety, explosion proof and hazardous duty motors</li> <li>▪ Motors designed for inverter operation (that cannot be line-started)</li> </ul>
<b>Required Efficiency Labelling</b>	

# Global Efficiency Standards & Requirements



## South Korea



Engineering

South Korea	
Efficiency Standard	KS C 4202
Efficiency Regulations	REELS 2010
Minimum Efficiency Level	IE2 (0.75 to 375 kW)
Applicable to	0.75 to 375 kW <ul style="list-style-type: none"> <li>▪ 2, 4, 6 and 8 pole motors</li> </ul>
Standard Efficiency Motors [Exemptions]	<ul style="list-style-type: none"> <li>▪ Duty Type S2</li> <li>▪ 2-speed motors</li> <li>▪ Motors designed for inverter operation (that cannot be line-started)</li> <li>▪ Non-ventilated motors (TENV, TEAO)</li> </ul>
Required Efficiency Labelling	<p>8509020 KOREA ENERGY LABEL 90.1/1.4 220/380-440V</p>





## Standard Motor Construction

Our motors are an important part of our ability to provide a high quality, competitive, and complete drive system. NORD motors are designed for across-the-line or inverter/vector duty operation. NORD motors are constructed with superior insulating methods to provide excellent moisture protection, low temperature rise, and voltage spike resistance in accordance with NEMA MG1. Low rotor inertia and high starting torque allow peak performance in difficult applications involving high start/stop cycling rates or rapid acceleration/deceleration. Standard motors offer protection from the elements with many standard and optional design features.

### Some of the standard design benefits include:

- Shaft lip seals on both ends of the motor shafts.
- Stator to endbell connections sealed to exclude moisture.
- Double coated magnetic wire insulation.
- Inverter/vector duty insulation system conforms to NEMA MG1, section 31.4 voltage spikes.
- Moisture resistant varnish dipped windings with improved varnish materials.
- Inorganic insulating components for tropical protection.
- Conduit box sealed with gaskets.
- Corrosion resistant alloy materials.
- Threaded cable entry holes.

## Asynchronous Low Voltage Motors

The motors listed in this catalogue are low voltage asynchronous motors, which can be used as gear motors or stand-alone motors.

The catalogue contains motors which NORD manufactures, in the power range from 0.16 to 40 hp. Information about motors with powers > 40hp as well as special motors such as explosion-protected motors, submersible motors or encapsulated motors can be supplied on request.

## Non-Sparking Fan

The standard NORD motor fan is a non-sparking design. The fan will also provide proper airflow in either direction of rotation.

## Terminal Block

Each NORD motor uses a terminal block, which is a superior method of wire termination when compared to pigtail leads. A terminal block ensures long-term reliability of the power connections.

## Inverter/Vector Duty – Voltage Spikes

All NORD motors are constructed with an insulating system designed to withstand the repeated voltage spikes generated by modern AC vector drives. The insulation system withstands the ratings in conformance with NEMA MG1 Section 31.4.4.2 Voltage Spikes.

$$V_{\text{peak}} \leq 3.1 \times V_{\text{rated}} \text{ with a Rise time } \geq 0.1\mu\text{s.}$$

## Insulation System

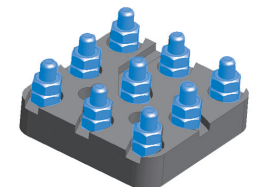
The NORD motor insulation system is designed to provide a superior degree of protection. NORD utilizes the following insulation components:

- |  |                            |
|--|----------------------------|
| ■ Magnet wire – double coated insulation | ■ Phase paper & separators |
| ■ Varnish dip impregnation               | ■ Top sticks               |
| ■ Slot liners                            | ■ Wire sleeve connectors   |

Other motor manufacturers eliminate some of these insulating components for cost reduction which leads to less reliability.

## Tropical Protection (Anti-fungal)

As a standard the NORD motor insulation system is tropically protected. The insulating and construction components are made of inorganic materials that resist fungal growth.





## Low Inertia

The motor inertia in all NORD motors is extremely low which allows for an increased dynamic motor control capability. Low motor inertia is a significant advantage when using NORD motors with AC vector drives or controllers. NORD motors have the ability to cycle more frequently and require less mechanical energy to start than the standard NEMA frame motors. This leaves more energy to start the load.

## High Starting Torque

NORD motors produce a higher starting torque than what is required by NEMA standards. This is achieved through improved motor winding, rotor design and construction.

## Service Factor

NORD standard motors that are rated 230/460V-60Hz and 332/575V-60Hz have a service factor of 1.15. All other motors have a service factor of 1.0 or as noted in the motor rating tables beginning on page 171.

## Poles / speeds

NORD offers a variety of single and two speed motors in addition to the standard 4 pole motor. NORD single speed motors are inverter/vector duty rated, however, it is not recommended to run a NORD two speed motor with an AC vector drive.

Number of Poles	Synchronous Speed at 60Hz	Synchronous Speed at 50Hz
<b>Single Speed Motors</b>		
4	1800 rpm	1500 rpm
2	3600 rpm	3000 rpm
6	1200 rpm	1000 rpm
<b>Two Speed Motors</b>		
4-2 - single winding	1800/3600 rpm	1500/3000 rpm
8-2 - dual winding	900/3600 rpm	750/3000 rpm

Other speeds available upon request.

## Maximum motor speeds

Our motor rotors are balanced to a minimum of 3600 rpm or 120Hz and have a standard maximum operation speed per the table below.

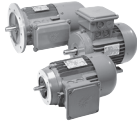
Frame Size	Maximum speed [rpm]
63	2500
71	2500
80	2860
90	3400
100	3500
112	3500
132	3300
160	3200
180	3100
200	3000
225	3000



### IMPORTANT NOTE



When maximum speeds higher than those listed above are required, Fluoro elastomer (FKM) sealing rings are necessary on both the drive end & non drive end sides. All details relate to S1 operating mode (continuous operation). For short periods, the motors are able to deliver higher speeds without the need for modification.



## Voltage and Frequency

NORD motors are available in a number of voltage and frequency options. All standard voltages are commonly available. Optional voltages or voltage/frequency combinations may be possible, please consult NORD with your requirements.

Poles	Efficiency	50 Hz NORD Motors			60 Hz NORD Motors		
		Motor Size Range	Power Range	Nominal Voltage	Motor Size Range	Power Range	Nominal Voltage
4	Standard (IE1)	63 S/4 - 100 L/4	0.12 - 2.2 kW	230/400 V Δ/Y	63 S/4 - 200 LX/4	0.16 - 40 Hp	230/460 V YY/Y
		100 LA/4 - 200 LX/4	3 - 30 kW	400/690 V Δ/Y			332/575 V Δ/Y
	Premium Efficient (IE3)	80 LP/4 - 100 LP/4	0.75 - 2.2 kW	230/400 V Δ/Y	80 LP/4 - 250 WP/4	1 - 75 HP	230/460 V YY/YY
		100 AP/4 - 250 WP/4	3 - 55 kW	400/690 V Δ/Y			332/575 V Δ/Y
4-2	Standard (IE1)	63 S/4-2 - 160L/4-2	0.10/0.15 - 13/17 kW	400 V Δ/YY	63 S/4-2 - 132 M/4-2	0.13/0.20 - 8.7/10.7 HP	230V or 460V or 575V Δ/YY
8-2		71 S/8-2 WU - 132 M/8-2 WU	0.045/0.22 - 1.4/5.5 kW	400 V Y/Y	71 S/8-2 WU - 132 M/8/2 WU	0.06/0.3 - 1.9/7.4 HP	230V or 460V or 575V Y/Y

## Voltage and Frequency Variation

Voltage and frequency variations are based upon the assumption that the nameplate horsepower will not be exceeded and that the motor temperature may increase. Standard allowable deviations are based upon the type of motor labeling.

### NEMA and CSA Labeled Motors

Variations are based upon the nominal utilization voltage, and not the service (supply) voltage as per ANSI C84.1. Voltage and frequency tolerances follow the guidelines set forth in NEMA MG-1.

Service Voltages	Utilization Voltages	Voltage Variation	Frequency Variation	Voltage/Frequency Variation
120V	115V	+/- 10%	+/- 5%	+/- 5%
208V	200V			
240V	230V			
480V	460V			
600V	575V			

### 50Hz CE Labeled Motors

Standard NORD motors are designed in accordance with IEC 60034-1, It is common practice to display the rated voltage on the motor nameplate. Alternatively, the allowable voltage range may be displayed on the motor nameplate. Allowable voltage and frequency variations are as specified in the table below:

Motor Voltage	Voltage Tolerance	Allowable Voltage Range	Frequency Variation
230/400V	+/- 5%	220-240 / 380-420V	+/- 2%
400/690V	+/- 5%	380-420 / 660-725V	+/- 2%

Voltage harmonization was introduced to the European Union in 1983, as part of IEC 60038 (formerly IEC 38). From 1995-2008 a transition period allowed motors to be labeled with the "harmonized voltage" however a reduced allowable voltage tolerance was permitted by the IEC 60038 standard as displayed in the table below:

Previous Motor Voltage	Harmonized Motor Voltage	Voltage Tolerance
220/380V	230/400V	+6 / -10%
240/415V	230/400V	+10 / -6%
380/660V	400/690V	+6 / -10%

## US and Canadian Standard (CUS)

CUS motor construction defines that NORD motors are constructed in accordance to UL 1004 (electric motors) and CSA C22.2 No. 100-04 (motors and generators) guidelines. This option is standard for 208, 230, 460, and 575 Volt operation at 60 Hz.

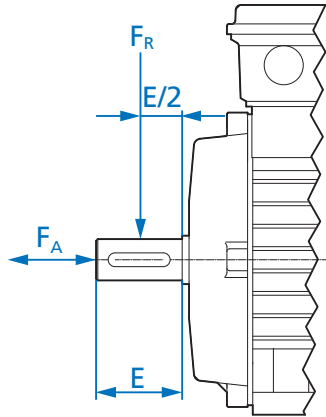
Motors nameplated with the CUS option will be marked  and  indicating that the Underwriters Laboratories and CSA have tested and approved NORD motors according to both US and Canadian standards.



## Permissible radial and axial forces for IEC / NEMA motors

The listed values apply for a calculated bearing life of  $L_n = 20,000$  hours, for 4-pole motors.

$F_R$  = permissible radial force with  $F_A = 0$   
 $F_A$  = permissible axial force with  $F_R = 0$



Permissible radial and axial forces

Type	$F_R$ [N]	$F_A$ [N]	$F_R$ [lb]	$F_A$ [lb]
63	530	480	120	110
71	530	480	120	110
80	860	760	195	170
90	910	810	205	180
100	1300	1100	290	245
112	1950	1640	440	370
132	2790	2360	625	530
160	3500	3000	785	675
180 .X	3500	3000	785	675
180	5500	4000	1235	900
200	5500	4000	1235	900
225	8000	5500	1800	1235
250	8000	5500	1800	1235



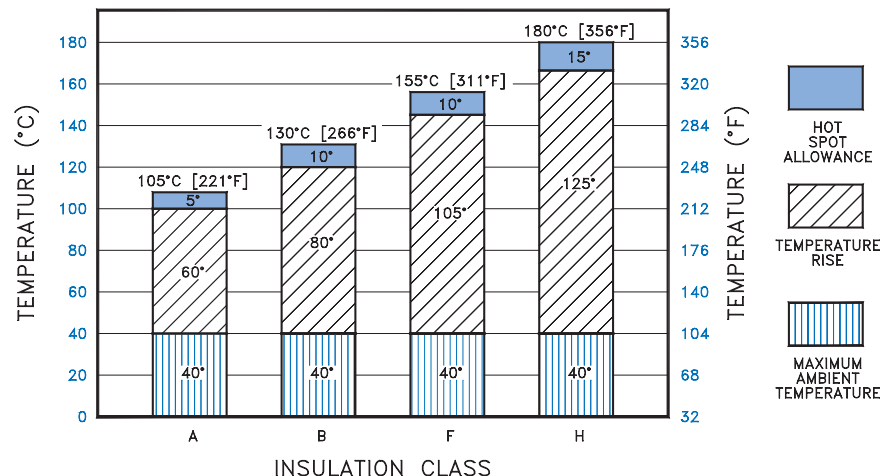
### IMPORTANT NOTE



- These values do not apply to the 2nd shaft end. Please ask about the power which can be transferred and the permissible radial force!
- Motors which are integrally mounted on the gear housing are subjected to radial and axial forces from the 1st gear stage and therefore may be equipped with reinforced bearings.

## Insulation Class

NORD motors are constructed with a thermal class F insulating system. These motors are also designed for a class B temperature rise of up to 80°C. The use of class F insulation with a class B temperature rise provides increased operating life. Motors constructed with class H insulation are also available as an option.







## Ambient Temperature

NORD motors are designed to operate with a maximum ambient temperature of 40°C (104°F). If the motor's operating environment exceeds 40°C, the motor's nominal power  $P_n$  either needs to be de-rated (see table below) or upgraded insulation is required.

Ambient temp [°F]	113	122	131	140
Ambient temp [°C]	45	50	55	60
De-rate factor	0.96	0.92	0.87	0.82

**Motor Rated Power =  $[P_n \times \text{De-rate factor}]$**

## Elevation

NORD motors are designed to operate at an elevation of up to 3300 ft (1000 m) above sea level. At higher elevations the air is thinner resulting in less cooling capacity. If the motor's installation elevation exceeds 3300 ft (1000 m), the motor's nominal power ( $P_n$ ) either needs to be de-rated (see table below) or upgraded insulation systems need to be considered.

Altitude [ft]	5000	6500	8200	10000	11500	13000
Altitude [m]	1500	2000	2500	3000	3500	4000
De-rate Factor	0.97	0.94	0.90	0.86	0.83	0.80

**Motor Rated Power =  $[P_n \times \text{De-rate factor}]$**

## Enclosure

The NORD standard motors are provided with Totally Enclosed Fan-Cooled (TEFC) with an IP55 enclosure rating. Other enclosures are available, including Totally Enclosed Non-Ventilated (TENV), Totally Enclosed Blower-Cooled (TEBC), and IP66.

The motor integral cooling fan provides proper air flow in either direction of rotation. The IEC cooling classification is IC 411 according to IEC 60034-6.

1st digit Foreign body protection		2nd digit Water protection	
0	No protection	0	No Protection
1	Protected against solid objects 50mm (2 in) in diameter and larger	1	Protected against dripping water
2	Protected against solid objects 12 mm (1/2 in) in diameter and larger	2	Protected against dripping water up to a 15 degree angle
3	Protected against solid objects 2.5 mm (0.1 in) in diameter and larger	3	Protection against sprayed water
4	Protected against solid objects 1 mm (0.04 in) in diameter and larger	4	Protection against splashed water
5	Protected against dust	5	Protection against water jets
6	Dust tight	6	Protection against high pressure water jets
7	--	7	Protection against intermittent submersion in water
8	--	8	Protection against continuous submersion in water



## Bearings and shaft sealing

NORD motors have lubricated-for-life roller bearings. The non drive end bearing is a fixed bearing. Greased shaft sealing rings without springs are used on the drive end and non drive end. Oil-tight motors with various flanges are available on request for direct mounting on the gear unit.

Replacement of roller bearings: see operating and maintenance manual B1091. When option AS66-Outdoor installation is ordered then special sealed ball-bearings (2RSR) are fitted.

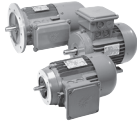
Motor Frame	Drive End Bearing	Non Drive End Bearing (fixed bearing)
63	6202.2Z	6202.2Z
71	6202.2Z	6202.2Z
80	6204.2Z	6204.2Z
90	6205.2Z	6205.2Z
100	6206.2Z	6206.2Z
112	6306.2Z.C3	6306.2Z.C3
132	6308.2Z.C3	6308.2Z.C3
160	6309.2Z.C3	6309.2Z.C3
180 .X	6309.2Z.C3	6309.2Z.C3
180	6312.2Z.C3	6311.2Z.C3
200	6312.2Z.C3	6311.2Z.C3
225	6314.2Z.C3	6313.2Z.C3

## Noise Emission

According to ISO 3745/44, the noise pressure level  $L_{PA}$  is measured in an echo-free room with the test sample idling. The measurement area dimension  $L_s$  [dB] is calculated from the dimensions of the test sample. The sound power level  $L_{WA}$  is determined by addition of the measurement surface dimension to the noise pressure level. A slightly increased noise level is to be expected with inverter operation due to magnetic hum or whistling. The fan noise increases at higher speeds with frequencies above 50Hz or 60 Hz. External fans are supplied directly from the mains. Their cooling effect and noise emission depend on the speed of the motor.

Sound pressure level measurement area and sound power level with mains operation.

Tolerance $\pm 3\text{db(A)}$		Self-cooled				with external fan			
		50Hz		60Hz		50Hz		60Hz	
		1500 rpm		1800 rpm					
Type & Efficiency		$L_{PA}$	$L_{WA}$	$L_{PA}$	$L_{WA}$	$L_{PA}$	$L_{WA}$	$L_{PA}$	$L_{WA}$
SE (IE1)	PE (IE3)	[dB(A)]				[dB(A)]			
63 S/L	-	40	52	44	56	47	59	50	62
71 S/L	-	45	57	49	57	51	63	53	65
80 S	-	47	59	51	63	56	68	59	71
80 L	80 LP								
90 S	90 SP	49	61	53	65	61	73	65	77
90 L	90 LP								
100 L	100 LP	51	64	55	68	59	72	63	76
100 LA	100 AP								
112 M	112 MP	54	66	58	70	61	74	64	77
132 S	-	60	73	64	77	57	70	60	73
-	132 MP								
-	-								
-	160 SP	66	79	70	83	60	73	64	77
160 M	160 MP								
160 L	160 LP								
180 MX	-	66	79	70	83	60	73	64	77
180 LX	-								
-	180 MP	62	75	66	79	60	73	64	77
-	180 LP								
200 LX	-	62	75	66	79	60	73	64	77
-	200 RP	66	80	70	84	66	80	71	85
-	200 SP								
-	200 MP								
-	250 WP	66	80	70	84	66	80	71	85



## Duty Classes

The following duty types are defined in IEC 60034-1.

Duty Type	Explanation Excerpts
S1	Continuous operation at a constant load, the motor reaches thermal equilibrium
S2	Short-time operation at a constant load for a given time followed by a time of rest until the motor is completely cooled down to ambient temperature. Example: S2-10 minutes Recommended values for determination: 10, 30 min.
S3	Sequential intermittent operation, identical run and rest cycles with a constant load. Temperature equilibrium is never reached. Starting current has little effect on temperature rise. The cyclic duration factor (cdf) indicates the portion of operation time in relation to a complete duty cycle. The typical duty cycle time is 10 minutes, unless otherwise specified. Example: S3-40% Recommended values for determination: 25, 40, 60%
S6	Continuous operation with intermittent load sequential, identical cycles of running with constant load and running with no load. No rest periods. Example: S6-40% Recommended values for determination: 25, 40, 60%

## Power Increasing Factor for Short-term & Intermittent Operation

Motor ratings in this catalog are based on continuous duty operation (S1). If a motor is designed for S1 duty, but is to be operated for short-time or intermittent operation it can be subjected to higher loads. The available motor power can be raised above the motor rated power by the “increasing factor” in the table below.

Duty Type	Increasing Factor		
S2	Operating time	10 min	1.40
		30 min	1.15
S3	Cyclic duration factor (cdf)	25%	1.33
		40%	1.18
		60%	1.08
S6	Cyclic duration factor (cdf)	25%	1.45
		40%	1.35
		60%	1.15

$$\text{Motor Rated Power} = [P_n \times \text{Increasing factor}]$$





## Protective Features

All NORD Motors and Speed Reducers are constructed to provide a high degree of protection against wet and severe environments. NORD motors and speed reducers are sealed against moisture ingress and use corrosion and moisture resistant components. NORD has recently made many enhancements in the motor and gear units standard construction to provide improved environmental protection. Many of the standard protection features of the NORD units are only available at an additional cost from other motor and gear drive suppliers. NORD designs all gearmotors, speed reducers and motors for installation in harsh industrial, commercial and municipal installation environments.

### Motors for Indoor Operation - Option Codes

### Motors for Outdoor Operation - Option Codes

	Dry Conditions	Wet or Humid Conditions		Sheltered from the Elements	Exposed to the Elements
<b>Ambient Temp. Fluctuation</b>	–	KB, SH	<b>Ambient Temp. Fluctuation</b>	KB, SH	KB, SH, KKV
<b>Paint</b>	–	NSD+	<b>Paint</b>	NSD+	NSDx3
<b>Vertical Motor Mount</b> 	RD	RDD	<b>Vertical Motor Mount</b> 	RD	RDD

### Option Code Key

<b>KB</b>	Condensation Drain Holes - Plugged	118
<b>SH</b>	Space Heater	116
<b>KKV</b>	Terminal Box Sealed with Resin	119
<b>NSD+</b>	NORD Severe Duty Paint	118
<b>NSDx3</b>	NORD Severe Extreme Duty X3 Paint	118
<b>RD</b>	Canopy Drip Cover	119
<b>RDD</b>	Double Fan Cover	119





## Inverter/Vector Duty

NORD single speed motors are Inverter/Vector Duty. The construction of the NORD motor insulating system takes into account the non-sinusoidal waveforms produced by variable frequency drives. NORD uses high grade insulating components and extra first turn protection as well as double coated wire to ensure long service life when connected to inverters. NORD motors can produce full torque at zero speed if properly sized, selected and controlled.



## Inverter/Vector Duty – Voltage Spikes

All NORD motors are constructed with an insulating system designed to withstand the repeated voltage spikes generated by modern frequency inverters. The insulation system is in conformance with NEMA MG 1 Section 31.4.4.2 Voltage Spikes, which requires motors to withstand:

$$V_{\text{peak}} = 3.1 \times V_{\text{rated}} \text{ with a Rise time } \geq 0.1\mu\text{s}$$

## Constant Torque Speed Range

NORD motors can be selected for a very wide speed range at constant torque. The selection of a motor for a given constant torque speed range must take into account the motor thermal cooling ability and its torque producing capacity. For most fan cooled motors operation at low frequencies is limited by the motor fan's ability to provide cooling air. Operation at speeds, above base frequencies, is restricted by torque capacity and by the voltage limit of the frequency inverter. Consult the curves "Motor Performance Self Cooled – TEFC" and "Motor Performance Forced Cooled – TEBC" to properly select a speed range. Following the selection curves are motor ratings tables with four pre-selected frequency ranges, 5:1, 10:1, 20:1 and 1000+:1.

## Maximum Motor Speed and Frequency

NORD 4-pole motors are designed for operation up to 3600 rpm with a maximum line frequency of 120 Hz.

## Zero Speed Operation

Operation of a NORD motor at zero speed is possible depending on the drive inverter control method and the motor cooling characteristics. To produce torque at zero speed, the motor must be sized sufficiently for adequate cooling (consult the curves "Motor Performance Self Cooled – TEFC" and "Motor Performance Forced Cooled – TEBC"). Also, the inverter or vector controller must be capable of producing torque at zero motor speed. This typically requires closed loop control with an encoder (NORD option IG) or other feedback device. Consult the AC drive manufacturer for details.

## Thermal Protection

It is good practice to use motor thermal protection on motors used with frequency inverters or vector controllers. NORD offers thermostats (option TW) and thermistors (option TF) to provide motor thermal protection.

## High Dynamic Operation

NORD motors are designed to deliver extremely high dynamic performance with modern frequency inverters. A key design element is a low mass moment of inertia design. The low inertia design allows for higher cycling capacity, lower operating temperature and more motor torque delivered to the load in dynamic applications.

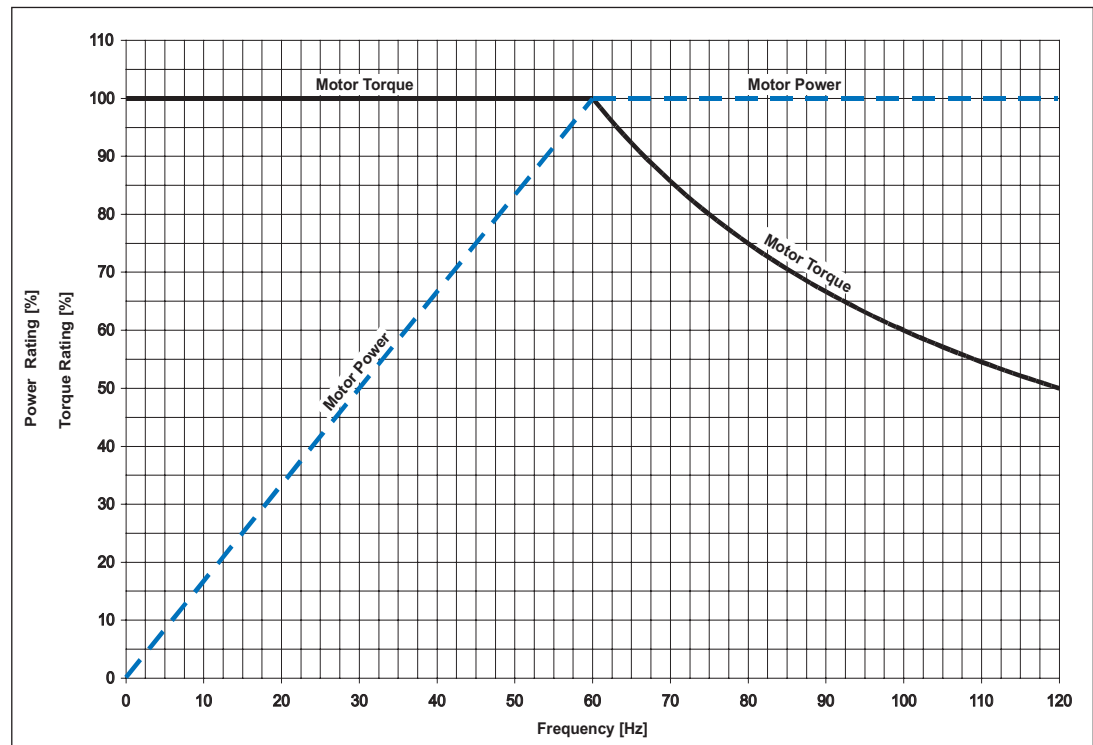


## Motor Speed and Torque

When operating a motor on an inverter, the motor output speed is essentially proportional to the supply frequency. If the supply frequency is increased, the motor speed will also increase. If the supply frequency is decreased, the motor speed will also decrease.

Induction motors are constant slip devices. This will cause the proportional relationship between output speed and input frequency to vary slightly.

Most applications for gearmotors and variable frequency inverters require constant torque. This means that the required torque is constant-independent of output speed. NORD motors are well suited for these constant torque applications. Following is a typical operating characteristic chart for NORD motors used on constant torque inverters. This chart demonstrates the frequency range in which NORD motors can produce constant torque and constant power. This chart does not take into account any thermal limits of the motor at low frequencies. Thermal limits will be addressed later in this catalog.



### Output speed based on variable frequency

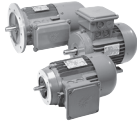
$$\text{Output Speed}_{\text{Hz}} (n_{\text{Hz}}) = \frac{1800 \text{ rpm} \times f_{\text{Hz}}}{60_{\text{Hz}}} - \text{Slip}_{\text{rpm}}$$

Power below 60Hz base speed (the power above base speed is constant at the rated power)

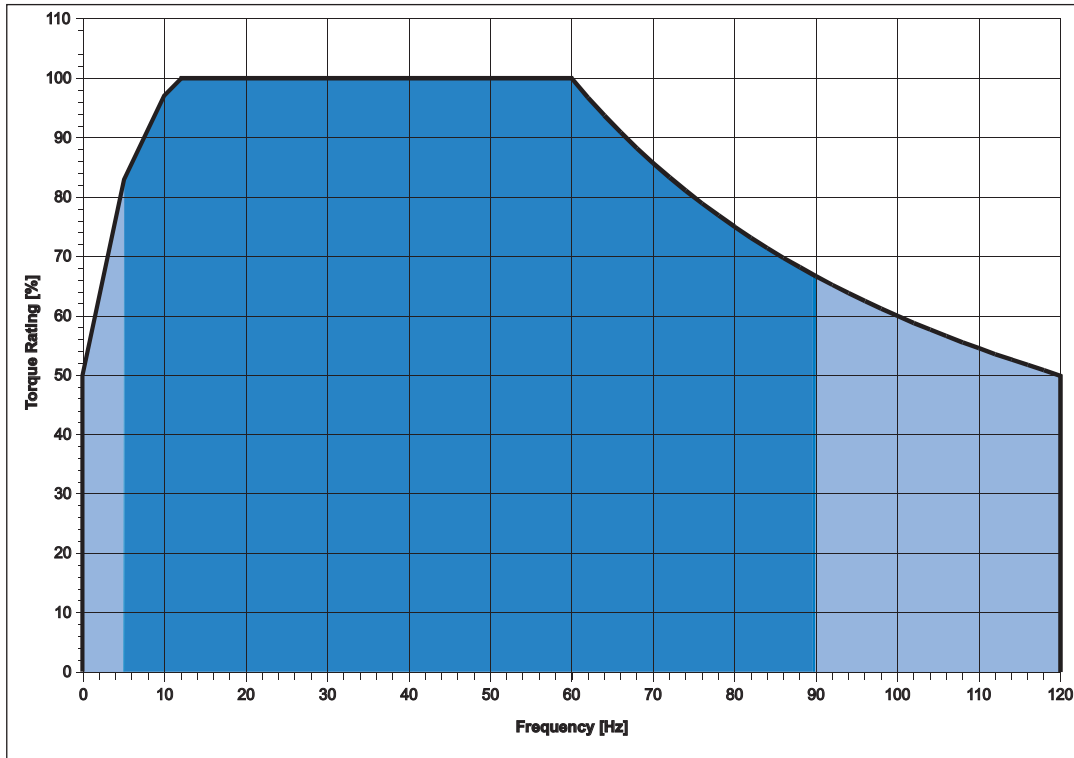
$$\text{HP}_{\text{Hz}} = P_{\text{rated}} \times \frac{f_{\text{Hz}}}{60_{\text{Hz}}}$$

The output torque capacity of the motor can be calculated from the speed and power

$$T_{\text{Hz}} = \frac{\text{HP}_{\text{Hz}} \times 63025}{n_{\text{Hz}}}$$



## Totally Enclosed Fan Cooled Motors - TEFC



NORD motors can safely operate over a frequency range of 0Hz to 120Hz.

- The dark shaded zone indicates the safe continuous operating zone.
- The lighter shaded zones indicates cautionary performance.

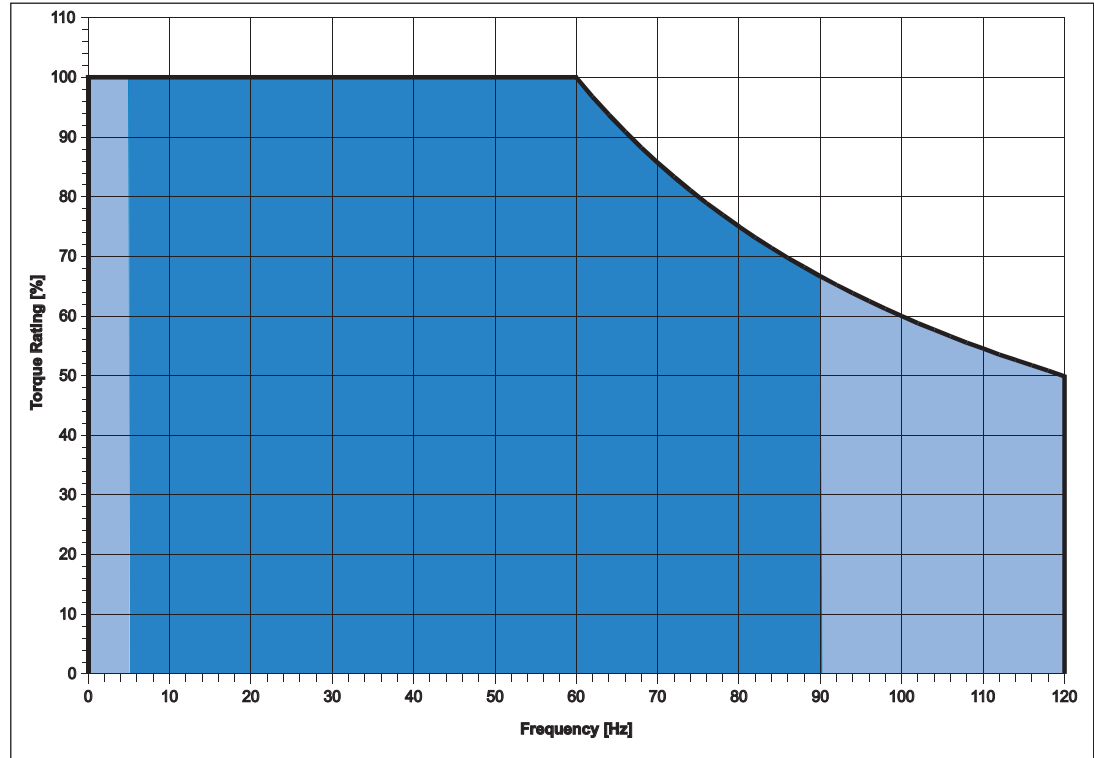
Below 5Hz, many AC inverter or Vector drives provide poor speed regulation. Consult the AC drive manufacturer for their recommendations. These performance limits are not due to the NORD motor but the control method of the AC drive.

Above 90Hz, a motor's overload capacity is limited. This is due to the limited voltage generated by the AC drive. When a motor is operated above 60Hz, the overload capacity is reduced as a square function of the increased frequency. Typically above 90Hz, the overload capacity is reduced to below 150%, which can cause a problem for some applications.



The Gray dashed line indicates that below 12Hz, the NORD the motor provides reduced torque capabilities as compared to their 60Hz rating. This is due to reduced cooling by the motor fan at lower speeds. If constant torque is required down to zero speed, NORD can provide optional separately powered motor cooling fans (TEBC-operation). See the next page for the performance characteristic.



## Totally Enclosed Blower Cooled Motors - TEBC



NORD motors can safely operate over a frequency range of 0Hz to 120Hz.

-  The dark shaded zone indicates the safe continuous operating zone.
-  The lighter shaded zones indicates cautionary performance.

Below 5Hz, many AC inverter or Vector drives provide poor speed regulation. Consult the AC drive manufacturer for their recommendations. These performance limits are not due to the NORD motor but the control method of the AC drive.

Above 90Hz, a motor's overload capacity is limited. This is due to the limited voltage generated by the AC drive. When a motor is operated above 60Hz, the overload capacity is reduced as a square function of the increased frequency. Typically above 90Hz, the overload capacity is reduced to below 150%, which can cause a problem for some applications.





## ATEX Explosion Protection For the EU

The term ATEX is derived from an old French directive titled “ATmospheres EXplosives” and is used to help protect people and equipment from potential explosive hazards. Explosive environments are usually the product of oxygen mixing with ignitable gases or airborne or settled ignitable dust. Gear drive systems may operate in areas with potentially explosive gas-air and dust-air mixtures; therefore NORD manufactures drive systems with special explosion protection to safely operate in these potentially dangerous environments.

### Integrated explosion protection indicates measures should be taken to:

- Prevent the development of potentially explosive environments
- Avoiding ignition of potentially explosive environments
- Limit the impact of an explosion to safe confines

In 1994 the European Parliament issued EU directive 94/9/EC commonly called the “equipment or product directive”, which regulates the legal requirements for equipment and protective systems intended for use in potentially explosive environments. Another directive was also created called the “worker protection directive” 1999/92/EC to protect workers and workplace property.

Some of the basic safety requirements met by this standard are listed below

### Standards for electrical equipment:

- DIN EN 60079-0 General Requirements
- DIN EN 60079-1 Flameproof enclosure “d”
- DIN EN 60079-7 Increased safety “e”
- DIN EN 60079-15 Non-sparking “n”
- DIN EN 50281 Combustible dust

### Standards for mechanical equipment:

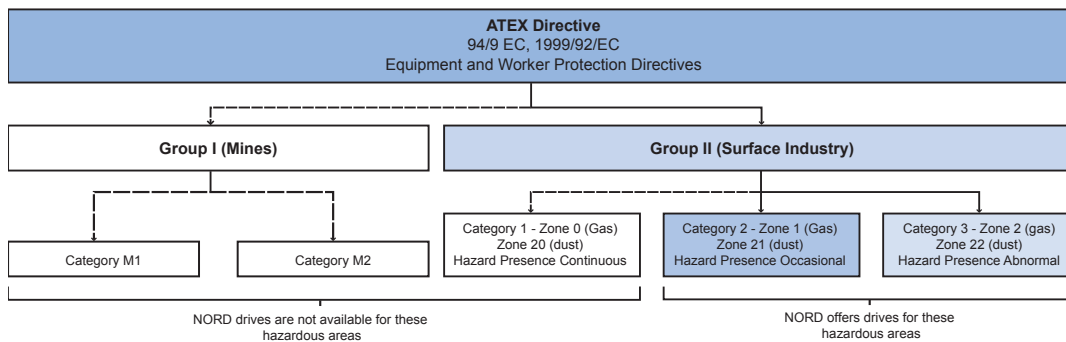
- EN 13463 Series of standards
- EN 13463-1 Basic method
- EN13463-5 Constructional safety

## Product Directive 94/9/EC

Defines the equipment and certification requirements of the equipment builder. Specifically equipment builders are required to label their products by categories according to ignition risks in a potentially explosive environment.

## Workers Protection Directive 1999/92/EC

Defines the duties of the end user. Specifically the end user has to specify hazardous areas within a plant or property called zones.





## Comparison between ATEX and North American Explosion Protection

ATEX directive 94/9/EC for explosion proof application is a mandatory requirement throughout the European Union and many other countries have adopted the directive as well. The ATEX directive is not required for North American installations, which use the Class/Division standard set by NEC/CEC.

The two systems are not easily compared since they were developed independently, but they both have been proven to be effective safety systems for use in hazardous areas. The Class/Division system is more straightforward by leaving little interpretation to the classification and which electrical materials can and cannot be used. The ATEX method allows for more application solutions because equipment is marked by its protection type and the user bears the responsibility to apply the proper equipment protection in each zone. ATEX also requires mechanical component protection like gear units, where the Class/Division system does not.

### ATEX Definitions

#### Group

The ATEX directive distinguishes between two equipments groups. Group I applies to equipment intended for use in mines and Group II applies to all other areas or the surface industry. NORD offers drives for Group II.

#### Category

The equipment category distinguishes the level of equipment protection needed and if the protection is for gas-air or dust-air mixtures. ATEX distinguishes three category levels; 1, 2 and 3 based upon the duration of exposure to a potentially explosive atmosphere with category 1 being the most dangerous.

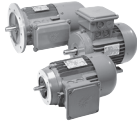
Following the category number is a letter G for gas or D for dust. If dust-air hazards are present, the dust must be classified as electrically conductive or electrically non-conductive. NORD offers drives for categories 2G, 2D, 3G and 3D for both conductive and non-conductive dust areas.

#### Zones

ATEX guideline 1999/92/EC requires plant operators and approved authorities to classify places at the workplace where explosive atmospheres may occur into hazardous or non-hazardous areas. Hazardous areas are further divided into zones. Atmospheres with gas-air mixtures are divided into zones 0, 1, and 2 with zone 0 being the most hazardous. Atmospheres with dust-air mixtures are divided into zones 20, 21, and 22 with zone 20 being the most hazardous.

The relationship between workplace Zones and equipment Categories is defined in the table below.

Zone (workplace)	Category (equipment)	Atmospheric Hazard	Definition	Exposure (hours/year)	Does NORD offer drives?
0	1G	Gas	Explosive atmosphere is present continuously or frequently due to malfunctions.	> 1000	No
20	1D	Dust			
1	2G	Gas	Explosive atmosphere is present occasionally or due to anticipated malfunctions.	10 ... 1000	Yes
21	2D	Dust			
2	3G	Gas	Explosive atmosphere is unlikely to occur in normal operation and if it does, it will be for a short time.	< 10	Yes
22	3D	Dust			



## Production Type

Following the equipment category in the explosion protection declaration is the lower case letters that indicate the exact protection type of the equipment. Depending on the zone and equipment category different solutions are possible.

Motors:	
Flameproof enclosure	d
Increased safety	e
Non-sparking	n
Gear Units:	
Constructional safety	c
Liquid immersion	k

### Flameproof Enclosure “EEx d”

Flameproof motors are designed with stronger walls and specific ignition gaps to prevent internal explosions from transmitting to the surrounding atmosphere. Flameproof motors are frequently used for inverter operations, brakes, encoders and when a very high degree of safety is required. Specifically flameproof motors:

- Have housings that can withstand internal explosion pressures
- Have ignition gaps designed to dissipate the pressure arising from an internal explosion
- Are designed so that generated hot gases are significantly cooled by the time they escape the motor body so they do not potentially ignite the potentially explosive environment

### Increased Safety “EEx e”

Increased safety motors are designed with higher quality insulation and larger clearances between rotating parts. This prevents sparking as well as high surface and internal temperatures even during motor malfunction. Increased safety motors are less expensive than flameproof motors, but use special windings that generally result in lower performance than flameproof motors.

### Non-Sparking “EEx n”

Non-sparking motors resemble increased safety “e” motors, but do not achieve the same protection level. They do however have the same power output of flameproof motors and can be used in conjunction with approved inverters.

### Constructional Safety “EEx c”

Construction safety for gear units takes into account measures including ignition protection from hot surface temperatures, sparks, moving parts and adiabatic compression even under expected gear unit failures. NORD provides gear units with constructional safety protection.

### Liquid Immersion “EEx k”

Liquid immersion protection type “k” ensures partial or complete submersion in a protective fluid or constant wetting of a potentially combustible surface.



## ATEX Temperature Specification

In a dust-air mixture surface temperature is a critical thermal factor, therefore the maximum surface temperature is declared based upon the dust type that is present. The goal is to keep surface temperatures below the smoldering and ignition temperature of a dust-air mixture. NORD displays a maximum surface temperature on the reducer nameplate, typically 125°C.

Gas-air mixtures are grouped into temperature classes. The following table shows the maximum surface temperature and temperature ignition ranges and the for each temperature class.

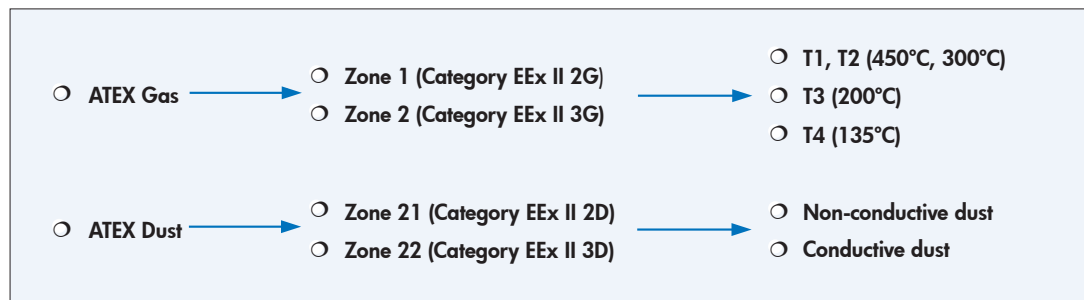
Temperature Class	Maximum Surface Temperature °C	Ignition Temperature °C
T1	450	> 450
T2	300	300 ... 450
T3	200	200 ... 300
T4	135	135 ... 200
T5*	100	100 ... 135
T6*	85	85 ... 100

\* Not satisfied with AC gear drives

## ATEX unit Selection

Since the selection of gear units for hazardous locations requiring ATEX certification can be somewhat confusing, NORD has simplified the process.

1. Select a gear unit based upon power, speed and service factor
2. Contact NORD to request the ATEX inquiry form.  
The form is also available at [www.nord.com](http://www.nord.com).
3. Fill in the ATEX inquiry form
  - Select the hazard, Gas or Dust
  - Select the zone
  - Select the temperature class (for gas) or select electrically conductive or non-conductive for dust hazards



4. Return the completed ATEX inquiry form
5. NORD engineers will review your selection to ensure it conforms to ATEX guidelines
6. If your selection is approved, Customer Service will quote the unit.  
If not, NORD engineers will make a unit selection recommendation.

## ATEX Documentation

ATEX applications require more documentation than gear drive equipment used in non-hazardous locations. Each ATEX certified NORD gear drive undergoes verification to ensure it will safely operate within the limits of the ATEX specification. NORD stores and supply this document to the customer upon request. In addition, ATEX specific operation & maintenance instructions are included with each equipment delivery in the language of the equipment builder and end user.





## Mounting Positions

The motor mounting position helps to determine the use of specific options as well as help specify the terminal box location as well as the conduit entry location. However, unless a drip cover is used for shaft-up or shaft-down applications, drip-proof motors must be mounted in the horizontal or sidewall position to meet its enclosure definition. If considering any mounting positions that are not shown as catalog-standard options, it is critical that the customer consult with NORD prior to ordering. When mounting motors, secure the motor tightly to the mounting base of your equipment or onto to a flat and rigid surface.

<p><b>Mounting Positions Footed Motors</b></p>	<p><b>Terminal Block &amp; Conduit Entry For Footed Motors</b></p> <p><b>Hand Lever Positions For Footed Motors</b></p>
<p><b>Mounting Positions Flanged Motors</b></p>	<p><b>Terminal Block &amp; Conduit Entry For Flanged Motors</b></p> <p><b>Hand Lever Positions For Flanged Motors</b></p>



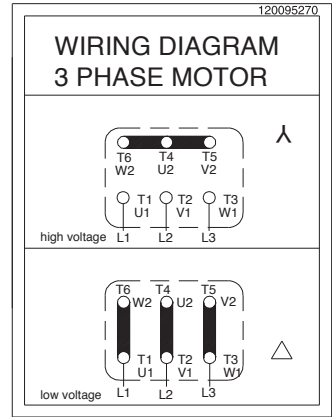
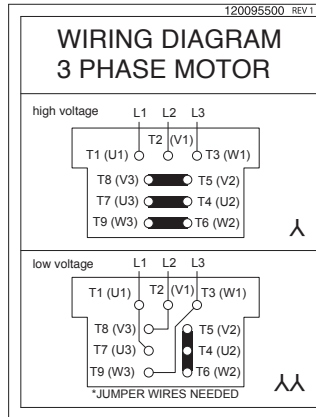
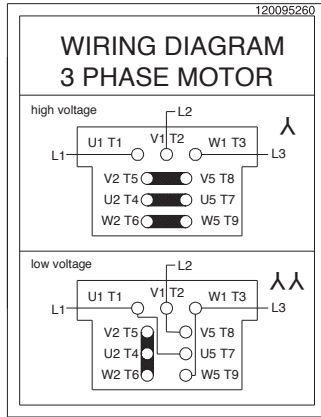
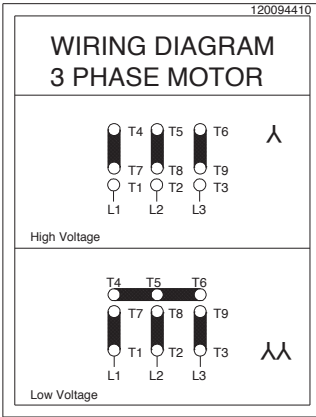
## Motor Connection Diagrams

NORD Frames 63-225  
230 / 460V, 60Hz, 3Ø | 200 / 400V, 50Hz, 3Ø

NORD Mfg by Siemens - Frames 200+  
230 / 460V, 60Hz, 3Ø | 200 / 400V, 50Hz, 3Ø  
190 / 380V, 60Hz, 3Ø

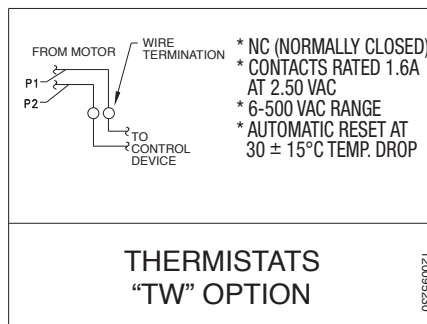
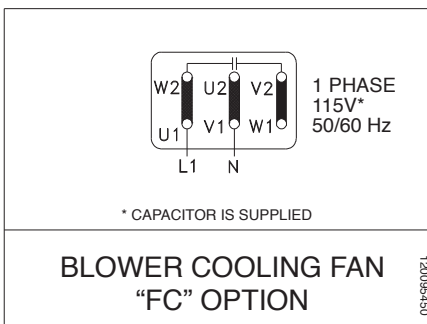
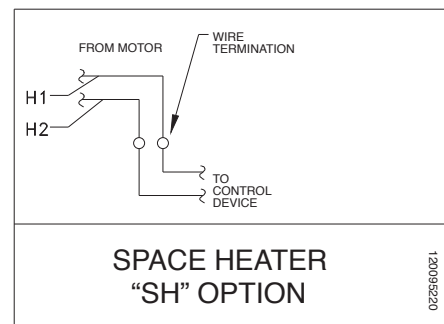
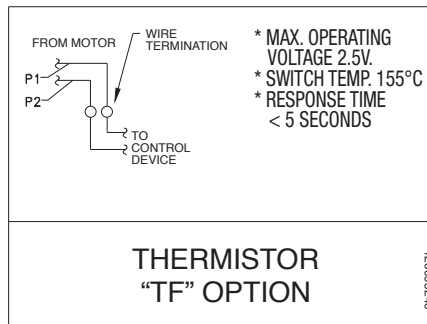
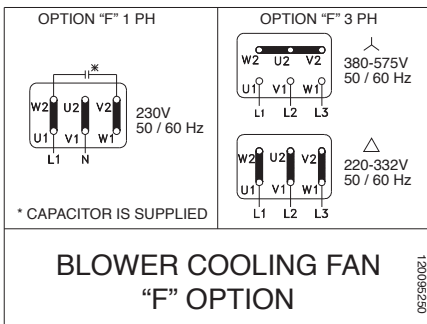
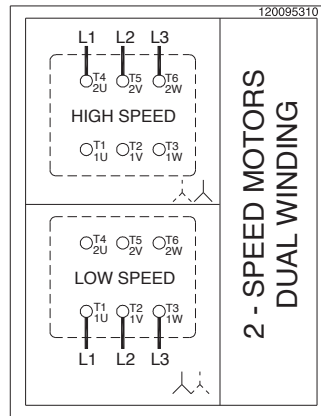
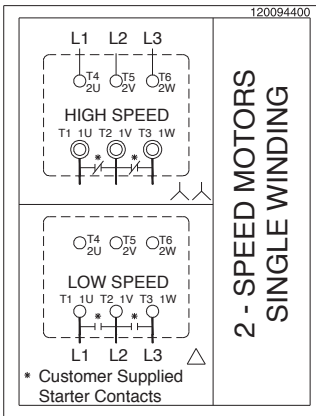
NORD Mfg by Siemens - Frames 200+  
230 / 460V, 60Hz, 3Ø | 200 / 400V, 50Hz, 3Ø  
190 / 380V, 60Hz, 3Ø

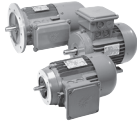
NORD Frames 63-225  
460 / 800V, 60Hz, 3Ø | 230 / 400V, 50Hz, 3Ø  
208 / 360V, 60Hz, 3Ø | 400 / 690V, 50Hz, 3Ø  
332 / 575V, 60Hz, 3Ø



NORD 2 - SPEED MOTORS  
SINGLE WINDING (4-2 & 8-4 POLE)

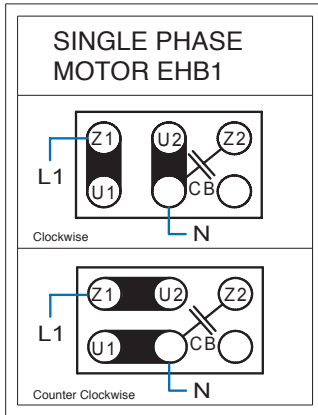
NORD 2 - SPEED MOTORS  
DUAL WINDING (8-2 POLE)



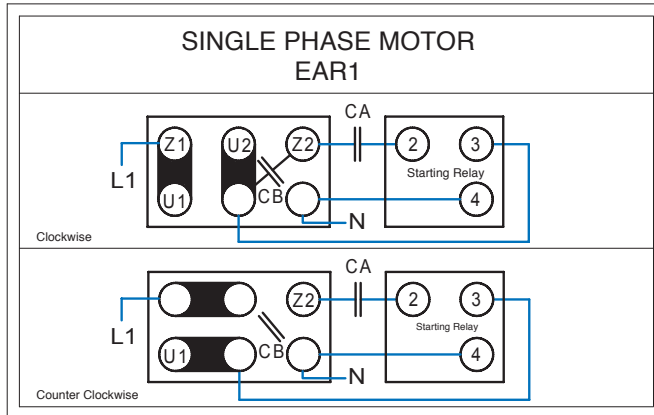


**Single Phase Motor Connection Diagrams**

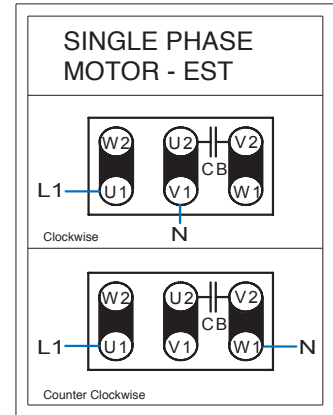
Motor Frame Sizes 63-90  
230V, 50Hz, 1Ø



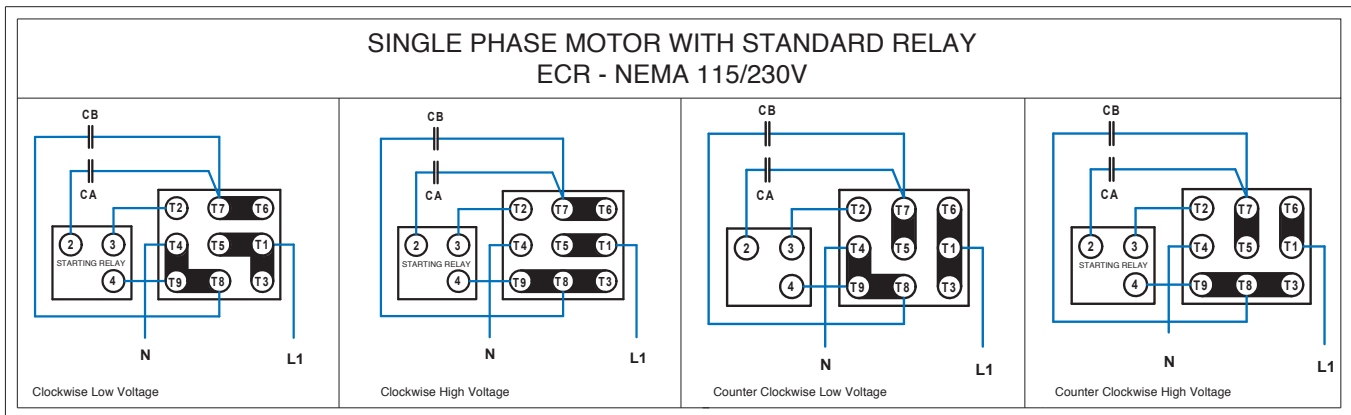
Motor Frame Sizes 63-90  
230V, 50Hz, 1Ø



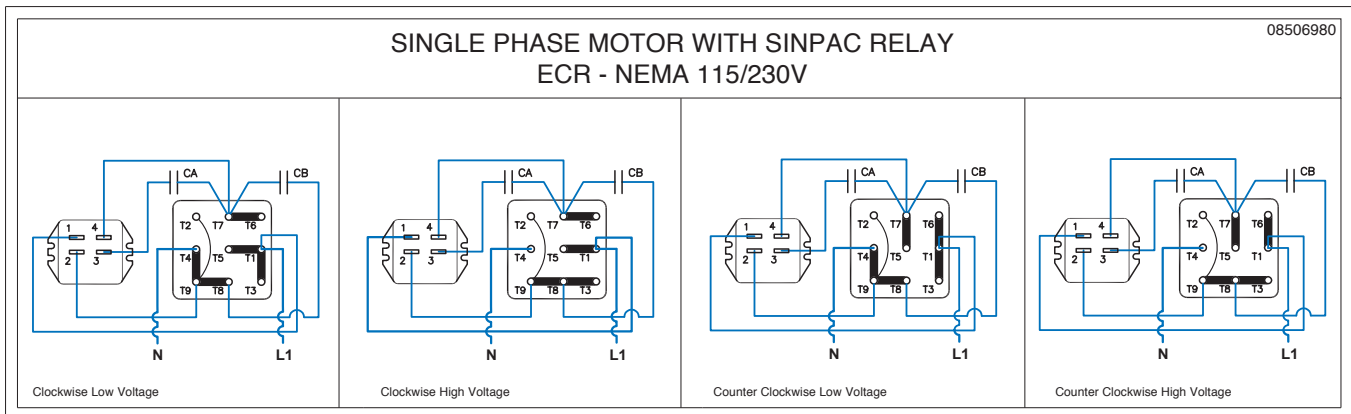
Motor Frame Sizes 63-90  
230V, 50Hz, 1Ø



Motor Frame Sizes 63-90  
115 / 230, 60Hz, 1Ø



Motor Frame Sizes 63-90  
115 / 230, 60Hz, 1Ø



# Notes



A large grid of blue lines on a white background, intended for taking notes.

Engineering





# Options

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## Motor Options & Construction

NORD motors are stocked in one of two ways. The first method is to stock a complete motor that is ready to be assembled to a gear reducer or shipped as a stand alone motor. The second method, the motor is assembled from component parts. The **M Modify** next to a motor option designates that the option can be added to a complete motor by simple modification. The **B Build** next to a motor option indicates that the motor will need to be built from component parts in order to incorporate the motor option.

### Motor Options

Abbreviation	Description	M Modify	B Build	Page
AG	Absolute Encoder		✓	129
AICM	Additional Insulation		✓	119
ECR	Single Phase Motors, 60Hz		✓	117
EKK	Small Terminal Box	✓		120
EP	Epoxy Dipped Windings		✓	119
F	Blower Cooling Fan	✓		122
FC	Blower Cooling Fan	✓		122
HR	Hand Wheel		✓	120
IG...P	Incremental Encoder		✓	128
ISO H	Class H Insulation		✓	116
KB	Condensation Drain Holes - Plugged		✓	118
KBO	Condensation Drain Holes - Open		✓	118
KKV	Terminal Box Sealed with Resin		✓	119
MG	Magnetic Encoder		✓	127
MS	Quick Power Plug Connector	✓		124
OL	Totally Enclosed Non-Ventilated	✓		120
OL/H	Totally Enclosed Non Ventilated without Fan Cover		✓	120
RD	Canopy Drip Cover	✓		119
RDD	Double Fan Cover	✓		119
RLS	Motor Backstop		✓	121
RS	Round Motor Power Connectors		✓	125
SH	Space Heater		✓	116
TF	Thermistor		✓	116
TW	Thermostat		✓	115
WE	2nd Shaft Extension on Fan Side		✓	120
WU	High Resistance Rotor		✓	115
Z	High Inertia Cast Iron Fan		✓	121
-	IP65 Enclosure Protection	✓		119
-	IP66 Enclosure Protection	✓		119
-	Paint Coatings	✓		118
-	Pre-Fabricated Motor Power Cable	✓		125



## Motor Overload Protection

Selecting appropriate motor protection is a key factor in reliable motor operation. There are two common classes of motor protection; current based and temperature based. Electrical installation codes require at least two types of protection in the motor circuit, both of which are normally current based. First is short-circuit protection, normally accomplished by fuses or circuit breakers. The Second is “motor overload protection” and is normally a device called a “motor overload” or a “heater.” Current based protection is effective in some conditions. NORD can provide two different types of motor temperature based protection, a PTC thermistor (TF) or a bi-metallic thermostat (TW). Temperature based protection is more effective motor protection in many situations, this is explained in the table below.

↑ = Good protection ↔ = Limited protection ↓ = No protection	Fuses	Motor Overloads	PTC Thermistor (TF)	Thermostat (TW & 2TW)
Over current up to 200%	↓	↑	↑	↑
High inertia starting	↓	↔	↑	↔
Frequent motor starts	↓	↔	↑	↑
Stalling	↔	↔	↔	↔
Single phasing	↓	↔	↑	↑
Supply voltage deviations	↓	↑	↑	↑
Supply frequency deviations	↓	↑	↑	↑
Inadequate motor cooling	↓	↓	↑	↑
Bearing Damage	↓	↓	↑	↑

## Thermostats (TW & 2TW)

**B** Build

Motor thermostats or bi-metallic switches can be wired directly into the control circuit without a separate control module or tripping device. Thermostats operate on a relatively high control voltage so they are much less sensitive to voltage interference from the main power supply. One may often run thermostat leads and motor power leads next to each other when using the appropriate shielded cable. The installer is responsible for wiring the thermostats onto the motor control circuit. The leads may be labeled in a variety of ways as indicated.

<b>Thermostat Standard connection</b>	Series connected, one per phase
<b>Contact</b>	NC (Normally Closed)/ Auto Re-setting
<b>Response Temperature (Option TW)</b>	311 °F (155 °C) Shut-Off Device
<b>Response Temperature (Option 2TW)</b>	311 °F (155 °C) Shut-Off Device + 266°F (130 °C) Alarm Device
<b>Nominal Current</b>	1.6 Amp at 250 V
<b>Resistance</b>	< 50 mΩ
<b>Switch Rebound</b>	< 1ms
<b>Insulation Rating</b>	2000 VAC
<b>Cycles</b>	10,000 max
<b>Lead Identification (inside terminal box)</b>	P1 and P2 or TB1 and TB2 / 2TB1 and 2TB2

<b>WARNING</b>		
⚠	<ul style="list-style-type: none"> <li>■ Thermostats and Thermistors will automatically reset.</li> <li>■ All wiring must be completed by qualified personal and adhere to all local installation codes.</li> </ul>	⚠



## Thermistors (TF)

**B** Build

With a separate control module or tripping device (ex. Kirwan INT69) thermistors are used to sense overload and temperature conditions by converting the critical operating temperature limit into internal resistance changes. However many variable frequency drives are available to accept thermistors without requiring the separate control module. Due to their small size, heat sink construction, and high change in resistance value, minor resistance variations caused by relatively long lead runs may be tolerated. This feature also allows for one controller to be used for several temperature sensing locations. Many variable frequency drives come with on-board thermistor inputs. NORD does not supply the thermistor control module.

<b>Thermistor Standard Connection</b>	Three devices, series connected, one per phase
<b>Type</b>	Positive temperature coefficient (PTC)
<b>Transition Temperature</b>	150°C±5 °C
<b>Resistance</b>	20... 500Ω (below transition) or > 4 kΩ (above transition)
<b>Reed Current</b>	< 1mA
<b>Max Voltage</b>	30V
<b>Lead Identification(inside terminal box)</b>	P1 and P2 or TP1 and TP2

⚠

### WARNING

⚠

- Thermostats and Thermistors will automatically reset.
- All wiring must be completed by qualified personal and adhere to all local installation codes.

## Space Heater (SH)

**B** Build

Motors subject to extreme temperature fluctuations, severe climatic conditions or repeated heating or cooling cycles can be damaged by the formation of condensation. NORD can provide an anti-condensation space heater inside the motor to heat up the windings when the motor is not operating. This will prevent moisture from forming inside the motor. Space heaters are recommended when motors are installed in very damp or wet locations or where condensation is likely. The space heaters must not be switched on while the motor is running.

Space Heater Voltage Must Be Specified	
	<input type="radio"/> 115V – 50/60Hz
	<input type="radio"/> 230V – 50/60Hz
	<input type="radio"/> 460V – 50/60Hz
	<input type="radio"/> other voltages available on request

## Class H Insulation (ISO H)

**B** Build

NORD motors can be manufactured with a class H insulation system. Standard NORD motors include double coated magnetic wire windings. When these windings are paired with a class H insulation it provides extra temperature capacity for the motor and will increase the motor's life. Class H insulation rated motors are also an advantage in some severe applications such as:

- Increased ambient temperature installations above 40°C (104°F)
- Increased elevation installations – above 3300 ft (1000 m)
- Applications with a high number of starts per hour.
- A lower operating frequency such as when used with an AC vector drive
- For additional information on insulation class see page 96.

## High Resistance Rotor (WU)

**B** Build

Using Silumin rotor material, NORD offers a high resistance rotor to soften the motors operation and allow higher overload torques. Generally used in conveyor applications without an AC Vector Drive.

### IMPORTANT NOTE

Not available with energy efficient (EE/IE2) or premium efficient (PE/IE3) motors.





## Single Phase Motors, 60Hz (ECR)

**B** Build

The ECR series single phase motor is intended for demanding operation on a 60 Hz power supply. The permissible voltage is either 115V +/-10% or 230V +/-10%. The ECR motors contain both a run-capacitor as well as an additional start-capacitor which is switched off after start-up. The ECR motor is suitable for applications which demand higher starting torque and generally they have a 1.35 SF if the operated within the allowable voltage range (page 186).

## Single Phase Motors, 50Hz (EHB, EAR, EST)

**B** Build

### EHB1 Motors

The EHB1 series motor is a single capacitor motor intended for operation on a 50 Hz power supply. The permissible voltage range is 220-240V. The EHB1 motor is most suited for simple demands and applications where there is no appreciable difference in the start-up and operational load. (page 203).

### EAR1 Motors

The EAR1 series motor is single phase motor intended for more demanding operation on a 50 Hz power supply. The permissible voltage range is 220-240V. The EAR1 motors contain both a run-capacitor as well as an additional start-capacitor which is switched off after start-up and they are suitable for applications which demand higher starting torque (page "230V - 50Hz Single Phase" on page 204).

### EST Motors

The EST series motor is a more cost-effective 50 Hz single phase motor variant that is constructed from a common three-phase motor winding which is operated with a single operating capacitor connected in a Steinmetz circuit. The permissible voltage range is 220-240V. The EST motor is most suited for simple demands and applications where there is no appreciable difference in the start-up and operational load (Page 205).



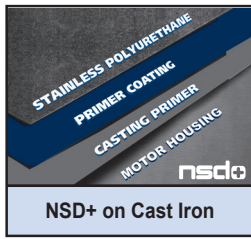
## Paint Coatings, Surface Conversion, and Motor Surfaces M Modify

NORD's standard paint coating is a two component, aliphatic polyurethane finish containing 316 stainless steel material. This gray stainless steel paint has excellent appearance and outstanding physical properties. It is suitable for both indoor and outdoor applications..



### Paint free design Motors (63 frame - 200 frame motors)

Our 63 to 200 frame motor housings are made from corrosion resistant die-cast aluminum alloy and feature a smooth body design. The smooth aluminum alloy surfaces have natural corrosion protection; therefore paint coatings are not required. Paint coatings may optionally be applied.



### Cast Iron Motors (225 and larger frame motors)

The 225 frame and larger motor housings are made from class 35 gray cast iron and are painted with NORD's stainless steel paint. Additionally a variety of coating options are available including our severe duty coatings.



Improved corrosion protection for wet and outdoor environments starts by applying a primer undercoat over the primed cast-iron or base aluminum materials. The finish is then completed with our exceptional strength stainless steel polyurethane top coat.



For more demanding environments our multi-layer corrosion protection starts with a primer undercoat over the base material and then adding our stainless steel polyurethane coating and a high-gloss topcoat.



### Condensation Drain Holes B Build

NORD motors can be equipped with condensation drain holes. These drain holes are placed in the motor endbells at the lowest possible point. The drain holes are closed at the factory with plastic snap in plugs. They allow for condensation accumulation in the motor to drain after the closing plugs are removed.

The motor drain holes can be provided by NORD either open (KBO) or sealed with a closing plug (KB).



### IMPORTANT NOTE



The motor must be installed in the mounting orientation specified on the nameplate or the drain holes will not function properly and may result with the motor filling with water.

### Condensation Drain Holes, Plugged (KB) B Build

KB drain holes are plugged for shipment. In order for the holes to effectively drain moisture, the plugs must be removed before using the motor.

### Condensation Drain Holes, Open (KBO) B Build

KBO drain holes are shipped open (not plugged).



## IP65 Enclosure Protection

**M** Modify

NORD motors can be provided with an IP65 enclosure protection. IP65 protection is suitable for wet, low-pressure wash down and extremely dusty environments.

IP	1 <sup>st</sup> digit - Foreign body protection	IP	2 <sup>nd</sup> digit - Water protection
6	Dust tight	5	Protection against water jets

## IP66 Enclosure Protection

**M** Modify

NORD motors can be provided with an IP66 enclosure protection. IP66 protection is suitable for wet, high-pressure wash down and extremely dusty environments, and includes all requirements included in IP65 enclosure protection.

IP	1 <sup>st</sup> digit - Foreign body protection	IP	2 <sup>nd</sup> digit - Water protection
6	Dust tight	6	Protection against high pressure water jets

## Terminal Box Sealed with Resin (KKV)

**B** Build

Terminal boxes may be sealed with a flexible, electrically safe resin to ensure that contaminants, water, and moisture cannot pass through the terminal box into the stator body. This option is helpful in extremely dusty, wet and humid environments. Another environment where this option is helpful is in installations that have frequent large temperature swings where condensation may form.

For extreme wet environments it is possible to fill the terminal box full of resin. In these instances the motor must be supplied with a quick disconnect plug pre-wired for the proper voltage.

## Additional Insulation (AICM)

**B** Build

NORD can provide additional insulation inside the motor to provide additional electrical protection in extremely wet or corrosive environments. An electrically safe insulating material is applied internally in order to coat the stator windings and the rotor body.

## Epoxy Dipped Windings (EP)

**B** Build

In extremely wet environments, the motor windings are dipped in epoxy for improved moisture protection. The motor can also be treated with a variety of protective coatings including NSD+ or NSDx3 for an even higher degree of protection.

## Canopy Drip Cover (RD)

**M** Modify

For wet or dirty installations where the fan end of the motor is mounted up, NORD offers a canopy drip cover to block this falling water or debris, thus forcing water or debris to repel from the motor's fan guard, .

## Double Fan Cover (RDD)

**M** Modify

For wet or dirty installations where the fan end of the motor is mounted up, the NORD Double Fan Cover provides protection against falling or wind blown water, snow, dirt or debris from entering the back of the motor.



## Totally Enclosed Non-Ventilated (OL) M Modify

NORD can provide totally enclosed non-ventilated (TENV) motor enclosure. TENV motors provide benefits in certain operating environments; such as extremely dusty or dirty applications, where cooling fans may have material accumulation, which can be detrimental to the motor and the application. The OL series of motors are the standard fan cooled motor construction including the fan cover, but provided without the fan. TENV motors can also be used to reduce cooling fan noise on a standard motor.

A TENV motor requires either a larger motor frame size or a reduced power rating must be applied to the standard frame. A standard motor frame size can be allowed to operate as a TENV motor at full rated power provided that the duty cycle is intermittent at 50% ED or less.

## Totally Enclosed Non-Ventilated, without Fan Cover (OL/H) B Build

The OL/H series of TENV motors are more compact in space than the OL series. They do not include the rotor shaft extension through the back bearing end bell or the fan cover.

## 2nd Shaft Extension on Fan Side (WE) B Build

NORD can provide a second shaft extension on the fan side of the motor that protrudes through the fan cover. This extension can be used as a power take-off or to mount customer supplied devices such as encoders and tachometers.

The shaft extension can be provided on motors with and without brakes. The shaft extension can not be used on motors with blower fans (F) or (FC). For dimensions see pages 208 - 254.

## Hand Wheel (HR) B Build

Motors can be supplied with a hand wheel that is located on the second shaft extension. The hand wheel can be used for manual operation during power outages, or for machine positioning setup. This option is offered on metric WE shafts only.

WARNING

The customer is required to provide appropriate safety guarding for the rotating hand wheel.

## Small Terminal Box (EKK) M Modify

The motor terminal box can be provided as a smaller, one-piece terminal box design. This option is valid for standard motors 0.16 - 10 hp (frame size 63-132).

Motor Size	LL (Square)	AB	AA (metric)	AA (NPT)
63	2.95	3.94	M16 x 1.5	1/2" NPT
71	2.95	4.29	M16 x 1.5	1/2" NPT
80	2.95	4.88	M20 x 1.5	1/2" NPT
90	3.62	5.08	M20 x 1.5	1/2" NPT
100	3.62	5.51	M20 x 1.5	1/2" NPT
112	3.62	5.91	M20 x 1.5	1/2" NPT
132	4.09	6.85	M25 x 1.5	3/4" NPT

WARNING

When supplied with a brakemotor, the brake rectifier must be located outside of the terminal box.





## High Inertia Cast Iron Fan (Z)

**B** Build

An optional cast iron motor cooling fan is available. This fan is used as a mechanical soft start and/or soft stop. This fan adds inertia to the motor. The high inertia fan can also be used for a flywheel effect to store mechanical energy. This can be helpful in smoothing rapid load changes. The cast iron fan replaces the standard plastic motor fan. The motor length is the same as a brakemotor.



Motor Frame	Fan Inertia $J_z$ [lb-ft <sup>2</sup> ]
63	0.0221
71	0.0475
80	0.114
90	0.238
100	0.268
112	0.565
132	0.950

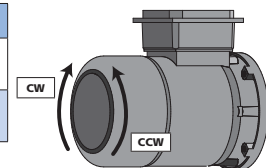
## Motor Backstop (RLS)

**B** Build

NORD can provide backstops on many motor frames. A backstop will prevent the motor from rotating in one direction. A common use is to prevent a motor from allowing a load to move backwards when power is removed. A motor brake is an alternative that may be used for this same purpose. A backstop adds additional length to the motor. For the motor length extension, see the table below.

Motor Size	Backstop Torque [lb-in]	Minimum Speed [rpm]
80	1150	860
90	1150	860
100	1150	860
112	3270	750
132	3270	750
160	7880	670
180MX/LX	7880	670
180	9120	630
200	9120	630

The Allowable Rotation Direction Must Be Specified	
	<input type="radio"/> Clockwise - Looking at back of motor
	<input type="radio"/> Counter Clockwise - Looking at back of motor



For all motor dimensions please see pages 208 - 254.

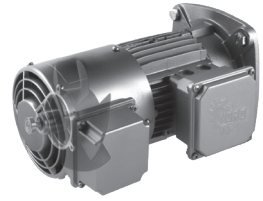
	<h3>WARNING</h3>	
<p>The backstop may become worn or damaged if speeds during normal motor operation do not exceed the backstop lift-off speed. Avoid using the backstop when the motor has greater than 4-poles or if the motor is operated on a frequency drive.</p>		



## Blower Cooling Fan (F)

**B** Build

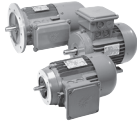
NORD offers continuous running motor mounted cooling fans that provide motor cooling at low motor speeds. When a motor is operated on an AC vector drive at low frequency, standard rotor fans do not provide adequate airflow for cooling. NORD's separate powered motor cooling fans provide that necessary airflow. These separately powered fans replace the standard motor fan and its cover.



Options

Motor Type Frame Size	1 Phase, 60 Hz				3 Phase, 60 Hz					
	$\perp \Delta$ Steinmetz Circuit	$\perp \Delta$ Steinmetz Circuit	P	$n_n$	$\Delta$	$\Delta$	Y	Y	P	$n_n$
	[V]	[mA]	[W]	[rpm]	[V]	[mA]	[V]	[mA]	[W]	[rpm]
63	230 - 277	109 - 118	25 - 32	3150 - 3322	220 - 332	68 - 104	380 - 575	40 - 60	20 - 28	3057 - 3415
71	230 - 277	112 - 122	25 - 33	3047 - 3254	220 - 332	69 - 103	380 - 575	39 - 60	20 - 29	3083 - 3410
80	230 - 277	128 - 135	29 - 37	2278 - 2937	220 - 332	79 - 101	380 - 575	46 - 58	25 - 34	2855 - 3312
90	230 - 277	232 - 247	50 - 65	3360 - 3462	220 - 332	174 - 331	380 - 575	98 - 191	46 - 77	3365 - 3498
100	230 - 277	278 - 298	65 - 75	3088 - 3371	220 - 332	198 - 313	380 - 575	112 - 180	59 - 87	3246 - 3450
112	230 - 277	341 - 374	82 - 94	2394 - 3176	220 - 332	232 - 308	380 - 575	131 - 178	76 - 103	3083 - 3401
132	230 - 277	228 - 262	49 - 67	1717 - 1737	220 - 332	174 - 332	380 - 575	99 - 192	33 - 67	1693 - 1748
160	230 - 277	388 - 429	85 - 112	1688 - 1720	220 - 332	300 - 543	380 - 575	172 - 314	64 - 104	1653 - 1733
180	230 - 277	388 - 429	85 - 112	1688 - 1720	220 - 332	300 - 543	380 - 575	172 - 314	64 - 104	1653 - 1733
200	230 - 277	388 - 429	85 - 112	1688 - 1720	220 - 332	300 - 543	380 - 575	172 - 314	64 - 104	1653 - 1733
225	---	---	---	---	220 - 400	703 - 760	380 - 575	346 - 430	226 - 285	1314 - 1720
250	---	---	---	---	220 - 400	703 - 760	380 - 575	346 - 430	226 - 285	1314 - 1720

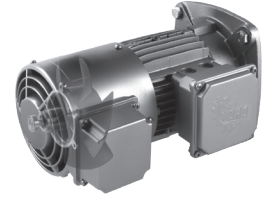
Motor Type Size	1 Phase, 50 Hz				3 Phase, 50 Hz					
	$\perp \Delta$ Steinmetz Circuit	$\perp \Delta$ Steinmetz Circuit	P	$n_n$	$\Delta$	$\Delta$	Y	Y	P	$n_n$
	[V]	[mA]	[W]	[rpm]	[V]	[mA]	[V]	[mA]	[W]	[rpm]
63	230 - 277	88 - 106	19 - 27	2830 - 2875	200 - 303	60 - 116	346 - 525	35 - 66	16 - 28	2630 - 2900
71	230 - 277	90 - 104	20 - 27	2768 - 2866	200 - 303	62 - 112	346 - 525	36 - 64	15 - 31	2680 - 2875
80	230 - 277	99 - 107	22 - 29	2625 - 2780	200 - 303	66 - 109	346 - 525	38 - 62	18 - 31	2582 - 2818
90	230 - 277	215 - 293	41 - 65	2885 - 2923	200 - 303	180 - 379	346 - 525	104 - 219	36 - 91	2860 - 2931
100	230 - 277	223 - 282	46 - 66	2820 - 2888	200 - 303	182 - 372	346 - 525	105 - 215	43 - 91	2800 - 2906
112	230 - 277	252 - 284	54 - 71	2705 - 2845	200 - 303	191 - 353	346 - 525	110 - 204	50 - 97	2730 - 2880
132	230 - 277	220 - 281	41 - 61	1450 - 1460	200 - 303	189 - 376	346 - 525	109 - 209	31 - 81	1435 - 1466
160	230 - 277	351 - 446	64 - 93	1438 - 1460	200 - 303	318 - 622	346 - 525	184 - 346	51 - 118	1415 - 1456
180	230 - 277	351 - 446	64 - 93	1438 - 1460	200 - 303	318 - 622	346 - 525	184 - 346	51 - 118	1415 - 1456
200	230 - 277	351 - 446	64 - 93	1438 - 1460	200 - 303	318 - 622	346 - 525	184 - 346	51 - 118	1415 - 1456
225	---	---	---	---	200 - 400	490 - 1100	346 - 525	290 - 350	142 - 285	1330 - 1445
250	---	---	---	---	200 - 400	490 - 1100	346 - 525	290 - 350	142 - 285	1330 - 1445



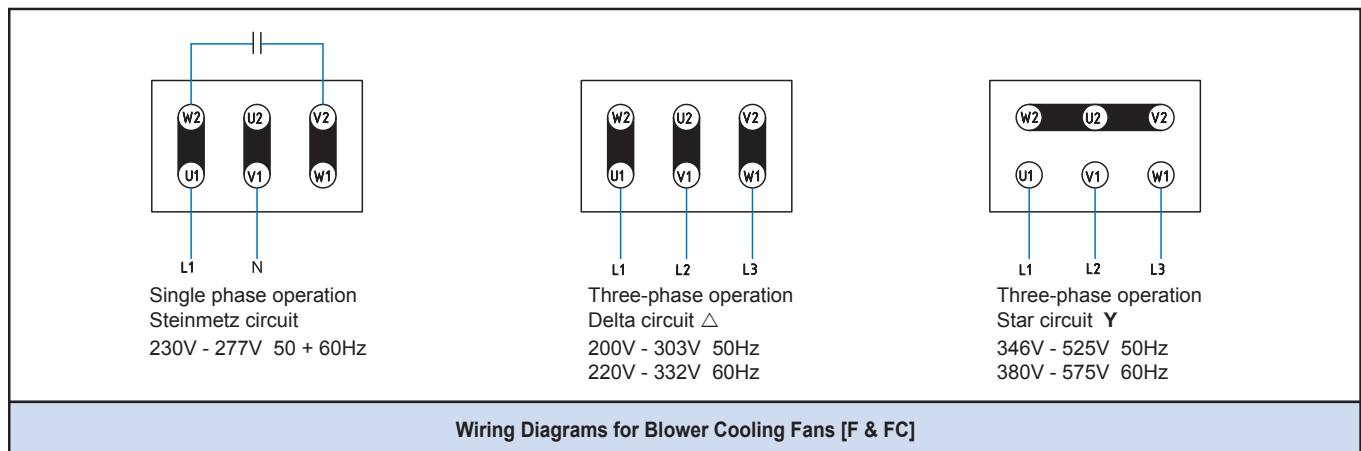
## Blower Cooling Fan (FC)

**M** Modify

NORD offers continuous running motor mounted cooling fans that provide motor cooling at low motor speeds. When a motor is operated on an AC vector drive at low frequency, standard rotor fans do not provide adequate airflow for cooling. NORD's separate powered motor cooling fans provide that necessary airflow. These separately powered fans replace the standard motor fan and its cover.



Motor Type Frame Size	1ph 115V 60 Hz			1ph 115V 50 Hz		
	Voltage	Current	Power	Voltage	Current	Power
	[V]	[A]	[W]	[V]	[A]	[W]
<b>Single Phase Connection - Δ (Delta)</b>						
63	100 – 135	0.23	42	100 – 135	0.3	42
71	100 – 135	0.23	47	100 – 135	0.3	44
80	100 – 135	0.27	57	100 – 135	0.3	43
90	100 – 135	0.46	102	100 – 135	0.57	78
100	100 – 135	0.53	105	100 – 135	0.54	78
112	100 – 135	0.6	115	100 – 135	0.55	80



Options





## Quick Power Plug Connector (MS)

**M** Modify

The quick power plug connector (MS) is a simple and fast way to connect and disconnect a motor or brake motor. The MS connector is available on NORD three-phase motors from frame size 63 to 132. The motor connections are made by a modular power plug manufacturer by Harting. After the first installation, the motor can be quickly changed by simply plugging and unplugging the electrical connections. This will ensure the new motor is properly wired. This is a significant advantage to equipment builders who fabricate machinery on site and then ship to another location. The motor with the MS connector can simply be plugged in during final installation.

NORD supplies the male connector half mounted on the motor conduit box. The customer must supply the female connector half mounted on the power wiring. NORD supplies a protective plastic cover on the motor male connector half to protect from dirt and damage prior to installation.

Quick Power Plug Connectors (MS)		
		
<b>Manufacturer</b>	Harting	
<b>Connector</b>	HAN 10 ES / HAN 10 ESS	HAN 10 C-Modular
	Cage Clamp Connectors	Cage Clamp Connectors
<b>Number of Pins</b>	10-Male	9-Male
<b>Voltage</b>	600VAC per UL/CSA	690VAC per UL/CSA
<b>Current</b>	16A - Continuous	22A - Continuous


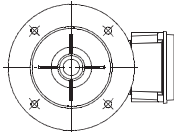
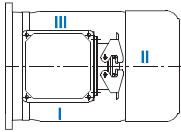
### Advantages:

- Simple motor wiring
- Accurate wiring of motor at final job site
- Accurate wiring of replacement motor
- Ideal for portable equipment
- Faster motor changes reduce down time
- Reduces required personnel for motor replacement

### Quick Power Plug Connectors:

Includes conduit box, mounting hardware & either of the two Harting motor plug options (MS). The power plug position must be specified when ordering.

P/N	HAN 10 Plug	Motor size	P/N	HAN 10 Plug	Motor size
11035350	10-Pin	63 + 71	16035350	10-Pin	112
13035350	10-Pin	80 + 90 + 100	16335350	9-Pin	132

Power Plug Position Must Be Specified When ordering MS or kitted option		
	<input type="radio"/> I <input type="radio"/> II <input type="radio"/> III	 

**IMPORTANT NOTE**

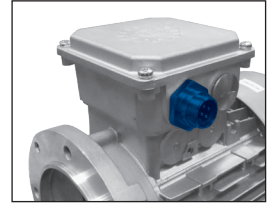
Standard configuration is : Terminal box - Position 1; MS Connector - Position II as shown above.





## Round Motor Power Connector (RS) M Modify

NORD can provide a variety of motor power plug connectors that allow for a safe and quick connection/disconnection of the motor's main power supply. The following M23 plug options are stocked for NORD motors up to 5 HP and can be used with standard NORD AC motor and brake-motors (powered from the motor's terminal block). The M23 plug provides three pins for line power and one pin for ground at the motor connection.



Technical Data		
<b>NORD P/N</b>	119555270	119555690
<b>Manufacturer</b>	Turck	Turck
<b>Type</b>	RSF46-0.3M/M20	RSF44-0.3M/M25
<b>Motor Interface</b>	M20 x 1.5 male thread	M25 x 1.5 male thread
<b>Customer Interface</b>	7/8-16 UN male thread	7/8-16 UN male thread
<b>Voltage Rating</b>	600V	600V
<b>Current Rating</b>	10.0 A	15.0 A
<b>Pin Out</b>	4-Pin Male	4-Pin Male

RS Connector Compatibility		
Motor Frame	Terminal Box Thread	Connector Part Number
<b>63-71</b>	M20	119555270
<b>80-90</b>	M25	119555690
<b>100-112</b>	M32	119555690 + 18522326*

\* M32 / M25 Adapter

Motor power plug connectors can reduce costs associated with drive installation and commissioning time, help decreased labor costs compared to traditional conduit, and insure fast and accurate installation and change-out or replacement. The mating plug and chord set is typically supplied by the machine builder. Different motor power plug options can easily be configured by NORD to accommodate accessories including brakes (requiring separate line power), thermal overload protection, space heaters, etc. It is possible to have more than one power plug adapter connected and wired to the motor's terminal box.

Connector Wiring			
Motor Terminal Marking	Wire Color	Number	
L1 (line power)	Black	1	
L2 (line power)	Red	3	
L3 (line power)	White	2	
Ground	Green	4	

## Pre-Fabricated Motor Power Cable M Modify

NORD can provide Turck pre-fabricated motor power cables to mate with the M23 motor power plugs.

Pins	Wire Size	Current Rating	Voltage Rating	Length	Nord P/N	Turck P/N
4	14 AWG	15 A	600 V	2 m	119555780	RKM 44-2M/S4000
				5 m	119555790	RKM 44-5M/S4000
				10 m	119555800	RKM 44-10M/S4000
				Custom	Order from Turck	RKM 44-*M/S4000

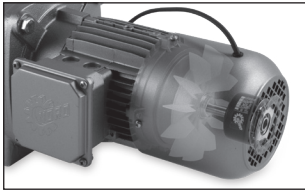


Temperature rating: -40 to +105 ° C (-40 to +221 ° F)

Protection rating: Meets IEC IP67 and NEMA 1, 3, 4, and 6P

\* indicates cable length in meters





## Encoder Overview

In many of today's drive applications encoders are needed when it necessary to monitor travel distance, position, or speed. Encoders use integrated electronics to convert sensor detected signals into a digital output format that is easily interfaced with programmable logic controllers (PLC's) and computers.

NORD offers a variety of encoder solutions that will satisfy almost any application. NORD will also work closely with our customers to satisfy many specific encoder requirements or meet specifications for a variety of protocols.

## Incremental Encoders

Incremental encoders can be used to monitor position or speed. Position is determined by counting pulses from a zero mark or home position. Speed or velocity data is generated by looking at the time interval between pulses or the number of pulses within a given time period

With incremental encoders it is necessary to reinitialize the system in order to return the system to the home position in the event of a power loss.

NORD offers two types of incremental encoders, magnetic and optical encoders.

**Magnetic Encoders** use a magnetized wheel spinning in relationship to a fixed magneto-resistive sensor. The wheel causes predictable responses in the sensor, based on the strength of the magnetic field.

- Magnetic Incremental Encoder (Page 127)

**Optical Encoders** use a spinning disk and a mask. The mask lets light pass through in predictable patterns for interpretation by a photo-electric sensor. In both cases the sensor produces a digital output format that is easily interfaced by the PLC or computer.

- Optical Incremental Encoders (Page 128).

## Types of Common Pulse Signals found in Incremental Encoders

Incremental encoders can provide different pulse signals for each full rotation of the encoder.

**Quadrature pulse signals** are represented by two encoder output signals (A & B channel) phased 90° electrically apart; these signals help determine direction of rotation by monitoring the phase relationship between the two channels.

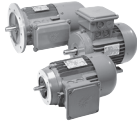
**Differential signals** are complimentary or mirror image [high (A & B) and low (A & B)] output signals that are generated in order to greatly reduce the encoder's susceptibility to electrical interference or noise. When noise occurs during a given pulse, a mirror image does not result and that small portion of the total signal can be ignored.

A **Marker Pulse or Index signal** (Z channel) can be provided as one pulse per revolution signal for pulse count verification on the A and/or B channels. This pulse is sometimes used for error detection or re-homing the system after a power failure or fault condition.

## Absolute Encoders [AG]

Absolute encoders use a disc system with digital coding on concentric tracks. A unique pattern is assigned to every position. True position verification and reference to home is maintained offering optimal recovery from system and/or power failures. Absolute encoder's also come in a variety of output protocols or interfaces. Additional incremental tracks are often specified to provide speed control along with accurate position monitoring.

- Absolute Encoders (Page 129).
- Absolute Encoders for NORD Vector Drives (Page 130).



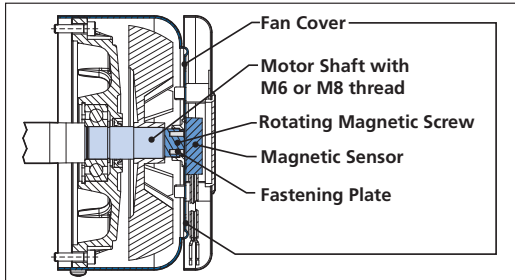
## Magnetic-Incremental Encoder (MG) B Build

NORD offers a competitively priced magnetic encoder that is easily adaptable to the 63 to 180 frame NORD motors. The magnetic encoder utilizes a special screw installed to the motor's rotor shaft in order to create a permanent rotating magnetic field.

A small [0.78 inch (20 mm)] sensor pick-up is mounted to the back of the motor fan shroud. The sensor converts the changing magnetic fields into HTL, push-pull output signals that can be read by a PLC or computer. Quadrature (2 channels, A and B) output signals are phased electrically apart by 90° in order to help determine the direction of rotation by monitoring the phase relationship between the two channels. Our design enables the encoder's implementation near the vicinity of our electric brakes.

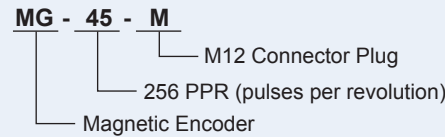
### Advantages

- Cost effective, compact, and easy to mount (63– 180 frame motors).
- Minimal dimensional change to back of motor (page 207).
- Non-contacting measuring method using magnetics.
- Accurate resolution, vibration and shock resistancy in order to increase durability.



### Ordering Example

Encoder Type: MG - Pulse Count - Option



Magnetic HTL encoder, with a 256 pulse count that is connected by a M12 connector plug

Technical Data	
Interface	HTL (push-pull) / Quadrature
Supply Voltage	10-30 VDC
Current	40 mA Max / < 30 mA (no load)
Pulse Count	1 PPR, 32 PPR or 256 PPR
Speed Range	0-5000 rpm
Protection Class	IP 68
Temp.	-4 to 176°F (-20 to 80°C)

Pulse Count
<b>01 = 1 PPR</b>
<b>20 = 32 PPR</b>
<b>45 = 256 PPR</b>

Connection Options (Supplier)
<b>O</b> = Open-end cable
<b>M</b> = M12 motor terminal box plug (Lumberg Automation P/N RSFM4/0.5M)
<b>N</b> = M12 male plug connector (Lumberg Automation P/N RSC4/9)
<b>V</b> = Coupling connector (18200999) (Phoenix Contact, Quickon P/N 1641879)

Wire Color	Designation
Red	(+) Supply Voltage
Black	(-) Supply Voltage
Brown	Channel A
Orange	Channel B
Cable Size	0.19 in x 39 in Lg
Wires	4
Gauge	22 AWG

Connection Wiring				
M12 Connectors (Option M or N)		Coupling Connector (Option V)		
Pin	Wire Color	Pin	Wire Color	Designation
1	Brown	1	Red	(+) Supply Voltage
2	Black	2	Brown	(-) Supply Voltage
3	White	3	Orange	Channel A
4	Blue	4	Blue	Channel B



## Optical-Incremental Encoder (IG..P) B Build

NORD offers optical incremental encoders to monitor position or speed. These encoders are typically mounted to the back side of the electric motor shaft. Common interface logic types include: TTL, HTC and Line Driver. NORD will also work closely with our customers to provide specified encoder pulse counts or control logic.

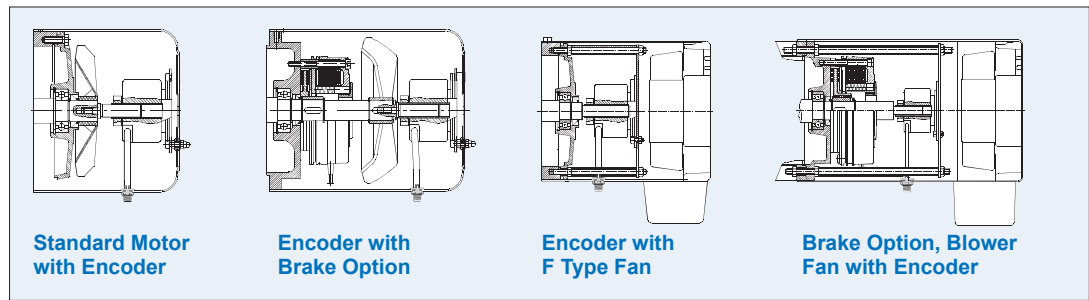
Optical incremental encoders pass light from a light emitting diode (LED) through a partially masked rotating code disc onto a photo-electric receiver. The receiver converts light pulse signals into a square wave digital output format that is easily interfaced by programmable logic controllers (PLC's) and computers.

With optical incremental encoders it is necessary to re-initialize the system and return the system to the home position in the event of power loss.

### Advantages

- Quadrature, differential and marker pulse output signals
- Accurate resolution up to 5000 ppr.
- Sturdy double bearing design offers high tolerance to shock and vibration.
- Short-circuit proof outputs and reverse connection protection.
- M12 (8-pin) male plug fixed to motor fan cover for easy wiring and adaptability.

M12 Connector		
Pin	Color	Signal
1	OV	WH
2	+V	BN
3	A	GN
4	A \	YE
5	B	GY
6	B \	PK
7	Z	BU
8	Z \	RD



NORD Encoder Type	IG1 P	IG2 P	IG4 P	IG11 P	IG21 P	IG41 P	IG12 P	IG22 P	IG42 P	IG13 P	IG23 P	IG43 P
Part Number	19651500	19651510	19651520	19651502	19651512	19651522	19651501	19651511	19651521	19651503	19651513	19651523
Interface	TTL/RS422 (26C31)			TTL/RS422 (26C31)			HTL/Push-pull (IC-WE)			Line Driver (7272)		
Pulse Count [PPR]	1024	2048	4096	1024	2048	4096	1024	2048	4096	1024	2048	4096
Power Supply [VDC]	4-6	4-6	4-6	10-30	10-30	10-30	10-30	10-30	10-30	5-30	5-30	5-30
Logic [VDC]	5			5			10-30			5-30		
Max Current Draw [mA]	100						150					
Max Frequency [kHz]	300											
Temperature Range	-4°F to 176°F (-20°C to 80°C)											
IP Rating	IP67											
Cable	M12 8-pin male plug											

### Pre-fabricated Encoder Cables



NORD can provide Turck pre-fabricated encoder molded cordsets. (M12, 8-pin, shielded, twisted pair)

Length	In-line		Right-angle	
	NORD P/N	Turck P/N	NORD P/N	Turck P/N
2m	19551580	E-RKC 8T-264-2	19551584	E-WKC 8T-264-2
5m	19551581	E-RKC 8T-264-5	19551585	E-WKC 8T-264-5
10m	19551582	E-RKC 8T-264-10	19551586	E-WKC 8T-264-10
15m	19551583	E-RKC 8T-264-15	19551587	E-WKC 8T-264-15
Field Wireable Connector	19551588	CMB 8181-0	-	-
Custom	order from Turck	E-RKC 8T-264-*	order from Turck	E-WKC 8T-264-*

- The above encoder cables are provided with the shielding NOT connected thru the plug nut
- Providing a conducting path thru the cable nut and attaching the shield to ground on both cable ends is a possible source of electrical noise
- For applications where the cable requires a high degree of flexibility consult NORD or Turck.





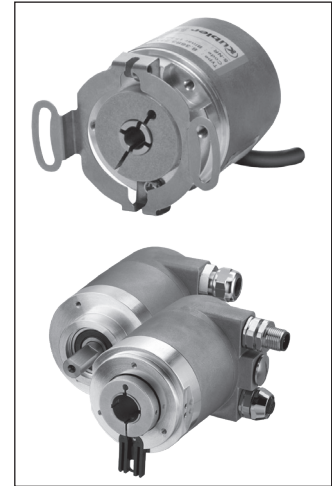
## Absolute Encoder (AG)

**B Build**

Absolute encoders do not lose position or home-position reference when power is removed. Absolute encoders provide a higher degree of safety than when using incremental encoders in applications where a loss of position could result in damage to the machinery or injury to the operator.

NORD absolute encoders are available with different data protocols or interfaces and many cases they can also be supplied with optional incremental tracks to provide accurate position and speed sensing feedback. We will also work closely with our customers to meet the specifications of the equipment builder or systems integrator.

NORD typically provides multi-turn absolute encoders mounted to the back side of the electric motor shaft. Multi-turn encoders provide turns counting in applications involving more than one revolution of the encoder shaft. Single-turn encoders can also be supplied and they are best suited for short travel, motion control applications where position verification is required within a single turn of the encoder shaft.



Options

### Kübler Absolute Encoders (AG)

Kübler Type	Kübler 8.F3683*	Kübler 8.F3668*	Kübler 8.5860	Kübler 8.5883
Interface	SSI or BiSS-C® ②	CANopen® ②	DeviceNet™ ①	SSI or BiSS-C®
Supply Voltage	5 VDC or 10-30 VDC	10-30 VDC	10-30 VDC	5 VDC or 10-30 VDC
Single-turn Resolution	10, 12-14 & 17 bit	13 bit (default) 16 bit (max.)	13 bit	10-14 & 17 bit
Multi-turn Resolution	12, 16 or 24 bit	12 bit	12 bit	12 bit
Incremental Options	TTL/RS 422 (2048 PPR) or SinCos (2048 PPR)	None	None	TTL/RS 422 (2048 PPR) or SinCos (2048 PPR)
Shaft Version	Ø 8 mm hollow shaft	Ø 8 x 14.5 mm blind hollow shaft	Ø 12 x 30 mm blind hollow shaft	Ø 12 mm hollow shaft
Temperature Range	-40 to +194 °F (-40 to +90 °C)	-40 to +185 °F (-40 to +85 °C)	-4 to +176 °F (-20 to +80 °C)	-22 to +167 °F (-30 to +75 °C)
IP Rating	IP 67	IP 67	IP 67	IP 67

Kübler Type	Kübler 8.5888	Kübler 8.5888	Kübler 8.5888	Kübler 8.5888
Interface	CANopen® ② & ③	EtherCAT®	PROFIBUS® ④	PROFINET®
Supply Voltage	10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
Single-turn Resolution	13 bit (default) 16 bit (max.)	13 bit (default) 16 bit (max.)	13 bit (default) 16 bit (max.)	13 bit (default) 16 bit (max.)
Multi-turn Resolution	12 bit	12 bit	12 bit	12 bit
Incremental Options	TTL/RS 422 (2048 PPR)	None	None	None
Shaft Version	Ø 12 mm hollow shaft	Ø 12 x 30 mm blind hollow shaft	Ø 12 x 30 mm blind hollow shaft	Ø 12 x 30 mm blind hollow shaft
Temperature Range	-22 to +167 °F (-30 to +75 °C)	-40 to +176 °F (-40 to +80 °C)	-40 to +176 °F (-40 to +80 °C)	-40 to +185 °F (-40 to +85 °C)
IP Rating	IP 67	IP67	IP67	IP67

\* Compact Encoder without Gears

- ① DeviceNet™ encoders are subject to magnet interference due to the hall-effect sensors used.
- ② Device specific CANopen® profile DS406 V3.2 is also available.
- ③ CANopen® Lift® profile DS417 V1.1 is also available.
- ④ Linedriver / RS485 is functionally integrated.

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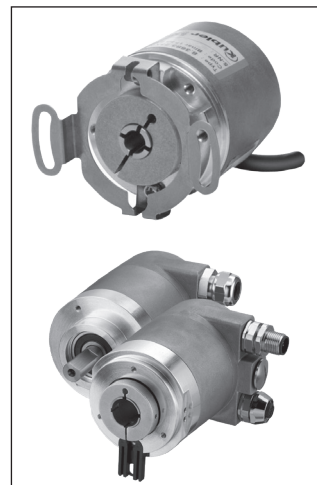
## Absolute Encoder (AG) - For NORD AC Vector Drives

**B** Build

Many NORD AC variable frequency drives have an on-board CANopen® interface allowing the user to implement vector-drive position control.

The encoders listed in the table below communicate using CANopen® profile DS406 V3.2; device specific add-ons allow parameterization of the absolute encoder directly from the NORD frequency inverter.

The table indicates which encoder options contain incremental tracks so that speed control can also be monitored.



### Kübler Absolute Encoders (AG) - For NORD AC Vector Drives (Series 200E & 500E)

Kübler Type (NORD P/N)	Kübler 8.5888 (19551883)	Kübler 8.5888 (19551891)	Kübler 8.5888 (19551881)	Kübler 8.5888 (19551886)
NORD AC VFD Type	SK2xxE, SK53xE	SK53xE	SK53xE	SK2xxE
Interface	CANopen® profile DS406 V3.2 ❶	CANopen® profile DS406 V3.2 ❶	CANopen® profile DS406 V3.2 ❶	CANopen® profile DS406 V3.2 ❶
Supply Voltage	10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
Single-turn Resolution	13 bit (8192)	13 bit (8192)	13 bit (8192)	13 bit (8192)
Multi-turn Resolution	12 bit (4096)	12 bit (4096)	12 bit (4096)	12 bit (4096)
Node address/Baud rate (kbits/s)	51 / 125 ❷ (fixed/fixed)	51 / 125 ❸ (fixed/fixed)	51 / 125 ❷ (fixed/fixed)	33 / 250 ❷ (fixed/fixed)
Incremental Output	None	None	TTL/RS 422 (2048 PPR)	HTL/Push-Pull (2048 PPR)
Shaft Version	Ø 12 x 30 mm blind hollow shaft	Ø 12 x 30 mm blind hollow shaft	Ø 12 x 30 mm blind hollow shaft	Ø 12 x 30 mm blind hollow shaft
Temperature Range	-40 to +176 °F (-40 to +80 °C)	-22 to +167 °F (-30 to +75 °C)	-40 to +176 °F (-40 to +80 °C)	-40 to +176 °F (-40 to +80 °C)
IP Rating	IP 67	IP 67	IP 67	IP 67
Electrical Connection	Removable Bus Cover with Cable Glands	Fixed Connection - (2m) Radial Cable	3 x M12 Connectors (Bus-in, TTL, Bus-out)	3 x M12 Connectors (Bus-in, HTL, Bus-out)

### NORD AC Vector Drive Encoder Compatibility

NORD AC Vector Drive	Kübler Encoder Type (NORD Part Number)			
	Kübler 8.5888 (19551883)	Kübler 8.5888 (19551891)	Kübler 8.5888 (19551881)	Kübler 8.5888 (19551886)
SK530E	✓	✓	✓	
SK200E	✓ ❹			✓
SK210E	✓ ❹			✓
SK220E	✓ ❹			✓
SK230E	✓ ❹			✓
SK205E	✓			✓
SK215E	✓			✓
SK225E	✓			✓
SK235E	✓			✓

❶ CANopen® profile DS406 V3.2 contains device specific add-ons to work with NORD AC Variable Frequency Drives

❷ Device specific CANopen® profile DS406 V3.2 is also available.

❸ CANopen® Lift® profile DS417 V1.1 is also available.

❹ Linedriver / RS485 is functionally integrated.

CANopen® is a registered trademark of the Controller Area Network (CAN) automation user's group

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## Motor Brake (Option BRE)

The standard NORD motor brake is spring-set when power is removed from the BRE circuit (power-off). The brake coil utilizes a DC voltage supplied through a rectified power source.

### Advantages

- Each NORD motor frame size has a number of available brake sizes, each with different torque capacities.
- Brake torque adjustments are possible by changing the brake spring combinations. In addition, brake sizes from 5-40 Nm (3.7-30 lb-ft) are typically supplied with an additional spanner-nut adjustment on the back of the brake.
- NORD brakes provide a high degree of safety because when power is removed the brake will automatically set to hold the load.
- The brake rotor or brake disc is environmentally safe and asbestos-free.
- The connection between the rectifier and the brake coil is completed at the factory and the brake air-gap is factory-set but can be adjusted in the event of wear.

### Basic Brake Operation

The standard NORD motor brake is “spring set”. When power is removed and the brake is de-energized (power-off), the brake springs exert a force against the armature plate in turn preventing the brake rotor (or brake disc) from rotating. When the brake coil is energized (power-on), a magnetic field pulls the armature plate across the air gap to the brake casing, which releases the brake rotor and allows the motor shaft to rotate.

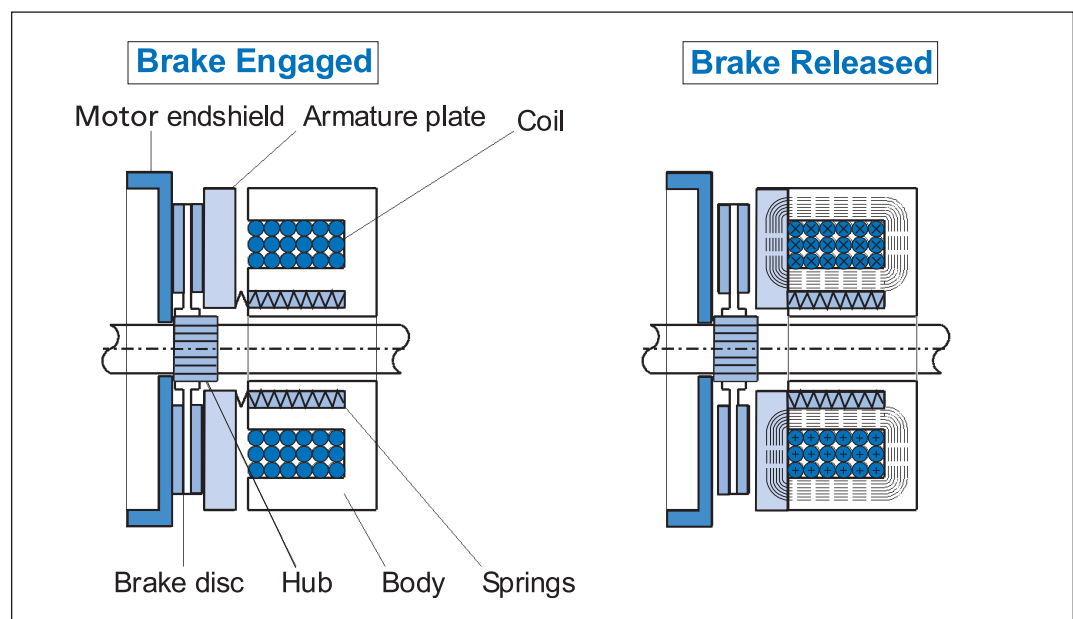
NORD brakes are DC voltage brakes and in most instances are supplied with a motor mounted brake rectifier for easy connections to AC power. AC power is taken directly from the power line or from the terminal block of the motor and converted to DC by the supplied rectifier.



### IMPORTANT NOTE



If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, the AC power must be supplied separately to the brake rectifier.







## Brake Selection

The selection of a motor brake system is broken down into five phases. The selection of the braking torque, the selection of the braking times (release times and setting times), the selection of the electrical supply and connection, the selection of brake options, and the final phase is the verification of the permissible brake work.

Each NORD motor may be supplied with a number of brake torque sizes. Each brake may be adjusted to different brake torque values.

### Selection steps

- 1) Brake torque selection (page 134)
- 2) Brake times & electrical selection (page 136)
- 3) Electrical supply and connection (page 138 -page 139)
- 4) Brake options (page 140)
- 5) Brake work verification (page 159)





## Brake Torque Selection

Each NORD motor size has a number of brake torque sizes available. The BRE value in the table below is the standard brake torque size for each motor.

Example for ordering: SK 32 - S/4 **BRE10** (BRE 10 indicates a brake torque size of 10 Nm)

## General Selection Considerations

NORD relies on the equipment builder to specify appropriate brake sizing for their application, while giving consideration to the following:

- For most applications, we advise sizing the brake to 1.5 - 2 times the motor rated torque.
- For vertical applications, it may be advisable to size the brake size up to 3 times the motor rated torque.
- For some applications, it may be necessary to specify a reduced brake torque setting to prevent excessive peak load conditions developed at the reducer output.
- On travel drive applications, excessive brake torque may lead to wheel skid; in addition on crane applications excess hoist-cable swing can result.

	<b>CAUTION</b>	
BRE800 and BRE1200 brakes may only be controlled with a fast reaction rectifier (overexcitation), the maximum permissible nominal currents of the rectifier must be considered!		

Motor Size & Efficiency			Brake Size and Torque										
Frame Size	SE	PE		BRE5	BRE10	BRE20	BRE40	BRE60	BRE100	BRE150	BRE250	BRE400	BRE800
			Nm	5	10	20	40	60	100	150	250	400	800
			lb-in	44	89	177	354	531	885	1328	2213	3540	7080
			lb-ft	3.7	7.4	14.8	29.5	44.3	73.8	111	184	295	590
63	S/L	-		Std.	Opt. * #								
71	S/L	-		Std.	Opt. *								
80	S	-		Std.	Opt.	Opt. *							
80	L	LP		Opt.	Std.	Opt. *							
90	S	SP			Opt.	Std.	Opt.*						
90	L	LP			Opt.	Std.	Opt.*						
100	L	LP				Std.	Opt.	Opt. * #					
100	LA	AP				Opt.	Std.	Opt. * #					
112	M	MP				Opt.	Opt.	Std.					
132	S	SP						Std.	Opt.	Opt. *			
132	M	MP						Opt.	Std.	Opt. *			
132	MA	-						Opt.	Opt.	Std. *			
160	M	MP							Opt.	Std.	Opt.		
160	L	LP							Opt.	Opt.	Std.		
180	MX	-								Opt.	Std.		
180	LX	-								Opt.	Std.		
180	-	MP									Std.	Opt.* #	
180	-	LP									Std.	Opt.* #	
200	LX	-									Opt.	Std.* #	
225	-	RP									Opt.	Std.	
225	-	SP									Opt.	Std.	
225	-	MP										Opt.	Std.
250	-	WP										Opt.	Std.
Weight	kg		2	3	5.5	7	10	16	22	32	50	53	
	lb		4.4	6.6	12.1	15.4	22	35	49	71	110	117	
Inertia	kg-m <sup>2</sup> x 10 <sup>-3</sup>		0.015	0.045	0.153	0.45	0.86	1.22	2.85	6.65	19.5	39	
	lb-ft <sup>2</sup> x 10 <sup>-3</sup>		0.356	1.068	3.63	10.68	20.4	29.0	67.6	158	463	926	

\* IP66 brake not possible

<sup>2)</sup> When used as a stopping brake, evaluation is essential.

Std - Standard Offering

# Manual brake release option not possible

<sup>3)</sup> Designed as a holding brake or emergency stop only.

Opt - Optional Offering



**CAUTIONS**

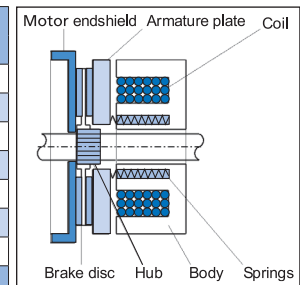
- **Brake torque** - The brake torque is measured with a mean friction radius of the brake pad surface with a circumferential speed of 1m/sec (197 fpm).
- **Brake torque tolerance** - For different applications and operating conditions, brake torque can vary from +40/-20% compared to the rated brake torque.
- **Hoisting (lifting/lowering) applications** - must have the brake wired for fast response (DC-switching)
- **Initial operation & wear-in period** - In new condition, the brake will have a reduced torque of up to 30%. In order to achieve full rated brake torque, a short run-in period is required. The run in time will vary depending on system loads.
- **The brake rotor or brake pad** - must be protected against foreign matter, oil and grease. Contaminants of this type can greatly influence wear and reduce breaking torque.

## Brake Torque Adjustment (ADJ)

Brake torque adjustments are possible by changing the brake spring combinations or by removing springs.

### Brake Torque Reduction - Spring Removal

"Brake Size"	7 Springs		5 Springs		3 Springs	
	[Nm]	[lb-ft]	[Nm]	[lb-ft]	[Nm]	[lb-ft]
BRE 5	5	3.7	3.5	2.6	2	1.5
BRE10	10	7.4	7	5.2	4	3.0
BRE20	20	14.8	14	10.3	8	5.9
BRE40	40	29.5	28	20.7	17	12.5
BRE60	60	44.3	43	31.7	26	19.2
BRE100	100	73.8	70	51.6	42	31.0
BRE150	150	111	107	78.9	65	47.9
"Brake Size"	8 Springs		6 Springs		4 Springs	
	[Nm]	[lb-ft]	[Nm]	[lb-ft]	[Nm]	[lb-ft]
BRE250	250	184	187	138	125	92
BRE400	400	295	300	221	200	148
BRE800	800	590	600	442	400	295



When adjusting the brake torque, start by removing the outer springs at opposite corners to prevent uneven brake wear.

On brake sizes 5-150 Nm (3.7-111 lb-ft) full brake torque is achieved with all (7) springs. The brake springs are placed in such a manner where there are (3) inner and (4) outer springs.

On brake sizes 250-1200 Nm (184-885 lb-ft) full brake torque is achieved with all (8) springs. The brake springs are placed in such a manner where there are (4) inner and (4) outer springs.

### Spanner Nut Adjustment

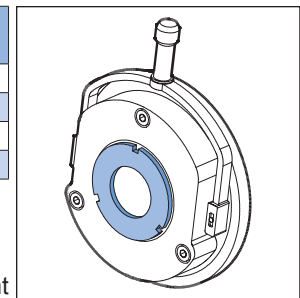
#### Spanner Nut Adjustment

"Brake Size"	Torque Reduction*		Max. Turns	Minimum Torque*	
	[Nm]	[lb-ft]		[Nm]	[lb-ft]
BRE 5	0.2	0.15	6	0.8	0.59
BRE10	0.2	0.15	12	1.6	1.18
BRE20	0.3	0.22	12	4.4	3.25
BRE40	1	0.74	9	8.0	5.90

\* With the minimum number of springs and maximum number of turns to the spanner nut.

\* Per each turn of the spanner nut

In addition, brake sizes from 5-40 Nm (3.7-30 lb-ft) are typically supplied with a threaded adjustment nut or spanner nut. Additional fine torque adjustment can be made by unscrewing the spanner nut a number of turns or "clicks" with a spanner wrench.





## Brake Times & Electrical Selection

Brake timing performance is critical in selecting the optimal brake system. NORD brakes can provide exceptional performance in terms of the release (start) times and engagement (stop) times. Use the following guidelines in order to select the correct brake control components and connections.

- 1) Determine if the brake needs to be wired directly from the motor terminal block or powered by a separate source.
  - If you are using a AC vector drive, soft-start or a two- speed motor you will need to supply the rectifier from a separate power source.
  - If the motor is powered direct across-the-line the rectifier power can be supplied from the motor's terminal block.
- 2) What type of performance do I need?
  - Is the standard brake performance OK?
  - Is a higher performance required for fast brake release or very fast brake stopping?
- 3) Determine the brake supply voltage and check the rectifier compatibility table on page 138.





## Selection Suggestions

### When Fast or Very Fast Stopping is Recommended

Any applications that require quick stops and positive action at stand-still, as well as all vertically mounted applications.

#### Recommended Applications

- conveyors and inclined conveyors
- hoists and lifts
- bulk material handling equipment (bucket elevators, idler conveyor's)

### When Fast-Release is Recommended (Overexcitation)

Any application that is very high-cycling with frequent starts and stops. These applications require the brake to release very-quickly in order to avoid excessive heat build-up in the AC motor and brake coil.

#### Recommended Applications

- Index conveyors
- Diverters
- Storage and retrieval crane systems

	<b>CAUTION</b>	
Hoisting (lifting/lowering) applications - must have the brake wired for fast brake engagement.		

Power Source	Brake Release (start)	Brake engagement (stop)	Braking Method *	Rectifier
<b>Motor Terminal Block</b>	Standard	Standard (AC switching)	10	GVE/GHE/GUE
	Standard	Fast (DC switching)	15	GVE/GHE/GUE
	Standard	Very Fast (Reduced power holding)	40	GPE/PMG
	Fast (Overexcitation)	Standard (AC switching)	30	GPE/PMG
	Fast (Overexcitation)	Fast (DC switching)	35	GPE/PMG
<b>Separate Power Source</b>	Standard	Standard (AC switching)	20	GVE/GHE/GUE
	Standard	Fast (DC switching)	25	GVE/GHE/GUE
	Standard	Very Fast (Reduced power holding)	55	GPU/PMG
	Fast (Overexcitation)	Standard (AC switching)	45	GPU/PMG
	Fast (Overexcitation)	Fast (DC switching)	50	GPU/PMG

\* Braking methods referenced in connection diagrams on pages 160 - 170

#### Rectifier Styles

**GV** - Full Wave Rectifier (Bridge)

**GH** - Half Wave Rectifier

**GU** - Combination Rectifier, can be connected full or half wave

**GPE** - Hybrid Rectifier, Full wave then switches to half wave.

**PMG** - Hybrid Rectifier, Full wave then switches to half wave.

**GPU** - Hybrid Rectifier, Full wave, then switches to half wave. Has integrated DC Switching via voltage sensing.



## Brake Rectifier Compatibility

Brake Voltage (VAC)	Coil Voltage (VDC)	Braking Method	Rectifier Type	Rectifier P/N	BRE 5	BRE 10	BRE 20	BRE 40	BRE 60	BRE 100	BRE 150	BRE 250	BRE 400	BRE 800
115 (105-120)	105	20	GVE20	19141000	X	X	X	X	X	X	X			
	105	25	GVE20	19141000	X	X	X	X	X	X	X			
208 (200-208)	105	10	GHE40	19141010	X	X	X	X	X	X	X			
	180	10	GVE20	19141000	X	X	X	X	X	X	X	X	X	
	105	15	GHE40	19141010	X	X	X	X	X	X	X			
	180	15	GVE20	19141000	X	X	X	X	X	X	X	X	X	
	105	20	GHE40	19141010	X	X	X	X	X	X	X			
	180	20	GVE20	19141000	X	X	X	X	X	X	X	X	X	
	105	25	GHE40	19141010	X	X	X	X	X	X	X			
	180	25	GVE20	19141000	X	X	X	X	X	X	X	X	X	
	105	30	GPE20	19140230	X	X	X	X						
	105	30	PMG500	19140200					X	X	X	X	X	X
	105	35	GPE20	19140230	X	X	X	X						
	105	35	PMG500	19140200					X	X	X	X	X	X
	180	40	GPE20	19140230	X	X	X	X	X	X	X			
	180	40	PMG500	19140200								X	X	X
	105	45	GPU20	19140090	X	X	X	X						
	105	45	PMG500	19140200					X	X	X	X	X	X
	105	50	GPU20	19140090	X	X	X	X						
	105	50	PMG500	19140200					X	X	X	X	X	X
180	55	GPU20	19140090	X	X	X	X	X	X	X				
180	55	PMG500	19140200								X	X	X	
230 (220-240)	105	10	GHE40	19141010	X	X	X	X	X	X	X			
	205	10	GVE20	19141000	X	X	X	X	X	X	X	X	X	
	105	15	GHE40	19141010	X	X	X	X	X	X	X			
	205	15	GVE20	19141000	X	X	X	X	X	X	X	X	X	
	105	20	GHE40	19141010	X	X	X	X	X	X	X			
	205	20	GUE40V	19140300	X	X	X	X	X	X	X			
	205	20	GVE20	19141000	X	X	X	X	X	X	X	X	X	
	105	25	GHE40	19141010	X	X	X	X	X	X	X			
	205	25	GUE40V	19140300	X	X	X	X	X	X	X			
	205	25	GVE20	19141000	X	X	X	X	X	X	X	X	X	
	105	30	GPE20	19140230	X	X	X	X						
	105	30	PMG500	19140200					X	X	X	X	X	X
	105	35	GPE20	19140230	X	X	X	X	X	X	X			
	105	35	PMG500	19140200								X	X	X
	205	40	GPE20	19140230	X	X	X	X	X	X	X			
	205	40	PMG500	19140200								X	X	X
	105	45	GPU20	19140090	X	X	X	X						
	105	45	PMG500	19140200					X	X	X	X	X	X
	105	50	GPU20	19140090	X	X	X	X						
	105	50	PMG500	19140200					X	X	X	X	X	X
205	55	GPU20	19140090	X	X	X	X	X	X	X				
205	55	PMG500	19140200								X	X	X	



### Brake Rectifier Compatibility

Brake Voltage (VAC)	Coil Voltage (VDC)	Braking Method	Rectifier Type	Rectifier P/N	BRE 5	BRE 10	BRE 20	BRE 40	BRE 60	BRE 100	BRE 150	BRE 250	BRE 400	BRE 800
332	180	30	GPE40	19140240	X	X	X	X	X	X	X			
	180	30	PMG500	19140200								X	X	X
	180	35	GPE40	19140240	X	X	X	X	X	X	X			
	180	35	PMG500	19140200								X	X	X
	180	45	GPU40	19140170	X	X	X	X	X	X	X			
	180	50	GPU40	19140170	X	X	X	X	X	X	X			
400 (380-415)	180	10	GHE40	19141010	X	X	X	X	X	X	X	X	X	
	180	15	GHE40	19141010	X	X	X	X	X	X	X	X	X	
	180	20	GHE40	19141010	X	X	X	X	X	X	X	X	X	
	180	25	GHE40	19141010	X	X	X	X	X	X	X	X	X	
	180	30	GPE40	19140240	X	X	X	X	X	X	X			
	180	30	PMG500	19140200								X	X	X
	180	35	GPE40	19140240	X	X	X	X	X	X	X			
	180	35	PMG500	19140200								X	X	X
	180	45	GPU40	19140090	X	X	X	X	X	X	X			
	180	45	PMG500	19140200								X	X	X
	180	50	GPU40	19140090	X	X	X	X	X	X	X			
	180	50	PMG500	19140200								X	X	X
460 (440-480)	205	10	GHE40	19141010	X	X	X	X	X	X	X	X	X	
	205	15	GHE40	19141010	X	X	X	X	X	X	X	X	X	
	205	20	GHE40	19141010	X	X	X	X	X	X	X	X	X	
	205	20	GUE40V	19140300	X	X	X	X	X	X	X			
	205	25	GHE40	19141010	X	X	X	X	X	X	X	X	X	
	205	25	GUE40V	19140300	X	X	X	X	X	X	X			
	205	30	GPE40	19140240	X	X	X	X	X	X	X			
	205	30	PMG500	19140200								X	X	X
	205	35	GPE40	19140240	X	X	X	X	X	X	X			
	205	35	PMG500	19140200								X	X	X
	205	45	GPU40	19140170	X	X	X	X	X	X	X			
	205	45	PMG500	19140200								X	X	X
	205	50	GPU40	19140170	X	X	X	X	X	X	X			
	205	50	PMG500	19140200								X	X	X
575 (550-600)	250	10	GHE50	19141020	X	X	X	X	X	X	X	X	X	
	250	15	GHE50	19141020	X	X	X	X	X	X	X	X	X	
	250	20	GHE50	19141020	X	X	X	X	X	X	X	X	X	
	250	25	GHE50	19141020	X	X	X	X	X	X	X	X	X	



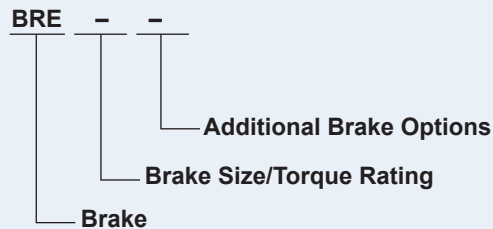
## Brake Options

Abbreviation	Description	Page
ADJ	Torque Adjustment - Brake torque may be adjusted at the factory	135
DBR	Double Brake (2xBRE) - Double brakes are used for redundancy and additional safety	144
FHL	Locking Hand Release Lever - Lockable manual hand release lever	141
HL	Hand Release Lever - Manual hand release lever	141
HLH	Hand Release Lever with Hole - Hand lever with 5.5 mm hole	141
IP66	IP66 Brake Enclosure - Brake with IP66 enclosure	141
IR	Current Sensing Relay - Fast brake engagement (stopping) without external control equipment	143
MIK	Micro-Switch - Brake fitted with a micro-switch for sensing the brake state (released or engaged)	142
NRB1	Quiet Brake Release - An o-ring is placed between the coil body and the armature plate for noise reduction	142
NRB2	Quiet Brake Motor Operation - An o-ring is placed between the carrier hub & the armature plate to prevent clattering.	142
RG	Corrosion Protected Brake - Corrosion protected brake	141
SR	Dust & Corrosion Protected Brake - Dust & corrosion protected brake	141

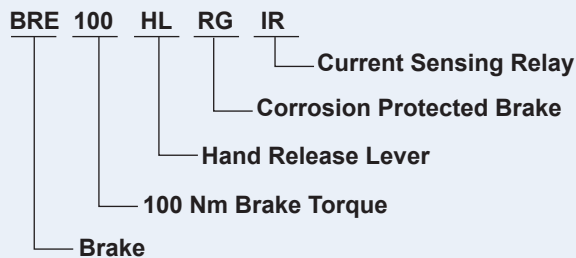
## Rectifier Options

Abbreviation	Description	Page
<b>Rectifiers</b>	Most NORD brakes are provided with a rectifier that converts AC voltage to DC voltage. Rectifiers are used because most motors are AC powered, but brakes require DC power.	145
GHE	Half Wave Rectifiers	151
GPE	Push Hybrid Rectifiers - External DC Switching	153
GPU	Push Hybrid Rectifiers - Integrated DC Switching	155
GUE	Dual Rectifier - Full/Half-Wave	152
GVE	Full Wave Rectifiers	150
PMG	Push Hybrid Rectifier - Integrated DC Switching	154
EBGR	Digital Input Dual Wave Rectifier	156

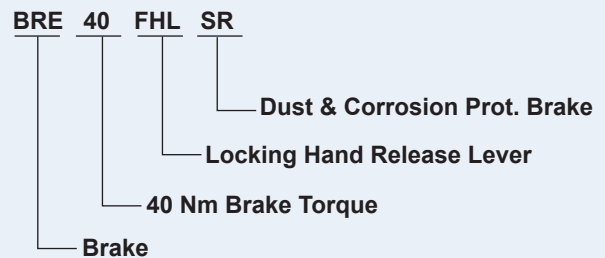
## Brake Nomenclature



## Ordering Examples



Brake, 100 Nm with a hand release lever, corrosion protected brake, and a current sensing relay.



Brake, 40 Nm with a locking hand release lever and dust & corrosion protected brake.



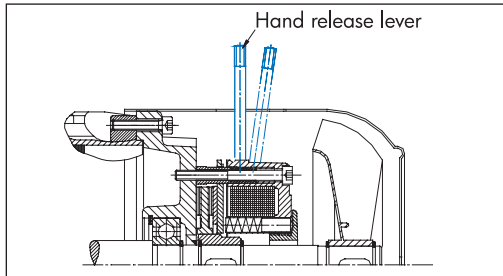


## Hand Release Lever (HL) M Modify

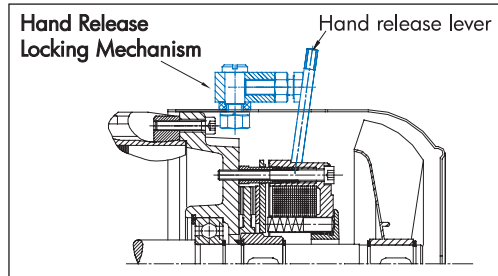
The hand release option allows the brake to be manually released without requiring that the brake be energized with voltage. The lever has a spring return that allows the brake to be hand released and returned automatically to its set position. The hand release lever can be unscrewed for easy removal.

## Locking Hand Release Lever (FHL) M Modify

This option allows the brake to be manually released and locked off without requiring voltage to the brake. The lock mechanism prevents the spring from returning the brake to a closed state without manual action by the user. The hand release lever can be unscrewed for easy removal.



Hand Release Lever (HL)



Locking Hand Release Lever (FHL)

## Hand Release Lever With Hole (HLH) B Build

The hand release levers can be provided with a 5.5mm through hole. The hole can be used for attaching external pulling devices such as a cord to release the brake at a distance. This option is available for brake sizes BRE5 to BRE60.

Hand Release Lever Location is Required for HL, FHL and HLH Options	
	<input type="radio"/> Position 1
	<input type="radio"/> Position 2
	<input type="radio"/> Position 3
	<input type="radio"/> Position 4
	Position 1               Position 2               Position 3               Position 4

## Corrosion Protected Brake (RG) B Build

The brake is fitted with a stainless steel brake plate to provide additional corrosion protection in severe and wet environments.

## Dust & Corrosion Protected Brake (SR) B Build

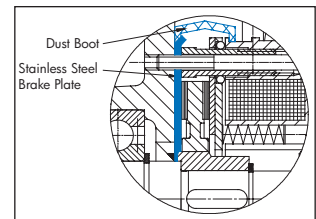
A rubber-sealing boot is installed on the brake to provide additional protection in dusty environments. This feature includes the stainless steel brake plate (RG).

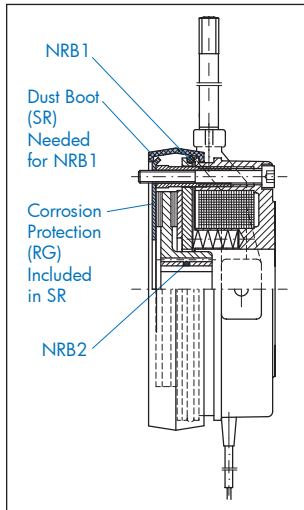
## IP66 Brake Enclosure (IP66) B Build

A sealed brake with IP66 enclosure protection can also be provided. This brake has a different mechanical housing that provides a higher degree of protection against severe environments.

## Brake Heating B Build

Brakes can be provided with a number of different heating systems. Contact NORD to discuss the details of your application





## Quiet Brake Release (NRB1)

**B** Build

To reduce the noise of the brake release, an o-ring can be placed between the brake coil body and the armature plate (stationary disc). The o-ring dampens the impact caused by the armature plate hitting the brake coil body during the release process. When ordering NRB1, the SR (Dust Boot) option is required. The SR option also includes the RG stainless steel corrosion plate.

## Quiet Brake Operation (NRB2)

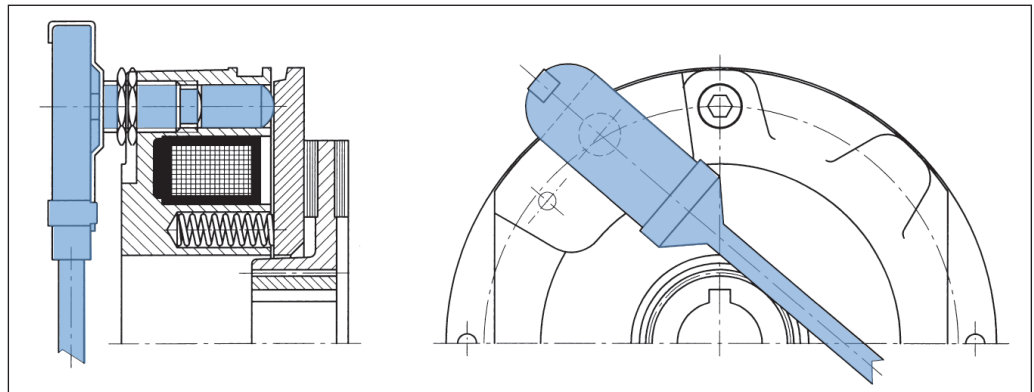
**B** Build

Noise due to vibration in the brake components is possible during motor operation particularly with variable frequency drive or single phase motor operation. To reduce this vibration the brake can be constructed with an o-ring between the brake carrier hub and the brake disc. This o-ring will prevent the clattering caused by the rapid micro speed changes in the motor caused by inverter or single phase operation.

## Micro Switch (MIK)

**B** Build

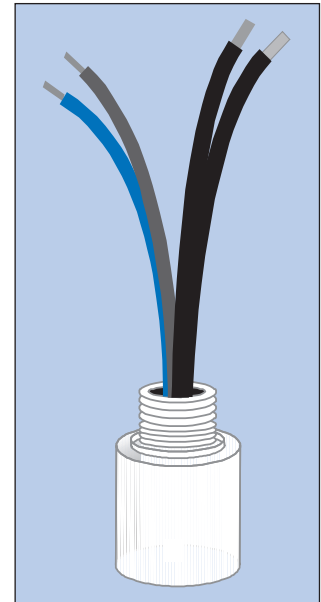
The micro switch monitors the release state of the brake and can be wired into external control circuitry to provide additional safety. The switch can also be used to detect certain brake service problems including excessive brake wear.





## Current Sensing Relay (IR) M Modify

The current sensing relay, is used to achieve a fast brake engagement (stopping) without the use of external control equipment or additional wiring. The relay is mounted directly on the conduit box, and is powered from the motor's terminal block. The power leads for the relay replace one of the brass jumper bars on the terminal block of any single speed motor. The switch leads are connected to terminals 3 and 4 of the rectifier. When the power to the motor is shut off, the IR relay opens the brake circuit on the DC side which allows the brake to de-magnetize quickly.



⚠ CAUTIONS ⚠
<b>Current Sensing Relay Requirements</b>
<ul style="list-style-type: none"> <li>■ Brake must be powered from the motor's terminal block (not separately powered)</li> <li>■ Motor must be single speed and should not be powered by a frequency inverter or soft starter.</li> </ul>

Part number	18556010	18556020
Reissmann Part Number	RSR 25-46	RSR 50-46
Primary Current Rating (black/white wires)	25A <sub>AC</sub>	50 A <sub>AC</sub>
Maximum Primary Current (black/white wires)	75A <sub>AC</sub>	150 A <sub>AC</sub>
Maximum Time at Maximum Primary Current	0.2 s	0.2 s
Maximum Cycles per hour	500	500
Switching Voltage	42 - 550V <sub>DC</sub>	42 - 550V <sub>DC</sub>
Switching Current (red/blue wires)	1.0 A <sub>DC</sub>	1.0 A <sub>DC</sub>
Holding Current ❶	< 0.7 A <sub>AC</sub>	< 0.7 A <sub>AC</sub>
Delay Time ❷	18 ms	18 ms
Enclosure Rating	IP65	IP65
Ambient Temp.	- 25 to 90 °C (- 40 to 167 °F)	- 25 to 90 °C (- 40 to 167 °F)

- ❶ Relative to the distortion created by the magnetising current of the motor.
- ❷ Additional setting time delay added to the DC-setting time of the brake circuit.

### IR Relay Wiring Diagram

Rectifier			IR-Relay Wires to Rectifier	
Model Type	Part Number	Design	Red	Blue
GVE20L	19141000	Full-wave	4	3
GHE40L	19141010	Half-wave	4	3
GHE50L	19141020	Half-wave	4	3
GPE20L	19140230	Push-hybrid	4	3
GPE40L	19140240	Push-hybrid	4	3
GUE40V	19140300	Dual Wave	4	3

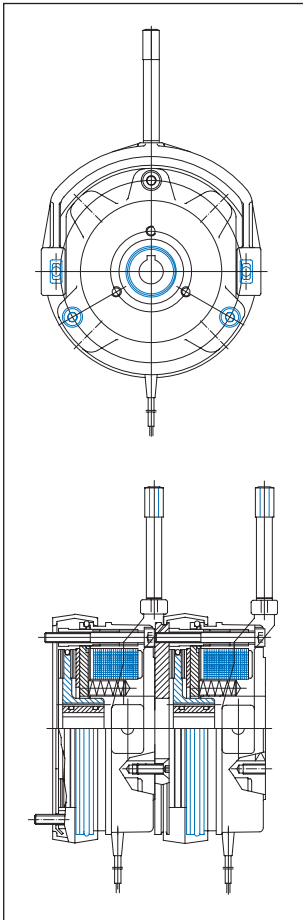
### Conduit Box Thread Adapter

Thread	Motor Frame	Part Number
M20	63-71	18542006*
M25	80-90	18522253
M32	100-132	18522320
M40	160	18522400 + 18522253

\* Spacer



**B** Build



## Double Brakes (DBR)

Some applications require two independent brakes to meet industry safety guidelines.

### Double Brakes for Theatrical Applications

Many international standards for braking systems used on theatre hoists mandate the use of brakes that automatically set when power is removed. Redundancy is also required with the system brakes. If one brake fails, the other brake can still operate the system by running independently and parallel to each other. NORD DBR (2xBRE) brake systems are designed to meet these requirements. The NORD double brakes are also designed for quiet operation < 50dB(A).

Some safety standards require that the load brake hold 1.25 times the rated load at test. We recommend selecting the brake for approximately 1.6 to a maximum of 2.0 times the required operating torque for each brake.

The NORD double theatre brakes do not need to be worn-in and will achieve their full braking torque initially.

Two brake rectifiers are required for operating a double brake systems. These will be provided as loose parts and are normally mounted in the customers control panel.

The double brake option will add motor length compared to the single brake.



### CAUTIONS



NORD recommends delayed operation of one of the brakes. If the brakes are operated simultaneously, the combined torques may result in excessive torque for the gear unit or other mechanical system elements. If the brakes are set at the same time even in an E-stop condition, the gear units must be sized to handle this increased torque.

Motor SE	PE	Brake	7 Springs		5 Springs		4 Springs	
			[Nm]	[lb-ft]	[Nm]	[lb-ft]	[Nm]	[lb-ft]
63S/L	-	DBR6	2 x 6	2 x 4.4	2 x 4	2 x 3	2 x 3.5	2 x 2.6
71S/L	-	DBR6	2 x 6	2 x 4.4	2 x 4	2 x 3	2 x 3.5	2 x 2.6
80S	-	DBR6	2 x 6	2 x 4.4	2 x 4	2 x 3	2 x 3.5	2 x 2.6
80L	LP	DBR12	2 x 12.5	2 x 9.2	2 x 8.5	2 x 6.3	2 x 7	2 x 5.2
90S	SP	DBR12	2 x 12.5	2 x 9.2	2 x 8.5	2 x 6.3	2 x 7	2 x 5.2
90L	LP	DBR25	2 x 25	2 x 18.4	2 x 17.5	2 x 12.9	2 x 14	2 x 10.3
100L	LP	DBR25	2 x 25	2 x 18.4	2 x 17.5	2 x 12.9	2 x 14	2 x 10.3
100LA/4	AP	DBR50	2 x 50	2 x 37	2 x 35	2 x 26	2 x 28	2 x 20.7
112M	-	DBR50	2 x 50	2 x 37	2 x 35	2 x 26	2 x 28	2 x 20.7
-	MP	DBR75	2 x 75	2 x 55	2 x 52	2 x 38	2 x 42	2 x 31
132S	SP	DBR75	2 x 75	2 x 55	2 x 52	2 x 38	2 x 42	2 x 31
132M	MP	DBR125	2 x 125	2 x 92	2 x 89	2 x 66	2 x 70	2 x 52
160M	MP	DBR187	2 x 187	2 x 138	2 x 132	2 x 97	2 x 107	2 x 79
160L	LP	DBR187	2 x 187	2 x 138	2 x 132	2 x 97	2 x 107	2 x 79
180MX/LX	MX/LX	DBR300	2 x 300	2 x 221	2 x 225	2 x 166	2 x 150	2 x 111
200LX	-	DBR500	2 x 500	2 x 369	2 x 375	2 x 277	2 x 250	2 x 184





## Brake Control Rectifiers

NORD brake control rectifiers convert AC voltage to DC voltage. Rectifiers are used because in many instances AC voltage is used to power the motor, but DC voltage is required to power the brake, and DC power is not typically available. NORD brakemotors typically include a rectifier that is located inside the terminal box. NORD rectifiers can be powered by the motor terminal block, or by a separate power source.

### Rectifier Advantages

- Individual power source for each brake.
- Compact size, mounted inside the terminal box.
- Multiple types, voltage options & release/engagement modes available.
- Mountable in a separate control cabinet.
- Integral protection against voltage spikes.

## Rectifier Protection

### Coated Electronics (G...L)

NORD standard rectifiers are provided with each brake motor (except 24 VDC brakes) unless a sealed or high performance rectifier is specified.

#### Standard Rectifiers

Nomenclature	Part #	Type	Color
GVE20L	19141000	Full-wave	Black
GHE40L	19141010	Half-wave	Yellow
GHE50L	19141020	Half-wave	Grey

### Potted Electronics (G...V)

NORD offers rectifiers that are sealed with an electrically safe resin to ensure that water and moisture will not pass into the rectifier. Sealed rectifiers have the same brake performance ratings as the standard rectifier and can be beneficial if water is present in the motors terminal box.

#### Sealed Rectifiers

Nomenclature	Part #	Type	Color
GVE20V	19141030	Full-wave	Black
GHE40V	19141040	Half-wave	Yellow
GHE50V	19141050	Half-wave	Grey
GUE40V	19140300	Full/Half-Wave	Black

## Rectifier Types

### Full-wave rectifier:

The DC output voltage is 90% of the applied input AC voltage.

### Half-wave rectifier:

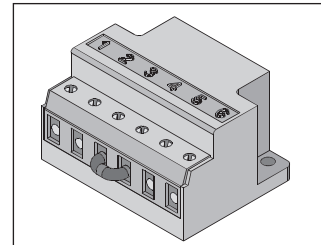
The DC output voltage is 45% of the applied input AC voltage.

### Dual Rectifier (Full/Half Wave):

The GUE rectifier is a "dual" rectifier that is either a full-wave or a half-wave rectifier depending on how it is connected. An advantage for using this rectifier is when using it together with a 205 VDC brake coil, it is able to operate on either a 230 VAC or 460 VAC power connection.

### Push-Hybrid rectifier (Full/Half Wave):

These rectifiers are designed to switch from an initial full-wave mode to a final half-wave mode. They include GPE, GPU, and PMG rectifier types and are utilized to improve brake performance by providing faster stopping times or shorter brake release times.



Rectifier Terminals	Description
1, 1a, 1b & 2	Brake Supply AC Voltage
3 & 4	DC-Switching Contact or Jumper
5 & 6	Connection to Brake Coil

**Rectifier Nomenclature**

**G H E 4 0 L**

- Electronic Protection**
  - L = Varnish coated
  - V = Potted/Resin Sealed
- Components Current Rating**
  - 0 = 0.5A (75°C)
  - 1 = 1.5A (75°C)
- Voltage Range**
  - 2 = up to 275VAC input
  - 4 = up to 480VAC input
  - 5 = up to 575VAC input
- Type of DC Switching**
  - E = External DC-switching (contact)
  - U = Internal DC-switching (voltage)
- Type of Rectifier**
  - H= Half-wave
  - V = Full-wave (bridge)
  - P = Push-Hybrid (full & half-wave)
  - U = Combo (full & half-wave)

**Rectifier**



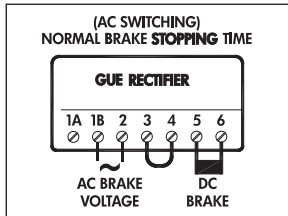
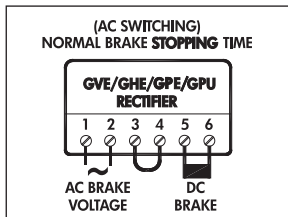
## Stopping Methods

NORD brake rectifiers have the ability to provide different stopping performance. The different performance is achieved by using a different rectifier and/or wiring the rectifier differently. The different methods include:

- Standard Stopping (AC Switching)
- Fast Stopping (DC Switching)
- Fast Stopping (DC Switching via Integrated Voltage Sensing)
- Very Fast Stopping (Reduced Power Holding & DC Switching)
- Very Fast Stopping (Reduced Power Holding & DC Switching via Integrated Voltage Sensing)

### Standard Stopping (AC Switching)

The rectifier can be wired to operate by supplying and removing AC power, commonly called AC switching. The advantage to using AC switching is that the rectifier can be powered directly from the motor's terminal block and no additional wiring is required. However, tapping into the motor's terminal block gives the slower stopping time due to the de-energizing time of the motor's magnetic field. The stopping time can be improved by wiring the rectifier from an external power supply.

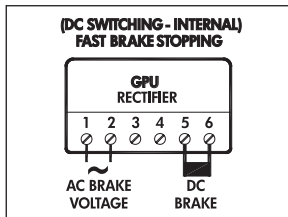
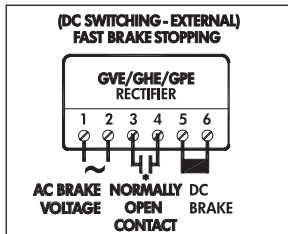


Power Source	Brake Release (start)	Brake Engagement (stop)	Braking Method *	Rectifier
Motor Terminal Block	Standard	Standard (AC switching)	10	GVE, GHE or GUE
	Fast (Overexcitation)	Standard (AC switching)	30	GPE or PMG 500
Separate Power Source	Standard	Standard (AC switching)	20	GVE, GHE or GUE
	Fast (Overexcitation)	Standard (AC switching)	45	GPU or PMG 500

\* Braking methods referenced in connection diagrams on pages 160 - 170.

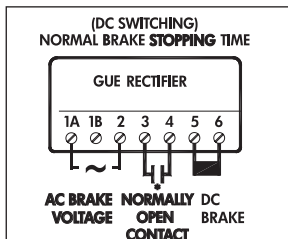
### Fast Stopping (DC switching)

DC switching directly interrupts the current flow in the DC circuit of the rectifier. This provides much faster stopping, because you do not need to wait for the motor's magnetic field to de-energize. To implement DC switching, a normally open relay must be installed between terminals 3 and 4 on the rectifier for rectifier types GVE, GHE, and GPE. For GPU type rectifiers simply remove the jumper between terminals 3 & 4 to activate DC switching.



Power Source	Brake Release (start)	Brake Engagement (stop)	Braking Method *	Rectifier
Motor Terminal Block	Standard	Fast (DC switching)	15	GVE GHE or GUE
	Fast (Overexcitation)	Fast (DC switching)	35	GPE or PMG 500
Separate Power Source	Standard	Fast (DC switching)	25	GVE GHE or GUE
	Fast (Overexcitation)	Fast (DC switching)	50	GPU or PMG 500

\* Braking methods referenced in connection diagrams on pages 160 - 170.

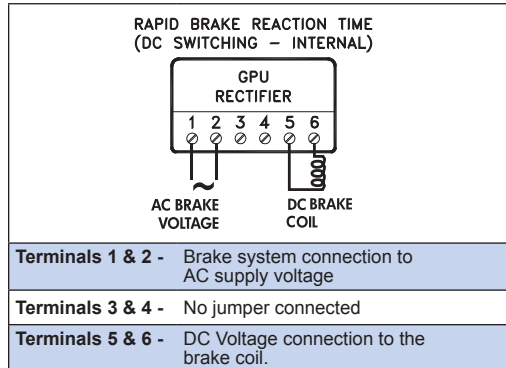




## Fast Stopping (DC switching Via Integrated Voltage Sensing)

Our GPU rectifier's integrate DC-Switching by sensing the AC voltage supplied to the rectifier. When no voltage is present the GPU rectifier automatically opens the DC circuit. The GPU rectifier is primarily designed for use with a separate brake power source, such as inverter powered motors, soft-start motors, and two-speed motors.

The GPU rectifier is primarily designed for use with a separate brake power source, such as inverter powered motors, soft-start motors, and two-speed motors.

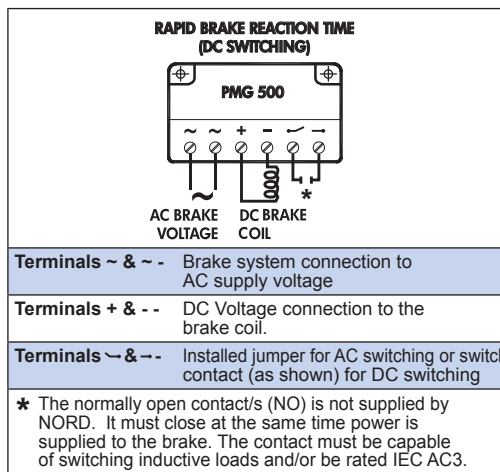
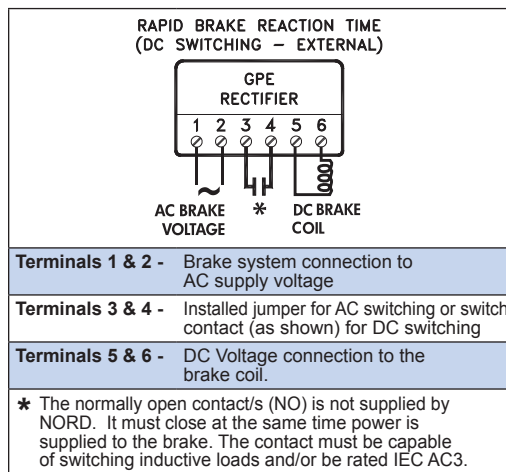


Power Source	Brake Release (start)	Brake engagement (stop)	Braking Method *	Rectifier
Seperate Power Source	Fast (Overexcitation)	Fast (DC switching)	50	GPU

\* Braking methods referenced in connection diagrams on pages 160 - 170.

## Very Fast Stopping (DC switching Via Reduced Power Holding)

In reduced power holding, the rectifier initially supplies the rated DC voltage to the brake coil. When voltage is first applied, the rectifier operates as a full-wave rectifier (90% of the applied AC voltage), releasing the brake in the standard time. After the brake is released, the rectifier switches to half-wave mode (45% of the applied DC voltage), weakening the brake's magnetic field. The weaker field will allow the brake to stop more quickly when power is removed. In this method the brake coil is selected as if the brake system is powered by a full-wave rectifier. Therefore, the brake coil's DC-voltage rating should be 90% of the AC voltage applied to the rectifier.



Power Source	Brake Release (start)	Brake Engagement (stop)	Braking Method *	Rectifier
Motor Terminal Block	Standard	Very Fast (Reduced Power Holding)	40	GPE or PMG 500
Seperate Power Source	Standard	Very Fast (Reduced Power Holding)	55	GPU or PMG 500

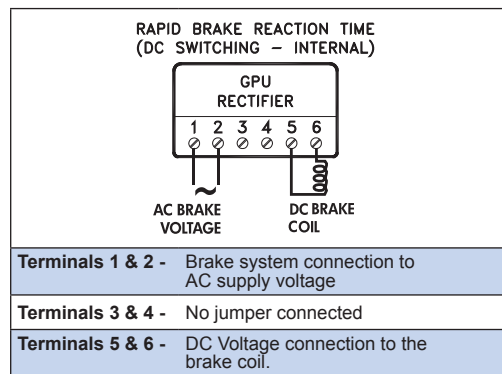
\* Braking methods referenced in connection diagrams on pages 160 - 170.



## Very Fast Stopping (DC switching Via Reduced Power Holding & Integrated Voltage Sensing)

In reduced power holding, the rectifier initially supplies the rated DC voltage to the brake coil. When voltage is first applied, the rectifier operates as a full-wave rectifier (90% of the applied AC voltage), releasing the brake in the standard time. After the brake is released, the rectifier switches to half-wave mode (45% of the applied DC voltage), weakening the brake's magnetic field. The weaker field will allow the brake to stop more quickly when power is removed. In this method the brake coil is selected as if the brake system is powered by a full-wave rectifier. Therefore, the brake coil's DC-voltage rating should be 90% of the AC voltage applied to the rectifier.

These GPU rectifier s integrate DC-Switching, which is triggered by sensing the AC voltage supplied to the rectifier. When no voltage is present the GPU rectifier automatically opens the DC circuit. The GPU rectifier is primarily designed for use with a separate brake power source, such as inverter powered motors, soft-start motors, and two-speed motors.



Power Source	Brake Release (start)	Brake engagement (stop)	Braking Method *	Rectifier
Seperate Power Source	Standard	Very Fast (Reduced Power Holding)	55	GPU

\* Braking methods referenced in connection diagrams on pages 160 - 170.





## Release Methods (Motor Starting)

NORD brake rectifiers can provide different types of release performance. The difference in performance is achieved by using a different rectifier and/or wiring the rectifier differently. The different methods include:

- Standard Brake Release (Constant Voltage)
- Fast Brake Release (Overexcitation)

### Standard Brake Release (Constant Voltage)

For the standard brake release method the DC Brake coil is supplied by a constant rated DC voltage to magnetize the brake coil and release the brake. Typically the DC brake voltage is supplied via a brake rectifier. The brake rectifier converts AC supply voltage to DC output voltage to power the brake. NORD can supply rectifiers that are either full-wave or half-wave designs. The brake is released by supplying the rectifier with AC voltage which in turn supplies the brake coil with the needed DC voltage.

#### Standard Brake Release Example

**Full-Wave**

System voltage:..... 230 VAC  
 Brake coil: ..... 205 VDC

**Half-Wave**

System voltage:..... 460 VDC  
 Brake coil:..... 205 VDC

### Fast Brake Release (Overexcitation)

In overexcitation the rectifier initially over-voltages the brake coil. This overexcitation of the rectifier produces a magnetic field in the brake coil that is stronger than normal, releasing the brake much more quickly. The rectifier is then switched over to a lower holding voltage so as not to thermally overload the brake coil. In this method the brake coil is selected as if the brake system is powered by a half-wave rectifier. Therefore, the brake coil's DC-voltage rating should be 45% of the AC voltage applied to the rectifier. This type of brake control is also called "Voltage Forcing" and "Supercharging."

#### Fast Brake Release Example

System voltage:..... 230 VAC  
 Brake coil: ..... 105 VDC

Initial brake release voltage:..... 205 VDC  
 Holding brake voltage:..... 105 VDC

# Full-Wave Rectifiers (GVE)



## Full-Wave Rectifiers (GVE)

Our Full-Wave rectifiers' DC output voltage is 90% of the applied input AC voltage.



### IMPORTANT NOTE



If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, the AC power must be supplied to the brake rectifier separately from the motor power.

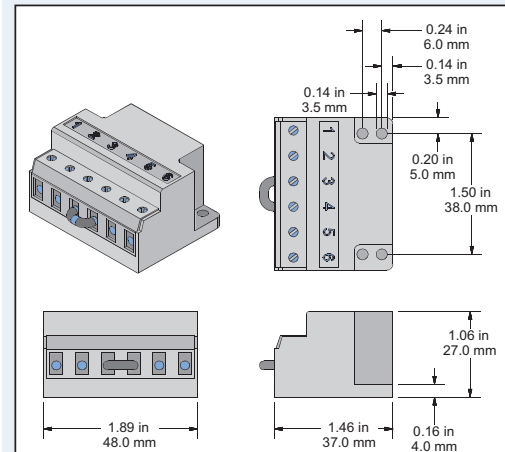
## Ratings & Part Numbers

Model Type	GVE20L	GVE20V
Part Number	19141000	19141030
Protection (electronics)	Coated	Encapsulated
Color	Black	
Input Voltage ( $V_{AC}$ )	110-275 +/- 10% $V_{AC}$	
Output Voltage ( $V_{DC}$ )	$(V_{DC} = 0.90 \times V_{AC})$	
Rated Current @ 40°C	1.5 A	
Rated Current @ 75°C	1.0 A	
Temperature Range	-20 °C to 75 °C	
DC-Switching via	External Contact or IR Relay	

## Braking Method

Braking Method	Break Release (Start)	Brake Engage (Stop)	Power Source
10	Standard	Standard (AC-Switching)	Motor Terminals
15	Standard	Fast (DC-switching)	Motor Terminals
20	Standard	Standard (AC-Switching)	Separate Power
25	Standard	Fast (DC-switching)	Separate Power

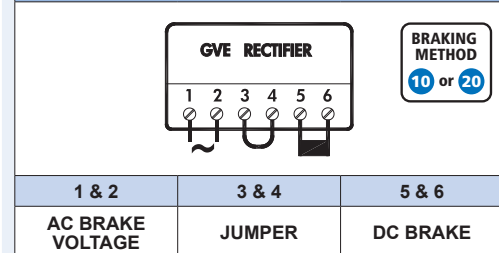
## GVE Rectifier Dimensions



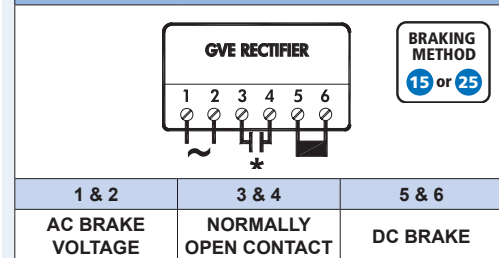
## Basic Connection

The GVE brake system can be connected for standard (AC-Switching) or fast stopping (DC-Switching).

### STANDARD STOPPING AC-SWITCHING



### FAST STOPPING DC-SWITCHING



\* The normally open contact/s (NO) is not supplied by NORD it must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated at IEC AC3.



## Half-Wave Rectifiers (GHE)

Our GHE Half-Wave rectifiers' DC output voltage is 45% of the applied input AC voltage.



### IMPORTANT NOTE



If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, the AC power must be supplied to the brake rectifier separately from the motor power.

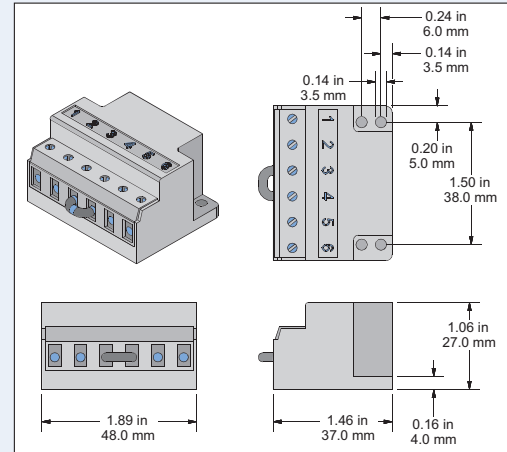
## Ratings & Part Numbers

Model Type	GHE40L	GHE40V	GHE50L	GHE50V
Part Number	19141010	19141040	19141020	19141050
Protection (electronics)	Coated	Encapsulated	Coated	Encapsulated
Color	Yellow		Grey	
Input Voltage (V <sub>AC</sub> )	200-480V <sub>AC</sub> +/- 10%		200-575V <sub>AC</sub> +/- 10%	
Output Voltage (V <sub>DC</sub> )	(V <sub>DC</sub> = 0.45 x V <sub>AC</sub> )		(V <sub>DC</sub> = 0.45 x V <sub>AC</sub> )	
Rated Current @ 40°C	2.0A <sub>DC</sub>		2.0A <sub>DC</sub>	
Rated Current at 75°C	1.0A <sub>DC</sub>		1.0A <sub>DC</sub>	
Temperature Range	-20°C to 75°C		-20°C to 75°C	
DC-Switching via	External Contact or IR Relay		External Contact or IR Relay	

## Braking Method

Braking Method	Break Release (Start)	Brake Engage (Stop)	Power Source
10	Standard	Standard (AC-Switching)	Motor Terminals
15	Standard	Fast (DC-switching)	Motor Terminals
20	Standard	Standard (AC-Switching)	Separate Power
25	Standard	Fast (DC-switching)	Separate Power

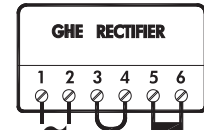
## GHE Rectifier Dimensions



## Basic Connection

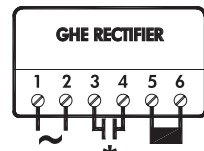
The GHE brake system is able to be connected for standard (AC-Switching) or fast stopping (DC-Switching).

### STANDARD STOPPING AC-SWITCHING



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	JUMPER	DC BRAKE

### FAST STOPPING DC-SWITCHING



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	NORMALLY OPEN CONTACT	DC BRAKE

\* The normally open contact/s (NO) is not supplied by NORD it must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated at IEC AC3.

# Dual-Wave Rectifiers (GUE)



## Dual-Wave Rectifiers (GUE)

The GUE rectifier is a “dual” rectifier that is either a full-wave or a half-wave rectifier depending on how it is connected. An advantage for using this rectifier is when using it together with a 205 VDC brake coil, it is able to operate on either a 230 VAC or 460VAC power connection.



### IMPORTANT NOTE



If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, the AC power must be supplied to the brake rectifier separately from the motor power.

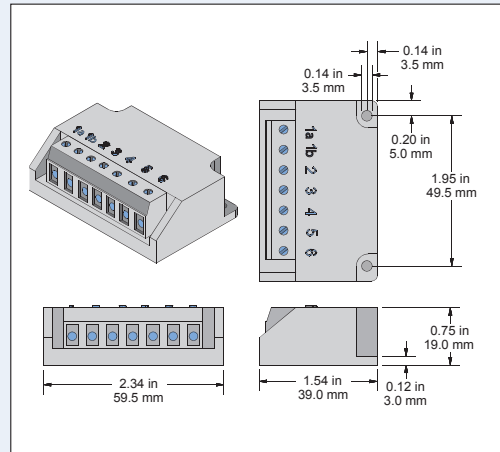
## Ratings & Part Numbers

<b>Model Type</b>	<b>GUE40V</b>	
<b>Part Number</b>	19140300	
<b>Protection (electronics)</b>	Coated	
<b>Color</b>	Black	
<b>Input Voltage (V<sub>AC</sub>)</b>	230 V <sub>AC</sub> +/- 10%	460 V <sub>AC</sub> +/- 10%
<b>Output Voltage (V<sub>DC</sub>)</b>	(V <sub>DC</sub> = 0.90 x V <sub>AC</sub> ) As Full-Wave	(V <sub>DC</sub> = 0.45 x V <sub>AC</sub> ) As Half-Wave
<b>Rated Current @ 40°C</b>	0.7 A	
<b>Rated Current @ 75°C</b>	0.5 A	
<b>Temperature Range</b>	-20°C to 75°C	
<b>DC-Switching via</b>	External Contact or IR Relay	

## Braking Method

Braking Method	Break Release (Start)	Brake Engage (Stop)	Power Source
10	Standard	Standard (AC-Switching)	Motor Terminals
15	Standard	Fast (DC-switching)	Motor Terminals
20	Standard	Standard (AC-Switching)	Separate Power
25	Standard	Fast (DC-switching)	Separate Power

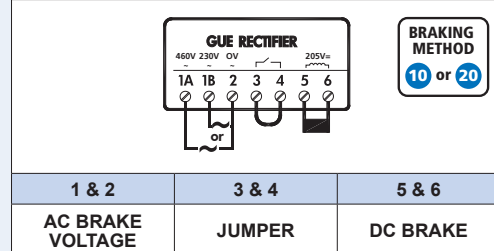
## GUE Rectifier Dimensions



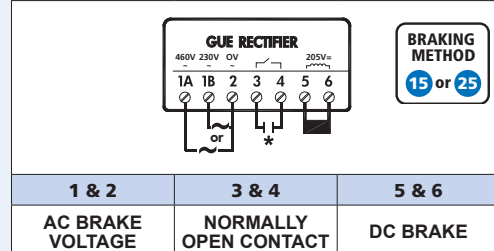
## Basic Connection

The GUE brake system can be connected for standard (AC-Switching) or fast stopping (DC-Switching).

### STANDARD STOPPING AC-SWITCHING



### FAST STOPPING DC-SWITCHING



\* The normally open contact/s (NO) is not supplied by NORD it must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated at IEC AC3.





## Push-Hybrid Rectifiers - External DC Switching (GPE)

Like the standard NORD brake control rectifiers, NORD's fast acting brake control rectifiers convert AC voltage to DC voltage. The "Fast Acting Brake Rectifiers" are utilized to improve brake performance and are often recommended in order to provide shorter brake release times or to provide faster stopping times.

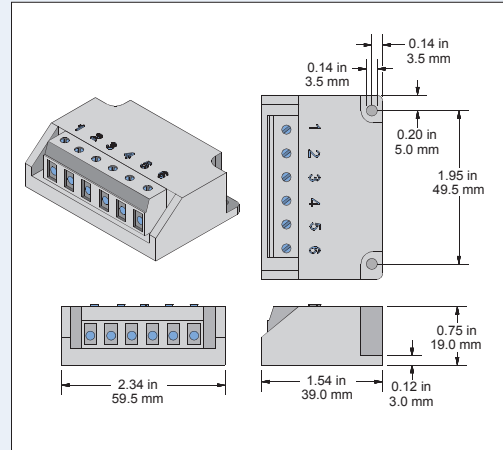
All of the fast acting rectifiers are a two-stage "push" design. When power is first applied, these rectifiers operate like a full-wave rectifier and then after a relatively short period of time they act like a half-wave rectifier. For example, the GPE type rectifiers start out in full-wave mode when power is first applied and then after approximately 250 ms they act like a half-wave rectifiers.

GPE rectifiers were designed for external control of the brake's DC-switching. Primarily used in across-the-line applications where the brake power is supplied by the motor terminals and may also be used in situations where the brake power is supplied separate from the motor.

There are two ways to apply the fast acting rectifiers:

- The first method, known as "Overexcitation," provides fast brake release. The brake coil is selected as a half-wave system (45% of the AC supply voltage).
- The second method, known as "Reduced Power Holding," provides very fast brake stopping. The brake coil is selected like a full-wave system (90% of the AC supply voltage).

## GPE Rectifier Dimensions



## Basic Connection

The GPE brake system can be connected for standard (AC-Switching), fast (DC-Switching) and very fast stopping (Reduced power holding & DC-Switching). Fast brake release can also be achieved by selecting a different brake coil combination.



## IMPORTANT NOTE



If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, the AC power must be supplied to the brake rectifier separately from the motor power.

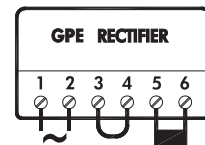
## Ratings & Part Numbers

Model Type	GPE20L	GPE40L
Part Number	19140230	19140240
Protection (electronics)	Coated	Coated
Color	Black	
Input Voltage (V <sub>AC</sub> )	200V-275V	380V-480V
Output Voltage (V <sub>DC</sub> )	(V <sub>DC</sub> =0.45 x V <sub>AC</sub> ) - As Half-Wave (V <sub>DC</sub> =0.90 x V <sub>AC</sub> ) - As Full-Wave	
Rated Current @ 40°C	0.7 A	0.7 A
Rated Current @ 75°C	0.5 A	0.5A
Temperature Range	-20°C to 75°C	
DC-Switching via	External Contact or IR Relay	

## Braking Method

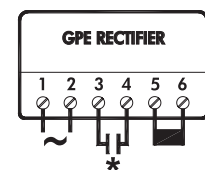
Braking Method	Break Release (Start)	Brake Engage (Stop)	Power Source
40	Standard	Very Fast (Reduced Power Holding)	Motor Terminals
30	Fast (Overexcitation)	Standard (AC Switching)	Motor Terminals
35	Fast (Overexcitation)	Fast (DC Switching)	Motor Terminals

### STANDARD STOPPING AC-SWITCHING



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	JUMPER	DC BRAKE

### FAST STOPPING DC-SWITCHING



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	NORMALLY OPEN CONTACT	DC BRAKE

\* The normally open contact/s (NO) is not supplied by NORD it must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated at IEC AC3.

# Push-Hybrid Rectifiers External DC Switching (PMG)



## Push-Hybrid Rectifiers - External DC Switching (PMG)

Like the standard NORD brake control rectifiers, NORD's fast acting brake control rectifiers convert AC voltage to DC voltage. The "Fast Acting Brake Rectifiers" are utilized to improve brake performance and are often recommended in order to provide shorter brake release times or to provide faster stopping times.

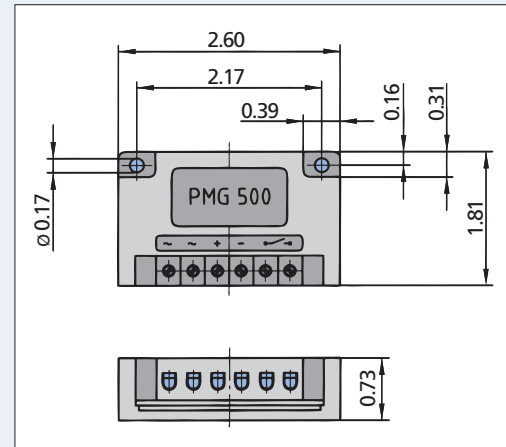
All of the fast acting rectifiers are a two-stage "push" design meaning that when power is first applied these rectifiers operate like a full-wave rectifier and then after a relatively short period of time they act like a half-wave rectifier. For example, the PMG type rectifiers start out in full-wave mode when power is first applied and after approximately 250 ms they act like a half-wave rectifiers.

PMG rectifiers were designed for external control of the brake's DC-switching. Primarily used in across-the-line applications where the brake power is supplied by the motor terminals and may also be used in situations where the brake power is supplied separate from the motor.

There are two ways to apply the fast acting rectifiers:

- The first method, known as "Overexcitation," provides fast brake release. The brake coil is selected like a half-wave system (45% of the AC supply voltage).
- The second method, known as "Reduced Power Holding," provides very fast brake stopping. The brake coil is selected like a full-wave system (90% of the AC supply voltage).

## PMG Rectifier Dimensions



## Basic Connection

The PMG brake system can be connected for standard (AC-Switching), fast (DC-Switching) and very fast stopping (Reduced power holding & DC-Switching). Fast brake release can also be achieved by selecting a different brake coil combination.



### IMPORTANT NOTE



If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, the AC power must be supplied to the brake rectifier separately from the motor power.

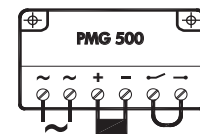
## Ratings & Part Numbers

Model Type	PMG 500
Part Number	19140200
Protection (electronics)	Coated
Color	Black
Input Voltage (V <sub>AC</sub> )	200-500V <sub>AC</sub> +/- 10%
Output Voltage (V <sub>DC</sub> )	(V <sub>DC</sub> = 0.45 x V <sub>AC</sub> ) - As Half-Wave (V <sub>DC</sub> = 0.90 x V <sub>AC</sub> ) - As Full-Wave
Rated Current @ 40°C	4.0 A
Rated Current @ 75°C	2.8 A
Temperature Range	-15°C to 80°C
DC-Switching via	External Contact

## Braking Method

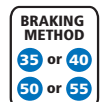
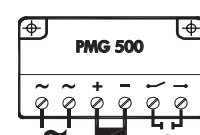
Braking Method	Break Release (Start)	Brake Engage (Stop)	Power Source
40	Standard	Very Fast (Reduced Power Holding)	Motor Terminals
30	Fast (Overexcitation)	Standard (AC Switching)	Motor Terminals
35	Fast (Overexcitation)	Fast (DC Switching)	Motor Terminals
55	Standard	Very Fast (Reduced Power Holding)	Separate Power
45	Fast (Overexcitation)	Standard (AC Switching)	Separate Power
50	Fast (Overexcitation)	Fast (DC Switching)	Separate Power

### STANDARD STOPPING AC-SWITCHING



~ & ~	+ & -	~ & ~
AC BRAKE VOLTAGE	DC BRAKE	JUMPER

### FAST STOPPING DC-SWITCHING



~ & ~	+ & -	~ & ~
AC BRAKE VOLTAGE	DC BRAKE	NORMALLY OPEN CONTACT

\* The normally open contact/s (NO) is not supplied by NORD it must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated at IEC AC3.



# Push-Hybrid Rectifiers Integrated DC Switching (GPU)

## Push-Hybrid Rectifiers - Integrated DC Switching (GPU)

Like the standard NORD brake control rectifiers, NORD's fast acting brake control rectifiers convert AC voltage to DC voltage. The "Fast Acting Brake Rectifiers" are utilized to improve brake performance and are often recommended in order to provide shorter brake release times or to provide faster stopping times.

The GPU fast acting rectifiers are a two-stage "push" design meaning that when power is first applied these rectifiers operate like a full-wave rectifier and then after a relatively short period of time they act like a half-wave rectifier. For example, the GPU type rectifiers start out in full-wave mode when power is first applied and then after approximately 250 ms they act like a half-wave rectifiers.

GPU rectifiers were designed for integrated control of the brake's DC-switching and for voltage sensing. Primarily used in applications where the brake power is supplied by the motor terminals and includes applications that involve two-speed motors and motors that are powered by an inverter or soft-starter.

There are two ways to apply the fast acting rectifiers:

- The first method, known as "Overexcitation," provides fast brake release. The brake coil is selected like a half-wave system. (45% of the AC supply voltage).
- The second method, known as "Reduced Power Holding," provides very fast brake stopping. The brake coil is selected like a full-wave system (90% of the AC supply voltage).



### IMPORTANT NOTES



- The GPU rectifier may also be utilized for across-the-line applications; however it must always be powered separate from the motor and have its own pair of contactors or starters. It is inadvisable to use the motor terminal block to supply the GPU rectifier's AC power due to the motor's slow energy dissipation when switched off.
- If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, the AC power must be supplied to the brake rectifier separately from the motor power.

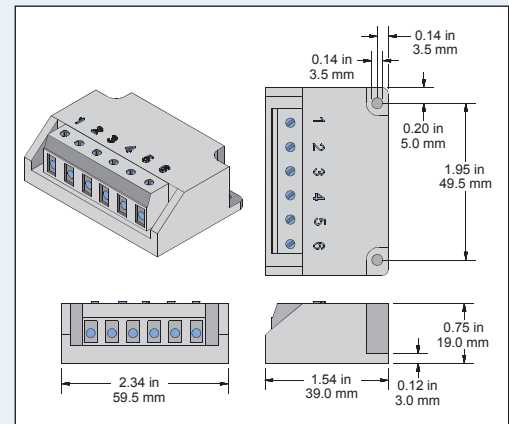
## Ratings & Part Numbers

Model Type	GPU20L	GPU40L
Part Number	19140090	19140170
Protection (electronics)	Coated	Coated
Color	Black	
Input Voltage (V <sub>AC</sub> )	200V-275V	380V-480V
Output Voltage (V <sub>DC</sub> )	(V <sub>DC</sub> = 0.45 x V <sub>AC</sub> ) - As Half-Wave (V <sub>DC</sub> = 0.90 x V <sub>AC</sub> ) - As Full-Wave	
Rated Current @ 40°C	0.7 A	0.7 A
Rated Current @ 75°C	0.5 A	0.5 A
Temperature Range	-20°C to 75°C	
DC-Switching via	Internal Activation	

## Braking Method

Braking Method	Break Release (Start)	Brake Engage (Stop)	Power Source
55	Standard	Very Fast (Reduced Power Holding)	Separate Power
45	Fast (Overexcitation)	Standard (AC Switching)	Separate Power
50	Fast (Overexcitation)	Fast (DC Switching)	Separate Power

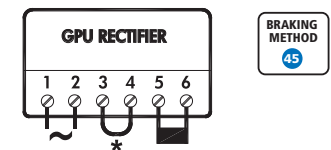
## GPU Rectifier Dimensions



## Basic Connection

The GPU brake system can be connected for standard (AC-Switching), fast (DC-Switching) and very fast stopping (Reduced power holding & DC-Switching). Fast brake release can also be achieved by selecting a different brake coil combination.

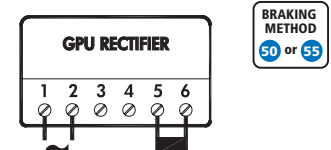
### STANDARD STOPPING AC-SWITCHING



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	JUMPER	DC BRAKE

\* The normally open contact/s (NO) is not supplied by NORD it must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated at IEC AC3.

### FAST & VERY FAST STOPPING DC-SWITCHING



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	-	DC BRAKE

# Digital Input Dual Wave Rectifiers (EBGR)



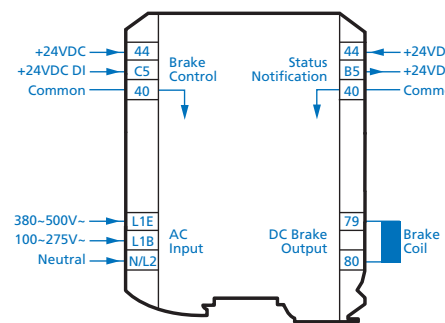
## Digital Input Activated Dual, Full & Half Wave Rectifiers (EBGR)

The EBGR-1 provides brake control by an internal 24VDC signal or contact closure. This allows the motor brake to be easily operated by an external controller like a PLC or an AC drive without the need for a piloting relay. The rectifier can be connected as either a full-wave or half-wave brake power source, similar to the GUE rectifier. The EBGR module also provides status notification to an external device like a PLC. The device is designed for DIN rail mounting.

The module must be supplied with 24VDC power connected to terminal 44 and control ground to terminal 40 for proper operation. The terminals 44 and 40 are bridged to terminal 44 and 40 on the opposite side of the rectifier. This power is the source for the digital output used as an acknowledgement to a supervisory device (PLC or Drive). The digital input controls both the on/off state of the brake coil power, acknowledging the digital output. In the event that the brake coil becomes detached the acknowledgement will not function, indicating a problem with the brake or wiring.

## Basic Connection

The EBGR rectifiers can be wired for either standard engagement (AC-Switching) or fast engagement (DC-Switching) switching the AC power source (input) or the DC voltage supply (output).



<b>CAUTIONS</b>	
Be sure not to connect higher voltage AC mains to the DC rated terminals as this will result in damage to the unit. AC terminals include numbers letters while the DC terminals are all numbers only. Follow UL standards for protection.	

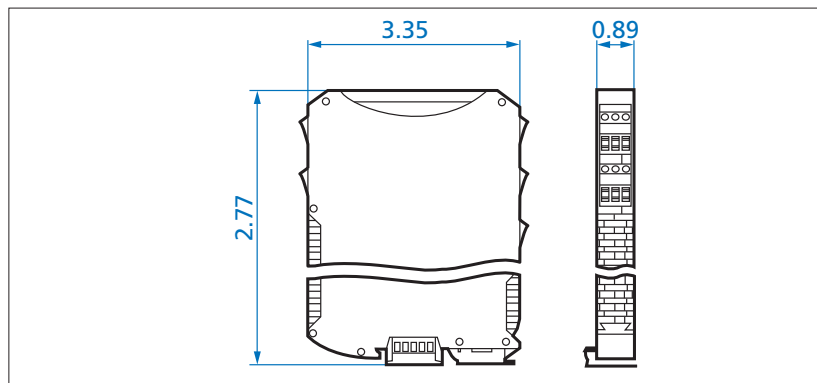
## Ratings & Part Numbers

Model Type	EBGR
Part Number	19140990
Protection (electronics)	IP20
Input Voltage (V <sub>AC</sub> )	100-275V $\pm$ 10% (Terminal L1B & N/L2)
	380 - 500V $\pm$ 10% (Terminal L1E & N/L2)
Output Voltage (V <sub>DC</sub> )	(V <sub>DC</sub> =0.90 x V <sub>AC</sub> ) (Full-Wave)
	(V <sub>DC</sub> =0.45 x V <sub>AC</sub> ) (Half Wave)
Rated Current @ 40°C	0.7A
Rated Current @ 75°C	0.5A
Temperature Range	-20°C to 75°C
DC-Switching	Integrated

## Braking Method

Braking Method	Break Release (Start)	Brake engage (Stop)	Power source
25	Standard	Fast (DC-switching)	Separate Power

## EBGR Dimensions



Description	Terminal	Position Description
24VDC power supply input bridged to output	44	1 Top Layer
Digital input used to control DC brake coil	C5	
Common reference signal ground DC	40	
AC main power Half-wave rectifier input 380-500VAC	LE1	2 Top Layer
AC main power Full-wave rectifier input 100-275VAC	LB1	
Neutral or line 2 common AC connection	N/L2	
Common 24VDC power supply from input side	44	3 Bottom Layer
Digital output DC brake coil acknowledgement	85	
Common DC reference signal ground	40	
DC brake coil connection Plus +	79	4 Bottom Layer
No connect	-	
DC brake coil connection minus -	80	

Main Line Voltage	Brake Coil Voltage	Terminal Number
230 VAC	205 VDC	LB1 + N/L2
400 VAC	180 VDC	LE1 + N/L2
460 VAC	205 VDC	LE1 + N/L2

Terminals	Screw type	Terminal blocks
Cable cross section	0.2 to 2.5mm	12-30 AWG
PE connection	Grounded through DIN rail	Snap on rail must be grounded.





## Standard Brake Components

Standard brake components will be provided if no brake components are specified by the customer.

### Motor Voltage 230/460V-60Hz (208-230/460V) (YY/Y)

Brake Sizes	BRE5-BRE400	BRE800-BRE1200
Brake Coil Voltage	205VDC	No standard – must be specified
Rectifier	GVE20L – full-wave	PMG500
Brake AC Supply	230VAC	No standard – must be specified

**Notes** – The 230VAC standard brake can be used on either motor voltage connection (230V or 460V) when the motor is powered directly with line power and the brake voltage is provided by the motor terminals. When the brake is separately powered, like inverter operation, the brake AC voltage should match the motor connected voltage 230VAC or 460VAC. A 460VAC brake requires a different rectifier to be specified.

### Motor Voltage 460/800V-60Hz (Δ/Y)

Brake Sizes	BRE5-BRE400	BRE800-BRE1200
Brake Coil Voltage	205VDC	205VDC
Rectifier	GHE40L – half-wave	PMG500
Brake AC Supply	460VAC	460VAC

### Motor Voltage 332/575V-60Hz (Δ/Y)

Brake Sizes	BRE5-BRE400	BRE400-BRE1200
Brake Coil Voltage	250VDC	No standard – must be specified
Rectifier	GHE50L – half-wave	No standard – must be specified
Brake AC Supply	575VAC	No standard – must be specified

### Motor Voltage 208/360V-60Hz (Δ/Y)

Brake Sizes	BRE5-BRE400	BRE800-BRE1200
Brake Coil Voltage	180VDC	No standard – must be specified
Rectifier	GVE20L – full-wave	PMG500
Brake AC Supply	208VAC	No standard – must be specified

### Motor Voltage 230/400V-50Hz (220-240/380-420V) (Δ/Y)

Brake Sizes	BRE5-BRE400	BRE800-BRE1200
Brake Coil Voltage	205VDC	No standard – must be specified
Rectifier	GVE20L – full-wave	PMG500
Brake AC Supply	230VAC	No standard – must be specified

### Motor Voltage 400/690-50Hz (380-420/660-720V) (Δ/Y)

Brake Sizes	BRE5-BRE400	BRE800-BRE1200
Brake Coil Voltage	180VDC	No standard – must be specified
Rectifier	GHE40L – half-wave	No standard – must be specified
Brake AC Supply	400VAC	No standard – must be specified

# Brake Performance Data



## Brake Performance Data

Brake Size		BRE5	BRE10	BRE20	BRE40	BRE60	BRE100	BRE150	BRE250	BRE400	BRE800*
Brake torque - max	[lb-ft]	3.7	7.4	15	30	44	74	110	185	295	590
	[lb-in]	44	89	177	354	531	885	1330	2200	3500	7100
	[Nm]	5	10	20	40	60	100	150	250	400	800
Power coil P <sub>20</sub>	[W]	22	28	39	42	50	75	76	100	140	140
Nominal air gap	[in]	0.008	0.008	0.008	0.012	0.012	0.016	0.020	0.020	0.020	0.024
	[mm]	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.5	0.6
Maximum air gap (re-adjust) a <sub>max</sub>	[in]	0.024	0.028	0.031	0.035	0.039	0.043	0.043	0.047	0.047	0.047
	[mm]	0.6	0.7	0.8	0.9	1.0	1.1	1.1	1.2	1.2	1.2
Max brake pad wear - must be replaced	[in]	0.118	0.118	0.111	0.118	0.138	0.138	0.138	0.138	0.138	0.138
	[mm]	3	3	2.8	3	3.5	3.5	3.5	3.5	3.5	3.5
Minimum brake pad thickness	[in]	0.177	0.217	0.295	0.374	0.453	0.492	0.571	0.571	0.650	0.650
	[mm]	4.5	5.5	7.5	9.5	11.5	12.5	14.5	14.5	16.5	16.5
Max work per cycle W <sub>max</sub>	[J x 10 <sup>3</sup> ]	3	6	12	25	35	50	75	105	150	112
	[lb-ft x 10 <sup>3</sup> ]	2.2	4.4	8.9	18.4	25.8	36.9	55.3	77.4	110.6	82.6
Work until re-adjust W <sub>m</sub>	[J x 10 <sup>7</sup> ]	5	12	20	35	60	125	200	340	420	420
	[lb-ft x 10 <sup>7</sup> ]	3.7	8.9	14.8	25.8	44.3	92.2	147.5	250.8	309.8	309.8
Heat load per cycle	[J/s]	80	100	130	160	200	250	300	350	400	600
	[lb-ft/s]	59.0	73.8	95.9	118.0	147.5	184.4	221.3	258.1	295.0	442.5
Release time (start) t <sub>1</sub>	[ms]	35	45	70	80	120	160	200	220	230	400
Release time (start) t <sub>1,OE</sub>	[ms]	15	15	28	28	75	110	110	n/a	n/a	n/a
Setting time (stop) t <sub>2,AC</sub>	[ms]	70	95	140	175	210	280	350	500	800	1000
Setting time (stop) t <sub>2,DC</sub>	[ms]	30	45	30	75	90	120	150	180	200	250
Setting time (stop) t <sub>2,DCRP</sub>	[ms]	5	6	11	12	12	13	17	24	n/a	n/a
IR relay delay (stop) t <sub>2-IR</sub>	[ms]	18	18	18	18	18	18	18	18	18	n/a
Current – 250VDC coil	[A]	0.09	0.11	0.14	0.18	0.19	0.31	0.31	0.4	0.6	0.6
Current – 225VDC coil	[A]	0.09	0.13	0.18	0.20	0.22	0.35	0.36	0.5	0.6	0.6
Current – 205VDC coil	[A]	0.11	0.13	0.15	0.24	0.28	0.44	0.45	0.5	0.7	0.7
Current – 180VDC coil	[A]	0.12	0.16	0.19	0.25	0.30	0.46	0.47	0.6	0.8	0.8
Current – 105VDC coil	[A]	0.21	0.32	0.39	0.46	0.60	0.88	0.89	1.1	1.3	1.3
Current – 24VDC coil	[A]	0.92	1.17	1.42	1.75	2.08	3.10	3.20	4.2	5.9	5.9

\* Holding Brakes with emergency-stop properties - switched with fast acting brake rectifier

Release times
t <sub>1</sub> – Brake release time - Standard
t <sub>1,OE</sub> – Brake release time – Overexcitation (GP)
Set (stop) times
t <sub>2,AC</sub> – Brake set time – AC switching
t <sub>2,DC</sub> – Brake set time – DC switching
t <sub>2,DCRP</sub> – Brake set time – DC switching reduced power
t <sub>2-IR</sub> – Additional brake stopping of the IR relay

### IMPORTANT NOTE

An increased air gap will alter the braking times listed above.



## Brake Size Calculation

Torque and inertias below are based on the motor speed. Load side torques must always be divided by the gear reduction ratio. Inertias must be divided by the square of the gear ratio. You must also consider any external reduction ratio outside the gearbox.

### Selection for holding loads (static)

$$T_{req} = T_{stat} = T_{load} \times K$$

### Selection for stopping loads (static + dynamic)

$$\sum J = J_{motor} + \frac{J_{load}}{i^2}$$

Typically other inertias, like the gearbox, can be ignored.

$$T_{dyn} = \frac{\sum J \times n}{25.7 \times t}$$

$$T_{req} = (T_{dyn} + T_{load}) \times K$$

For driving loads use:  $-T_{load}$

For overhauling loads use:  $+T_{load}$

## Brake Work Verification

$$W = \frac{\sum J \times n^2}{5880} \times \frac{T_B}{T_B \pm T_{load}} \Rightarrow W \leq W_{max}$$

For driving loads use:  $+T_{load}$

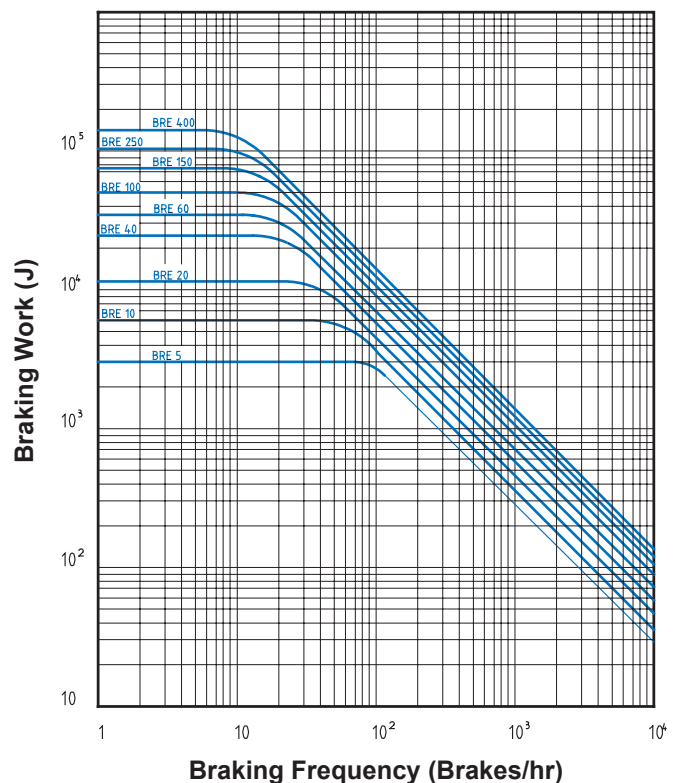
For overhauling loads use:  $-T_{load}$

The permissible values for  $W_{max}$  (Friction work) depend on the stopping frequency. See diagram at right.

In applications where the brake is operated frequently, two brake work values should be evaluated to ensure adequate brake life: the braking work compared to the braking frequency and the maximum work limit for a single operation, such as an E-stop. Reviewing these two values will help determine the optimal solution and ensure long brake life.

## Abbreviation Key

c/h	=	Number of brakes per hour
J [lb-ft <sup>2</sup> ]	=	Inertia
J <sub>motor</sub> [lb-ft <sup>2</sup> ]	=	Motor inertia
i	=	System reduction ratio
K	=	Safety factors. Based on application and according to industry rules and practices Hoisting >2 Hoisting with people >2..3 Travel drives 0.5 to 1.5
T <sub>B</sub> [lb-in]	=	Brake torque
T <sub>dyn</sub> [lb-in]	=	Dynamic torque
T <sub>req</sub> [lb-in]	=	Required brake torque
T <sub>load</sub> [lb-in]	=	Load torque
T <sub>stat</sub> [lb-in]	=	Static torque
n [rpm]	=	Motor speed
t <sub>r</sub> [sec]	=	Stopping time
W [lb-ft]	=	Brake work
W <sub>max</sub> [lb-ft]	=	Maximum brake work for one brake operations



# Connections GHE & GVE Rectifiers



## GHE & GVE Connection Diagrams

Diagram ID	Power Source	Stopping Method	Voltage Level
BR101A	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	NORMAL STOPPING (AC-SWITCHING)
BR101B	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	NORMAL STOPPING (AC-SWITCHING)
BR101C	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	NORMAL STOPPING (AC-SWITCHING)
BR601A	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	NORMAL STOPPING (AC-SWITCHING)
BR601B	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	NORMAL STOPPING (AC-SWITCHING)
BR601C	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	NORMAL STOPPING (AC-SWITCHING)
BR603A	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	FAST STOPPING (DC-SWITCHING)
BR603B	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	FAST STOPPING (DC-SWITCHING)
BR603C	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	FAST STOPPING (DC-SWITCHING)
BR103A	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	FAST STOPPING (DC-SWITCHING)
BR103B	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	FAST STOPPING (DC-SWITCHING)
BR103C	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	FAST STOPPING (DC-SWITCHING)

Brakes

\* The normally open contact/s (NO) is not supplied by NORD. It must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated IEC AC3.

= Braking Method





## GHE & GVE Connection Diagrams

BR102A <span style="float:right">20</span>					BR102B <span style="float:right">20</span>					BR602A <span style="float:right">20</span>					BR602B <span style="float:right">20</span>				
SEPERATE POWER SOURCE STANDARD RELEASE NORMAL STOPPING (AC-SWITCHING)					SEPERATE POWER SOURCE STANDARD RELEASE NORMAL STOPPING (AC-SWITCHING)					SEPERATE POWER SOURCE STANDARD RELEASE NORMAL STOPPING (AC-SWITCHING)					SEPERATE POWER SOURCE STANDARD RELEASE NORMAL STOPPING (AC-SWITCHING)				
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
208-230r/460y	GVE20	208 VAC	230 VAC	205 VDC	230r/460y	GVE20	460 VAC	115 VAC	105 VDC	208Δ/360y	GVE20	208 VAC	208 VAC	180 VDC	230Δ/400y	GHE40	400VAC	230 VAC	105 VDC
230r/460y	GVE20	230 VAC	115 VAC	105 VDC	230r/460y	GVE20	460 VAC	230 VAC	205 VDC	230Δ/400y	GVE20	230 VAC	230 VAC	205 VDC	230Δ/400y	GHE20	400VAC	230 VAC	205VDC
230r/460y	GVE20	230 VAC	230 VAC	205 VDC	230r/460y	GHE40	460 VAC	460 VAC	205 VDC	400Δ/690y	GHE40	400 VAC	400 VAC	180 VDC	230Δ/400y	GHE40	400 VAC	400 VAC	180 VDC
230r/460y	GHE40	230 VAC	230 VAC	105 VDC						460Δ/r	GHE40	460 VAC	460 VAC	205 VDC	332Δ/575y	GHE50	575 VAC	575 VAC	250 VDC
BR104A <span style="float:right">25</span>					BR104B <span style="float:right">25</span>					BR604A <span style="float:right">25</span>					BR604B <span style="float:right">25</span>				
SEPERATE POWER SOURCE STANDARD RELEASE FAST STOPPING (DC-SWITCHING)					SEPERATE POWER SOURCE STANDARD RELEASE FAST STOPPING (DC-SWITCHING)					SEPERATE POWER SOURCE STANDARD RELEASE FAST STOPPING (DC-SWITCHING)					SEPERATE POWER SOURCE STANDARD RELEASE FAST STOPPING (DC-SWITCHING)				
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
208-230r/460y	GVE20	208 VAC	230 VAC	205 VDC	230r/460y	GVE20	460 VAC	115 VAC	105 VDC	208Δ/360y	GVE20	208 VAC	208 VAC	105 VDC	230Δ/400y	GHE40	400VAC	230 VAC	105 VDC
230r/460y	GVE20	230 VAC	115 VAC	105 VDC	230r/460y	GVE20	460 VAC	230 VAC	205 VDC	230Δ/400y	GHE20	230 VAC	230 VAC	105 VDC	230Δ/400y	GHE20	400VAC	230 VAC	205VDC
230r/460y	GVE20	230 VAC	230 VAC	205 VDC	230r/460y	GHE40	460 VAC	460 VAC	205 VDC	400Δ/690y	GHE40	400 VAC	400 VAC	180 VDC	230Δ/400y	GHE40	400 VAC	400 VAC	180 VDC
230r/460y	GHE40	230 VAC	230 VAC	105 VDC						460Δ/r	GHE40	460 VAC	460 VAC	205 VDC	332Δ/575y	GHE50	575 VAC	575 VAC	250 VDC

\* The normally open contact/s (NO) is not supplied by NORD. It must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated IEC AC3.

= Braking Method

Brakes

## GUE Dual Rectifier - Connection Diagrams

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= Braking Method



## GPE Rectifier - Connection Diagrams

GP101A		GP101B		GP101C		GP101D			
POWERED FROM MOTOR TERMINAL BLOCK		POWERED FROM MOTOR TERMINAL BLOCK		POWERED FROM MOTOR TERMINAL BLOCK		POWERED FROM MOTOR TERMINAL BLOCK			
FAST-RELEASE (OVER EXCITATION)		FAST-RELEASE (OVER EXCITATION)		FAST-RELEASE (OVER EXCITATION)		FAST-RELEASE (OVER EXCITATION)			
NORMAL STOPPING (AC-SWITCHING)		NORMAL STOPPING (AC-SWITCHING)		NORMAL STOPPING (AC-SWITCHING)		NORMAL STOPPING (AC-SWITCHING)			
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
230Vr/460y	GPE20L	230 VAC	230 VAC	105 VDC	230Vr/460y	GPE20L	460 VAC	230 VAC	105 VDC
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
230Vr/460y	GPE20L	230 VAC	230 VAC	105 VDC	230Vr/460y	GPE40L	460 VAC	460 VAC	205 VDC
					208Δ/360y	GPE20L	208 VAC	230 VAC	105 VDC
					230Δ/400y	GPE20L	230 VAC	230 VAC	105 VDC
					400Δ/690y	GPE40L	400 VAC	400 VAC	180 VDC
					460Δ/y	GPE40L	460 VAC	460 VAC	205 VDC
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
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POWERED FROM MOTOR TERMINAL BLOCK		POWERED FROM MOTOR TERMINAL BLOCK		POWERED FROM MOTOR TERMINAL BLOCK		POWERED FROM MOTOR TERMINAL BLOCK			
FAST-RELEASE (OVER EXCITATION)		FAST-RELEASE (OVER EXCITATION)		FAST-RELEASE (OVER EXCITATION)		FAST-RELEASE (OVER EXCITATION)			
NORMAL STOPPING (AC-SWITCHING)		FAST STOPPING (DC-SWITCHING)		FAST STOPPING (DC-SWITCHING)		FAST STOPPING (DC-SWITCHING)			
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
230Δ/400y	GPE20L	400 VAC	230 VAC	105 VDC	230Vr/460y	GPE20L	230 VAC	230 VAC	105 VDC
332Δ/575y	GPE40L	575 VAC	332 VAC	180 VDC	230Vr/460y	GPE40L	460 VAC	460 VAC	205 VDC
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
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POWERED FROM MOTOR TERMINAL BLOCK		POWERED FROM MOTOR TERMINAL BLOCK		POWERED FROM MOTOR TERMINAL BLOCK		POWERED FROM MOTOR TERMINAL BLOCK			
FAST-RELEASE (OVER EXCITATION)		FAST-RELEASE (OVER EXCITATION)		FAST-RELEASE (OVER EXCITATION)		FAST-RELEASE (OVER EXCITATION)			
FAST STOPPING (DC-SWITCHING)		FAST STOPPING (DC-SWITCHING)		FAST STOPPING (DC-SWITCHING)		FAST STOPPING (DC-SWITCHING)			
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
208Δ/360y	GPE20L	208 VAC	208 VAC	105 VDC	230Δ/400y	GPE20L	400 VAC	230 VAC	105 VDC
230Δ/400y	GPE20L	230 VAC	230 VAC	105 VDC	332Δ/575y	GPE40L	575 VAC	332 VAC	180 VDC
400Δ/690y	GPE40L	400 VAC	400 VAC	180 VDC	230Vr/460y	GPE20L	230 VAC	230 VAC	105 VDC
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MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
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= Braking Method

Brakes

## GPE & GPU Rectifier - Connection Diagrams

Diagram ID	Power Source	Stopping Method	Voltage
GP103C	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)
GP103D	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE	VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)
GP104A	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	NORMAL STOPPING (AC-SWITCHING)
GP104B	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	NORMAL STOPPING (AC-SWITCHING)
GP104C	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	NORMAL STOPPING (AC-SWITCHING)
GP104D	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	NORMAL STOPPING (AC-SWITCHING)
GP104E	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	NORMAL STOPPING (AC-SWITCHING)
GP105A	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	FAST STOPPING (DC-SWITCHING)
GP105B	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	FAST STOPPING (DC-SWITCHING)
GP105C	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	FAST STOPPING (DC-SWITCHING)
GP105D	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	FAST STOPPING (DC-SWITCHING)
GP105E	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION)	FAST STOPPING (DC-SWITCHING)

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## GPU & PMG Rectifier - Connection Diagrams

GP106A		GP106B		GP106C		GP106D			
SEPERATE POWER SOURCE STANDARD RELEASE VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)		SEPERATE POWER SOURCE STANDARD RELEASE VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)		SEPERATE POWER SOURCE STANDARD RELEASE VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)		SEPERATE POWER SOURCE STANDARD RELEASE VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)			
55		55		55		55			
MOTOR	RECTIFIER	$V_{motor}$	$V_{B-AC}$	$V_{B-DC}$	MOTOR	RECTIFIER	$V_{motor}$	$V_{B-AC}$	$V_{B-DC}$
230Vr/460y	GPU20L	230 VAC	230 VAC	205 VDC	230Vr/460y	GPU20L	460 VAC	230 VAC	205 VDC
208Δ/360y	GPU20L	230 VAC	208 VAC	180 VDC	230Δ/400y	GPU20L	230 VAC	230 VAC	205 VDC
230Δ/400y	GPU20L	400 VAC	230 VAC	205 VDC					
PMG101A		PMG101B		PMG101C		PMG101D			
POWERED FROM MOTOR TERMINAL BLOCK FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)			
30		30		30		30			
MOTOR	RECTIFIER	$V_{motor}$	$V_{B-AC}$	$V_{B-DC}$	MOTOR	RECTIFIER	$V_{motor}$	$V_{B-AC}$	$V_{B-DC}$
230Vr/460y	PMG500	230 VAC	230 VAC	105 VDC	230Vr/460y	PMG500	460 VAC	230 VAC	105 VDC
230Δ/360y	PMG500	208 VAC	208 VAC	105 VDC	230Δ/400y	PMG500	230 VAC	230 VAC	105 VDC
400Δ/690y	PMG500	400 VAC	400 VAC	180 VDC	460Δ/y	PMG500	460 VAC	460 VAC	205 VDC
230Δ/400y	PMG500	460 VAC	460 VAC	205 VDC					
PMG101E		PMG102A		PMG102B		PMG102C			
POWERED FROM MOTOR TERMINAL BLOCK FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK FAST-RELEASE (OVER EXCITATION) FAST STOPPING (DC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK FAST-RELEASE (OVER EXCITATION) FAST STOPPING (DC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK FAST-RELEASE (OVER EXCITATION) FAST STOPPING (DC-SWITCHING)			
30		35		35		35			
MOTOR	RECTIFIER	$V_{motor}$	$V_{B-AC}$	$V_{B-DC}$	MOTOR	RECTIFIER	$V_{motor}$	$V_{B-AC}$	$V_{B-DC}$
230Δ/400y	PMG500	400 VAC	230 VAC	105 VDC	230Vr/460y	PMG500	230 VAC	230 VAC	105 VDC
230Vr/460y	PMG500	230 VAC	230 VAC	105 VDC	230Vr/460y	PMG500	460 VAC	230 VAC	105 VDC
230Δ/400y	PMG500	460 VAC	460 VAC	205 VDC	230Vr/460y	PMG500	460 VAC	460 VAC	205 VDC

\* The normally open contact/s (NO) is not supplied by NORD. It must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated IEC AC3.

= Braking Method

Brakes



## PMG Rectifier - Connection Diagrams

Diagram ID	Power Source	Release/Stopping	Braking Method	Motor Starter	Motor	Rectifier	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
PMG102D	POWERED FROM MOTOR TERMINAL BLOCK	FAST-RELEASE (OVER EXCITATION) FAST STOPPING (DC-SWITCHING)	LOW VOLTAGE	MOTOR STARTER	208Δ/360y 230Δ/400y 400Δ/690y 460Δ/y	PMG500	208 VAC 230 VAC 400 VAC 460 VAC	208 VDC 230 VAC 400 VAC 460 VAC	105 VDC 105 VDC 180 VDC 205 VDC
PMG102E	POWERED FROM MOTOR TERMINAL BLOCK	FAST-RELEASE (OVER EXCITATION) FAST STOPPING (DC-SWITCHING)	HIGH VOLTAGE	MOTOR STARTER	230Δ/400y	PMG500	400 VAC	230 VAC	105 VDC
PMG103A	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)	LOW VOLTAGE	MOTOR STARTER	230y/460y	PMG500	230 VAC	230 VAC	205 VDC
PMG103B	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)	HIGH VOLTAGE	MOTOR STARTER	230y/460y	PMG500	460 VAC	230 VAC	205 VDC
PMG103C	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)	LOW VOLTAGE	MOTOR STARTER	208Δ/360y 230Δ/400y	PMG500	208 VAC 230 VAC	180 VDC 205 VDC	
PMG103D	POWERED FROM MOTOR TERMINAL BLOCK	STANDARD RELEASE VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)	HIGH VOLTAGE	MOTOR STARTER	230Δ/400y	PMG500	400 VAC	230 VAC	205 VDC
PMG104A	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)	LOW VOLTAGE	MOTOR STARTER	230y/460y	PMG500	230 VAC	230 VAC	105 VDC
PMG104B	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)	HIGH VOLTAGE	MOTOR STARTER	230y/460y	PMG500	460 VAC	230 VAC	105 VDC
PMG104C	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)	HIGH VOLTAGE	MOTOR STARTER	230y/460y	PMG500	460 VAC	460 VAC	205 VDC
PMG104D	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)	LOW VOLTAGE	MOTOR STARTER	208Δ/360y 230Δ/400y 400Δ/690y 460Δ/y	PMG500	208 VAC 230 VAC 400 VAC 460 VAC	105 VDC 230 VAC 400 VAC 460 VAC	105 VDC 105 VDC 180 VDC 205 VDC
PMG104E	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION) NORMAL STOPPING (AC-SWITCHING)	HIGH VOLTAGE	MOTOR STARTER	230Δ/400y	PMG500	400 VAC	230 VAC	105 VDC
PMG105A	SEPERATE POWER SOURCE	FAST-RELEASE (OVER EXCITATION) FAST STOPPING (DC-SWITCHING)	LOW VOLTAGE	MOTOR STARTER	230y/460y	PMG500	230 VAC	230 VAC	105 VDC

\* The normally open contact/s (NO) is not supplied by NORD. It must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated IEC AC3.

= Braking Method



## PMG Rectifier - Connection Diagrams

PMG105B	PMG105C	PMG105D	PMG105E																																																							
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= Braking Method



## IR Relay Typical Connection Diagrams

<p><b>IR101A</b> POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING) <b>15</b></p> <table border="1"> <thead> <tr> <th>MOTOR</th> <th>RECTIFIER</th> <th>V<sub>motor</sub></th> <th>V<sub>B-AC</sub></th> <th>V<sub>B-DC</sub></th> </tr> </thead> <tbody> <tr> <td>208/230V/460V</td> <td>GVE20</td> <td>208VAC</td> <td>230 VAC</td> <td>205 VDC</td> </tr> <tr> <td>230V/460V</td> <td>GVE20</td> <td>230 VAC</td> <td>230 VAC</td> <td>205 VDC</td> </tr> </tbody> </table>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	208/230V/460V	GVE20	208VAC	230 VAC	205 VDC	230V/460V	GVE20	230 VAC	230 VAC	205 VDC	<p><b>IR101B</b> POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING) <b>15</b></p> <table border="1"> <thead> <tr> <th>MOTOR</th> <th>RECTIFIER</th> <th>V<sub>motor</sub></th> <th>V<sub>B-AC</sub></th> <th>V<sub>B-DC</sub></th> </tr> </thead> <tbody> <tr> <td>230V/460V</td> <td>GVE20</td> <td>460 VAC</td> <td>230 VAC</td> <td>205 VDC</td> </tr> </tbody> </table>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	230V/460V	GVE20	460 VAC	230 VAC	205 VDC	<p><b>IR102A</b> POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING) <b>15</b></p> <table border="1"> <thead> <tr> <th>MOTOR</th> <th>RECTIFIER</th> <th>V<sub>motor</sub></th> <th>V<sub>B-AC</sub></th> <th>V<sub>B-DC</sub></th> </tr> </thead> <tbody> <tr> <td>208/230V/460V</td> <td>GHE40</td> <td>208VAC</td> <td>230 VAC</td> <td>105 VDC</td> </tr> <tr> <td>230V/460V</td> <td>GHE40</td> <td>230 VAC</td> <td>230 VAC</td> <td>105 VDC</td> </tr> </tbody> </table>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	208/230V/460V	GHE40	208VAC	230 VAC	105 VDC	230V/460V	GHE40	230 VAC	230 VAC	105 VDC	<p><b>IR102B</b> POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING) <b>15</b></p> <table border="1"> <thead> <tr> <th>MOTOR</th> <th>RECTIFIER</th> <th>V<sub>motor</sub></th> <th>V<sub>B-AC</sub></th> <th>V<sub>B-DC</sub></th> </tr> </thead> <tbody> <tr> <td>230V/460V</td> <td>GHE40</td> <td>460 VAC</td> <td>230 VAC</td> <td>105 VDC</td> </tr> </tbody> </table>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	230V/460V	GHE40	460 VAC	230 VAC	105 VDC
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230V/460V	GHE40	460 VAC	460VAC	205 VDC																																																	
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>																																																	
208Δ/360V	GVE20	208 VAC	208 VAC	180 VDC																																																	
230Δ/400V	GVE20	230 VAC	230 VAC	205 VDC																																																	
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>																																																	
460Δ/800V	GHE40	460 VAC	460 VAC	205 VDC																																																	
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>																																																	
332Δ/575V	GHE50	575 VAC	575 VAC	250 VDC																																																	
<p><b>IR601</b> POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING) <b>15</b></p> <table border="1"> <thead> <tr> <th>MOTOR</th> <th>RECTIFIER</th> <th>V<sub>motor</sub></th> <th>V<sub>B-AC</sub></th> <th>V<sub>B-DC</sub></th> </tr> </thead> <tbody> <tr> <td>230Δ/400V</td> <td>GVE20</td> <td>400 VAC</td> <td>230 VAC</td> <td>205 VDC</td> </tr> <tr> <td>230Δ/400V</td> <td>GHE40</td> <td>400 VAC</td> <td>230 VAC</td> <td>105 VDC</td> </tr> </tbody> </table>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	230Δ/400V	GVE20	400 VAC	230 VAC	205 VDC	230Δ/400V	GHE40	400 VAC	230 VAC	105 VDC	<p><b>IR602</b> POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING) <b>15</b></p> <table border="1"> <thead> <tr> <th>MOTOR</th> <th>RECTIFIER</th> <th>V<sub>motor</sub></th> <th>V<sub>B-AC</sub></th> <th>V<sub>B-DC</sub></th> </tr> </thead> <tbody> <tr> <td>400Δ/690V</td> <td>GHE40</td> <td>400 VAC</td> <td>400 VAC</td> <td>180 VDC</td> </tr> </tbody> </table>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	400Δ/690V	GHE40	400 VAC	400 VAC	180 VDC	<div style="text-align: center;"> <h3 style="margin: 0;">CAUTIONS</h3> </div> <p style="text-align: center;"><b>Requirements</b></p> <ul style="list-style-type: none"> <li>• Brake must be powered from the motor's terminal block (not separately powered)</li> <li>• Motor must be a single speed and should not be powered by a frequency inverter or soft starter.</li> </ul>																										
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>																																																	
230Δ/400V	GVE20	400 VAC	230 VAC	205 VDC																																																	
230Δ/400V	GHE40	400 VAC	230 VAC	105 VDC																																																	
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>																																																	
400Δ/690V	GHE40	400 VAC	400 VAC	180 VDC																																																	



## IR Relay with GUE40V Dual Wave Rectifier

IR701A		IR701B		IR702A		IR702B													
POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING)													
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
208-230V/460V 230Vr/460V	GUE40V GUE40V	208 VAC 230 VAC	230 VAC 230 VAC	205 VDC 205 VDC	208-230V/460V 230Vr/460V	GUE40V GUE40V	460 VAC 460 VAC	460 VAC 460 VAC	205 VDC 205 VDC	208Δ/360V 230Δ/400V	GUE40V GUE40V	208 VAC 230 VAC	208 VAC 230 VAC	180 VDC 205 VDC	230Δ/400V	GUE40V	400 VAC	400 VAC	180 VDC

## GPE Rectifier for External DC-Switching with IR Relay

IR151A		IR151B		IR152A		IR152B													
POWERED FROM MOTOR TERMINAL BLOCK FAST RELEASE (OVER EXCITATION) FAST STOPPING (DC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE FAST STOPPING (DC-SWITCHING)		POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE VERY FAST STOPPING (REDUCED POWER HOLD)		POWERED FROM MOTOR TERMINAL BLOCK STANDARD-RELEASE VERY FAST STOPPING (REDUCED POWER HOLD)													
MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>	MOTOR	RECTIFIER	V <sub>motor</sub>	V <sub>B-AC</sub>	V <sub>B-DC</sub>
230Vr/460V	GPE20L	230 VAC	230 VAC	105 VDC	230Vr/460V	GPE20L	460 VAC	230 VAC	105 VDC	230Vr/460V	GPE20L	230 VAC	230 VAC	205 VDC	230Vr/460V	GPE20L	460 VAC	230 VAC	205 VDC



### CAUTIONS



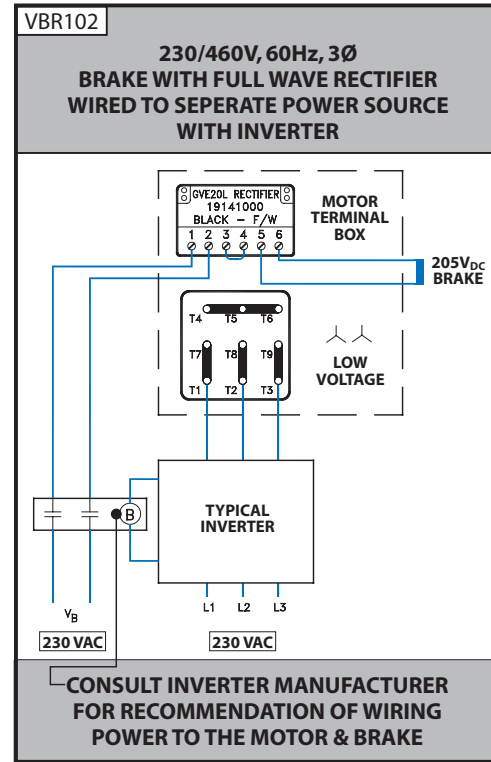
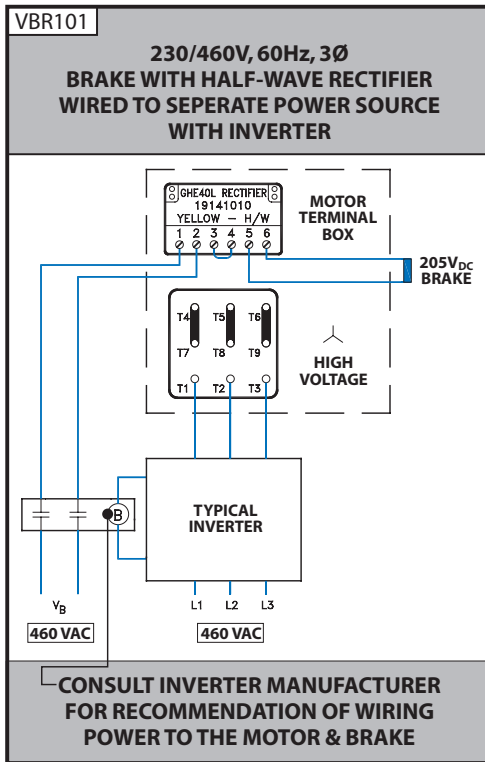
#### Requirements

- Brake must be powered from the motor's terminal block (not separately powered)
- Motor must be a single speed and should not be powered by a frequency inverter or soft starter.

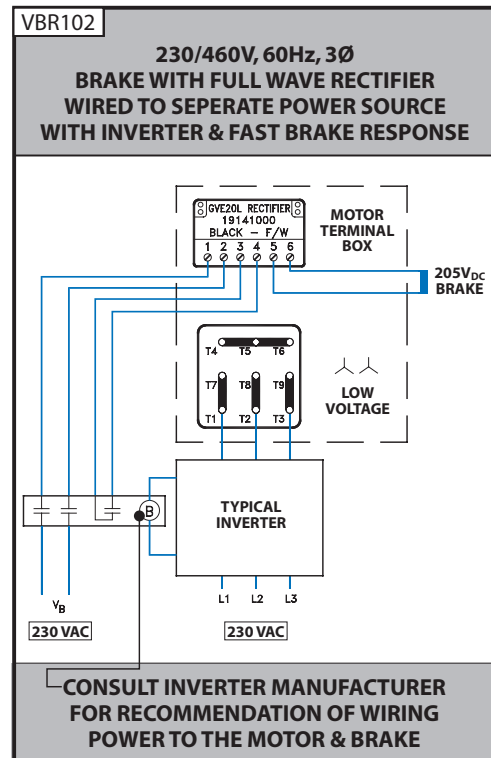
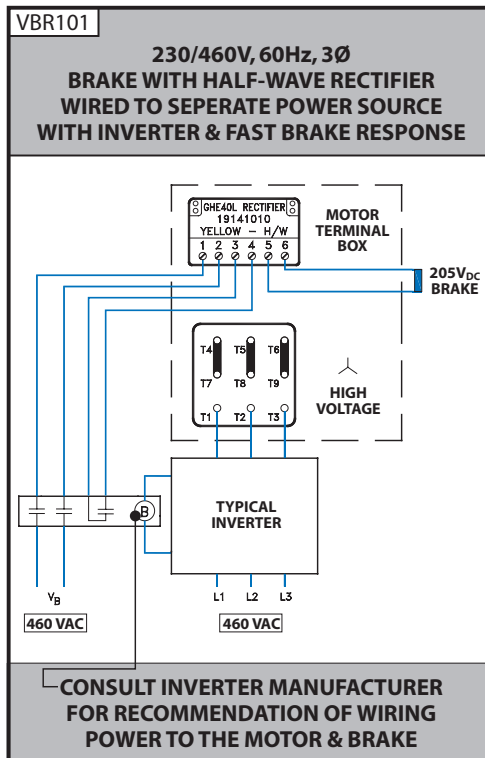


## Inverter Driven Brakemotors

### Connection Guide for Brakes with AC-Switching



### Connection Guide for Brakes with DC-Switching







**DRIVESYSTEMS**

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# Continuous Duty 230/460V - 60Hz



Inverter duty • Induction motor • TEFC  
Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
Voltages: 230/460V – 60Hz • 1.15 Service Factor  
Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		Eff. Class	n <sub>N</sub> Full-Load Speed	I <sub>n</sub> Full-Load Current		I <sub>2</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full-Load Torque	T <sub>2</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>v</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Efficiency	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[hp]	[kW]			[rpm]	230V [A]									
63 S/4	0.16	0.12	-	1700	0.88	0.44	250%	F	5.93	2.7	3.5	0.66	52.0%	0.0050	7.9
63 L/4	0.25	0.18	-	1680	1.12	0.56	270%	E	9.38	2.3	2.5	0.71	57.0%	0.0066	9.3
71 S/4	0.33	0.25	-	1710	1.56	0.78	310%	G	12.2	2.4	2.7	0.64	63.0%	0.017	12
71 L/4	0.5	0.37	-	1720	1.90	0.95	350%	F	18.3	2.3	2.7	0.69	71.0%	0.020	14
80 S/4	0.75	0.55	-	1710	2.70	1.35	350%	F	27.6	2.2	2.3	0.71	72.0%	0.026	18
80 LP/4	1	0.75	pe	1730	3.14	1.57	650	K	36.4	3.5	3.8	0.70	86.1	0.045	22
90 SP/4	1.5	1.1	pe	1740	4.20	2.10	840	L	54.3	4.2	4.9	0.76	86.9	0.081	33
90 LP/4	2	1.5	pe	1730	5.60	2.80	760	K	72.9	3.9	4.3	0.78	87.0	0.093	37
100 LP/4	3	2.2	pe	1770	7.68	3.84	920	L	107	3.0	4.5	0.79	90.0	0.192	62
112 MP/4	5	3.7	pe	1755	13.0	6.50	950	L	180	4.1	4.6	0.80	90.3	0.332	78
132 SP/4	7.5	5.5	pe	1770	19.5	9.75	1020	M	267	4.7	5.0	0.77	91.7	0.759	121
132 MP/4	10	7.5	pe	1765	26.7	13.4	960	M	357	4.7	5.0	0.77	91.7	0.831	137
160 MP/4	15	11	pe	1770	35.6	17.8	880	K	534	3.2	3.8	0.84	92.5	1.59	205
160 LP/4	20	15	pe	1775	47.6	23.8	1080	M	710	4.3	4.7	0.85	93.0	2.18	269
180 MP/4	25	18.5	pe	1780	60.6	30.3	1010	L	885	3.9	4.0	0.82	93.6	3.80	342
180 LP/4	30	22	pe	1780	69.6	34.8	880	K	1062	3.3	3.4	0.85	93.6	3.80	342
225 RP/4	40	30	pe	1785	-	49.5	890	K	1412	3.4	3.8	0.81	94.5	11.6	694
225 SP/4	50	37	pe	1785	-	59.7	880	K	1765	3.0	3.7	0.82	94.6	12.8	728
225 MP/4	60	45	pe	1785	-	72.0	910	K	2118	3.3	3.6	0.83	95.2	15.9	805
250 WP/4	75	55	pe	1785	-	84.4	920	J	2648	2.9	3.2	0.86	95.4	19.5	882

Motor Ratings





**Inverter duty • Induction motor • TEFC**  
**Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase**  
**Voltages: 230/460V – 60Hz • 1.15 Service Factor**  
**60 Minute Duty • 40°C Ambient • up to 3300ft Elevation**  
**Class B temperature rise • Class F insulation**

Motor Type	P <sub>n</sub> Full Load Power		n <sub>n</sub> Full-Load Speed	I <sub>n</sub> Full-Load Current		I <sub>2</sub> /I <sub>1</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full-Load Torque	T <sub>2</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>v</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Efficiency	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[hp]	[kW]		[A]	[A]									
80 L/4	1	0.75	1650	3.66	1.83	390%	G	38.2	2.2	2.3	0.74	70.0%	0.034	20
90 S/4	1.5	1.1	1660	4.84	2.42	490%	G	57.0	2.5	2.8	0.78	73.0%	0.056	26
90 L/4	2	1.5	1660	6.34	3.17	510%	H	75.9	2.5	2.8	0.80	74.0%	0.074	31
100 L/4	3	2.2	1705	9.00	4.50	490%	G	111	2.3	2.6	0.81	76.0%	0.107	40
100 LA/4	5	3.7	1725	15.2	7.60	510%	G	183	2.7	3.1	0.75	81.0%	0.142	46
132 S/4	7.5	5.5	1735	19.8	9.90	540%	G	272	2.4	2.7	0.82	85.0%	0.570	97
132 M/4	10	7.5	1735	25.8	12.9	630%	H	363	2.9	3.2	0.84	87.0%	0.759	121
160 M/4	15	11	1770	35.8	17.9	820%	J	534	2.9	3.8	0.85	90.7%	1.19	172
160 L/4	20	15	1760	48.4	24.2	850%	K	716	2.9	3.9	0.87	89.4%	1.59	205
180 MX/4	25	18.5	1760	59.0	29.5	880%	K	895	3.4	4.3	0.87	90.5%	1.90	236
180 LX/4	30	22	1765	74.4	37.2	890%	K	1071	3.6	4.4	0.80	92.8%	2.18	269
200 LX/4	40	30	1770	98.6	49.3	690%	H	1424	3.2	3.6	0.83	92.1%	3.80	342



# Inverter Duty - Continuous Duty

## 5:1 Constant Torque (VR)

### 230/460V - 60-12Hz



Inverter duty • Induction motor • TEFC  
 Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
 Voltages: 230/460V – 60Hz • 1.0 Service Factor  
 Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	Power		Eff. Class	Operating Range			Motor Across the line data												
	P <sub>n</sub>			n <sub>60</sub>	n <sub>12</sub>	T <sub>60-12</sub>	n <sub>N</sub>	I <sub>n</sub>			I <sub>2</sub> /I <sub>n</sub>	NEMA Code Letter	T <sub>n</sub>	T <sub>2</sub> /T <sub>n</sub>	T <sub>k</sub> /T <sub>n</sub>	pf	η	J <sub>m</sub>	Wt. Weight
	Full Load Power							Full Load Speed	Full Load Speed	Full Load Torque									
	[HP]	[kW]		60 Hz	12 Hz	60-12 Hz	60 Hz	230 V	460 V	[%]	[lb-in]								
63 S/4-VR	0.16	0.12	-	1700	340	5.93	1700	0.88	0.44	250	F	5.93	2.7	3.5	0.66	52.0	0.0050	7.9	
63 L/4-VR	0.25	0.18	-	1680	336	9.38	1680	1.12	0.56	270	E	9.38	2.3	2.5	0.71	57.0	0.0066	9.3	
71 S/4-VR	0.33	0.25	-	1710	342	12.2	1710	1.56	0.78	310	G	12.2	2.4	2.7	0.64	63.0	0.017	12	
71 L/4-VR	0.5	0.37	-	1720	344	18.3	1720	1.90	0.95	350	F	18.3	2.3	2.7	0.69	71.0	0.020	14	
80 S/4-VR	0.75	0.55	-	1710	342	27.6	1710	2.70	1.35	350	F	27.6	2.2	2.3	0.71	72.0	0.026	18	
80 LP/4-VR	1	0.75	pe	1730	346	36.4	1730	3.14	1.57	650	K	36.4	3.5	3.8	0.70	86.1	0.045	22	
90 SP/4-VR	1.5	1.1	pe	1740	348	54.3	1740	4.20	2.10	840	L	54.3	4.2	4.9	0.76	86.9	0.081	33	
90 LP/4-VR	2	1.5	pe	1730	346	72.9	1730	5.60	2.80	760	K	72.9	3.9	4.3	0.78	87.0	0.093	37	
100 LP/4-VR	3	2.2	pe	1770	354	107	1770	7.68	3.84	920	L	107	3.0	4.5	0.79	90.0	0.192	62	
112 MP/4-VR	5	3.7	pe	1755	351	180	1755	13	6.5	950	L	180	4.1	4.6	0.80	90.3	0.332	78	
132 SP/4-VR	7.5	5.5	pe	1770	354	267	1770	19.5	9.75	1020	M	267	4.7	5.0	0.77	91.7	0.759	121	
132 MP/4-VR	10	7.5	pe	1765	353	357	1765	26.7	13.4	960	M	357	4.7	5.0	0.77	91.7	0.831	137	
160 MP/4-VR	15	11	pe	1770	354	534	1770	35.6	17.8	880	K	534	3.2	3.8	0.84	92.5	1.59	205	
160 LP/4-VR	20	15	pe	1775	355	710	1775	47.6	23.8	1080	M	710	4.3	4.7	0.85	93.0	2.18	269	
180 MP/4-VR	25	18.5	pe	1780	356	885	1780	60.6	30.3	1010	L	885	3.9	4.0	0.82	93.6	3.80	342	
180 LP/4-VR	30	22	pe	1780	356	1062	1780	69.6	34.8	880	K	1062	3.3	3.4	0.85	93.6	3.80	342	
225 RP/4-VR	40	30	pe	1785	357	1412	1785	-	49.5	890	K	1412	3.4	3.8	0.81	94.5	11.6	694	
225 SP/4-VR	50	37	pe	1785	357	1765	1785	-	59.7	880	K	1765	3.0	3.7	0.82	94.6	12.8	728	
225 MP/4-VR	60	45	pe	1785	357	2118	1785	-	72.0	910	K	2118	3.3	3.6	0.83	95.2	15.9	805	
250 WP/4-VR	75	55	pe	1785	357	2648	1785	-	84.4	820	J	2648	2.9	3.2	0.86	95.4	19.5	882	

Motor Ratings





# Inverter Duty - Intermittant Duty

## 5:1 Constant Torque (VR)

### 230/460V - 60-12Hz

Inverter duty • Induction motor • TEFC  
 Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
 Voltages: 230/460V – 60Hz • 1.0 Service Factor  
 60 Minute Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	Power P <sub>n</sub> Full Load Power		Operating Range			Motor Across the line data											
			n <sub>60</sub> Full Load Speed	n <sub>12</sub> Full Load Speed	T <sub>60-12</sub> Full Load Torque	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current		I <sub>l</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>l</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
			60 Hz [rpm]	12 Hz [rpm]	60-12 Hz [lb-in]	60 Hz [rpm]	230 V [A]	460 V [A]									
80 L/4-VR	1	0.75	1650	330	38.2	1650	3.66	1.83	390	G	38.2	2.2	2.3	0.74	70.0	0.034	20
90 S/4-VR	1.5	1.1	1660	332	57.0	1660	4.84	2.42	490	G	57.0	2.5	2.8	0.78	73.0	0.056	26
90 L/4-VR	2	1.5	1660	332	75.9	1660	6.34	3.17	510	H	75.9	2.5	2.8	0.80	74.0	0.074	31
100 L/4-VR	3	2.2	1705	341	111	1705	9.00	4.50	490	G	111	2.3	2.6	0.81	76.0	0.107	40
100 LA/4-VR	5	3.7	1725	345	183	1725	15.2	7.62	510	G	183	2.7	3.1	0.75	81.0	0.142	46
132 S/4-VR	7.5	5.5	1735	347	272	1735	19.8	9.90	540	G	272	2.4	2.7	0.82	85.0	0.570	97
132 M/4-VR	10	7.5	1735	347	363	1735	25.8	12.9	630	H	363	2.9	3.2	0.84	87.0	0.759	121
160 M/4-VR	15	11	1770	354	534	1770	35.8	17.9	820	J	534	2.9	3.8	0.85	90.7	1.19	172
160 L/4-VR	20	15	1760	352	716	1760	48.4	24.2	850	K	716	2.9	3.9	0.87	89.4	1.59	205
180 MX/4-VR	25	18.5	1760	352	895	1760	59.0	29.5	880	K	895	3.4	4.3	0.87	90.5	1.90	236
180 LX/4-VR	30	22	1765	353	1071	1765	74.4	37.2	890	K	1071	3.6	4.4	0.80	92.8	2.18	269
200 LX/4-VR	40	30	1770	354	1424	1770	98.6	49.3	690	H	1424	3.2	3.6	0.83	92.1	3.80	342





# Inverter Duty - Continuous Duty 10:1 Constant Torque (VN) 230/460V - 60-6Hz



Inverter duty • Induction motor • TEFC  
Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
Voltages: 230/460V – 60Hz • 1.0 Service Factor  
Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	Power		Eff. Class	Operating Range						Motor Across the line data														
	P <sub>n</sub>			Full Load Speed	n <sub>60</sub>	n <sub>6</sub>	T <sub>60-6</sub>	n <sub>N</sub>	I <sub>n</sub>			I <sub>2</sub> /I <sub>1</sub>	NEMA Code Letter	T <sub>n</sub>	T <sub>2</sub> /T <sub>n</sub>	T <sub>2</sub> /T <sub>n</sub>	pf	η	J <sub>m</sub>	Wt. Weight				
	Full Load Power								Full Load Current		Locked Rotor Current Ratio										Full Load Torque	Full Load Speed	230 V	460 V
	[HP]	[kW]							[A]	[A]														
63 S/4-VN	0.12	0.09	-	1720	172	4.40	1720	0.76	0.38	290	J	4.40	3.6	4.7	0.57	52.0	0.005	7.9						
63 L/4-VN	0.16	0.12	-	1720	172	5.86	1720	0.90	0.45	335	J	5.86	3.7	4.0	0.64	52.0	0.007	9.3						
71 S/4-VN	0.25	0.18	-	1740	174	9.06	1740	1.06	0.53	454	J	9.06	3.2	3.6	0.70	63.0	0.017	11.9						
71 L/4-VN	0.33	0.25	-	1745	175	11.9	1745	1.48	0.74	449	K	11.9	3.5	4.2	0.64	65.0	0.020	13.9						
80 S/4-VN	0.50	0.37	-	1745	175	18.1	1745	2.79	1.40	338	J	18.1	3.4	3.5	0.46	73.0	0.026	17.6						
80 LP/4-VN	0.75	0.55	pe	1750	175	27.0	1750	2.32	1.16	881	M	27.0	4.7	5.1	0.71	85.6	0.045	22						
90 SP/4-VN	1	0.75	pe	1760	176	35.8	1760	3.34	1.67	1057	R	35.8	6.4	7.4	0.65	86.3	0.081	33						
90 LP/4-VN	1.5	1.1	pe	1755	176	53.9	1755	4.59	2.30	926	N	53.9	5.3	5.8	0.70	87.5	0.093	37						
100 LP/4-VN	2	1.5	pe	1780	178	70.8	1780	5.72	2.86	1234	R	70.8	4.5	6.8	0.73	89.9	0.18	56						
112 MP/4-VN	3	2.2	pe	1775	178	107	1775	9.33	4.67	1323	S	107	6.9	7.8	0.67	89.8	0.30	78						
132 SP/4-VN	5	3.7	pe	1780	178	177	1780	15.7	7.9	1265	R	177	7.1	7.5	0.65	91.7	0.75	121						
132 MP/4-VN	7.5	5.5	pe	1775	178	266	1775	21.5	10.8	1192	P	266	6.3	6.7	0.71	92.0	0.84	137						
160 MP/4-VN	10	7.5	pe	1780	178	354	1780	27.6	13.8	1134	N	354	4.8	5.7	0.73	92.4	1.59	205						
160 LP/4-VN	15	11	pe	1780	178	531	1780	38.4	19.2	1338	P	531	5.7	6.3	0.78	93.2	2.18	269						
180 MP/4-VN	20	15	pe	1785	179	706	1785	49.6	24.8	1234	N	706	4.9	5.0	0.81	93.6	3.08	302						
180 LP/4-VN	25	18.5	pe	1785	179	883	1785	59.7	29.9	1026	L	883	4.0	4.1	0.83	94.0	3.80	342						
225 RP/4-VN	30	22	pe	1790	179	1056	1790	-	40.0	1101	N	1056	4.5	5.1	0.74	94.5	11.6	694						
225 SP/4-VN	40	30	pe	1790	179	1408	1790	-	50.6	1038	M	1408	3.8	4.6	0.78	94.6	12.8	728						
225 MP/4-VN	50	37	pe	1790	179	1760	1790	-	62.1	1055	M	1760	4.0	4.3	0.79	95.2	15.9	805						
250 WP/4-VN	60	45	pe	1785	179	2118	1785	-	70.7	979	L	2118	3.6	4.0	0.83	95.4	19.5	882						

Motor Ratings





# Inverter Duty - Intermittant Duty

## 10:1 Constant Torque (VN)

### 230/460V - 60-6Hz

Inverter duty • Induction motor • TEFC  
 Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
 Voltages: 230/460V – 60Hz • 1.0 Service Factor  
 60 Minute Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	Power P <sub>n</sub> Full Load Power		Operating Range			Motor Across the line data											
			n <sub>60</sub> Full Load Speed	n <sub>6</sub> Full Load Speed	T <sub>60-6</sub> Full Load Torque	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current		I <sub>L</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>L</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
			60 Hz [rpm]	6 Hz [rpm]	60-6 Hz [lb-in]	60 Hz [rpm]	230 V [A]	460 V [A]									
80 L/4-VN	0.75	0.55	1740	174	27.2	1740	3.84	1.92	371	J	27.2	3.1	3.2	0.51	72.0	0.034	19.8
90 S/4-VN	1	0.75	1760	176	35.8	1760	3.90	1.95	609	L	35.8	4.0	4.5	0.65	74.0	0.056	26.5
90 L/4-VN	1.5	1.1	1750	175	54.0	1750	4.86	2.43	666	K	54.0	3.5	3.9	0.76	76.0	0.074	30.9
100 L/4-VN	2	1.5	1760	176	71.6	1760	7.26	3.63	608	K	71.6	3.6	4.0	0.68	76.0	0.11	39.7
100 LA/4-VN	3	2.2	1760	176	107	1760	13.0	6.48	598	M	107	4.6	5.3	0.50	86.0	0.14	46.3
132 S/4-VN	5	3.7	1775	178	178	1775	13.9	6.96	768	K	178	3.7	4.1	0.78	86.0	0.57	97.0
132 M/4-VN	7.5	5.5	1770	177	267	1770	20.5	10.2	794	K	267	3.9	4.4	0.78	88.0	0.76	121
160 M/4-VN	10	7.5	1780	178	354	1780	26.9	13.4	1092	N	354	4.4	5.7	0.77	90.4	1.19	172
160 L/4-VN	15	11	1775	178	533	1775	37.9	18.9	1085	M	533	3.9	5.2	0.81	91.2	1.59	205
180 MX/4-VN	20	15	1775	178	710	1775	51.1	25.6	1015	M	710	4.3	5.4	0.80	91.5	1.90	236
180 LX/4-VN	25	18.5	1775	178	888	1775	69.1	34.5	958	M	888	4.3	5.3	0.74	91.4	2.18	269
200 LX/4-VN	30	22	1785	179	1059	1785	85.0	42.5	801	L	1059	4.3	4.8	0.72	92.4	3.80	342



# Inverter Duty - Continuous Duty

## 20:1 Constant Torque (VW)

### 230/460V - 80-4Hz



Inverter duty • Induction motor • TEBC  
 Synchronous speed 1800rpm @ 80Hz • 4-pole • Three-phase  
 Voltages: 230/460V – 60Hz • 1.0 Service Factor  
 Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	Power		Eff. Class	Operating Range						Motor Across the line data								
	P <sub>n</sub>			Full Load Speed	n <sub>4</sub> Full Load Speed	T <sub>80-4</sub> Full Load Torque	n <sub>N</sub> Full Load Speed	I <sub>n</sub>		I <sub>2</sub> /I <sub>1</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>2</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>4</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	Full Load Power							230 V	460 V									
	[HP]	[kW]						[A]	[A]									
63 S/4-VW	0.16	0.12	-	2250	113	4.48	1700	0.88	0.44	250	F	5.93	2.7	3.5	0.66	52.0	0.0050	7.9
63 L/4-VW	0.25	0.18	-	2220	111	7.10	1680	1.12	0.56	270	E	9.38	2.3	2.5	0.71	57.0	0.0066	9.3
71 S/4-VW	0.33	0.25	-	2285	114	9.10	1710	1.56	0.78	310	G	12.2	2.4	2.7	0.64	63.0	0.017	12
71 L/4-VW	0.5	0.37	-	2280	114	13.8	1720	1.90	0.95	350	F	18.3	2.3	2.7	0.69	71.0	0.020	14
80 S/4-VW	0.75	0.55	-	2285	114	20.7	1710	2.70	1.35	350	F	27.6	2.2	2.3	0.71	72.0	0.026	18
80 LP/4-VW	1	0.75	pe	2230	112	28.3	1730	3.14	1.57	650	K	36.4	3.5	3.8	0.70	86.1	0.045	22
90 SP/4-VW	1.5	1.1	pe	2320	116	40.7	1740	4.20	2.10	840	L	54.3	4.2	4.9	0.76	86.9	0.081	33
90 LP/4-VW	2	1.5	pe	2310	116	54.6	1730	5.60	2.80	760	K	72.9	3.9	4.3	0.78	87.0	0.093	37
100 LP/4-VW	3	2.2	pe	2360	118	80.1	1770	7.68	3.84	920	L	107	3.0	4.5	0.79	90.0	0.192	62
112 MP/4-VW	5	3.7	pe	2335	117	135	1755	13	6.5	950	L	180	4.1	4.6	0.80	90.3	0.332	78
132 SP/4-VW	7.5	5.5	pe	2355	118	201	1770	19.5	9.75	1020	M	267	4.7	5.0	0.77	91.7	0.759	121
132 MP/4-VW	10	7.5	pe	2350	118	268	1765	26.7	13.4	960	M	357	4.7	5.0	0.77	91.7	0.831	137
160 MP/4-VW	15	11	pe	2360	118	401	1770	35.6	17.8	880	K	534	3.2	3.8	0.84	92.5	1.59	205
160 LP/4-VW	20	15	pe	2360	118	534	1775	47.6	23.8	1080	M	710	4.3	4.7	0.85	93.0	2.18	269
180 MP/4-VW	25	18.5	pe	2380	119	662	1780	60.6	30.3	1010	L	885	3.9	4.0	0.82	93.6	3.80	342
180 LP/4-VW	30	22	pe	2370	119	798	1780	69.6	34.8	880	K	1062	3.3	3.4	0.85	93.6	3.80	342
225 RP/4-VW	40	30	pe	2380	119	1059	1785	-	49.5	890	K	1412	3.4	3.8	0.81	94.5	11.6	694
225 SP/4-VW	50	37	pe	2380	119	1324	1785	-	59.7	880	K	1765	3.0	3.7	0.82	94.6	12.8	728
225 MP/4-VW	60	45	pe	2380	119	1589	1785	-	72.0	910	K	2118	3.3	3.6	0.83	95.2	15.9	805
250 WP/4-VW	75	55	pe	2375	119	1990	1785	-	84.4	820	J	2648	2.9	3.2	0.86	95.4	19.5	882

Motor Ratings





# Inverter Duty - Intermittant Duty

## 20:1 Constant Torque (VW)

### 230/460V - 80-4Hz

**Inverter duty • Induction motor • TEFC**  
**Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase**  
**Voltages: 230/460V – 80Hz • 1.0 Service Factor**  
**60 Minute Duty • 40°C Ambient • up to 3300ft Elevation**  
**Class B temperature rise • Class F insulation**

Motor Type	Power P <sub>n</sub> Full Load Power		Operating Range			Motor Across the line data											
			n <sub>80</sub> Full Load Speed	n <sub>4</sub> Full Load Speed	T <sub>80-4</sub> Full Load Torque	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current		I <sub>2</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>g</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>n</sub> Rotor Inertia	Wt. Weight
	80 Hz [rpm]	4 Hz [rpm]	80-4 Hz [lb-in]	60 Hz [rpm]	230 V [A]	460 V [A]	[%]	[lb-in]			[%]	[%]	[%]	[lb-ft <sup>2</sup> ]	[lb]		
80 L/4-VW	1	0.75	2290	115	27.5	1650	3.66	1.83	390	G	38.2	2.2	2.3	0.74	70.0	0.034	20
90 S/4-VW	1.5	1.1	2310	116	40.9	1660	4.84	2.42	490	G	57.0	2.5	2.8	0.78	73.0	0.056	26
90 L/4-VW	2	1.5	2305	115	54.7	1660	6.34	3.17	510	H	75.9	2.5	2.8	0.80	74.0	0.074	31
100 L/4-VW	3	2.2	2310	116	81.9	1705	9.00	4.50	490	G	111	2.3	2.6	0.81	76.0	0.11	40
100 LA/4-VW	5	3.7	2295	115	137	1725	15.2	7.6	510	G	183	2.7	3.1	0.75	81.0	0.14	46
132 S/4-VW	7.5	5.5	2340	117	202	1735	19.8	9.9	540	G	272	2.4	2.7	0.82	85.0	0.57	97
132 M/4-VW	10	7.5	2340	117	269	1735	25.8	12.9	630	H	363	2.9	3.2	0.84	87.0	0.76	121
160 M/4-VW	15	11	2350	118	402	1770	35.8	17.9	820	J	534	2.9	3.8	0.85	90.7	1.19	172
160 L/4-VW	20	15	2350	118	536	1760	48.4	24.2	850	K	716	2.9	3.9	0.87	89.4	1.59	205
180 MX/4-VW	25	18.5	2354	118	669	1760	59.0	29.5	880	K	895	3.4	4.3	0.87	90.5	1.90	236
180 LX/4-VW	30	22	2360	118	801	1765	74.4	37.2	890	K	1071	3.6	4.4	0.80	92.8	2.18	269
200 LX/4-VW	40	30	2370	119	1064	1770	98.6	49.3	690	H	1424	3.2	3.6	0.83	92.1	3.80	342

Motor Ratings



# Inverter Duty - Continuous Duty 1000:1 Constant Torque (F VZ) 230/460V - 60-0Hz



Inverter duty • Induction motor • TEBC  
Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
Voltages: 230/460V – 60Hz • 1.0 Service Factor  
Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	Power P <sub>n</sub> Full Load Power		Eff. Class	Operating Range			Motor Across the line data											
				n <sub>60</sub> Full Load Speed	n <sub>0</sub> Full Load Speed	T <sub>60-0</sub> Full Load Torque	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current		I <sub>2</sub> /I <sub>1</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>2</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	60 Hz	0 Hz		60-0 Hz	60 Hz	230 V	460 V											
	[HP]	[kW]		[rpm]	[rpm]	[lb-in]	[rpm]	[A]	[A]	[%]	[lb-in]	[%]	[lb-ft <sup>2</sup> ]	[lb]				
63 S/4-F VZ	0.16	0.12	-	1700	0	5.93	1700	0.88	0.44	250	F	5.93	2.7	3.5	0.66	52.0	0.005	7.9
63 L/4-F VZ	0.25	0.18	-	1680	0	9.38	1680	1.12	0.56	270	E	9.38	2.3	2.5	0.71	57.0	0.007	9.3
71 S/4-F VZ	0.33	0.25	-	1710	0	12.2	1710	1.56	0.78	310	G	12.2	2.4	2.7	0.64	63.0	0.017	12
71 L/4-F VZ	0.5	0.37	-	1720	0	18.3	1720	1.90	0.95	350	F	18.3	2.3	2.7	0.69	71.0	0.020	14
80 S/4-F VZ	0.75	0.55	-	1710	0	27.6	1710	2.70	1.35	350	F	27.6	2.2	2.3	0.71	72.0	0.026	18
80 LP/4-F VZ	1	0.75	pe	1730	0	36.4	1730	3.14	1.57	650	K	36.4	3.5	3.8	0.70	86.1	0.045	22
90 SP/4-F VZ	1.5	1.1	pe	1740	0	54.3	1740	4.20	2.10	840	L	54.3	4.2	4.9	0.76	86.9	0.081	33
90 LP/4-F VZ	2	1.5	pe	1730	0	72.9	1730	5.60	2.80	760	K	72.9	3.9	4.3	0.78	87.0	0.093	37
100 LP/4-F VZ	3	2.2	pe	1770	0	107	1770	7.68	3.84	920	L	107	3.0	4.5	0.79	90.0	0.192	62
112 MP/4-F VZ	5	3.7	pe	1755	0	180	1755	13.0	6.50	950	L	180	4.1	4.6	0.80	90.3	0.332	78
132 SP/4-F VZ	7.5	5.5	pe	1770	0	267	1770	19.5	9.75	1020	M	267	4.7	5.0	0.77	91.7	0.759	121
132 MP/4-F VZ	10	7.5	pe	1765	0	357	1765	26.7	13.4	960	M	357	4.7	5.0	0.77	91.7	0.831	137
160 MP/4-F VZ	15	11	pe	1770	0	534	1770	35.6	17.8	880	K	534	3.2	3.8	0.84	92.5	1.59	205
160 LP/4-F VZ	20	15	pe	1775	0	710	1775	47.6	23.8	1080	M	710	4.3	4.7	0.85	93.0	2.18	269
180 MP/4-F VZ	25	18.5	pe	1780	0	885	1780	60.6	30.3	1010	L	885	3.9	4.0	0.82	93.6	3.80	342
180 LP/4-F VZ	30	22	pe	1780	0	1062	1780	69.6	34.8	880	K	1062	3.3	3.4	0.85	93.6	3.80	342
225 RP/4-F VZ	40	30	pe	1785	0	1412	1785	-	49.5	890	K	1412	3.4	3.8	0.81	94.5	11.6	694
225 SP/4-F VZ	50	37	pe	1785	0	1765	1785	-	59.7	880	K	1765	3.0	3.7	0.82	94.6	12.8	728
225 MP/4-F VZ	60	45	pe	1785	0	2118	1785	-	72.0	910	K	2118	3.3	3.6	0.83	95.2	15.9	805
250 WP/4-F VZ	75	55	pe	1785	0	2648	1785	-	84.4	820	J	2648	2.9	3.2	0.86	95.4	19.5	882

Motor Ratings







# Inverter Duty - Intermittant Duty 1000:1 Constant Torque (F VZ) 230/460V - 60-0Hz

Inverter duty • Induction motor • TEBC  
Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
Voltages: 230/460V – 60Hz • 1.0 Service Factor  
60 Minute Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	Power P <sub>n</sub> Full Load Power		Operating Range			Motor Across the line data											
			n <sub>60</sub> Full Load Speed	n <sub>0</sub> Full Load Speed	T <sub>60-0</sub> Full Load Torque	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current		I <sub>l</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>l</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	60 Hz [rpm]	0 Hz [rpm]	60-0 Hz [lb-in]	60 Hz [rpm]	230 V [A]	460 V [A]	[%]	[lb-in]									
80 L/4-F VZ	1	0.75	1650	0	38.2	1650	3.66	1.83	390	G	38.2	2.2	2.3	0.74	70.0	0.034	20
90 S/4-F VZ	1.5	1.1	1660	0	57.0	1660	4.84	2.42	490	G	57.0	2.5	2.8	0.78	73.0	0.056	26
90 L/4-F VZ	2	1.5	1660	0	75.9	1660	6.34	3.17	510	H	75.9	2.5	2.8	0.80	74.0	0.074	31
100 L/4-F VZ	3	2.2	1705	0	111	1705	9.00	4.50	490	G	111	2.3	2.6	0.81	76.0	0.107	40
100 LA/4-F VZ	5	3.7	1725	0	183	1725	15.2	7.6	510	G	183	2.7	3.1	0.75	81.0	0.142	46
132 S/4-F VZ	7.5	5.5	1735	0	272	1735	19.8	9.9	540	G	272	2.4	2.7	0.82	85.0	0.570	97
132 M/4-F VZ	10	7.5	1735	0	363	1735	25.8	12.9	630	H	363	2.9	3.2	0.84	87.0	0.759	121
160 M/4-F VZ	15	11	1770	0	534	1770	35.8	17.9	820	J	534	2.9	3.8	0.85	90.7	1.19	172
160 L/4-F VZ	20	15	1760	0	716	1760	48.4	24.2	850	K	716	2.9	3.9	0.87	89.4	1.59	205
180 MX/4-F VZ	25	18.5	1760	0	895	1760	59.0	29.5	880	K	895	3.4	4.3	0.87	90.5	1.90	236
180 LX/4-F VZ	30	22	1765	0	1071	1765	74.4	37.2	890	K	1071	3.6	4.4	0.80	92.8	2.18	269
200 LX/4-F VZ	40	30	1770	0	1424	1770	98.6	49.3	690	H	1424	3.2	3.6	0.83	92.1	3.80	342

Motor Ratings



# 2-Speed Single-Winding 4-2 Pole - 230V - 60Hz



Induction motor • TEFC

Synchronous speed 1800/3600rpm @ 60Hz • 4-2 Pole • Three-phase

Voltages: 230V – 60Hz • 1.0 Service Factor

Continuous Duty • 40°C Ambient • up to 3300ft Elevation

Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current	I <sub>2</sub> /I <sub>1</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>2</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[HP]	[kW]	60 Hz	230 V	[%]		[lb-in]				[%]	[lb-ft <sup>2</sup> ]	[lb]
			[rpm]	[A]									
63 S/4-2 CUS	0.13	0.10	1700	1.28	240	J	4.97	3.8	3.9	0.58	33.8	0.0050	7.9
	0.20	0.15	3410	1.46	260		3.72	3.3	4.0	0.68	37.9		
63 L/4-2 CUS	0.20	0.15	1680	1.90	220	K	7.55	3.3	3.4	0.57	34.8	0.0066	9.3
	0.25	0.19	3420	1.90	290		4.70	3.6	4.3	0.66	38.0		
71 S/4-2 CUS	0.28	0.21	1690	1.32	350	G	10.5	2.4	2.5	0.73	54.7	0.017	12
	0.37	0.28	3335	1.60	360		6.99	2.8	3.0	0.86	51.1		
71 L/4-2 CUS	0.40	0.30	1660	1.96	320	G	15.3	2.3	2.3	0.75	51.2	0.020	14
	0.60	0.45	3260	2.60	330		11.7	1.7	2.0	0.88	49.4		
80 S/4-2 CUS	0.65	0.48	1670	2.60	310	G	24.5	1.9	2.2	0.77	60.2	0.026	18
	0.82	0.60	3340	3.32	350		15.5	2.2	2.2	0.82	55.3		
80 L/4-2 CUS	0.95	0.70	1625	3.68	310	G	36.8	1.8	1.9	0.79	60.4	0.033	20
	1.15	0.85	3325	4.68	350		21.8	2.2	2.3	0.80	57.0		
90 S/4-2 CUS	1.5	1.1	1680	5.36	390	G	55.3	1.7	2.3	0.84	61.3	0.056	26
	1.9	1.4	3335	7.00	390		35.5	1.8	2.3	0.88	57.1		
90 L/4-2 CUS	2.0	1.5	1655	7.00	370	G	76.6	2.2	2.4	0.81	66.4	0.074	31
	2.5	1.9	3330	9.40	400		48.2	2.6	2.5	0.82	61.9		
100 L/4-2 CUS	2.7	2.0	1680	9.20	350	G	101	2.1	2.4	0.75	72.8	0.107	40
	3.2	2.4	3395	11.0	440		59.7	2.4	2.6	0.85	64.4		
100 LA/4-2 CUS	3.5	2.6	1655	11.2	350	G	133	1.8	2.1	0.87	66.7	0.142	46
	4.2	3.1	3390	13.4	450		77.3	2.1	2.3	0.88	65.9		
112 M/4-2 CUS	5.0	3.7	1750	13.8	520	J	179	2.0	2.7	0.82	82.1	0.261	71
	5.9	4.4	3505	16.4	650		106	2.5	3.1	0.81	83.1		
132 S/4-2 CUS	6.3	4.7	1760	18.6	470	H	226	2.1	2.8	0.84	75.5	0.570	97
	7.9	5.9	3485	24	560		143	2.5	3.0	0.88	70.1		
132 M/4-2 CUS	8.7	6.5	1740	26	510	J	316	2.4	2.9	0.83	75.6	0.759	121
	10.7	8.0	3500	36	590		193	3.2	5.9	0.79	70.6		

Motor Ratings





Induction motor • TEFC  
 Synchronous speed 1800/3600rpm @ 60Hz • 4-2 Pole • Three-phase  
 Voltages: 460V – 60Hz • 1.0 Service Factor  
 Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>n</sub> Full Load Speed	I <sub>n</sub> Full-Load Current	I <sub>l</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>l</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[HP]	[kW]	60 Hz [rpm]	460 V [A]	[%]		[lb-in]				[%]	[lb-ft <sup>2</sup> ]	[lb]
63 S/4-2 CUS	0.13	0.10	1700	0.64	240	J	4.97	3.8	3.9	0.58	33.8	0.005	7.9
	0.20	0.15	3410	0.73	260		3.72	3.3	4.0	0.68	37.9		
63 L/4-2 CUS	0.20	0.15	1680	0.95	220	K	7.55	3.3	3.4	0.57	34.8	0.007	9.3
	0.25	0.19	3420	0.95	290		4.70	3.6	4.3	0.66	38.0		
71 S/4-2 CUS	0.28	0.21	1690	0.66	350	G	10.5	2.4	2.5	0.73	54.7	0.017	12
	0.37	0.28	3335	0.80	360		6.99	2.8	3.0	0.86	51.1		
71 L/4-2 CUS	0.40	0.30	1660	0.98	320	G	15.3	2.3	2.3	0.75	51.2	0.020	14
	0.60	0.45	3260	1.30	330		11.7	1.7	2.0	0.88	49.4		
80 S/4-2 CUS	0.65	0.48	1670	1.30	310	G	24.5	1.9	2.2	0.77	60.2	0.026	18
	0.82	0.60	3340	1.66	350		15.5	2.2	2.2	0.82	55.3		
80 L/4-2 CUS	0.95	0.70	1625	1.84	310	G	36.8	1.8	1.9	0.79	60.4	0.033	20
	1.15	0.85	3325	2.34	350		21.8	2.2	2.3	0.8	57.0		
90 S/4-2 CUS	1.5	1.1	1680	2.68	390	G	55.3	1.7	2.3	0.84	61.3	0.056	26
	1.9	1.4	3335	3.50	390		35.5	1.8	2.3	0.88	57.1		
90 L/4-2 CUS	2.0	1.5	1655	3.50	370	G	76.6	2.2	2.4	0.81	66.4	0.074	31
	2.5	1.9	3330	4.70	400		48.2	2.6	2.5	0.82	61.9		
100 L/4-2 CUS	2.7	2.0	1680	4.60	350	G	101	2.1	2.4	0.75	72.8	0.107	40
	3.2	2.4	3395	5.50	440		59.7	2.4	2.6	0.85	64.4		
100 LA/4-2 CUS	3.5	2.6	1655	5.60	350	G	133	1.8	2.1	0.87	66.7	0.142	46
	4.2	3.1	3390	6.70	450		77.3	2.1	2.3	0.88	65.9		
112 M/4-2 CUS	5.0	3.7	1750	6.90	520	J	179	2.0	2.7	0.82	82.1	0.261	71
	5.9	4.4	3505	8.20	650		106	2.5	3.1	0.81	83.1		
132 S/4-2 CUS	6.3	4.7	1760	9.30	470	H	226	2.1	2.8	0.84	75.5	0.570	97
	7.9	5.9	3485	12.0	560		143	2.5	3.0	0.88	70.1		
132 M/4-2 CUS	8.7	6.5	1740	13.0	510	J	316	2.4	2.9	0.83	75.6	0.759	121
	10.7	8	3500	18.0	590		193	3.2	5.9	0.79	70.6		

Motor Ratings



# 2-Speed Dual-Winding 8-2 Pole - 230V - 60Hz



Induction motor • TEFC

Synchronous speed 900/3600rpm @ 60Hz • 8-2 Pole • Three-phase

Voltages: 230V – 60Hz • 1.0 Service Factor

S3-40% • 40°C Ambient • up to 3300ft Elevation

Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current	I <sub>L</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>L</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[HP]	[kW]	60 Hz [rpm]	230 V [A]	[%]		[lb-in]				[%]	[lb-ft <sup>2</sup> ]	[lb]
71 S/8-2 WU	0.06	0.05	820	0.86	170	B	4.64	2.3	2.2	0.52	25.3	0.017	12
	0.30	0.22	3250	0.98	250		5.75	1.4	1.3	0.87	64.8		
71 L/8-2 WU	0.08	0.06	820	1.00	190	D	6.20	2.4	2.4	0.54	27.9	0.020	14
	0.40	0.30	3260	1.36	300		7.79	2.0	2.1	0.89	62.3		
80 S/8-2 WU	0.13	0.10	825	1.36	180	E	10.3	1.7	1.5	0.50	37.0	0.026	18
	0.60	0.45	3350	2.50	300		11.3	1.4	1.8	0.71	63.7		
80 L/8-2 WU	0.17	0.13	650	1.52	180	G	16.9	1.4	1.8	0.69	31.2	0.036	20
	0.74	0.55	3110	2.66	400		15.0	2.0	1.8	0.88	59.1		
90 S/8-2 WU	0.27	0.20	830	2.04	230	H	20.4	2.2	2.2	0.50	49.3	0.055	26
	1.1	0.80	3400	4.18	440		19.9	3.2	3.0	0.71	67.7		
90 L/8-2 WU	0.40	0.30	815	2.42	180	F	31.2	2.0	1.4	0.53	58.8	0.074	31
	1.6	1.2	3410	5.30	420		29.7	3.3	2.5	0.76	74.9		
100 L/8-2 WU	0.54	0.40	845	3.18	240	F	40.0	1.8	2.1	0.51	62.0	0.107	40
	2.1	1.6	3425	6.24	460		39.5	2.4	2.5	0.84	76.7		
100 LA/8-2 WU	0.74	0.55	845	4.24	240	E	55.1	1.5	1.9	0.49	66.5	0.142	46
	3.0	2.2	3445	8.34	440		54.0	2.1	2.2	0.81	81.8		
112 M/8-2 WU	1.0	0.75	850	5.70	330	G	74.6	2.9	2.4	0.47	70.4	0.282	66
	4.0	3.0	3495	10.9	570		72.6	2.5	3.3	0.82	84.7		
132 S/8-2 WU	1.3	1.0	865	6.68	290	F	97.7	2.6	2.3	0.53	71.0	0.553	97
	5.4	4.0	3470	13.7	520		97.4	2.9	2.4	0.91	80.8		
132 M/8-2 WU	1.9	1.4	860	9.16	360	E	138	2.5	2.2	0.53	72.5	0.752	121
	7.4	5.5	3455	18.1	470		135	2.9	2.4	0.93	81.9		

Motor Ratings





# 2-Speed Dual-Winding 8-2 Pole - 460V - 60Hz

Induction motor • TEFC  
Synchronous speed 900/3600rpm @ 60Hz • 8-2 Pole • Three-phase  
Voltages: 460V – 60Hz • 1.0 Service Factor  
S3-40% • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>n</sub> Full Load Speed	I <sub>n</sub> Full-Load Current	I <sub>l</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>l</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[HP]	[kW]	60 Hz [rpm]	460 V [A]	[%]		[lb-in]				[%]	[lb-ft <sup>2</sup> ]	[lb]
71 S/8-2 WU	0.06	0.05	820	0.43	170	B	4.64	2.3	2.2	0.52	25.3	0.017	12
	0.30	0.22	3250	0.49	250		5.72	1.4	1.3	0.87	64.8		
71 L/8-2 WU	0.08	0.06	820	0.5	190	D	6.18	2.4	2.4	0.54	27.9	0.020	14
	0.40	0.30	3260	0.68	300		7.78	2.0	2.1	0.89	62.3		
80 S/8-2 WU	0.13	0.10	825	0.68	180	E	10.2	1.7	1.5	0.50	37.0	0.026	18
	0.60	0.45	3350	1.25	300		11.4	1.4	1.8	0.71	63.7		
80 L/8-2 WU	0.17	0.13	650	0.76	180	G	16.9	1.4	1.8	0.69	31.2	0.036	20
	0.74	0.55	3110	1.33	400		14.9	2.0	1.8	0.88	59.1		
90 S/8-2 WU	0.27	0.20	830	1.02	230	H	20.4	2.2	2.2	0.50	49.3	0.055	26
	1.1	0.80	3400	2.09	440		19.9	3.2	3.0	0.71	67.7		
90 L/8-2 WU	0.40	0.30	815	1.21	180	F	31.1	2.0	1.4	0.53	58.8	0.074	31
	1.6	1.2	3410	2.65	420		29.7	3.3	2.5	0.76	74.9		
100 L/8-2 WU	0.54	0.40	845	1.59	240	F	40.0	1.8	2.1	0.51	62.0	0.107	40
	2.1	1.6	3425	3.12	460		39.5	2.4	2.5	0.84	76.7		
100 LA/8-2 WU	0.74	0.55	845	2.12	240	E	55.0	1.5	1.9	0.49	66.5	0.142	46
	3.0	2.2	3445	4.17	440		54.0	2.1	2.2	0.81	81.8		
112 M/8-2 WU	1.0	0.75	850	2.85	330	G	74.6	2.9	2.4	0.47	70.4	0.282	66
	4.0	3.0	3495	5.43	570		72.5	2.5	3.3	0.82	84.7		
132 S/8-2 WU	1.3	1.0	865	3.34	290	F	97.7	2.6	2.3	0.53	71.0	0.553	97
	5.4	4.0	3470	6.84	520		97.4	2.9	2.4	0.91	80.8		
132 M/8-2 WU	1.9	1.4	860	4.58	360	E	138	2.5	2.2	0.53	72.5	0.752	121
	7.4	5.5	3455	9.07	470		135	2.9	2.4	0.93	81.9		





# 115/230V - 60Hz Single Phase with Capacitor Start & Capacitor Run



TEFC

Synchronous speed 1800rpm @ 60Hz • 4-pole • Single-phase

Voltages: 115/230V – 60Hz

Continuous Duty • 40°C Ambient • up to 3300ft Elevation

Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub>		SF	115V Connection							230V Connection							J <sub>m</sub>	Wt. Weight	
	Full-Load Power			n <sub>n</sub>	I <sub>n</sub>	I <sub>a</sub> /I <sub>n</sub>	T <sub>n</sub>	T <sub>a</sub> /T <sub>n</sub>	T <sub>k</sub> /T <sub>n</sub>	cos φ	n <sub>n</sub>	I <sub>n</sub>	I <sub>a</sub> /I <sub>n</sub>	T <sub>n</sub>	T <sub>a</sub> /T <sub>n</sub>	T <sub>k</sub> /T <sub>n</sub>	cos φ			Motor Inertia
	[HP]	[kW]		Full Load Speed	Full Load Current	Locked Rotor Current Ratio	Full Load Torque	Locked Rotor Torq Ratio	Break Down Torq Ratio	Power Factor	Full Load Speed	Full Load Current	Locked Rotor Current Ratio	Full Load Torque	Locked Rotor Torq Ratio	Break Down Torq Ratio	Power Factor			[lb-ft <sup>2</sup> ]
				[rpm]	[A]	[%]	[lb-in]				[rpm]	[A]	[%]	[lb-in]						[lb]
63 LA/4 ECR	0.16	0.12	1.35	1740	3.3	340	5.80	2.5	3.5	0.66	1740	1.57	360	5.80	2.5	3.6	0.70	0.0083	11	
71 L/4 ECR	0.25	0.18	1.35	1760	3.46	450	8.95	2.1	3.3	0.89	1750	1.89	520	9.00	2.4	3.3	0.92	0.0204	15	
71 LA/4 ECR	0.33	0.25	1.35	1750	5.4	450	11.9	2.1	3	0.69	1750	2.65	470	11.9	2.2	2.9	0.71	0.027	18	
80 L/4 ECR	0.5	0.37	1.35	1765	6.55	560	17.9	2.4	3.4	0.8	1765	3.4	570	17.9	2.2	3.3	0.79	0.034	21	
80 LA/4 ECR	0.75	0.55	1.35	1760	9.4	510	26.9	2.6	2.9	0.71	1760	4.7	520	26.9	2.7	2.8	0.72	0.046	23	
90 L/4 ECR	1	0.75	1.35	1770	11.85	630	35.6	2.3	2.9	0.79	1770	5.94	680	35.6	2.3	3.1	0.78	0.074	32	
90 LB/4 ECR	1.5	1.1	1.35	1765	15.25	570	53.6	2	2.8	0.85	1760	7.62	650	53.7	2.1	2.9	0.84	0.093	38	
90 LX/4 ECR	2	1.5	1.20	-	-	-	-	-	-	-	1735	10.4	520	72.7	1.5	2.3	0.83	0.093	38	

Motor Ratings





Inverter duty • Induction motor • TEFC  
 Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
 Voltages: 332/575V – 60Hz • 1.15 Service Factor  
 Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		Eff. Class	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>2</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>2</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	Eff. Normal Efficiency	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[hp]	[kW]												
63 S/4	0.16	0.12	-	1700	0.37	250	G	5.93	2.7	3.5	0.66	52.0	0.0050	7.9
63 L/4	0.25	0.18	-	1680	0.46	270	E	9.38	2.3	2.5	0.71	57.0	0.0066	9.3
71 S/4	0.33	0.25	-	1710	0.66	310	G	12.2	2.4	2.7	0.64	63.0	0.017	12
71 L/4	0.5	0.37	-	1720	0.80	350	F	18.3	2.3	2.7	0.69	71.0	0.020	14
80 S/4	0.75	0.55	-	1710	1.12	350	F	27.6	2.2	2.3	0.71	72.0	0.026	18
80 LP/4	1	0.75	pe	1730	1.26	650	K	36.4	3.5	3.8	0.70	86.1	0.045	22
90 SP/4	1.5	1.1	pe	1740	1.68	840	L	54.3	4.2	4.9	0.76	86.9	0.081	33
90 LP/4	2	1.5	pe	1730	2.24	760	K	72.9	3.9	4.3	0.78	87.0	0.093	37
100 LP/4	3	2.2	pe	1770	3.07	920	L	107	3.0	4.5	0.79	90.0	0.19	62
112 MP/4	5	3.7	pe	1755	5.20	950	L	180	4.1	4.6	0.80	90.3	0.33	78
132 SP/4	7.5	5.5	pe	1770	7.80	1020	M	267	4.7	5.0	0.77	91.7	0.76	121
132 MP/4	10	7.5	pe	1765	10.7	960	M	357	4.7	5.0	0.77	91.7	0.83	137
160 MP/4	15	11	pe	1770	14.2	880	K	534	3.2	3.8	0.84	92.5	1.59	205
160 LP/4	20	15	pe	1775	19.0	1080	M	710	4.3	4.7	0.85	93.0	2.18	269
180 MP/4	25	18.5	pe	1780	24.2	1010	L	885	3.9	4.0	0.82	93.6	3.80	342
180 LP/4	30	22	pe	1780	27.8	880	K	1062	3.3	3.4	0.85	93.6	3.80	342
225 RP/4	40	30	pe	1785	39.6	890%	K	1412	3.4	3.8	0.81	94.5	11.6	694
225 SP/4	50	37	pe	1785	47.8	880%	K	1765	3.0	3.7	0.82	94.6	12.8	728
225 MP/4	60	45	pe	1785	57.6	910%	K	2118	3.3	3.6	0.83	95.2	15.9	805
250 WP/4	75	55	pe	1785	67.5	920%	J	2648	2.9	3.2	0.86	95.4	19.5	882



# Intermittant Duty 575V - 60Hz



Inverter duty • Induction motor • TEFC  
 Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
 Voltages: 332/575V – 60Hz • 1.15 Service Factor  
 60 Minute Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>2</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>2</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	Eff. Normal Efficiency	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[hp]	[kW]											
80 L/4	1	0.75	1650	1.46	390	G	38.2	2.2	2.3	0.74	70.0	0.034	20
90 S/4	1.5	1.1	1660	1.94	490	H	57.0	2.5	2.8	0.78	73.0	0.056	26
90 L/4	2	1.5	1660	2.54	510	H	75.9	2.5	2.8	0.80	74.0	0.074	31
100 L/4	3	2.2	1705	3.63	490	G	111	2.3	2.6	0.81	76.0	0.11	40
100 LA/4	5	3.7	1725	6.10	510	G	183	2.7	3.1	0.75	81.0	0.14	46
132 S/4	7.5	5.5	1735	7.92	540	G	272	2.4	2.7	0.82	85.0	0.57	97
132 M/4	10	7.5	1735	10.3	630	H	363	2.9	3.2	0.84	87.0	0.76	121
160 M/4	15	11	1770	14.5	820	J	534	2.9	3.8	0.85	90.7	1.19	172
160 L/4	20	15	1760	19.3	850	K	716	2.9	3.9	0.87	89.4	1.59	205
180 MX/4	25	18.5	1760	23.6	880	K	895	3.4	4.3	0.87	90.5	1.90	236
180 LX/4	30	22	1765	29.8	890	K	1071	3.6	4.4	0.80	92.8	2.18	269
200 LX/4	40	30	1770	39.4	690	H	1424	3.2	3.6	0.83	92.1	3.80	342

Motor Ratings





# Inverter Duty - Continuous Duty 5:1 Constant Torque (VR) 575V - 60-12Hz

Inverter duty • Induction motor • TEFC  
Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
Voltages: 575V – 60Hz • 1.0 Service Factor  
Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	Power P <sub>n</sub>		Eff. Class	Operating Range			Motor Across the line Data										
	Full Load Power			n <sub>60</sub>	n <sub>12</sub>	T <sub>60-12</sub>	n <sub>N</sub>	I <sub>n</sub>	I <sub>l</sub> /I <sub>n</sub>	NEMA Code Letter	T <sub>n</sub>	T <sub>l</sub> /T <sub>n</sub>	T <sub>k</sub> /T <sub>n</sub>	pf	η	J <sub>m</sub>	Wt. Weight
	[HP]	[kW]		60 Hz [rpm]	12 Hz [rpm]	60-12 Hz [lb-in]	60 Hz [rpm]	575 V [A]	Locked Rotor Current Ratio [%]		Full Load Torque [lb-in]	Locked Rotor Torque Ratio	Break Down Torque Ratio	Power Factor	Full Load Eff. [%]	Rotor Inertia [lb-ft <sup>2</sup> ]	[lb]
63 S/4-VR	0.16	0.12	-	1700	340	5.93	1700	0.35	250	F	5.93	2.7	3.5	0.66	52.0	0.0050	7.9
63 L/4-VR	0.25	0.18	-	1680	336	9.38	1680	0.45	270	E	9.38	2.3	2.5	0.71	57.0	0.0066	9.3
71 S/4-VR	0.33	0.25	-	1710	342	12.2	1710	0.62	310	G	12.2	2.4	2.7	0.64	63.0	0.017	12
71 L/4-VR	0.5	0.37	-	1720	344	18.3	1720	0.76	350	F	18.3	2.3	2.7	0.69	71.0	0.020	14
80 S/4-VR	0.75	0.55	-	1710	342	27.6	1710	1.08	350	F	27.6	2.2	2.3	0.71	72.0	0.026	18
80 LP/4-VR	1	0.75	pe	1730	346	36.4	1730	1.26	650	K	36.43	3.5	3.8	0.70	86.1	0.045	22
90 SP/4-VR	1.5	1.1	pe	1740	348	54.3	1740	1.68	840	L	54.33	4.2	4.9	0.76	86.9	0.081	33
90 LP/4-VR	2	1.5	pe	1730	346	72.9	1730	2.24	760	K	72.86	3.9	4.3	0.78	87.0	0.093	37
100 LP/4-VR	3	2.2	pe	1770	354	107	1770	3.07	920	L	106.82	3.0	4.5	0.79	90.0	0.192	62
112 MP/4-VR	5	3.7	pe	1755	351	180	1755	5.20	950	L	179.56	4.1	4.6	0.80	90.3	0.332	78
132 SP/4-VR	7.5	5.5	pe	1770	354	267	1770	7.80	1020	M	267.06	4.7	5.0	0.77	91.7	0.759	121
132 MP/4-VR	10	7.5	pe	1765	353	357	1765	10.7	960	M	357.08	4.7	5.0	0.77	91.7	0.831	137
160 MP/4-VR	15	11	pe	1770	354	534	1770	14.2	880	K	534.11	3.2	3.8	0.84	92.5	1.59	205
160 LP/4-VR	20	15	pe	1775	355	710	1775	19.0	1080	M	710.14	4.3	4.7	0.85	93.0	2.18	269
180 MP/4-VR	25	18.5	pe	1780	356	885	1780	24.2	1010	L	885.19	3.9	4.0	0.82	93.6	3.80	342
180 LP/4-VR	30	22	pe	1780	356	1062	1780	27.8	880	K	1062.23	3.3	3.4	0.85	93.6	3.80	342
225 RP/4-VR	40	30	pe	1785	357	1412	1785	39.6	890	K	1412	3.4	3.8	0.81	94.5	11.6	694
225 SP/4-VR	50	37	pe	1785	357	1765	1785	47.8	880	K	1765	3.0	3.7	0.82	94.6	12.8	728
225 MP/4-VR	60	45	pe	1785	357	2118	1785	57.6	910	K	2118	3.3	3.6	0.83	95.2	15.9	805
250 WP/4-VR	75	55	pe	1785	357	2648	1785	67.5	820	J	2648	2.9	3.2	0.86	95.4	19.5	882

Motor Ratings



# Inverter Duty - Intermittant Duty

## 5:1 Constant Torque (VR)

### 575V - 60-12Hz



Inverter duty • Induction motor • TEFC  
 Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
 Voltages: 575V – 60Hz • 1.0 Service Factor  
 60 Minute Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	Power $P_n$ Full Load Power		Operating Range			Motor Across the line Data										
			$n_{60}$ Full Load Speed	$n_{12}$ Full Load Speed	$T_{60-12}$ Full Load Torque	$n_N$ Full Load Speed	$I_n$ Full-Load Current	$I_L/I_n$ Locked Rotor Current Ratio	NEMA Code Letter	$T_n$ Full Load Torque	$T_L/T_n$ Locked Rotor Torque Ratio	$T_k/T_n$ Break Down Torque Ratio	pf Power Factor	$\eta$ Full Load Eff.	$J_m$ Rotor Inertia	Wt. Weight
	60 Hz [rpm]	12 Hz [rpm]	60-12 Hz [lb-in]	60 Hz [rpm]	575 V [A]	[%]	[lb-in]	[%]		[lb]						
80 L/4-VR	1	0.75	1650	330	38.2	1650	1.46	390	G	38.2	2.2	2.3	0.74	70.0	0.034	20
90 S/4-VR	1.5	1.1	1660	332	57.0	1660	1.94	490	G	57.0	2.5	2.8	0.78	73.0	0.056	26
90 L/4-VR	2	1.5	1660	332	75.9	1660	2.54	510	H	75.9	2.5	2.8	0.80	74.0	0.074	31
100 L/4-VR	3	2.2	1705	341	111	1705	3.60	490	G	111	2.3	2.6	0.81	76.0	0.107	40
100 LA/4-VR	5	3.7	1725	345	183	1725	6.08	510	G	183	2.7	3.1	0.75	81.0	0.142	46
132 S/4-VR	7.5	5.5	1735	347	272	1735	7.92	540	G	272	2.4	2.7	0.82	85.0	0.570	97
132 M/4-VR	10	7.5	1735	347	363	1735	10.3	630	H	363	2.9	3.2	0.84	87.0	0.759	121
160 M/4-VR	15	11	1770	354	534	1770	14.3	820	J	534	2.9	3.8	0.85	90.7	1.19	172
160 L/4-VR	20	15	1760	352	716	1760	19.4	850	K	716	2.9	3.9	0.87	89.4	1.59	205
180 MX/4-VR	25	18.5	1760	352	895	1760	23.6	880	K	895	3.4	4.3	0.87	90.5	1.90	236
180 LX/4-VR	30	22	1765	353	1071	1765	29.8	890	K	1071	3.6	4.4	0.80	92.8	2.18	269
200 LX/4-VR	40	30	1770	354	1424	1770	39.4	690	H	1424	3.2	3.6	0.83	92.1	3.80	342

Motor Ratings







# Inverter Duty - Continuous Duty 10:1 - Constant Torque (VN) 575V - 60-6Hz

Inverter duty • Induction motor • TEFC  
Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
Voltages: 575V – 60Hz • 1.0 Service Factor  
Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	Power P <sub>n</sub> Full Load Power		Eff. Class	Operating Range			Motor Across the line data										
				n <sub>60</sub> Full Load Speed	n <sub>6</sub> Full Load Speed	T <sub>60-6</sub> Full Load Torque	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>2</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>g</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	60 Hz [rpm]	6 Hz [rpm]		60-6 Hz [lb-in]	60 Hz [rpm]	575V [A]	[%]		[lb-in]					[%]	[lb-ft <sup>2</sup> ]	[lb]	
63 S/4-VN	0.12	0.09	-	1720	172	4.40	1720	0.30	290	J	4.40	3.6	4.7	0.57	52.0	0.005	7.9
63 L/4-VN	0.16	0.12	-	1720	172	5.86	1720	0.36	335	J	5.86	3.7	4.0	0.64	52.0	0.007	9.3
71 S/4-VN	0.25	0.18	-	1740	174	9.06	1740	0.43	454	J	9.06	3.2	3.6	0.70	63.0	0.017	11.9
71 L/4-VN	0.33	0.25	-	1745	175	11.9	1745	0.59	449	K	11.9	3.5	4.2	0.64	65.0	0.020	13.9
80 S/4-VN	0.50	0.37	-	1745	175	18.1	1745	1.12	338	J	18.1	3.4	3.5	0.46	73.0	0.026	17.6
80 LP/4-VN	0.75	0.55	pe	1750	175	27.0	1750	0.93	881	M	27.0	4.7	5.1	0.71	85.6	0.045	22
90 SP/4-VN	1	0.75	pe	1760	176	35.8	1760	1.33	1057	R	35.8	6.4	7.4	0.65	86.3	0.081	33
90 LP/4-VN	1.5	1.1	pe	1755	176	53.9	1755	1.84	926	N	53.9	5.3	5.8	0.70	87.5	0.093	37
100 LP/4-VN	2	1.5	pe	1780	178	70.8	1780	2.29	1234	R	70.8	4.5	6.8	0.73	89.9	0.18	56
112 MP/4-VN	3	2.2	pe	1775	178	107	1775	3.73	1323	S	107	6.9	7.8	0.67	89.8	0.30	78
132 SP/4-VN	5	3.7	pe	1780	178	177	1780	6.29	1265	R	177	7.1	7.5	0.65	91.7	0.75	121
132 MP/4-VN	7.5	5.5	pe	1775	178	266	1775	8.6	1192	P	266	6.3	6.7	0.71	92.0	0.84	137
160 MP/4-VN	10	7.5	pe	1780	178	354	1780	11.0	1134	N	354	4.8	5.7	0.73	92.4	1.59	205
160 LP/4-VN	15	11	pe	1780	178	531	1780	15.4	1338	P	531	5.7	6.3	0.78	93.2	2.18	269
180 MP/4-VN	20	15	pe	1785	179	706	1785	19.8	1234	N	706	4.9	5.0	0.81	93.6	3.08	302
180 LP/4-VN	25	18.5	pe	1785	179	883	1785	23.9	1026	L	883	4.0	4.1	0.83	94.0	3.80	342
225 RP/4-VN	30	22	pe	1790	179	1056	1790	32.0	1101	N	1056	4.5	5.1	0.74	94.5	11.6	694
225 SP/4-VN	40	30	pe	1790	179	1408	1790	40.5	1038	M	1408	3.8	4.6	0.78	94.6	12.8	728
225 MP/4-VN	50	37	pe	1790	179	1760	1790	49.7	1055	M	1760	4.0	4.3	0.79	95.2	15.9	805
250 WP/4-VN	60	45	pe	1785	179	2118	1785	56.6	979	L	2118	3.6	4.0	0.83	95.4	19.5	882

Motor Ratings



# Inverter Duty - Intermittant Duty

## 10:1 Constant Torque (VN)

### 575V - 60-6Hz



Inverter duty • Induction motor • TEFC  
 Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
 Voltages: 575V – 60Hz • 1.0 Service Factor  
 60 Minute Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	Power $P_n$ Full Load Power		Operating Range			Motor Across the line data										
			$n_{60}$ Full Load Speed	$n_6$ Full Load Speed	$T_{60-6}$ Full Load Torque	$n_N$ Full Load Speed	$I_n$ Full Load Current	$I_r/I_n$ Locked Rotor Current Ratio	NEMA Code Letter	$T_n$ Full Load Torque	$T_r/T_n$ Locked Rotor Torque Ratio	$T_k/T_n$ Break Down Torque Ratio	pf Power Factor	$\eta$ Full Load Eff.	$J_m$ Rotor Inertia	Wt. Weight
	[HP]	[kW]	60 Hz [rpm]	6 Hz [rpm]	60-6 Hz [lb-in]	60 Hz [rpm]	575V [A]	[%]		[lb-in]				[%]	[lb-ft <sup>2</sup> ]	[lb]
80 L/4-VN	0.75	0.55	1740	174	27.2	1740	1.54	371	J	27.2	3.1	3.2	0.51	72.0	0.034	19.8
90 S/4-VN	1	0.75	1760	176	35.8	1760	1.56	609	L	35.8	4.0	4.5	0.65	74.0	0.056	26.5
90 L/4-VN	1.5	1.1	1750	175	54.0	1750	1.94	666	K	54.0	3.5	3.9	0.76	76.0	0.074	30.9
100 L/4-VN	2	1.5	1760	176	71.6	1760	2.90	608	K	71.6	3.6	4.0	0.68	76.0	0.11	39.7
100 LA/4-VN	3	2.2	1760	176	107	1760	5.19	598	M	107	4.6	5.3	0.50	86.0	0.14	46.3
132 S/4-VN	5	3.7	1775	178	178	1775	5.57	768	K	178	3.7	4.1	0.78	86.0	0.57	97.0
132 M/4-VN	7.5	5.5	1770	177	267	1770	8.19	794	K	267	3.9	4.4	0.78	88.0	0.76	121
160 M/4-VN	10	7.5	1780	178	354	1780	10.8	1092	N	354	4.4	5.7	0.77	90.4	1.19	172
160 L/4-VN	15	11	1775	178	533	1775	15.2	1085	M	533	3.9	5.2	0.81	91.2	1.59	205
180 MX/4-VN	20	15	1775	178	710	1775	20.5	1015	M	710	4.3	5.4	0.80	91.5	1.90	236
180 LX/4-VN	25	18.5	1775	178	888	1775	27.6	958	M	888	4.3	5.3	0.74	91.4	2.18	269
200 LX/4-VN	30	22	1785	179	1059	1785	34.0	801	L	1059	4.3	4.8	0.72	92.4	3.80	342

Motor Ratings





# Inverter Duty - Continuous Duty 20:1 Constant Torque (VW) 575V - 80-4Hz

Inverter duty • Induction motor • TEFC  
Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
Voltages: 575V – 60Hz • 1.0 Service Factor  
Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	Power P <sub>n</sub> Full Load Power		Eff. Class	Operating Range			Motor Across the line data										
				n <sub>60</sub> Full Load Speed	n <sub>6</sub> Full Load Speed	T <sub>60-6</sub> Full Load Torque	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>2</sub> /I <sub>1n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>g</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	80 Hz [rpm]	4 Hz [rpm]		80-4 Hz [lb-in]	60 Hz [rpm]	575V [A]	[%]		[lb-in]					[%]	[lb-ft <sup>2</sup> ]	[lb]	
63 S/4-VW	0.16	0.12	-	2250	113	4.48	1700	0.35	250	F	5.93	2.7	3.5	0.66	52.0	0.0050	7.9
63 L/4-VW	0.25	0.18	-	2220	111	7.10	1680	0.45	270	E	9.38	2.3	2.5	0.71	57.0	0.0066	9.3
71 S/4-VW	0.33	0.25	-	2285	114	9.10	1710	0.62	310	G	12.2	2.4	2.7	0.64	63.0	0.017	12
71 L/4-VW	0.5	0.37	-	2280	114	13.8	1720	0.76	350	F	18.3	2.3	2.7	0.69	71.0	0.020	14
80 S/4-VW	0.75	0.55	-	2285	114	20.7	1710	1.08	350	F	27.6	2.2	2.3	0.71	72.0	0.026	18
80 LP/4-VW	1	0.75	pe	2230	112	28.3	1730	1.26	650	K	36.4	3.5	3.8	0.70	86.1	0.045	22
90 SP/4-VW	1.5	1.1	pe	2320	116	40.7	1740	1.68	840	L	54.3	4.2	4.9	0.76	86.9	0.081	33
90 LP/4-VW	2	1.5	pe	2310	116	54.6	1730	2.24	760	K	72.9	3.9	4.3	0.78	87.0	0.093	37
100 LP/4-VW	3	2.2	pe	2360	118	80.1	1770	3.07	920	L	107	3.0	4.5	0.79	90.0	0.192	62
112 MP/4-VW	5	3.7	pe	2335	117	135	1755	5.20	950	L	180	4.1	4.6	0.80	90.3	0.332	78
132 SP/4-VW	7.5	5.5	pe	2355	118	201	1770	7.80	1020	M	267	4.7	5.0	0.77	91.7	0.759	121
132 MP/4-VW	10	7.5	pe	2350	118	268	1765	10.7	960	M	357	4.7	5.0	0.77	91.7	0.831	137
160 MP/4-VW	15	11	pe	2360	118	401	1770	14.2	880	K	534	3.2	3.8	0.84	92.5	1.59	205
160 LP/4-VW	20	15	pe	2360	118	534	1775	19.0	1080	M	710	4.3	4.7	0.85	93.0	2.18	269
180 MP/4-VW	25	18.5	pe	2380	119	662	1780	24.2	1010	L	885	3.9	4.0	0.82	93.6	3.80	342
180 LP/4-VW	30	22	pe	2370	119	798	1780	27.8	880	K	1062	3.3	3.4	0.85	93.6	3.80	342
225 RP/4-VW	40	30	pe	2380	119	1059	1785	39.6	890	K	1412	3.4	3.8	0.81	94.5	11.6	694
225 SP/4-VW	50	37	pe	2380	119	1324	1785	47.8	880	K	1765	3.0	3.7	0.82	94.6	12.8	728
225 MP/4-VW	60	45	pe	2380	119	1589	1785	57.6	910	K	2118	3.3	3.6	0.83	95.2	15.9	805
250 WP/4-VW	75	55	pe	2375	119	1990	1785	67.5	820	J	2648	2.9	3.2	0.86	95.4	19.5	882

Motor Ratings



# Inverter Duty - Intermittant Duty

## 20:1 Constant Torque (VW)

### 575V - 80-4Hz



Inverter duty • Induction motor • TEFC  
 Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
 Voltages: 575V – 60Hz • 1.0 Service Factor  
 60 Minute Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	Power $P_n$ Full Load Power		Operating Range			Motor Across the line data										
			$n_{60}$ Full Load Speed	$n_6$ Full Load Speed	$T_{60-6}$ Full Load Torque	$n_N$ Full Load Speed	$I_n$ Full Load Current	$I_L/I_n$ Locked Rotor Current Ratio	NEMA Code Letter	$T_n$ Full Load Torque	$T_L/T_n$ Locked Rotor Torque Ratio	$T_k/T_n$ Break Down Torque Ratio	pf Power Factor	$\eta$ Full Load Eff.	$J_m$ Rotor Inertia	Wt. Weight
	80 Hz [rpm]	4 Hz [rpm]	80-4 Hz [lb-in]	60 Hz [rpm]	575V [A]	[%]	[lb-in]	[%]		[%]	[lb-ft <sup>2</sup> ]	[lb]				
80 L/4-VW	1	0.75	2290	115	27.5	1650	1.46	390	G	38.2	2.2	2.3	0.74	70.0	0.034	20
90 S/4-VW	1.5	1.1	2310	116	40.9	1660	1.94	490	G	57.0	2.5	2.8	0.78	73.0	0.056	26
90 L/4-VW	2	1.5	2305	115	54.7	1660	2.54	510	H	75.9	2.5	2.8	0.80	74.0	0.074	31
100 L/4-VW	3	2.2	2310	116	81.9	1705	3.60	490	G	111	2.3	2.6	0.81	76.0	0.11	40
100 LA/4-VW	5	3.7	2295	115	137	1725	6.08	510	G	183	2.7	3.1	0.75	81.0	0.14	46
132 S/4-VW	7.5	5.5	2340	117	202	1735	7.92	540	G	272	2.4	2.7	0.82	85.0	0.57	97
132 M/4-VW	10	7.5	2340	117	269	1735	10.32	630	H	363	2.9	3.2	0.84	87.0	0.76	121
160 M/4-VW	15	11	2350	118	402	1770	14.3	820	J	534	2.9	3.8	0.85	90.7	1.19	172
160 L/4-VW	20	15	2350	118	536	1760	19.4	850	K	716	2.9	3.9	0.87	89.4	1.59	205
180 MX/4-VW	25	18.5	2354	118	669	1760	23.6	880	K	895	3.4	4.3	0.87	90.5	1.90	236
180 LX/4-VW	30	22	2360	118	801	1765	29.8	890	K	1071	3.6	4.4	0.80	92.8	2.18	269
200 LX/4-VW	40	30	2370	119	1064	1770	39.4	690	H	1424	3.2	3.6	0.83	92.1	3.80	342





# Inverter Duty - Continuous Duty 1000:1 Constant Torque (F VZ) 575V - 60-0Hz

Inverter duty • Induction motor • TEBC  
Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
Voltages: 575V – 60Hz • 1.0 Service Factor  
Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	Power P <sub>n</sub>		Eff. Class	Operating Range			Motor Across the line data										
	Full Load Power			n <sub>60</sub>	n <sub>6</sub>	T <sub>60-6</sub>	n <sub>N</sub>	I <sub>n</sub>	I <sub>l</sub> /I <sub>n</sub>	NEMA Code Letter	T <sub>n</sub>	T <sub>l</sub> /T <sub>n</sub>	T <sub>k</sub> /T <sub>n</sub>	pf	η	J <sub>m</sub>	Wt. Weight
	[HP]	[kW]		60 Hz [rpm]	0 Hz [rpm]	60-0 Hz [lb-in]	60 Hz [rpm]	575V [A]	Locked Rotor Current Ratio [%]		Full Load Torque [lb-in]	Locked Rotor Torque Ratio	Break Down Torque Ratio	Power Factor	Full Load Eff. [%]	Rotor Inertia [lb-ft <sup>2</sup> ]	[lb]
63 S/4-F VZ	0.16	0.12	-	1700	0	5.93	1700	0.35	250	F	5.93	2.7	3.5	0.66	52.0	0.005	7.9
63 L/4-F VZ	0.25	0.18	-	1680	0	9.38	1680	0.45	270	E	9.38	2.3	2.5	0.71	57.0	0.007	9.3
71 S/4-F VZ	0.33	0.25	-	1710	0	12.2	1710	0.62	310	G	12.2	2.4	2.7	0.64	63.0	0.017	12
71 L/4-F VZ	0.5	0.37	-	1720	0	18.3	1720	0.76	350	F	18.3	2.3	2.7	0.69	71.0	0.020	14
80 S/4-F VZ	0.75	0.55	-	1710	0	27.6	1710	1.08	350	F	27.6	2.2	2.3	0.71	72.0	0.026	18
80 LP/4-F VZ	1	0.75	pe	1730	0	36.4	1730	1.26	650	K	36.4	3.5	3.8	0.70	86.1	0.045	22
90 SP/4-F VZ	1.5	1.1	pe	1740	0	54.3	1740	1.68	840	L	54.3	4.2	4.9	0.76	86.9	0.081	33
90 LP/4-F VZ	2	1.5	pe	1730	0	72.9	1730	2.24	760	K	72.9	3.9	4.3	0.78	87.0	0.093	37
100 LP/4-F VZ	3	2.2	pe	1770	0	107	1770	3.07	920	L	107	3.0	4.5	0.79	90.0	0.192	62
112 MP/4-F VZ	5	3.7	pe	1755	0	180	1755	5.20	950	L	180	4.1	4.6	0.80	90.3	0.332	78
132 SP/4-F VZ	7.5	5.5	pe	1770	0	267	1770	7.80	1020	M	267	4.7	5.0	0.77	91.7	0.759	121
132 MP/4-F VZ	10	7.5	pe	1765	0	357	1765	10.7	960	M	357	4.7	5.0	0.77	91.7	0.831	137
160 MP/4-F VZ	15	11	pe	1770	0	534	1770	14.2	880	K	534	3.2	3.8	0.84	92.5	1.59	205
160 LP/4-F VZ	20	15	pe	1775	0	710	1775	19.0	1080	M	710	4.3	4.7	0.85	93.0	2.18	269
180 MP/4-F VZ	25	18.5	pe	1780	0	885	1780	24.2	1010	L	885	3.9	4.0	0.82	93.6	3.80	342
180 LP/4-F VZ	30	22	pe	1780	0	1062	1780	27.8	880	K	1062	3.3	3.4	0.85	93.6	3.80	342
225 RP/4-F VZ	40	30	pe	1785	0	1412	1785	39.6	890	K	1412	3.4	3.8	0.81	94.5	11.6	694
225 SP/4-F VZ	50	37	pe	1785	0	1765	1785	47.8	880	K	1765	3.0	3.7	0.82	94.6	12.8	728
225 MP/4-F VZ	60	45	pe	1785	0	2118	1785	57.6	910	K	2118	3.3	3.6	0.83	95.2	15.9	805
250 WP/4-F VZ	75	55	pe	1785	0	2648	1785	67.5	820	J	2648	2.9	3.2	0.86	95.4	19.5	882

Motor Ratings





# Inverter Duty - Intermittant Duty

## 1000:1 Constant Torque (F VZ)

### 575V - 60-0Hz



Inverter duty • Induction motor • TEBC  
 Synchronous speed 1800rpm @ 60Hz • 4-pole • Three-phase  
 Voltages: 575V – 60Hz • 1.0 Service Factor  
 60 Minute Duty • 40°C Ambient • up to 3300ft Elevation  
 Class B temperature rise • Class F insulation

Motor Type	Power P <sub>n</sub> Full Load Power		Operating Range			Motor Across the line data										
			n <sub>60</sub> Full Load Speed	n <sub>0</sub> Full Load Speed	T <sub>60-0</sub> Full Load Torque	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>r</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>r</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[HP]	[kW]	60 Hz [rpm]	0 Hz [rpm]	60-0 Hz [lb-in]	60 Hz [rpm]	575V [A]	[%]		[lb-in]				[%]	[lb-ft <sup>2</sup> ]	[lb]
80 L/4-F VZ	1	0.75	1650	0	38.2	1650	1.46	390	G	38.2	2.2	2.3	0.74	70.0	0.034	20
90 S/4-F VZ	1.5	1.1	1660	0	57.0	1660	1.94	490	G	57.0	2.5	2.8	0.78	73.0	0.056	26
90 L/4-F VZ	2	1.5	1660	0	75.9	1660	2.54	510	H	75.9	2.5	2.8	0.80	74.0	0.074	31
100 L/4-F VZ	3	2.2	1705	0	111	1705	3.60	490	G	111	2.3	2.6	0.81	76.0	0.107	40
100 LA/4-F VZ	5	3.7	1725	0	183	1725	6.08	510	G	183	2.7	3.1	0.75	81.0	0.142	46
132 S/4-F VZ	7.5	5.5	1735	0	272	1735	7.92	540	G	272	2.4	2.7	0.82	85.0	0.570	97
132 M/4-F VZ	10	7.5	1735	0	363	1735	10.32	630	H	363	2.9	3.2	0.84	87.0	0.759	121
160 M/4-F VZ	15	11	1770	0	534	1770	14.3	820	J	534	2.9	3.8	0.85	90.7	1.19	172
160 L/4-F VZ	20	15	1760	0	716	1760	19.4	850	K	716	2.9	3.9	0.87	89.4	1.59	205
180 MX/4-F VZ	25	18.5	1760	0	895	1760	23.6	880	K	895	3.4	4.3	0.87	90.5	1.90	236
180 LX/4-F VZ	30	22	1765	0	1071	1765	29.8	890	K	1071	3.6	4.4	0.80	92.8	2.18	269
200 LX/4-F VZ	40	30	1770	0	1424	1770	39.4	690	H	1424	3.2	3.6	0.83	92.1	3.80	342

Motor Ratings





Induction motor • TEFC  
Synchronous speed 1800/3600rpm @ 60Hz • 4-2 pole • Three-phase  
Voltages: 575V – 60Hz • 1.0 Service Factor  
Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current	I <sub>L</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>L</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[HP]	[kW]	60 Hz [rpm]	575 V [A]	[%]		[lb-in]					[%]	[lb-ft <sup>2</sup> ]
63 S/4-2	0.13	0.10	1700	0.53	240	J	4.97	3.8	3.9	0.58	33.8	0.0050	7.9
	0.20	0.15	3410	0.61	260		3.72	3.3	4.0	0.68	37.9		
63 L/4-2	0.20	0.15	1680	0.76	220	K	7.55	3.3	3.4	0.57	34.8	0.0066	9.3
	0.25	0.19	3420	0.76	290		4.70	3.6	4.3	0.66	38.0		
71 S/4-2	0.28	0.21	1690	0.55	350	H	10.5	2.4	2.5	0.73	54.7	0.017	12
	0.37	0.28	3335	0.67	360		6.99	2.8	3.0	0.86	51.1		
71 L/4-2	0.40	0.30	1660	0.82	320	G	15.3	2.3	2.3	0.75	51.2	0.020	14
	0.60	0.45	3260	1.09	330		11.7	1.7	2.0	0.88	49.4		
80 S/4-2	0.65	0.48	1670	1.09	310	G	24.5	1.9	2.2	0.77	60.2	0.026	18
	0.82	0.60	3340	1.39	350		15.5	2.2	2.2	0.82	55.3		
80 L/4-2	0.95	0.70	1625	1.54	310	G	36.8	1.8	1.9	0.79	60.4	0.033	20
	1.15	0.85	3325	1.95	350		21.8	2.2	2.3	0.80	57.0		
90 S/4-2	1.5	1.1	1680	2.24	390	G	55.3	1.7	2.3	0.84	61.3	0.056	26
	1.9	1.4	3335	2.92	390		35.5	1.8	2.3	0.88	57.1		
90 L/4-2	2.0	1.5	1655	2.92	370	G	76.6	2.2	2.4	0.81	66.4	0.074	31
	2.5	1.9	3330	3.92	400		48.2	2.6	2.5	0.82	61.9		
100 L/4-2	2.7	2.0	1680	3.85	350	G	101	2.1	2.4	0.75	72.8	0.11	40
	3.2	2.4	3395	4.60	440		59.7	2.4	2.6	0.85	64.4		
100 LA/4-2	3.5	2.6	1655	4.70	350	G	133	1.8	2.1	0.87	66.7	0.14	46
	4.2	3.1	3390	5.60	450		77.3	2.1	2.3	0.88	65.9		
112 M/4-2	5.0	3.7	1750	6.60	520	K	179	2.0	2.7	0.82	82.1	0.26	71
	5.9	4.4	3505	8.00	650		106	2.5	3.1	0.81	83.1		
132 S/4-2	6.3	4.7	1760	7.80	470	H	226	2.1	2.8	0.84	75.5	0.57	97
	7.9	5.9	3485	10.0	560		143	2.5	3.0	0.88	70.1		
132 M/4-2	8.7	6.5	1740	10.9	510	K	316	2.4	2.9	0.83	75.6	0.76	121
	10.7	8.0	3500	15.0	590		193	3.2	5.9	0.79	70.6		



# 2-Speed Dual-Winding 8-2 Pole - 575V - 60Hz



Induction motor • TEFC

Synchronous speed 900/3600rpm @ 60Hz • 8-2-pole • Three-phase

Voltages: 230/460V – 60Hz • 1.0 Service Factor

S3-40% • 40°C Ambient • up to 3300ft Elevation

Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>N</sub> Full-Load Current	I <sub>L</sub> /I <sub>N</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>N</sub> Full Load Torque	T <sub>L</sub> /T <sub>N</sub> Locked Rotor Torque Ratio	T <sub>K</sub> /T <sub>N</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[HP]	[kW]	60 Hz [rpm]	575 V [A]	[%]		[lb-in]				[%]	[lb-ft <sup>2</sup> ]	[lb]
71 S/8-2 WU	0.06	0.05	820	0.36	170	B	4.64	2.3	2.2	0.52	25.3	0.017	12
	0.30	0.22	3250	0.40	250		5.72	1.4	1.3	0.87	64.8		
71 L/8-2 WU	0.08	0.06	820	0.44	190	D	6.18	2.4	2.4	0.54	27.9	0.020	14
	0.40	0.30	3260	0.55	300		7.78	2.0	2.1	0.89	62.3		
80 S/8-2 WU	0.13	0.10	825	0.59	180	F	10.2	1.7	1.5	0.50	37.0	0.026	18
	0.60	0.45	3350	1.12	300		11.4	1.4	1.8	0.71	63.7		
80 L/8-2 WU	0.17	0.13	650	0.65	180	J	16.9	1.4	1.8	0.69	31.2	0.036	20
	0.74	0.55	3110	1.32	400		14.9	2.0	1.8	0.88	59.1		
90 S/8-2 WU	0.27	0.20	830	0.88	230	J	20.4	2.2	2.2	0.50	49.3	0.055	26
	1.1	0.80	3400	1.90	440		19.9	3.2	3.0	0.71	67.7		
90 L/8-2 WU	0.40	0.30	815	1.04	180	G	31.1	2.0	1.4	0.53	58.8	0.074	31
	1.6	1.2	3410	2.41	420		29.7	3.3	2.5	0.76	74.9		
100 L/8-2 WU	0.54	0.40	845	1.40	240	G	40.0	1.8	2.1	0.51	62.0	0.11	40
	2.1	1.6	3425	2.70	460		39.5	2.4	2.5	0.84	76.7		
100 LA/8-2 WU	0.74	0.55	845	1.83	240	F	55.0	1.5	1.9	0.49	66.5	0.14	46
	3.0	2.2	3445	3.64	440		54.0	2.1	2.2	0.81	81.8		
112 M/8-2 WU	1.0	0.75	850	2.48	330	H	74.6	2.9	2.4	0.47	70.4	0.28	66
	4.0	3.0	3495	4.73	570		72.5	2.5	3.3	0.82	84.7		
132 S/8-2 WU	1.3	1.0	865	2.87	290	F	97.7	2.6	2.3	0.53	71.0	0.55	97
	5.4	4.0	3470	5.61	520		97.4	2.9	2.4	0.91	80.8		
132 M/8-2 WU	1.9	1.4	860	3.89	360	E	138	2.5	2.2	0.53	72.5	0.75	121
	7.4	5.5	3455	7.33	470		135	2.9	2.4	0.93	81.9		

Motor Ratings





**Inverter Duty • Induction motor • TEFC**  
**Synchronous speed 1500rpm @ 50Hz • 4-pole • Three-phase**  
**Voltages: 400V – 50Hz • 1.0 Service Factor**  
**Continuous Duty • 40°C Ambient • up to 3300ft Elevation**  
**Class B temperature rise • Class F insulation**

Motor Type	P <sub>n</sub> Full Load Power		Eff. Class	n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>s</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>s</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full-Load Efficiency	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[hp]	[kW]												
63 S/4	0.16	0.12	-	1335	0.55	290	H	7.55	2.7	2.7	0.64	50.0	0.0050	7.9
63 L/4	0.25	0.18	-	1390	0.68	300	G	11.3	2.6	2.7	0.61	58.0	0.0066	9.3
71 S/4	0.33	0.25	-	1380	0.76	330	F	15.1	2.2	2.1	0.77	63.0	0.017	12
71 L/4	0.5	0.37	-	1380	1.09	360	F	22.8	2.0	2.4	0.71	67.0	0.020	14
80 S/4	0.75	0.55	-	1375	1.52	330	E	34.4	1.9	2.0	0.73	75.1	0.026	18
80 LP/4	1	0.75	IE3	1415	1.79	540	H	44.5	3.0	3.1	0.72	83.7	0.045	22
90 SP/4	1.5	1.1	IE3	1430	2.38	680	J	66.1	3.6	4.0	0.78	85.3	0.081	33
90 LP/4	2	1.5	IE3	1415	3.23	590	H	89.1	3.3	3.5	0.79	85.3	0.093	37
100 LP/4	3	2.2	IE3	1465	4.27	820	K	129	2.6	3.9	0.83	88.1	0.19	62
100 AP/4	4	3	IE3	1460	6.06	730	J	173	2.4	3.6	0.81	88.1	0.19	62
112 MP/4	5.4	4	IE3	1440	7.85	740	J	236	3.3	3.5	0.83	88.6	0.33	78
132 SP/4	7.5	5.5	IE3	1465	10.9	860	K	323	3.9	4.1	0.80	90.9	0.76	121
132 MP/4	10	7.5	IE3	1460	15.7	750	K	432	3.9	4.2	0.77	90.4	0.83	137
160 SP/4	12	9.2	IE3	1470	16.7	810	J	514	2.9	3.3	0.88	91.0	1.59	205
160 MP/4	15	11	IE3	1465	20.5	740	J	645	2.9	3.4	0.85	91.4	1.59	205
160 LP/4	20	15	IE3	1465	27.9	910	K	860	3.8	4.3	0.85	92.3	2.18	269
180 MP/4	25	18.5	IE3	1480	34.0	920	K	1065	3.4	3.8	0.84	93.1	3.80	342
180 LP/4	30	22	IE3	1475	39.3	800	J	1282	2.8	3.2	0.87	93.1	3.80	342
225 RP/4	40	30	IE3	1485	56.2	780	J	1707	3.0	3.4	0.82	94.1	11.63	694
225 SP/4	50	37	IE3	1485	68.2	770	J	2106	2.9	3.2	0.83	94.1	12.81	728
225 MP/4	60	45	IE3	1485	81.7	800	J	2561	3.0	3.4	0.83	94.6	15.90	805
250 WP/4	75	55	IE3	1480	96.1	700	H	3141	2.6	2.8	0.87	94.6	19.46	882

Motor Ratings

\* Standard motors 10hp (7.5kw) and below are rated 230Δ / 400Y volts, while motors above 10hp (7.5kw) are rated 400Δ / 690Y volts.



# Intermittant Duty 400V - 50Hz



**Inverter Duty • Induction motor • TEFC**  
**Synchronous speed 1500rpm @ 50Hz • 4-pole • Three-phase**  
**Voltages: 400V – 50Hz • 1.0 Service Factor**  
**60 Minute Duty • 40°C Ambient • up to 3300ft Elevation**  
**Class B temperature rise • Class F insulation**

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>l</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>l</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>b</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full-Load Efficiency	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[hp]	[kW]											
80 L/4	1	0.75	1375	2.10	350%	F	45.8	2.0	2.1	0.74	75.5%	0.033	20
90 S/4	1.5	1.1	1395	2.81	440%	G	67.8	2.3	2.6	0.74	77.6%	0.056	26
90 L/4	2	1.5	1395	3.55	480%	G	90.4	2.3	2.6	0.78	77.5%	0.074	31
100 L/4	3	2.2	1440	5.20	510%	G	131	2.3	3.0	0.74	80.8%	0.11	40
100 LA/4	4	3	1415	6.52	540%	G	178	2.5	2.9	0.76	83.3%	0.14	46
112 M/4	5.4	4	1445	8.31	540%	G	236	2.3	2.9	0.80	85.1%	0.26	66
132 S/4	7.5	5.5	1445	11.4	550%	G	327	2.1	2.7	0.81	87.9%	0.57	97
132 M/4	10	7.5	1445	14.8	550%	G	436	2.5	2.8	0.84	87.7%	0.76	121
132 MA/4	12.3	9.2	1450	18.8	600%	H	535	2.6	3.1	0.80	86.9%	0.83	137
160 M/4	15	11	1455	20.9	650%	H	650	2.4	2.9	0.85	88.8%	1.19	172
160 L/4	20	15	1460	28.2	750%	J	863	2.9	3.5	0.85	89.7%	1.59	205
180 MX/4	25	18.5	1460	35.4	750%	J	1079	3.2	3.8	0.83	90.3%	1.90	236
180 LX/4	30	22	1460	42.6	750%	J	1295	3.3	3.8	0.82	90.3%	2.18	269
200 LX/4	40	30	1470	57.6	690%	H	1715	2.6	3.0	0.83	90.7%	3.80	342

\* Standard motors 10hp (7.5kw) and below are rated 230Δ / 400Y volts, while motors above 10hp (7.5kw) are rated 400Δ / 690Y volts.







# 2-Speed Single Winding 4-2 Pole - 400V - 50Hz

Induction motor • TEFC  
Synchronous speed 1500/3000rpm @ 50Hz • 4-2-pole • Three-phase  
Voltages: 400V – 50Hz • 1.0 Service Factor  
Continuous Duty • 40°C Ambient • up to 3300ft Elevation  
Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current	I <sub>l</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>l</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[HP]	[kW]	50 Hz [rpm]	400 V [A]	[%]		[lb-in]				[%]	[lb-ft <sup>2</sup> ]	[lb]
63 S/4-2	0.13	0.10	1415	0.64	250%	H	5.97	3.3	3.6	0.58	38.9%	0.0050	7.9
	0.20	0.15	2840	0.73	280%		4.46	3.2	3.8	0.68	43.6%		
63 L/4-2	0.20	0.15	1400	0.95	230%	J	9.06	2.9	3.1	0.57	40.0%	0.0066	9.3
	0.25	0.19	2850	0.95	300%		5.63	3.3	3.9	0.66	43.7%		
71 S/4-2	0.28	0.21	1410	0.66	360%	G	12.6	2.1	2.3	0.73	62.9%	0.017	12
	0.38	0.28	2780	0.80	390%		8.51	2.5	2.7	0.86	58.7%		
71 L/4-2	0.40	0.30	1385	0.98	330%	F	18.3	2.1	2.1	0.75	58.9%	0.020	14
	0.60	0.45	2715	1.30	340%		14.0	1.6	1.8	0.88	56.8%		
80 S/4-2	0.64	0.48	1390	1.30	330%	F	29.2	1.7	1.8	0.77	69.2%	0.026	18
	0.80	0.60	2785	1.66	360%		18.2	1.8	2.0	0.82	63.6%		
80 L/4-2	0.94	0.70	1355	1.84	330%	F	43.7	1.6	1.7	0.79	69.5%	0.033	20
	1.14	0.85	2770	2.34	360%		25.9	2.0	2.0	0.80	65.5%		
90 S/4-2	1.5	1.1	1400	2.68	390%	F	66.4	1.5	2.1	0.84	70.5%	0.056	26
	1.9	1.4	2780	3.50	390%		42.6	1.6	2.1	0.88	65.6%		
90 L/4-2	2.0	1.5	1380	3.50	390%	F	91.9	2.0	2.1	0.81	76.4%	0.074	31
	2.5	1.9	2775	4.70	420%		57.9	2.3	2.3	0.82	71.2%		
100 L/4-2	2.7	2.0	1400	4.60	370%	F	121	1.8	2.0	0.75	83.7%	0.11	40
	3.2	2.4	2830	5.50	450%		71.7	2.0	2.2	0.85	74.1%		
100 LA/4-2	3.5	2.6	1380	5.62	390%	F	159	1.8	2.1	0.87	76.8%	0.14	46
	4.2	3.1	2825	6.71	490%		92.7	2.1	2.2	0.88	75.8%		
112 M/4-2	5.0	3.7	1435	7.90	490%	H	218	2.0	2.6	0.84	80.5%	0.26	71
	5.9	4.4	2905	9.60	600%		128	2.4	3.0	0.83	79.7%		
112 MA/4-2	5.4	4.0	1455	8.72	570%	J	232	2.5	3.2	0.78	84.9%	0.30	71
	6.8	5.1	2900	11.9	640%		149	2.8	3.3	0.77	80.3%		
132 S/4-2	6.3	4.7	1465	9.30	490%	G	271	1.9	2.5	0.84	86.8%	0.57	97
	7.9	5.9	2905	12.0	580%		172	2.3	2.7	0.88	80.6%		
132 M/4-2	8.7	6.5	1450	13.0	540%	J	379	2.2	2.6	0.83	87.0%	0.76	121
	10.7	8.0	2915	18.0	620%		232	2.6	2.9	0.79	81.2%		
132 MA/4-2	9.8	7.3	1455	14.3	700%	K	424	2.7	3.2	0.84	87.7%	0.83	137
	12.1	9.0	2930	18.7	760%		260	2.7	3.5	0.83	83.7%		
160 M/4-2	12.5	9.3	1450	18.0	500%	G	542	2.2	2.5	0.88	84.7%	1.19	172
	15.4	11.5	2935	22.4	620%		331	2.2	3.0	0.91	81.4%		
160 L/4-2	17.4	13.0	1460	24.1	750%	H	753	2.7	3.2	0.88	88.5%	1.59	205
	22.8	17.0	2945	31.1	740%		488	2.6	3.4	0.93	84.8%		

Motor Ratings



# 2-Speed Dual-Winding 8-2 Pole - 400V - 50Hz



Induction motor • TEFC

Synchronous speed 750/3000rpm @ 50Hz • 8-2-pole • Three-phase

Voltages: 400V – 50Hz • 1.0 Service Factor

S3-40% • 40°C Ambient • up to 3300ft Elevation

Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full-Load Current	I <sub>L</sub> /I <sub>n</sub> Locked Rotor Current Ratio	NEMA Code Letter	T <sub>n</sub> Full Load Torque	T <sub>L</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	η Full Load Eff.	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[HP]	[kW]	50 Hz [rpm]	400 V [A]	[%]		[lb-in]				[%]	[lb-ft <sup>2</sup> ]	[lb]
71 S/8-2 WU	0.060	0.045	650	0.44	130	B	5.85	2.6	2.6	0.58	25.5	0.017	12
	0.30	0.22	2520	0.60	250		7.38	1.8	1.9	0.90	58.8		
71 L/8-2 WU	0.08	0.06	655	0.51	160	B	7.74	2.3	2.3	0.61	27.8	0.020	14
	0.40	0.30	2450	0.88	230		10.3	1.4	1.4	0.90	54.7		
80 S/8-2 WU	0.13	0.10	650	0.70	160	D	13.0	2.0	2.0	0.57	36.2	0.026	18
	0.60	0.45	2695	1.40	270		14.1	2.0	2.0	0.76	61.0		
80 L/8-2 WU	0.17	0.13	585	0.74	160	E	18.8	1.4	1.5	0.70	36.2	0.033	20
	0.74	0.55	2620	1.47	330		17.7	2.1	2.0	0.88	61.4		
90 S/8-2 WU	0.27	0.20	665	1.07	200	F	25.4	2.1	2.2	0.57	47.3	0.056	26
	1.07	0.80	2770	2.37	350		24.4	2.9	2.6	0.74	65.8		
90 L/8-2 WU	0.40	0.30	640	1.31	200	E	39.6	1.9	1.9	0.60	55.1	0.074	31
	1.6	1.2	2770	3.05	350		36.6	2.1	2.3	0.79	71.9		
100 L/8-2 WU	0.54	0.40	685	1.70	240	E	49.4	1.1	2.2	0.58	58.6	0.11	40
	2.1	1.6	2790	3.60	400		48.5	2.0	2.3	0.86	74.6		
100 LA/8-2 WU	0.74	0.55	680	2.28	250	F	68.4	2.1	2.3	0.56	62.2	0.14	46
	3.0	2.2	2810	4.87	460		66.2	2.5	2.6	0.83	78.6		
112 M/8-2 WU	1.0	0.75	695	3.05	280	G	91.2	2.3	2.6	0.53	67.0	0.26	71
	4.0	3.0	2875	6.37	560		88.2	2.3	3.3	0.83	81.9		
132 S/8-2 WU	1.3	1.0	630	4.00	260	F	134	1.8	2.0	0.53	68.1	0.57	97
	5.4	4.0	2710	8.55	480		125	2.3	2.3	0.93	72.6		
132 M/8-2 WU	1.9	1.4	700	5.10	280	F	169	1.9	2.3	0.60	66.0	0.76	121
	7.4	5.5	2835	10.6	530		164	2.3	2.5	0.93	80.5		

Motor Ratings





# 230V - 50Hz Single Phase with Single Capacitor

## TEFC

Synchronous speed 1500 rpm @ 50Hz • 4-pole • Single-phase

Voltages: 230V – 50Hz • 1.0 Service Factor

Continuous Duty • 40°C Ambient • up to 3300ft Elevation

Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>l</sub> /I <sub>n</sub> Locked Rotor Current Ratio	T <sub>n</sub> Full Load Torque	T <sub>l</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[hp]	[kW]	[rpm]	[A]	[%]	[lb-in]				[lb-ft <sup>2</sup> ]	[lb]
63 L/4 EHB1	0.16	0.12	1405	1.22	250	7.18	0.9	2.3	0.95	0.0066	9.9
63 LA/4 EHB1	0.25	0.18	1405	1.71	260	11.2	1.0	2.1	0.91	0.0083	11
71 L/4 EHB1	0.33	0.25	1430	1.96	340	14.5	0.6	2.2	0.95	0.020	15
71 LA/4 EHB1	0.5	0.37	1425	2.90	350	22.1	0.7	2.2	0.90	0.027	18
80 L/4 EHB1	0.75	0.55	1440	3.87	390	32.8	0.3	2.2	0.90	0.034	21
80 LA/4 EHB1	1	0.75	1435	5.10	350	43.9	0.4	1.9	0.90	0.046	23
90 L/4 EHB1	1.5	1.1	1445	7.54	420	65.4	0.2	2.0	0.87	0.074	32
90 LB/4 EHB1	2	1.5	1425	9.02	400	88.5	0.3	1.9	0.94	0.093	38



# 230V - 50Hz Single Phase with Start & Run Capacitors



## TEFC

Synchronous speed 1500 rpm @ 50Hz • 4-pole • Single-phase

Voltages: 230V – 50Hz • 1.0 Service Factor

Continuous Duty • 40°C Ambient • up to 3300ft Elevation

Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>l</sub> /I <sub>n</sub> Locked Rotor Current Ratio	T <sub>n</sub> Full Load Torque	T <sub>l</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[hp]	[kW]									
63 L/4 EAR1	0.16	0.12	1405	1.22	320	7.18	2.3	2.3	0.95	0.0050	9.9
63 LA/4 EAR1	0.25	0.18	1405	1.71	320	11.2	2.4	2.1	0.91	0.0066	11
71 L/4 EAR1	0.33	0.25	1430	1.96	410	14.5	2.1	2.2	0.95	0.015	15
71 LA/4 EAR1	0.5	0.37	1425	2.90	460	22.1	2.1	2.2	0.90	0.018	18
80 L/4 EAR1	0.75	0.55	1440	3.87	430	32.8	2.1	2.2	0.90	0.030	21
80 LA/4 EAR1	1	0.75	1435	5.10	430	43.9	2.2	1.9	0.90	0.039	23
90 L/4 EAR1	1.5	1.1	1445	7.54	480	65.4	2.2	2.0	0.87	0.056	32
90 LB/4 EAR1	2	1.5	1425	9.02	530	88.5	2.2	1.9	0.94	0.074	38





# 230V - 50Hz Single Phase with Steinmetz Circuit

## TEFC

Synchronous speed 1500 rpm @ 50Hz • 4-pole • Single-phase

Voltages: 230V – 50Hz • 1.0 Service Factor

Continuous Duty • 40°C Ambient • up to 3300ft Elevation

Class B temperature rise • Class F insulation

Motor Type	P <sub>n</sub> Full Load Power		n <sub>N</sub> Full Load Speed	I <sub>n</sub> Full Load Current	I <sub>l</sub> /I <sub>n</sub> Locked Rotor Current Ratio	T <sub>n</sub> Full Load Torque	T <sub>l</sub> /T <sub>n</sub> Locked Rotor Torque Ratio	T <sub>k</sub> /T <sub>n</sub> Break Down Torque Ratio	pf Power Factor	J <sub>m</sub> Rotor Inertia	Wt. Weight
	[hp]	[kW]	[rpm]	[A]	[%]	[lb-in]				[lb-ft <sup>2</sup> ]	[lb]
63 S/4 EST	0.12	0.09	1390	0.97	160	5.44	0.8	1.9	0.98	0.0050	8.6
63 L/4 EST	0.16	0.12	1405	1.19	190	7.18	0.7	2.2	0.98	0.0066	9.9
71 S/4 EST	0.25	0.18	1425	1.54	250	11.1	0.7	2.0	0.98	0.017	12.6
71 L/4 EST	0.33	0.25	1420	1.94	270	14.6	0.5	1.9	0.98	0.020	14.6
80 S/4 EST	0.5	0.37	1425	2.62	260	22.1	0.4	1.5	0.96	0.026	18.3
80 L/4 EST	0.75	0.55	1420	3.60	260	33.3	0.5	1.3	0.96	0.034	20.5
90 S/4 EST	1	0.75	1435	4.60	360	43.9	0.4	1.6	0.96	0.056	27.3
90 L/4 EST	1.5	1.1	1435	6.46	340	65.9	0.3	1.6	0.96	0.074	31.7









**DRIVESYSTEMS**

# Dimensions

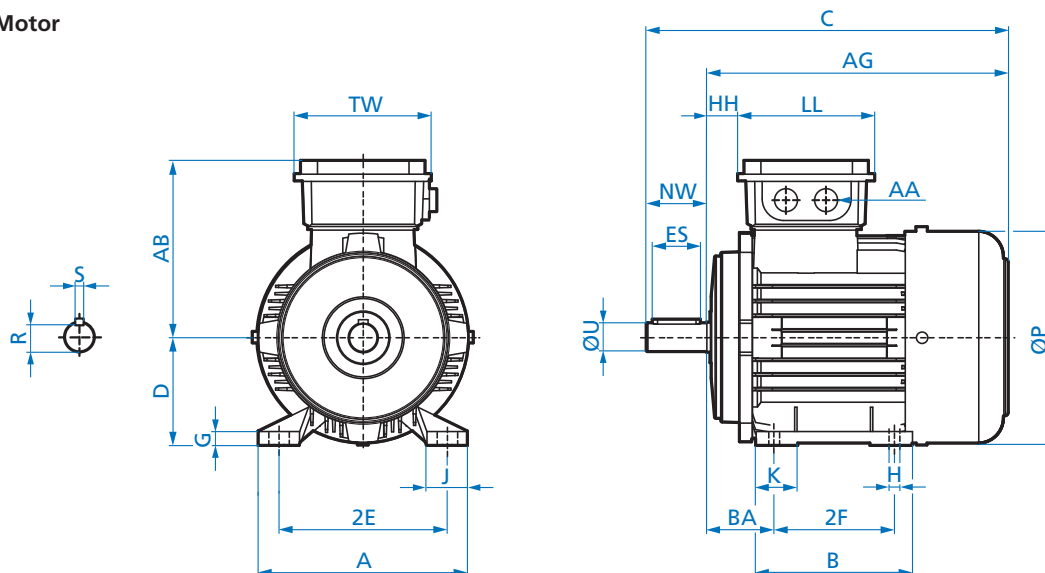
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# NEMA Footed Motors



## Standard Motor

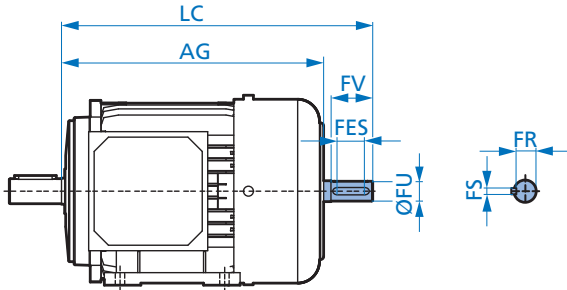


Motor Frame	Efficiency		NEMA Frame	Overall			Feet								
	SE	PE		C	AG	øP	A	B	2E	2F	BA	J	K	H	G
71	S/L	-	56	11.01	9.13	5.75	5.83	3.70	4.88	3.00	2.75	1.44	0.77	0.34	0.47
80	S	SP	56	11.51	9.63	6.46	6.06	4.02	4.88	3.00	2.75	1.26	1.04	0.34	0.55
80	L	-	56	11.51	9.63	6.46	6.06	4.02	4.88	3.00	2.75	1.26	1.04	0.34	0.55
80	-	LP	143T	11.57	9.32	6.46	6.69	5.00	5.50	4.00	2.25	1.56	1.50	0.34	0.57
90	S/L	SP/LP	145T	13.14	10.89	7.20	6.89	6.18	5.50	5.00	2.25	1.69	1.38	0.34	0.59
100	L	LP	182T	14.82	12.07	7.91	8.78	6.81	7.50	4.50	2.75	2.07	2.68	0.41	0.59
100	LA	AP	184T	14.82	12.07	7.91	8.78	6.81	7.50	5.50	2.75	2.07	2.68	0.41	0.59
112	M	-	184T	15.45	12.70	8.90	9.02	6.69	7.50	5.50	2.75	1.79	1.30	0.41	0.67
112	-	MP	184T	16.44	13.69	8.90	9.02	6.69	7.50	5.50	2.75	1.79	1.30	0.41	0.67
132	S	-	213T	18.08	14.71	10.47	10.24	7.09	8.50	5.50	3.50	2.30	1.46	0.41	0.69
132	-	SP	213T	19.58	16.20	10.47	10.24	7.09	8.50	5.50	3.50	2.30	1.46	0.41	0.69
132	M	MP	215T	19.58	16.20	10.47	10.24	8.58	8.50	7.00	3.50	2.30	1.46	0.41	0.69

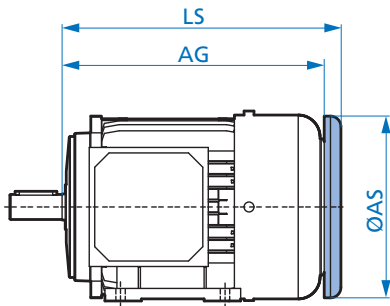
Motor Frame	Efficiency		NEMA Frame	Shaft						Terminal Box					
	SE	PE		U	NW	ES	R	S	D	AB	HH	LL	TW	AA (NPT)	AA (METRIC)
71	S/L	-	56	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	1.875	1.69	0.517	0.188	3.50	4.88	1.50	3.94	3.94	1/2"	M20 x1.5
80	S	SP	56	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	1.875	1.69	0.517	0.188	3.50	5.59	1.22	4.49	4.49	3/4"	M25x1.5
80	L	-	56	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	1.875	1.69	0.517	0.188	3.50	5.59	1.22	4.49	4.49	3/4"	M25x1.5
80	-	LP	143T	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	2.250	1.81	0.771	0.188	3.50	5.59	0.91	4.49	4.49	3/4"	M25x1.5
90	S/L	SP/LP	145T	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	2.250	1.81	0.771	0.188	3.50	5.79	1.06	4.49	4.49	3/4"	M25x1.5
100	L	LP	182T	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	2.750	2.25	0.986	0.250	4.50	6.65	1.30	4.49	4.49	1"	M32x1.5
100	LA	AP	184T	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	2.750	2.25	0.986	0.250	4.50	6.65	1.30	4.49	4.49	1"	M32x1.5
112	M	-	184T	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	2.750	2.25	0.986	0.250	4.50	7.05	1.26	4.49	4.49	1"	M32x1.5
112	-	MP	184T	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	2.750	2.25	0.986	0.250	4.50	7.05	1.26	4.49	4.49	1"	M32x1.5
132	S	-	213T	1.375 <sup>+0.000</sup> <sub>-0.0005</sub>	3.375	3.06	1.201	0.312	5.25	8.03	1.89	4.80	4.80	1"	M32x1.5
132	-	SP	213T	1.375 <sup>+0.000</sup> <sub>-0.0005</sub>	3.375	3.06	1.201	0.312	5.25	8.03	1.89	4.80	4.80	1"	M32x1.5
132	M	MP	215T	1.375 <sup>+0.000</sup> <sub>-0.0005</sub>	3.375	3.06	1.201	0.312	5.25	8.03	1.89	4.80	4.80	1"	M32x1.5



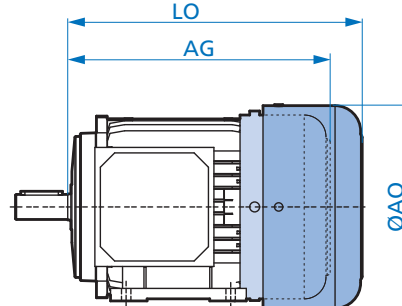
## Option WE - 2nd Shaft Extension



## Option RD - Canopy Drip Cover



## Option RDD - Double Fan Cover

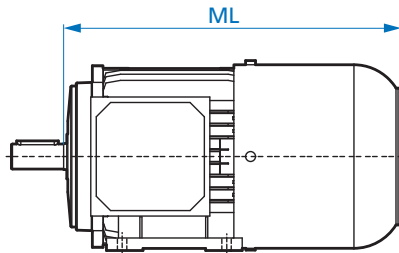


Motor Frame	Efficiency		NEMA Frame	AG	LC	øFU	WE				RD		RDD	
	SE	PE					FS	FR	FV	FES	LS	øAS	LO	øAO
71	S/L	-	56	9.13	10.67	0.500 <sup>+0.000</sup> <sub>-0.0005</sub>	flat	0.453	1.500	-	9.56	5.43	10.08	6.14
80	S	SP	56	9.63	11.63	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	10.22	6.14	10.66	6.93
80	L	-	56	9.63	11.63	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	10.22	6.14	10.66	6.93
80	-	LP	143T	9.32	11.31	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	9.91	6.14	10.34	6.93
90	S/L	SP/LP	145T	10.89	13.04	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	11.48	6.93	12.11	7.64
100	L	LP	182T	12.07	14.56	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	12.67	7.64	13.18	8.58
100	LA	AP	184T	12.07	14.56	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	12.67	7.64	13.18	8.58
112	M	-	184T	12.70	15.11	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	13.30	8.58	14.20	10.16
112	-	MP	184T	13.69	16.10	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	14.28	8.58	15.19	10.16
132	S	-	213T	14.71	18.16	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	0.250	0.986	2.750	2.00	15.37	10.16	16.32	12.20
132	-	SP	213T	16.20	19.66	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	0.250	0.986	2.750	2.00	16.87	10.16	17.82	12.20
132	M	MP	215T	16.20	19.66	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	0.250	0.986	2.750	2.00	16.87	10.16	17.82	12.20

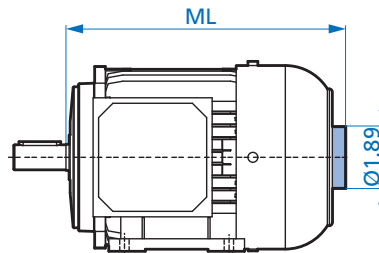
# NEMA Footed Motor Options



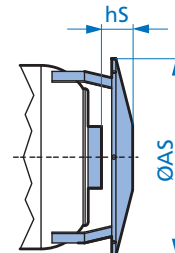
Option IG - Incremental Encoder



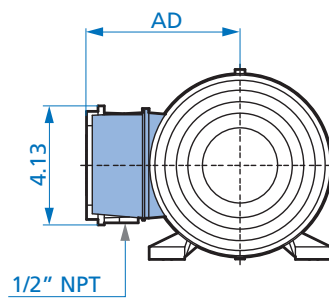
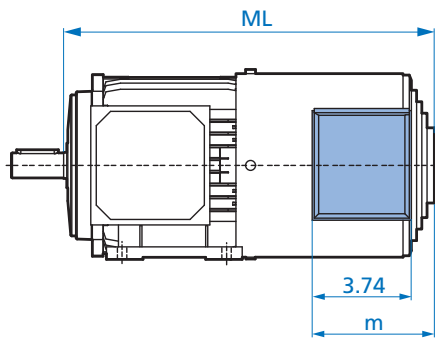
Option MG - Magnetic Encoder



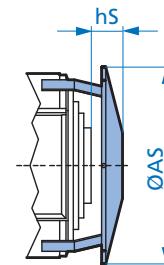
MG + RD



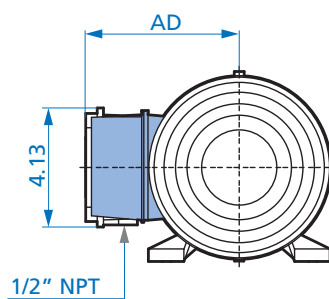
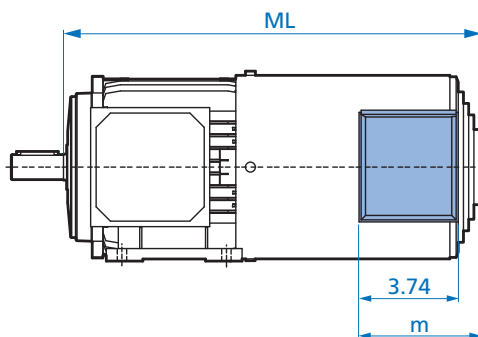
Option F - Forced Cooling Fan



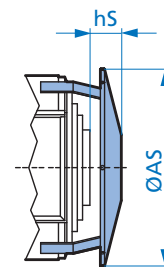
F + RD



Option IG-F - Incremental Encoder & Forced Cooling Fan



IG-F + RD



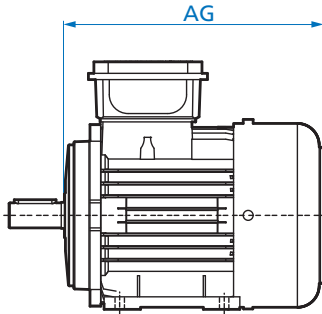
Dimensions

Motor Frame	Efficiency			IG ML	MG ML	MG & RD		F ML	F m	F & RD AD	F & RD		IG F ML	IG F m	IG F AD	IGF & RD	
	SE	PE	NEMA Frame			hS	øAS				hs	øAS				hs	øAS
71	S/L	-	56	11.34	9.58	0.43	5.43	12.64	4.21	4.84	1.46	5.91	14.80	4.21	4.84	1.46	5.91
80	S	SP	56	12.04	10.03	0.35	6.14	13.18	4.21	5.20	1.57	6.69	15.15	4.21	5.20	1.57	6.69
80	L	-	56	12.04	10.03	0.35	6.14	13.18	4.21	5.20	1.57	6.69	15.15	4.21	5.20	1.57	6.69
80	-	LP	143T	11.72	9.71	0.35	6.14	12.86	4.21	5.20	1.57	6.69	14.83	4.21	5.20	1.57	6.69
90	S/L	SP/LP	145T	13.73	11.44	0.35	6.93	14.99	4.61	5.59	1.18	7.40	16.76	4.61	5.59	1.18	7.40
100	L	LP	182T	14.79	12.57	0.33	7.64	15.81	4.61	5.94	1.10	8.27	18.18	4.61	5.94	1.10	8.27
100	LA	AP	184T	14.79	12.57	0.33	7.64	15.81	4.61	5.94	1.10	8.27	18.18	4.61	5.94	1.10	8.27
112	M	-	184T	15.38	13.20	0.33	8.58	16.60	4.61	6.42	1.30	9.80	18.57	4.61	6.42	1.30	9.80
112	-	MP	184T	16.37	14.16	0.33	8.58	17.59	4.61	6.42	1.30	9.80	19.56	4.61	6.42	1.30	9.80
132	S	-	213T	17.19	15.10	0.43	10.12	19.23	5.00	7.20	0.98	11.81	20.81	5.00	7.20	0.98	11.81
132	-	SP	213T	18.68	16.60	0.43	10.12	20.73	5.00	7.20	0.98	11.81	22.30	5.00	7.20	0.98	11.81
132	M	MP	215T	18.68	16.60	0.43	10.12	20.73	5.00	7.20	0.98	11.81	22.30	5.00	7.20	0.98	11.81

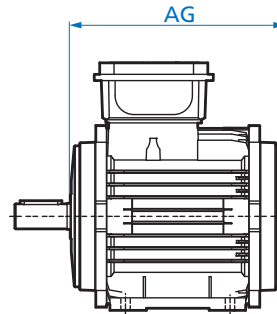




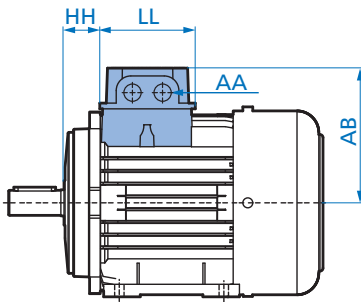
Option OL - Without Fan



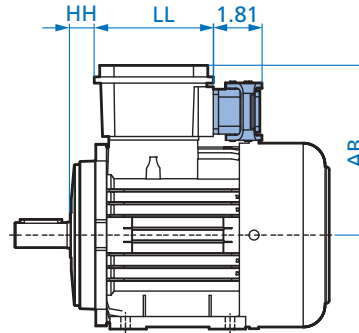
Option OL/H - Without Fan Cover



Option EKK - One Piece Terminal Box



Option MS - Quick Power Plug Connector



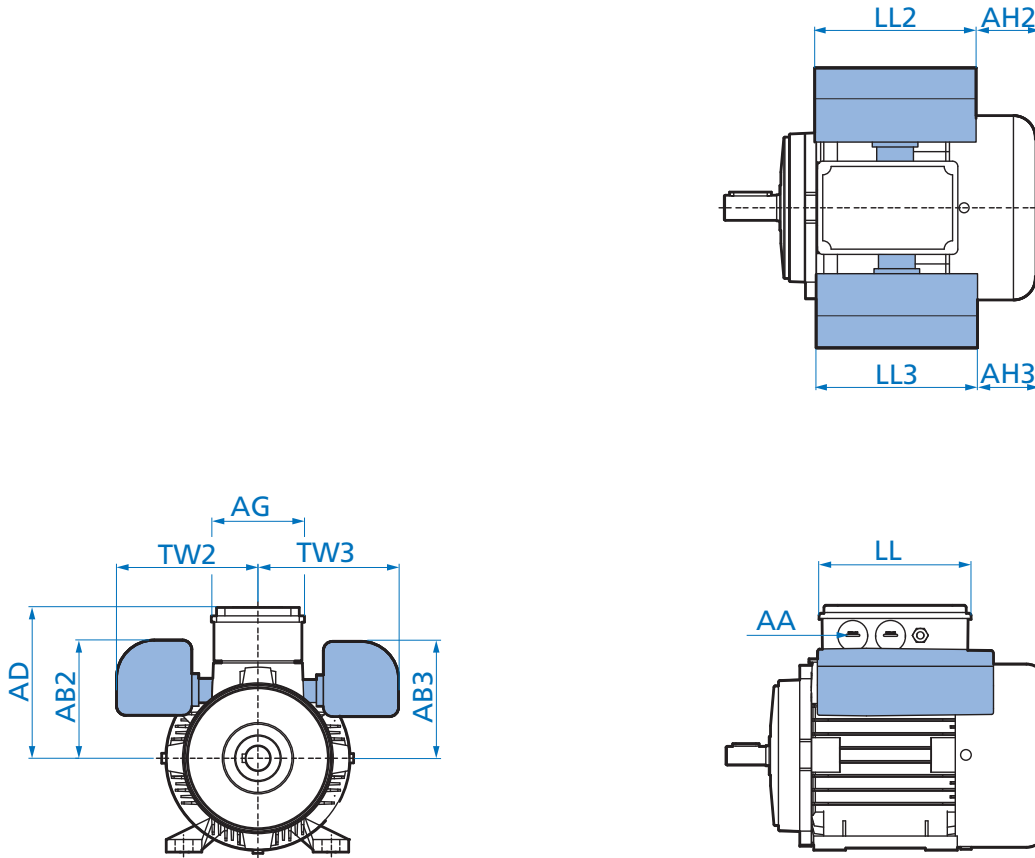
Motor Frame	Efficiency		NEMA Frame	OL	OL/H	EKK					MS		
	SE	PE		AG	AG	HH	LL	AB	AA (NPT)	AA (METRIC)	HH	LL	AB
71	S/L	-	56	9.13	7.95	1.57	2.95	4.29	1/2"	M16 x 1.5	1.50	4.49	5.87
80	S	SP	56	9.63	1.02	1.46	2.95	4.88	1/2"	M20 x 1.5	1.22	4.49	6.22
80	L	-	56	9.63	8.06	1.46	3.62	4.88	1/2"	M20 x 1.5	1.22	4.49	6.22
80	-	LP	143T	9.32	7.74	1.46	3.62	5.08	1/2"	M20 x 1.5	0.91	4.49	6.22
90	S/L	SP/LP	145T	10.89	8.93	1.61	3.62	5.08	1/2"	M20 x 1.5	1.06	4.49	6.42
100	L	LP	182T	12.07	9.71	1.85	3.62	5.51	1/2"	M20 x 1.5	1.30	4.49	6.85
100	LA	AP	184T	12.07	9.71	1.85	3.62	5.51	1/2"	M20 x 1.5	1.30	4.49	6.85
112	M	-	184T	12.70	10.34	2.36	3.62	5.91	1/2"	M20 x 1.5	1.26	4.49	7.24
112	-	MP	184T	13.69	11.33	2.36	3.62	5.91	1/2"	M20 x 1.5	1.26	4.49	7.24
132	S	-	213T	14.71	11.56	1.93	4.09	6.85	3/4"	M25x1.5	1.89	4.80	8.03
132	-	SP	213T	16.20	13.05	1.93	4.09	6.85	3/4"	M25x1.5	1.89	4.80	8.03
132	M	MP	215T	16.20	13.05	1.93	4.09	6.85	3/4"	M25x1.5	1.89	4.80	8.03

Dimensions

# NEMA Footed Motor Options



ECR - Single Phase Motor with Start-up & Run Capacitor

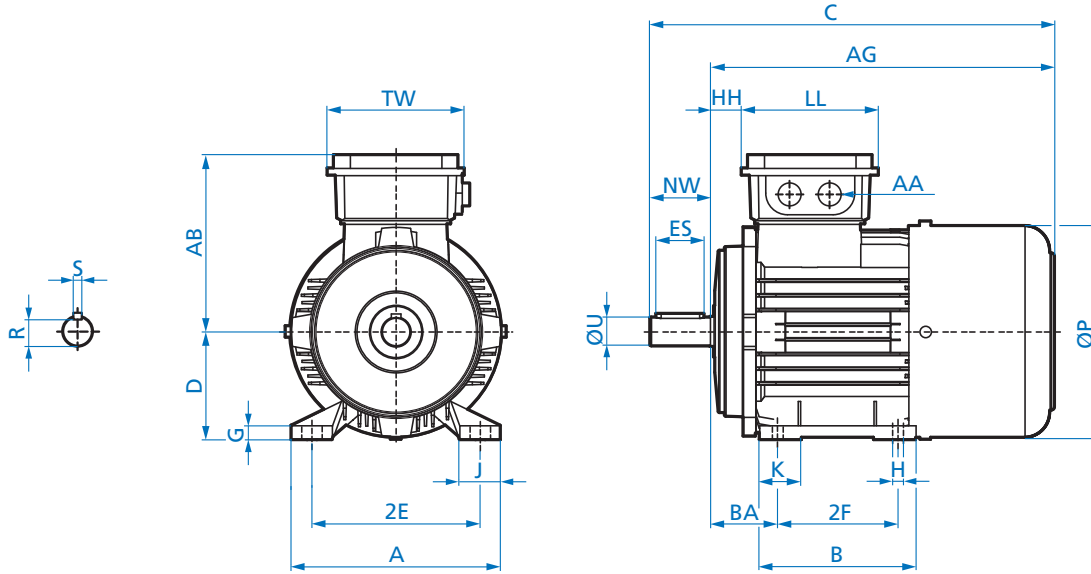


Motor Type	ECR												
	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA (NPT)	AA (metric)
71 L/LA	5.20	3.50	4.15	3.82	1.13	1.73	5.75	4.96	4.81	4.38	5.28	3/4 "	M25 x 1.5
80 L/LA	5.59	4.25	4.45	4.27	1.57	2.36	5.75	4.96	5.03	4.83	6.02	3/4 "	M25 x 1.5
90 L	5.79	4.25	4.65	4.47	2.99	3.78	5.75	4.96	5.03	4.83	6.02	3/4 "	M25 x 1.5
90 LB/LX	5.79	4.25	4.65	4.65	2.99	2.99	5.75	5.75	5.03	4.83	6.02	3/4 "	M25 x 1.5

Dimensions



## Standard Brakemotor



Motor type	Efficiency		NEMA Frame	BRE	Overall			Feet								
	SE	PE			C	AG	P	A	B	2E	2F	BA	J	K	H	G
71	S/L	-	56	5	13.29	11.42	5.75	5.83	3.70	4.88	3.00	2.75	1.44	0.77	0.34	0.47
80	S	SP	56	5	14.03	12.15	6.46	6.06	4.02	4.88	3.00	2.75	1.26	1.04	0.34	0.55
80	L	-	56	10	14.03	12.15	6.46	6.06	4.02	4.88	3.00	2.75	1.26	1.04	0.34	0.55
80	-	LP	143T	10	14.09	11.84	6.46	6.69	5.00	5.50	4.00	2.25	1.56	1.50	0.34	0.57
90	S/L	SP/LP	145T	20	16.10	13.85	7.20	6.89	6.18	5.50	5.00	2.25	1.69	1.38	0.34	0.59
100	L	LP	182T	20	18.41	15.66	7.91	8.78	6.81	7.50	4.50	2.75	2.07	2.68	0.41	0.59
100	LA	AP	184T	40	18.41	15.66	7.91	8.78	6.81	7.50	5.50	2.75	2.07	2.68	0.41	0.59
112	M	-	184T	60	19.16	16.41	8.90	9.02	6.69	7.50	5.50	2.75	1.79	1.30	0.41	0.67
112	-	MP	184T	60	20.14	17.39	8.90	9.02	6.69	7.50	5.50	2.75	1.79	1.30	0.41	0.67
132	S	-	213T	60	22.29	18.92	10.47	10.24	7.09	8.50	5.50	3.50	2.30	1.46	0.41	0.69
132	-	SP	213T	60	23.79	20.41	10.47	10.24	7.09	8.50	5.50	3.50	2.30	1.46	0.41	0.69
132	M	MP	215T	100	23.79	20.41	10.47	10.24	8.58	8.50	7.00	3.50	2.30	1.46	0.41	0.69

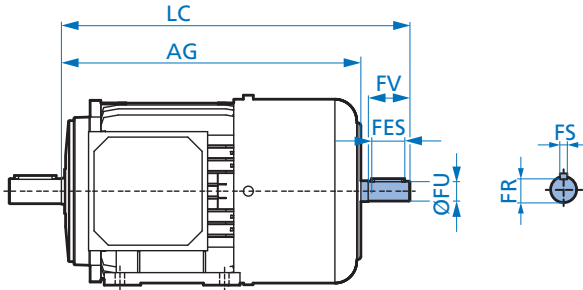
Motor type	Efficiency		NEMA Frame	BRE	Shaft						Terminal Box						
	SE	PE			U	NW	ES	R	S	D	AB	HH	LL	TW	AA (NPT)	AA (Metric)	
71	S/L	-	56	5	0.625	<sup>+0.000</sup> / <sub>-0.0005</sub>	1.875	1.69	0.517	0.188	3.50	5.20	1.06	5.28	3.50	1/2"	M20 x1.5
80	S	SP	56	5	0.625	<sup>+0.000</sup> / <sub>-0.0005</sub>	1.875	1.69	0.517	0.188	3.50	5.59	1.02	6.02	4.25	3/4"	M25x1.5
80	L	-	56	10	0.625	<sup>+0.000</sup> / <sub>-0.0005</sub>	1.875	1.69	0.517	0.188	3.50	5.59	1.02	6.02	4.25	3/4"	M25x1.5
80	-	LP	143T	10	0.875	<sup>+0.000</sup> / <sub>-0.0005</sub>	2.250	1.81	0.771	0.188	3.50	5.59	1.02	6.02	4.25	3/4"	M25x1.5
90	S/L	SP/LP	145T	20	0.875	<sup>+0.000</sup> / <sub>-0.0005</sub>	2.250	1.81	0.771	0.188	3.50	5.79	1.18	6.02	4.25	3/4"	M25x1.5
100	L	LP	182T	20	1.125	<sup>+0.000</sup> / <sub>-0.0005</sub>	2.750	2.25	0.986	0.250	4.50	6.77	1.42	6.02	4.25	1"	M32x1.5
100	LA	AP	184T	40	1.125	<sup>+0.000</sup> / <sub>-0.0005</sub>	2.750	2.25	0.986	0.250	4.50	6.77	1.42	6.02	4.25	1"	M32x1.5
112	M	-	184T	60	1.125	<sup>+0.000</sup> / <sub>-0.0005</sub>	2.750	2.25	0.986	0.250	4.50	7.17	1.54	6.02	4.25	1"	M32x1.5
112	-	MP	184T	60	1.125	<sup>+0.000</sup> / <sub>-0.0005</sub>	2.750	2.25	0.986	0.250	4.50	7.17	1.54	6.02	4.25	1"	M32x1.5
132	S	-	213T	60	1.375	<sup>+0.000</sup> / <sub>-0.0005</sub>	3.375	3.06	1.201	0.312	5.25	7.91	1.57	7.28	5.47	1"	M32x1.5
132	-	SP	213T	60	1.375	<sup>+0.000</sup> / <sub>-0.0005</sub>	3.375	3.06	1.201	0.312	5.25	7.91	1.57	7.28	5.47	1"	M32x1.5
132	M	MP	215T	100	1.375	<sup>+0.000</sup> / <sub>-0.0005</sub>	3.375	3.06	1.201	0.312	5.25	7.91	1.57	7.28	5.47	1"	M32x1.5

Dimensions

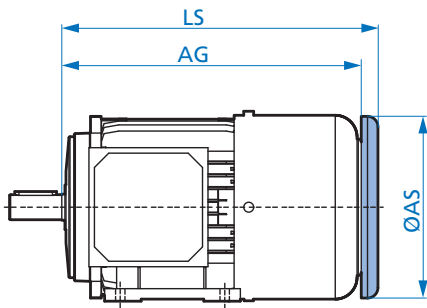
# NEMA Footed Brakemotor Options



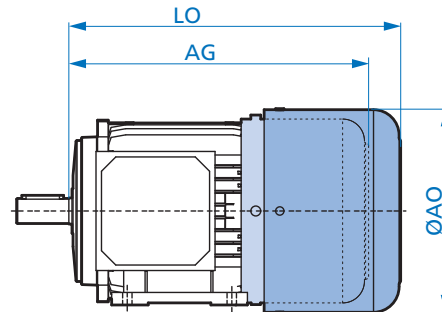
## Option WE - 2nd Shaft Extension



## Option RD - Canopy Drip Cover



## Option RDD - Double Fan Cover

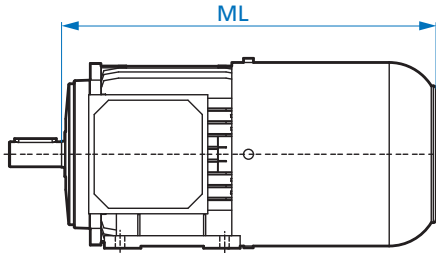


Motor Frame	Efficiency		NEMA Frame	AG	LC	FU	WE				RD		RDD	
	SE	PE					FS	FR	FV	FES	LS	øAS	LO	øAO
71	S/L	-	56	11.42	13.07	0.500 <sup>+0.000</sup> <sub>-0.0005</sub>	flat	0.453	1.500	-	11.85	5.43	12.36	6.14
80	S	SP	56	12.15	14.19	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	12.74	6.14	13.18	6.93
80	L	-	56	12.15	14.19	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	12.74	6.14	13.18	6.93
80	-	LP	143T	11.84	13.87	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	12.43	6.14	12.86	6.93
90	S/L	SP/LP	145T	13.85	16.04	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	14.44	6.93	15.07	7.64
100	L	LP	182T	15.66	18.30	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	16.25	7.64	16.76	8.58
100	LA	AP	184T	15.66	18.30	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	16.25	7.64	16.76	8.58
112	M	-	184T	16.41	18.93	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	17.00	8.58	17.90	10.16
112	-	MP	184T	17.39	19.92	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	17.98	8.58	18.89	10.16
132	S	-	213T	18.92	22.06	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	0.250	0.986	2.750	2.00	19.59	10.16	20.53	12.20
132	-	SP	213T	20.41	23.56	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	0.250	0.986	2.750	2.00	21.08	10.16	22.03	12.20
132	M	MP	215T	20.41	23.56	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	0.250	0.986	2.750	2.00	21.08	10.16	22.03	12.20

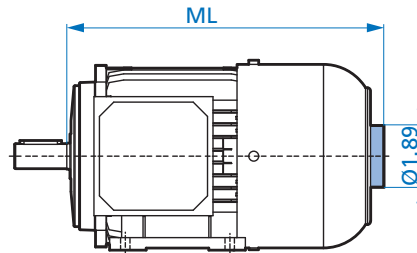


# NEMA Footed Brakemotor Options

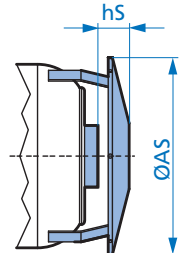
Option IG - Incremental Encoder



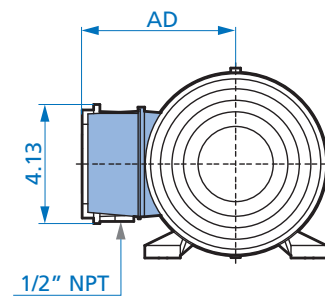
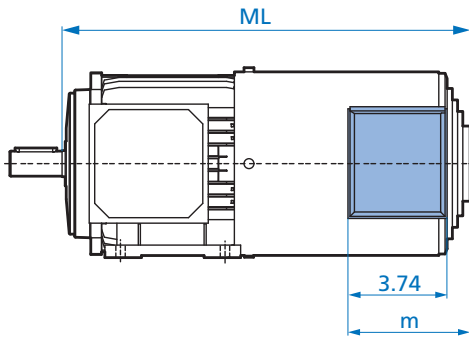
Option MG - Magnetic Encoder



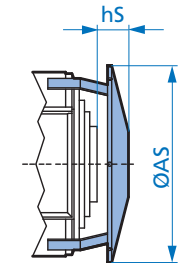
MG + RD



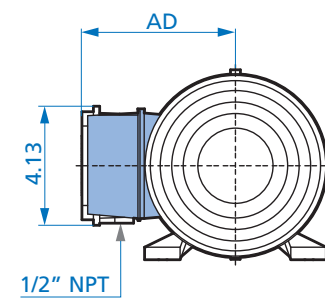
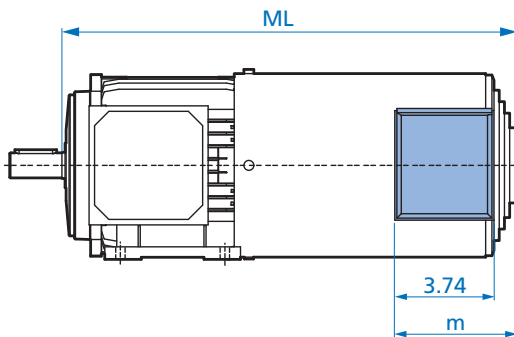
Option F - Forced Cooling Fan



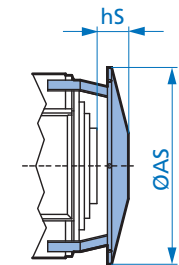
F + RD



Option IG-F - Incremental Encoder & Forced Cooling Fan



IG-F + RD



Motor Frame	Efficiency		NEMA Frame	IG		MG & R5		F				F & RD		IG F			IGF & RD	
	SE	PE		ML	ML	hs	øAS	ML	m	AD	hs	øAS	ML	m	AD	hs	øAS	
71	S/L	-	56	13.62	12.08	0.43	5.43	14.92	4.21	4.84	1.46	5.91	17.08	4.21	4.84	1.46	5.91	
80	S	SP	56	14.56	12.63	0.35	6.14	15.70	4.21	5.20	1.57	6.69	17.67	4.21	5.20	1.57	6.69	
80	L	-	56	14.56	12.63	0.35	6.14	15.70	4.21	5.20	1.57	6.69	17.67	4.21	5.20	1.57	6.69	
80	-	LP	143T	14.24	12.31	0.35	6.14	15.38	4.21	5.20	1.57	6.69	17.35	4.21	5.20	1.57	6.69	
90	S/L	SP/LP	145T	16.68	14.36	0.35	6.93	17.94	4.61	5.59	1.18	7.40	19.71	4.61	5.59	1.18	7.40	
100	L	LP	182T	18.37	16.17	0.33	7.64	19.40	4.61	5.94	1.10	8.27	21.76	4.61	5.94	1.10	8.27	
100	LA	AP	184T	18.37	16.17	0.33	7.64	19.40	4.61	5.94	1.10	8.27	21.76	4.61	5.94	1.10	8.27	
112	M	-	184T	19.08	16.90	0.35	8.58	20.30	4.61	6.42	1.30	9.80	22.27	4.61	6.42	1.30	9.80	
112	-	MP	184T	20.07	17.88	0.33	8.58	21.29	4.61	6.42	1.30	9.80	23.26	4.61	6.42	1.30	9.80	
132	S	-	213T	21.40	19.25	0.45	10.12	23.45	5.00	7.20	0.98	11.81	25.02	5.00	7.20	0.98	11.81	
132	-	SP	213T	22.89	20.75	0.45	10.12	24.94	5.00	7.20	0.98	11.81	26.52	5.00	7.20	0.98	11.81	
132	M	MP	215T	22.89	20.75	0.45	10.12	24.94	5.00	7.20	0.98	11.81	26.52	5.00	7.20	0.98	11.81	

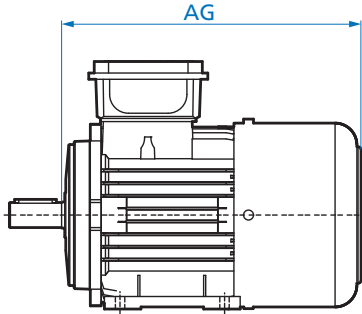
Dimensions



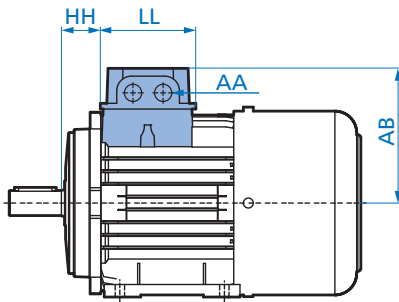
# NEMA Footed Brakemotor Options



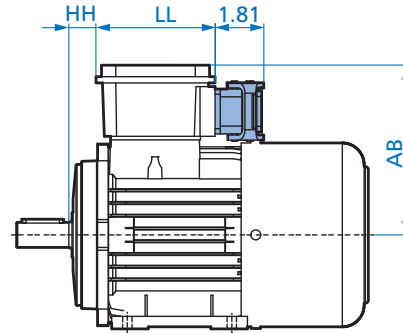
## Option OL - Without Fan



## Option EKK - One Piece Terminal Box



## Option MS - Quick Power Plug Connector



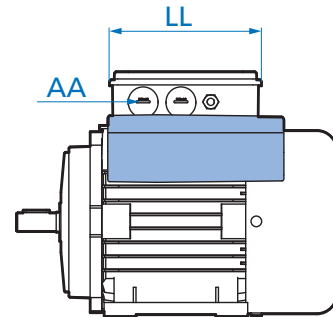
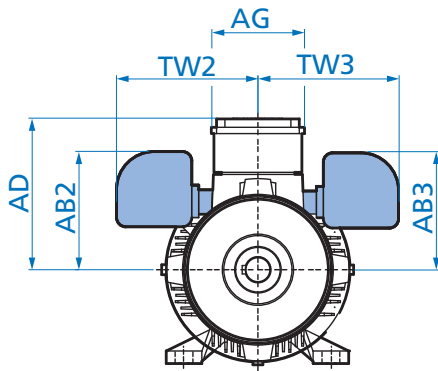
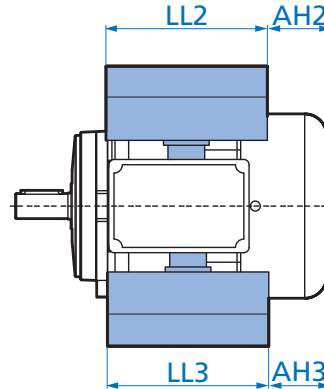
Dimensions

Motor Frame	Efficiency		NEMA Frame	OL			EKK			MS		
	SE	PE		AG	HH	LL	AB	AA (NPT)	AA (METRIC)	HH	LL	AB
71	S/L	-	56	11.42	1.57	2.95	4.29	1/2"	M16 x 1.5	1.06	4.49	5.87
80	S	SP	56	12.15	1.46	2.95	4.88	1/2"	M20 x1.5	1.02	4.49	6.22
80	L	-	56	12.15	1.46	3.62	4.88	1/2"	M20 x1.5	1.02	4.49	6.22
80	-	LP	143T	11.84	1.46	3.62	5.08	1/2"	M20 x1.5	1.02	4.49	6.22
90	S/L	SP/LP	145T	13.85	1.61	3.62	5.08	1/2"	M20 x1.5	1.18	4.49	6.42
100	L	LP	182T	15.66	1.85	3.62	5.51	1/2"	M20 x1.5	1.42	4.49	6.85
100	LA	AP	184T	15.66	1.85	3.62	5.51	1/2"	M20 x1.5	1.42	4.49	6.85
112	M	-	184T	16.41	2.36	3.62	5.91	1/2"	M20 x1.5	1.54	4.49	7.24
112	-	MP	184T	17.39	2.36	3.62	5.91	1/2"	M20 x1.5	1.54	4.49	7.24
132	S	-	213T	18.92	1.93	4.09	6.85	3/4"	M25x1.5	1.57	4.80	8.03
132	-	SP	213T	20.41	1.93	4.09	6.85	3/4"	M25x1.5	1.57	4.80	8.03
132	M	MP	215T	20.41	1.93	4.09	6.85	3/4"	M25x1.5	1.57	4.80	8.03



# NEMA Footed Brakemotor Options

ECR - Single Phase Motor with Start-up & Run Capacitor

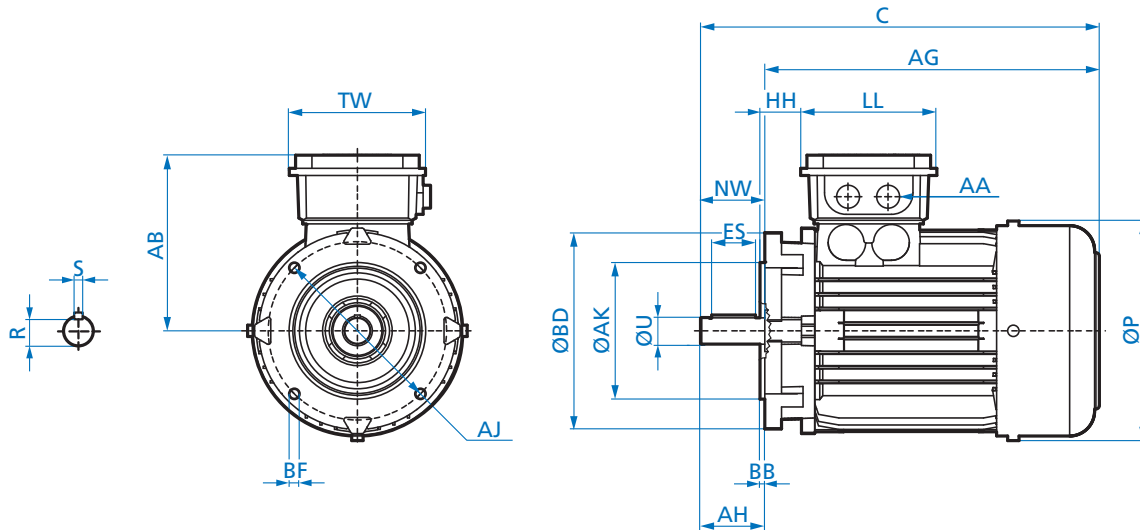


Motor Type	ECR												
	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA (NPT)	AA (metric)
71 L/LA	5.87	4.25	4.15	3.82	3.41	4.02	5.75	4.96	4.81	4.38	6.02	3/4 "	M25 x 1.5
80 L/LA	5.59	4.25	4.45	4.27	4.09	4.88	5.75	4.96	5.03	4.83	6.02	3/4 "	M25 x 1.5
90 L	5.79	4.25	4.65	4.47	5.95	6.73	5.75	4.96	5.03	4.83	6.02	3/4 "	M25 x 1.5
90 LB/LX	5.79	4.25	4.65	4.65	5.95	5.95	5.75	5.75	5.03	4.83	6.02	3/4 "	M25 x 1.5

# NEMA C-Face Motors



## Standard Motor

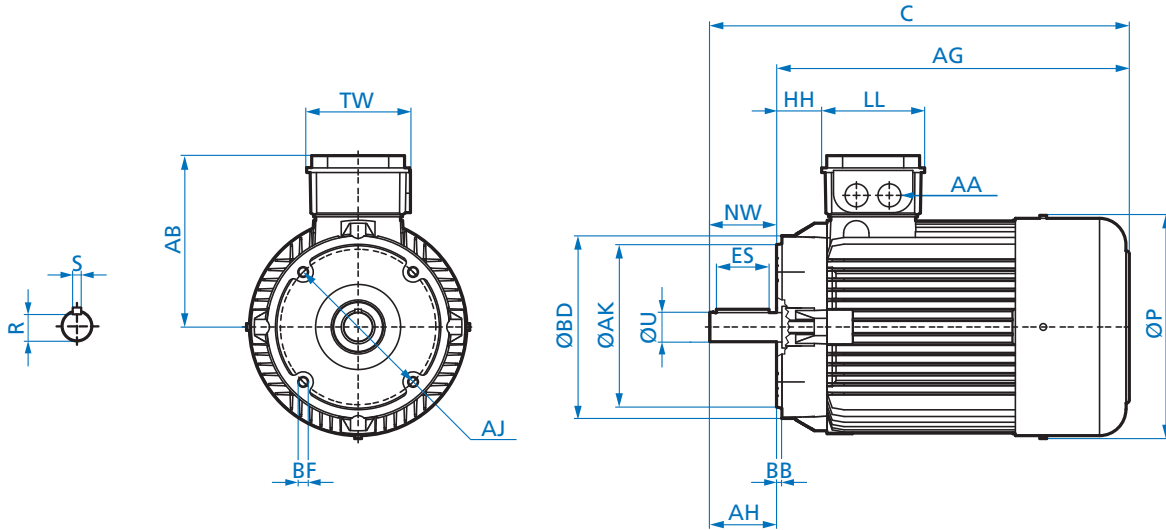


Motor Frame	Efficiency		NEMA Frame	Overall			Flange				
	SE	PE		C	AG	P	AJ	AK	BD	BB	BF
63	S/L	-	56C	9.62	7.56	5.08	5.875	4.500 <sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16 x 0.71
71	S/L	-	56C	10.49	8.43	5.75	5.875	4.500 <sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16 x 0.71
80	S/L	LP	56C	11.51	9.45	6.46	5.875	4.500 <sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16 x 0.87
80	L	-	56C	11.51	9.45	6.46	5.875	4.500 <sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16 x 0.87
80	-	LP	143TC	11.57	9.45	6.46	5.875	4.500 <sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16 x 0.87
90	S/L	SP/LP	145TC	13.15	11.02	7.20	5.875	4.500 <sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16 x 0.71

Motor Frame	Efficiency		NEMA Frame	Shaft						Terminal Box					
	SE	PE		U	NW	AH	ES	R	S	AB	HH	LL	TW	AA (NPT)	AA (METRIC)
63	S/L	-	56C	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	1.88	2.06	1.69	0.517	0.188	4.53	0.47	3.94	3.94	1/2"	M20 x1.5
71	S/L	-	56C	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	1.88	2.06	1.69	0.517	0.188	4.88	0.79	3.94	3.94	1/2"	M20 x1.5
80	S/L	LP	56C	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	1.88	2.06	1.69	0.517	0.188	5.59	1.02	4.49	4.49	3/4"	M25x1.5
80	L	-	56C	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	1.88	2.06	1.69	0.517	0.188	5.59	1.02	4.49	4.49	3/4"	M25x1.5
80	-	LP	143TC	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	2.25	2.12	1.81	0.771	0.188	5.59	1.02	4.49	4.49	3/4"	M25x1.5
90	S/L	SP/LP	145TC	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	2.25	2.12	1.81	0.771	0.188	5.79	1.18	4.49	4.49	3/4"	M25x1.5



Standard Motor



Motor Frame	Efficiency		NEMA Frame	Overall			Flange					
	SE	PE		C	AG	P	AJ	AK	BD	BB	BF	
100	L	LP	182TC	14.83	12.20	7.91	7.250	8.500	+0.000 -0.003	9.00	0.25	1/2-13x1.10
100	LA	AP	184TC	14.83	12.20	7.91	7.250	8.500	+0.000 -0.003	9.00	0.25	1/2-13x1.10
112	M	-	184TC	15.46	12.83	8.90	7.250	8.500	+0.000 -0.003	9.00	0.25	1/2-13x0.98
112	-	MP	184TC	16.44	13.82	8.90	7.250	8.500	+0.000 -0.003	9.00	0.25	1/2-13x0.98
132	S	SP	213TC	19.58	16.46	10.47	7.250	8.500	+0.000 -0.003	8.69	0.25	1/2-13x1.18
132	M	MP	215TC	19.58	16.46	10.47	7.250	8.500	+0.000 -0.003	8.69	0.25	1/2-13x1.18
160	M	MP	254TC	23.12	19.37	12.56	7.250	8.500	+0.000 -0.003	10.00	0.25	1/2-13x0.87
160	L	-	256TC	23.12	19.37	12.56	7.250	8.500	+0.000 -0.003	10.00	0.25	1/2-13x0.87
160	-	LP	256TC	24.85	21.10	12.56	7.250	8.500	+0.000 -0.003	10.00	0.25	1/2-13x0.87
180	MX	-	284TC	23.12	19.37	12.56	9.000	10.500	+0.000 -0.003	11.26	0.25	1/2-13x0.87
180	-	MP	284TC	28.79	24.42	14.25	9.000	10.500	+0.000 -0.003	11.26	0.25	1/2-13x0.87
180	LX	-	286TC	24.85	21.10	12.56	9.000	10.500	+0.000 -0.003	11.26	0.25	1/2-13x0.87
180	-	LP	286TC	28.79	24.42	14.25	9.000	10.500	+0.000 -0.003	11.26	0.25	1/2-13x0.87

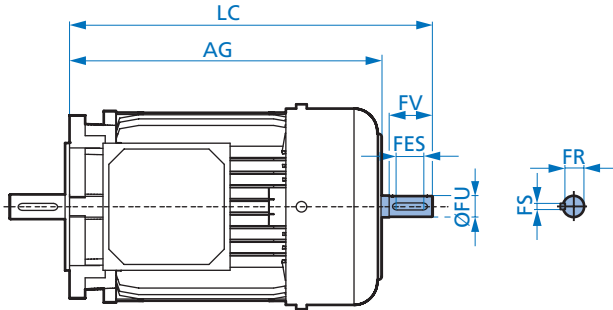
Motor Frame	Efficiency		NEMA Frame	Shaft						Terminal Box						
	SE	PE		U	NW	AH	ES	R	S	AB	HH	LL	TW	AA (NPT)	AA (METRIC)	
100	L	LP	182TC	1.125	+0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	6.65	1.42	4.49	4.49	1"	M32x1.5
100	LA	AP	184TC	1.125	+0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	6.65	1.42	4.49	4.49	1"	M32x1.5
112	M	-	184TC	1.125	+0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	7.05	1.38	4.49	4.49	1"	M32x1.5
112	-	MP	184TC	1.125	+0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	7.05	1.38	4.49	4.49	1"	M32x1.5
132	S	SP	213TC	1.375	+0.000 -0.0005	3.38	3.12	3.06	1.201	0.312	8.03	2.13	4.80	4.80	1"	M32x1.5
132	M	MP	215TC	1.375	+0.000 -0.0005	3.38	3.12	3.06	1.201	0.312	8.03	2.13	4.80	4.80	1"	M32x1.5
160	M	MP	254TC	1.625	+0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
160	L	-	256TC	1.625	+0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
160	-	LP	256TC	1.625	+0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
180	MX	-	284TC	1.875	+0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.29	7.32	7.32	1"	M40x1.5
180	-	MP	284TC	1.875	+0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.37	7.32	7.32	1"	M40x1.5
180	LX	-	286TC	1.875	+0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.29	7.32	7.32	1"	M40x1.5
180	-	LP	286TC	1.875	+0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.37	7.32	7.32	1"	M40x1.5

Dimensions

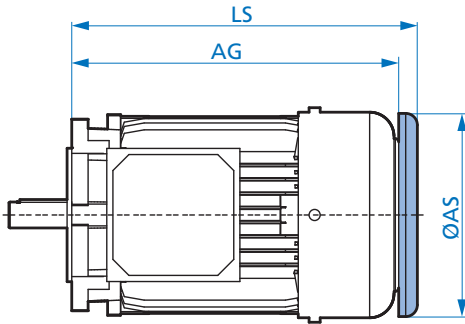
# NEMA C-Face Motor Options



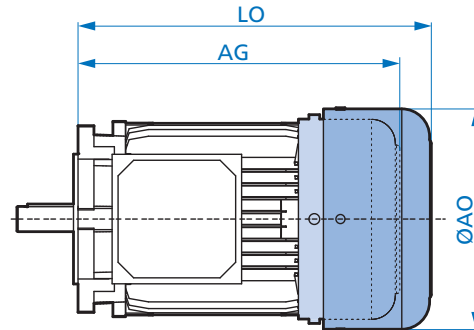
## Option WE - 2nd Shaft Extension



## Option RD - Canopy Drip Cover



## Option RDD - Double Fan Cover

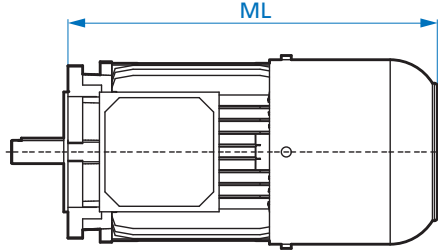


Motor Frame	Efficiency			AG	LC	FU	WE				RD		RDD		
	SE	PE	NEMA Frame				FS	FR	FV	FES	LS	øAS	LO	øAO	
63	S/L	-	56C	7.56	9.06	0.500	+0.000 -0.0005	flat	0.453	1.500	-	7.99	4.84	8.58	5.43
71	S/L	-	56C	8.43	9.96	0.500	+0.000 -0.0005	flat	0.453	1.500	-	8.86	5.43	9.37	6.14
80	S	SP	56C	9.45	11.44	0.625	+0.000 -0.0005	0.188	0.517	1.875	1.50	10.04	6.14	10.47	6.93
80	L	LP	56C	9.45	11.44	0.625	+0.000 -0.0005	0.188	0.517	1.875	1.50	10.04	6.14	10.47	6.93
80	-	LP	143TC	9.45	11.44	0.625	+0.000 -0.0005	0.188	0.517	1.875	1.50	10.04	6.14	10.47	6.93
90	S/L	SP/LP	145TC	11.02	13.17	0.625	+0.000 -0.0005	0.188	0.517	1.875	1.50	11.61	6.93	12.24	7.64
100	L	LP	182TC	12.20	14.69	0.875	+0.000 -0.0005	0.188	0.771	2.250	1.63	12.80	7.64	13.31	8.58
100	LA	AP	184TC	12.20	14.69	0.875	+0.000 -0.0005	0.188	0.771	2.250	1.63	12.80	7.64	13.31	8.58
112	M	-	184TC	12.83	15.24	0.875	+0.000 -0.0005	0.188	0.771	2.250	1.63	13.43	8.58	14.33	10.16
112	-	MP	184TC	13.82	16.23	0.875	+0.000 -0.0005	0.188	0.771	2.250	1.63	14.41	8.58	15.31	10.16
132	S	SP	213TC	16.46	19.92	1.125	+0.000 -0.0005	0.250	0.986	2.750	2.00	17.13	10.12	18.07	12.20
132	M	MP	215TC	16.46	19.92	1.125	+0.000 -0.0005	0.250	0.986	2.750	2.00	17.13	10.12	18.07	12.20
160	M	MP	254TC	19.37	23.10	1.375	+0.000 -0.0005	0.313	1.201	3.380	2.75	20.04	12.20	21.14	14.45
160	L	-	256TC	19.37	23.10	1.375	+0.000 -0.0005	0.313	1.201	3.380	2.75	20.04	12.20	21.14	14.45
160	-	LP	256TC	21.10	24.84	1.375	+0.000 -0.0005	0.313	1.201	3.380	2.75	21.77	12.20	22.87	14.45
180	MX	-	284TC	19.37	23.72	1.625	+0.000 -0.0001	0.375	1.416	4.000	3.25	20.04	12.20	21.14	14.45
180	-	MP	284TC	24.42	28.77	1.625	+0.000 -0.0001	0.375	1.416	4.000	3.25	25.09	13.70	27.17	15.87
180	LX	-	286TC	21.10	25.46	1.625	+0.000 -0.0001	0.375	1.416	4.000	3.25	21.77	12.20	22.87	14.45
180	-	LP	286TC	24.42	28.77	1.625	+0.000 -0.0001	0.375	1.416	4.000	3.25	25.09	13.70	27.17	15.87

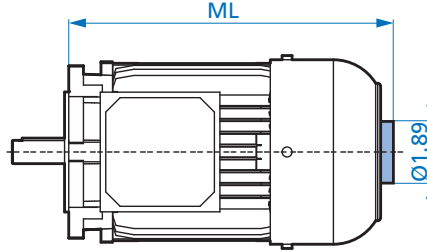




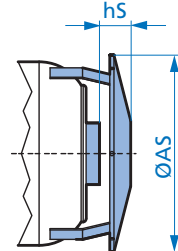
Option IG - Incremental Encoder



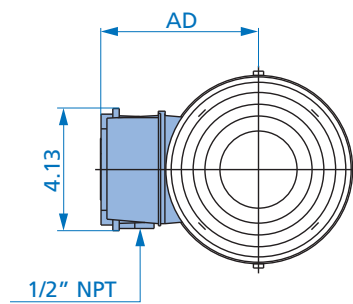
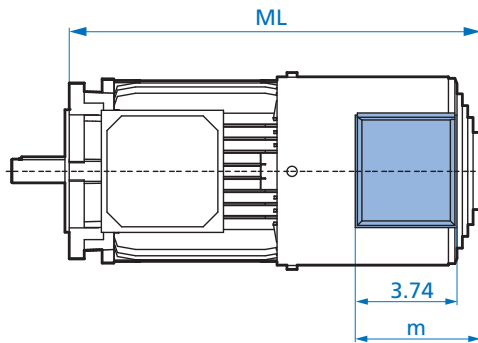
Option MG - Magnetic Encoder



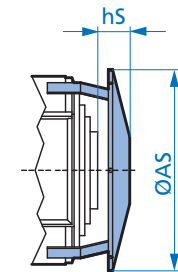
MG + RD



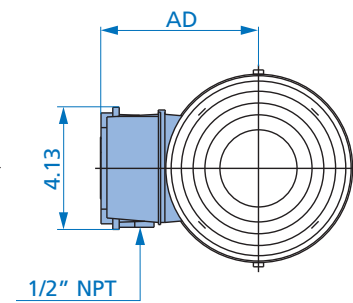
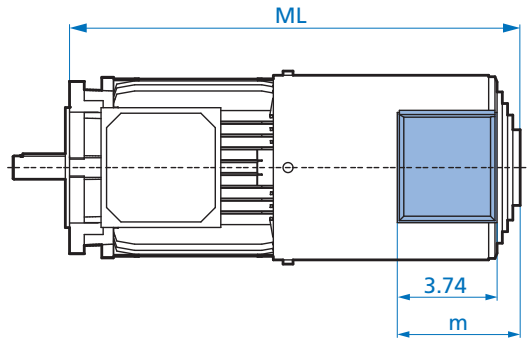
Option F - Forced Cooling Fan



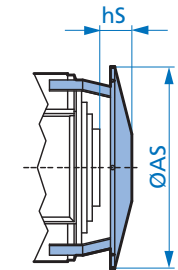
F + RD



Option IG-F - Incremental Encoder & Forced Cooling Fan



IG-F + RD



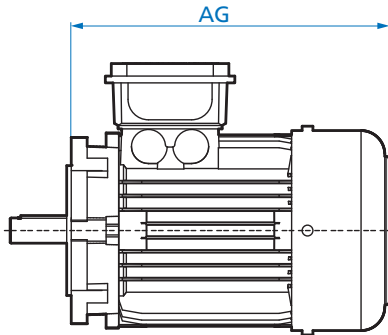
Motor Frame	Efficiency		NEMA Frame	IG		MG & RD		F			F & RD		IG F		IGF & RD		
	SE	PE		ML	ML	hs	øAS	ML	m	AD	hs	øAS	ML	m	AD	hs	øAS
63	S/L	-	56C	9.72	7.97	0.43	4.84	11.02	4.21	4.84	1.46	5.91	13.78	4.21	4.84	1.46	5.91
71	S/L	-	56C	10.63	8.88	0.43	5.43	11.93	4.21	4.84	1.46	5.91	14.09	4.21	4.84	1.46	5.91
80	S/L	SP	56C	11.85	9.84	0.35	6.14	12.99	4.21	5.20	1.57	6.69	14.96	4.21	5.20	1.57	6.69
80	-	LP	143TC	11.85	9.84	0.35	6.14	12.99	4.21	5.20	1.57	6.69	14.96	4.21	5.20	1.57	6.69
90	S/L	SP/LP	145TC	13.86	11.57	0.35	6.93	15.12	4.61	5.59	1.18	7.40	16.89	4.61	5.59	1.18	7.40
100	L	LP	182TC	14.92	12.70	0.33	7.64	15.94	4.61	5.94	1.10	8.27	18.31	4.61	5.94	1.10	8.27
100	LA	AP	184TC	14.92	12.70	0.33	7.64	15.94	4.61	5.94	1.10	8.27	18.31	4.61	5.94	1.10	8.27
112	M	-	184TC	15.51	13.33	0.33	8.58	16.73	4.61	6.42	1.30	9.80	18.70	4.61	6.42	1.30	9.80
112	-	MP	184TC	16.50	14.29	0.33	8.58	17.72	4.61	6.42	1.30	9.80	19.69	4.61	6.42	1.30	9.80
132	S	SP	213TC	18.94	16.85	0.43	10.12	20.98	5.00	7.20	0.98	11.81	22.56	5.00	7.20	0.98	11.81
132	M	MP	215TC	18.94	16.85	0.43	10.12	20.98	5.00	7.20	0.98	11.81	22.56	5.00	7.20	0.98	11.81
160	M	MP	254TC	22.13	20.00	0.41	12.20	25.28	5.00	8.25	1.26	13.31	28.62	5.00	8.25	1.26	13.31
160	L	-	256TC	22.13	20.00	0.41	12.20	25.28	5.00	8.25	1.26	13.31	28.62	5.00	8.25	1.26	13.31
160	-	LP	256TC	23.86	21.73	0.41	12.20	26.81	5.00	8.25	1.26	13.31	30.35	5.00	8.25	1.26	13.31
180	MX	-	284TC	22.13	20.00	0.41	12.20	25.28	5.00	8.25	1.26	13.31	28.62	5.00	8.25	1.26	13.31
180	-	MP	284TC	27.17	24.93	0.41	13.70	30.32	5.00	8.25	1.26	13.31	33.67	5.00	8.25	1.26	13.31
180	LX	-	286TC	23.86	21.73	0.41	12.20	26.81	5.00	8.25	1.26	13.31	30.35	5.00	8.25	1.26	13.31
180	-	LP	286TC	27.17	24.93	0.41	13.70	30.44	5.00	8.25	1.26	13.31	33.59	5.00	8.25	1.26	13.31

Dimensions

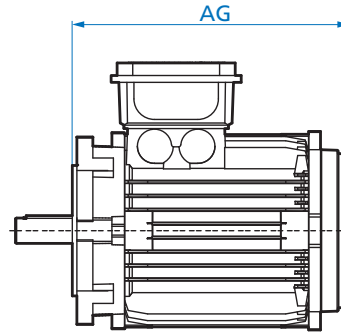
# NEMA C-Face Motor Options



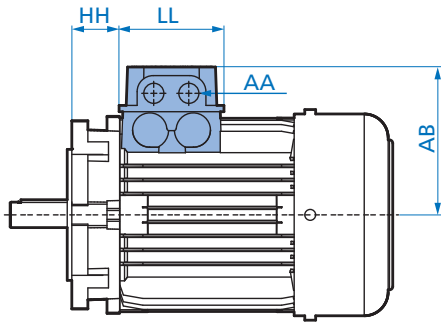
Option OL - Without Fan



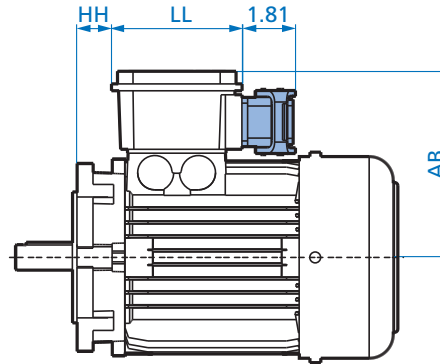
Option OL/H - Without Fan Cover



Option EKK - One Piece Terminal Box



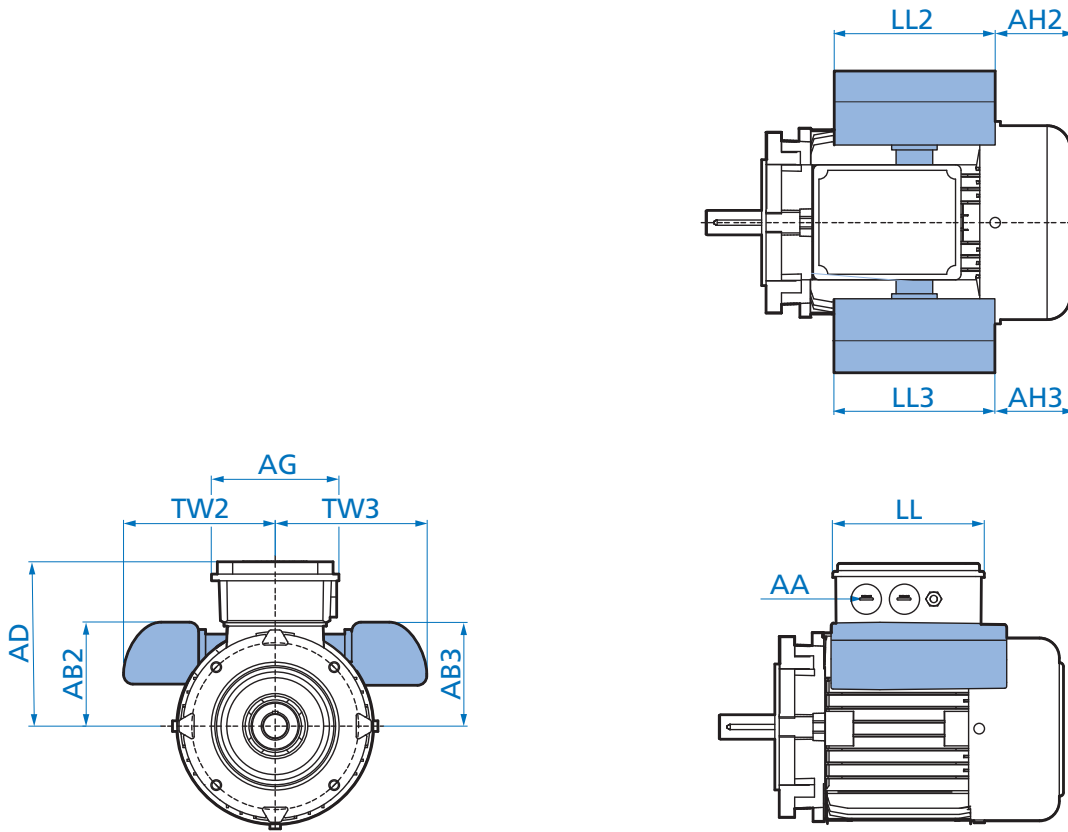
Option MS - Quick Power Plug Connector



Motor Frame	Efficiency		NEMA Frame	OL	OL/H	EKK					MS		
	SE	PE		AG	AG	HH	LL	AB	AA (NPT)	AA METRIC"	HH	LL	AB
63	S/L	-	56C	7.56	6.65	0.98	2.95	4.29	1/2"	M16 x 1.5	0.20	4.49	5.87
71	S/L	-	56C	8.43	7.24	1.30	2.95	4.29	1/2"	M16 x 1.5	0.51	4.49	5.87
80	S	SP	56C	9.45	7.87	1.46	2.95	4.88	1/2"	M20 x1.5	1.02	4.49	6.22
80	L	-	56C	9.45	7.87	1.46	3.62	4.88	1/2"	M20 x1.5	1.02	4.49	6.22
80	-	LP	143TC	9.45	7.87	1.46	3.62	5.08	1/2"	M20 x1.5	1.02	4.49	6.22
90	S/L	SP/LP	145TC	11.02	9.06	1.61	3.62	5.08	1/2"	M20 x1.5	1.18	4.49	6.42
100	L	LP	182TC	12.20	9.84	1.85	3.62	5.51	1/2"	M20 x1.5	1.42	4.49	6.85
100	LA	AP	184TC	12.20	9.84	1.85	3.62	5.51	1/2"	M20 x1.5	1.42	4.49	6.85
112	M	-	184TC	12.83	10.47	2.20	3.62	5.91	1/2"	M20 x1.5	1.77	4.49	7.24
112	-	MP	184TC	13.82	11.46	2.20	3.62	5.91	1/2"	M20 x1.5	1.77	4.49	7.24
132	S	SP	213TC	16.46	13.31	2.48	4.09	6.85	3/4"	M25x1.5	2.13	4.80	8.03
132	M	MP	215TC	16.46	13.31	2.48	4.09	6.85	3/4"	M25x1.5	2.13	4.80	8.03
160	M	MP	254TC	19.37	15.04								
160	L	-	256TC	19.37	15.04								
160	-	LP	256TC	21.10	16.77								
180	MX	-	284TC	19.37	15.04								
180	-	MP	284TC	24.42	20.09								
180	LX	-	286TC	21.10	16.77								
180	-	LP	286TC	24.42	20.09								



ECR - Single Phase Motor with Start-up & Run Capacitor

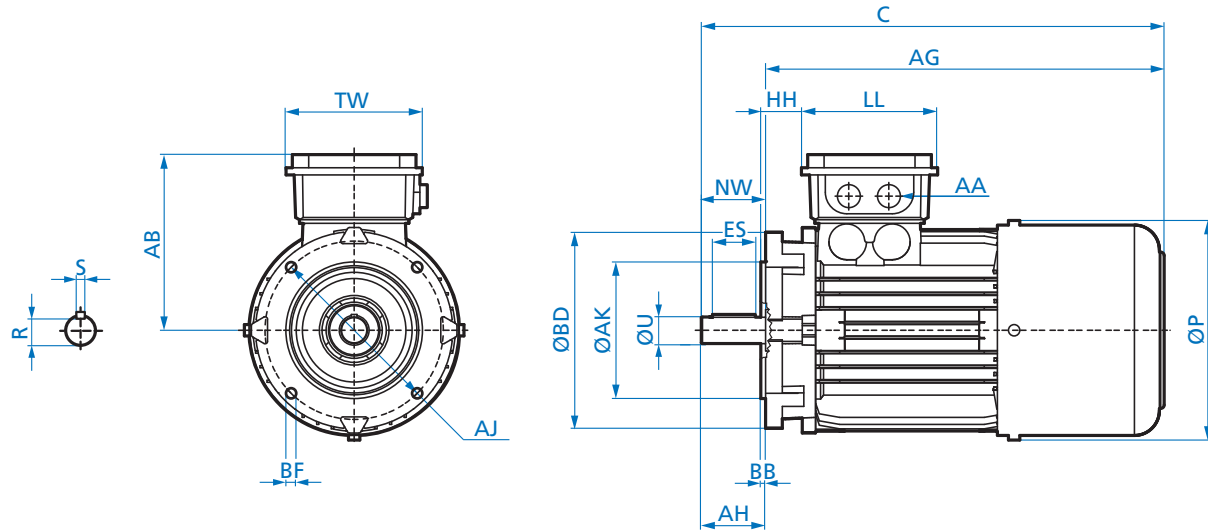


Motor Type	ECR												
	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA (NPT)	AA (metric)
63 LA	4.84	3.50	3.52	3.52	1.23	1.23	4.96	4.96	4.37	4.38	5.28	3/4 "	M25 x 1.5
71 L/LA	5.20	3.50	4.15	3.82	1.13	1.73	5.75	4.96	4.81	4.38	5.28	3/4 "	M25 x 1.5
80 L/LA	5.59	4.25	4.45	4.27	1.57	2.36	5.75	4.96	5.03	4.83	6.02	3/4 "	M25 x 1.5
90 L	5.79	4.25	4.65	4.47	2.99	3.78	5.75	4.96	5.03	4.83	6.02	3/4 "	M25 x 1.5
90 LB/LX	5.79	4.25	4.65	4.65	2.99	2.99	5.75	5.75	5.03	4.83	6.02	3/4 "	M25 x 1.5

# NEMA C-Face Brakemotors



## Standard Brakemotor

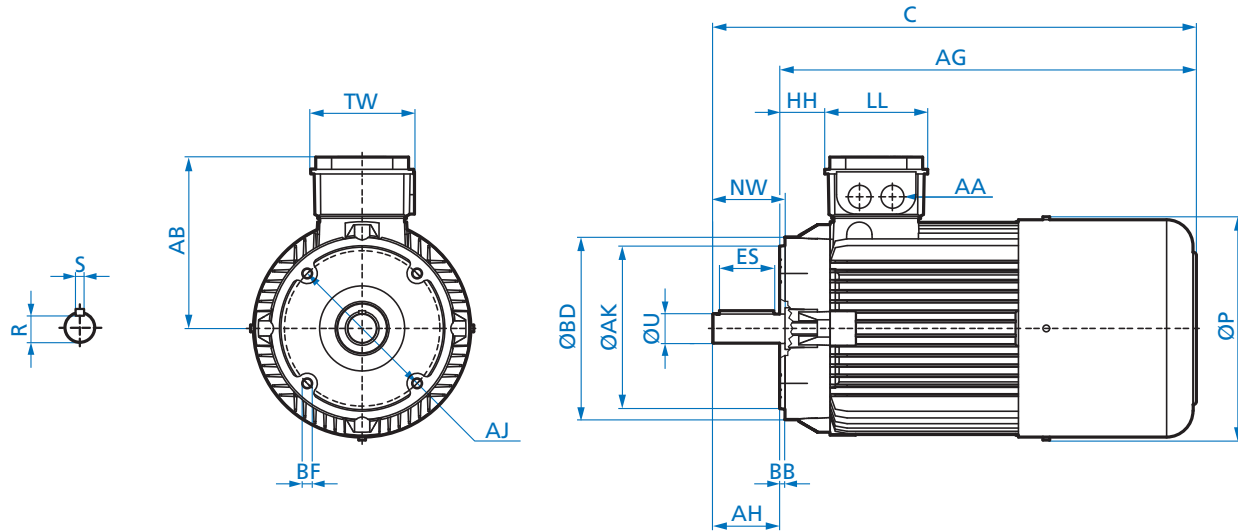


Motor Frame	Efficiency		NEMA Frame	BRE	Overall			Flange					
	SE	PE			C	AG	P	AJ	AK	BD	BB	BF	
63	S/L	-	56C	5	11.83	9.76	5.08	5.875	4.500	<sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16x0.71
71	S/L	-	56C	5	12.77	10.71	5.75	5.875	4.500	<sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16x0.71
80	S/L	LP	56C	5	14.03	11.97	6.46	5.875	4.500	<sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16x0.87
80	L	-	56C	10	14.03	11.97	6.46	5.875	4.500	<sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16x0.87
80	-	LP	143TC	10	14.53	12.40	6.46	5.875	4.500	<sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16x0.87
90	S/L	SP/LP	145TC	20	16.73	14.61	7.20	5.875	4.500	<sup>+0.000</sup> <sub>-0.003</sub>	6.50	0.16	3/8-16x0.71

Motor Frame	Efficiency		NEMA Frame	BRE	Shaft						Terminal Box						
	SE	PE			U	NW	AH	ES	R	S	AB	HH	LL	TW	AA (NPT)	AA (METRIC)	
63	S/L	-	56C	5	0.625	<sup>+0.000</sup> <sub>-0.0005</sub>	1.88	2.06	1.69	0.517	0.188	4.84	0.75	5.28	3.50	1/2"	M20 x1.5
71	S/L	-	56C	5	0.625	<sup>+0.000</sup> <sub>-0.0005</sub>	1.88	2.06	1.69	0.517	0.188	5.20	1.06	5.28	3.50	1/2"	M20 x1.5
80	S/L	LP	56C	5	0.625	<sup>+0.000</sup> <sub>-0.0005</sub>	1.88	2.06	1.69	0.517	0.188	5.59	1.18	6.02	4.25	3/4"	M25x1.5
80	L	-	56C	10	0.625	<sup>+0.000</sup> <sub>-0.0005</sub>	1.88	2.06	1.69	0.517	0.188	5.59	1.18	6.02	4.25	3/4"	M25x1.5
80	-	LP	143TC	10	0.875	<sup>+0.000</sup> <sub>-0.0005</sub>	2.25	2.12	1.81	0.771	0.188	5.59	1.18	6.02	4.25	3/4"	M25x1.5
90	S/L	SP/LP	145TC	20	0.875	<sup>+0.000</sup> <sub>-0.0005</sub>	2.25	2.12	1.81	0.771	0.188	5.79	1.34	6.02	4.25	3/4"	M25x1.5



## Standard Brakemotor



Motor Frame	Efficiency		NEMA Frame	BRE	Overall			Flange					
	SE	PE			C	AG	P	AJ	AK	BD	BB	BF	
100	L	LP	182TC	20	18.41	15.79	7.91	7.250	8.500	+0.000 -0.003	9.00	0.25	1/2-13x1.10
100	LA	AP	184TC	40	18.53	15.91	7.91	7.250	8.500	+0.000 -0.003	9.00	0.25	1/2-13x1.10
112	M	-	184TC	60	19.16	16.54	8.90	7.250	8.500	+0.000 -0.003	9.00	0.25	1/2-13x0.98
112	-	MP	184TC	60	20.66	18.03	8.90	7.250	8.500	+0.000 -0.003	9.00	0.25	1/2-13x0.98
132	S	SP	213TC	60	23.79	20.67	10.47	7.250	8.500	+0.000 -0.003	8.69	0.25	1/2-13x1.18
132	M	MP	215TC	100	23.79	20.67	10.47	7.250	8.500	+0.000 -0.003	8.69	0.25	1/2-13x1.18
160	M	MP	254TC	150	28.44	24.69	12.56	7.250	8.500	+0.000 -0.003	10.00	0.25	1/2-13x0.87
160	L	-	256TC	250	28.44	24.69	12.56	7.250	8.500	+0.000 -0.003	10.00	0.25	1/2-13x0.87
160	-	LP	256TC	250	30.17	26.42	12.56	7.250	8.500	+0.000 -0.003	10.00	0.25	1/2-13x0.87
180	MX	-	284TC	250	28.44	24.69	12.56	9.000	10.500	+0.000 -0.003	11.26	0.25	1/2-13x0.87
180	-	MP	284TC	250	34.11	29.73	14.25	9.000	10.500	+0.000 -0.003	11.26	0.25	1/2-13x0.87
180	LX	-	286TC	250	29.85	26.10	12.56	9.000	10.500	+0.000 -0.003	11.26	0.25	1/2-13x0.87
180	-	LP	286TC	250	33.79	29.42	14.25	9.000	10.500	+0.000 -0.003	11.26	0.25	1/2-13x0.87

Motor Frame	Efficiency		NEMA Frame	BRE	Shaft						Terminal Box						
	SE	PE			U	NW	AH	ES	R	S	AB	HH	LL	TW	AA (NPT)	AA (METRIC)	
100	L	LP	182TC	20	1.125	+0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	6.77	1.57	6.02	4.25	1"	M32x1.5
100	LA	AP	184TC	40	1.125	+0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	6.77	1.57	6.02	4.25	1"	M32x1.5
112	M	-	184TC	60	1.125	+0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	7.17	1.54	6.02	4.25	1"	M32x1.5
112	-	MP	184TC	60	1.125	+0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	7.17	1.54	6.02	4.25	1"	M32x1.5
132	S	SP	213TC	60	1.375	+0.000 -0.0005	3.38	3.12	3.06	1.201	0.312	7.91	1.85	7.28	5.47	1"	M32x1.5
132	M	MP	215TC	100	1.375	+0.000 -0.0005	3.38	3.12	3.06	1.201	0.312	7.91	1.85	7.28	5.47	1"	M32x1.5
160	M	MP	254TC	150	1.625	+0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
160	L	-	256TC	250	1.625	+0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
160	-	LP	256TC	250	1.625	+0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
180	MX	-	284TC	250	1.875	+0.000 -0.001	4.62	4.38	4.00	1.591	0.500	9.53	2.29	7.32	7.32	1"	M40x1.5
180	-	MP	284TC	250	1.875	+0.000 -0.001	4.62	4.38	4.00	1.591	0.500	9.53	2.37	7.32	7.32	1"	M40x1.5
180	LX	-	286TC	250	1.875	+0.000 -0.001	4.62	4.38	4.00	1.591	0.500	9.53	2.29	7.32	7.32	1"	M40x1.5
180	-	LP	286TC	250	1.875	+0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.37	7.32	7.32	1"	M40x1.5

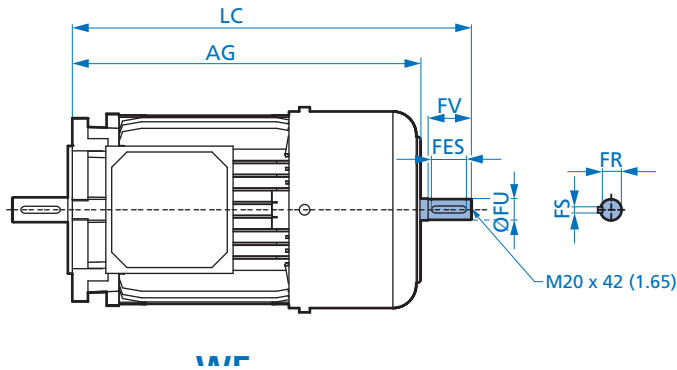
Dimensions



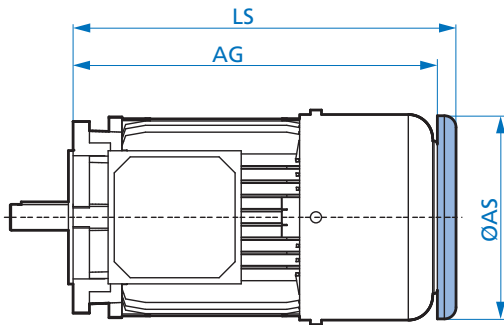
# NEMA C-Face Brakemotor Options



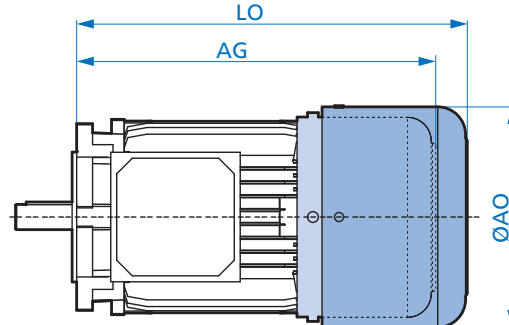
## Option WE - 2nd Shaft Extension



## Option RD - Canopy Drip Cover



## Option RDD - Double Fan Cover

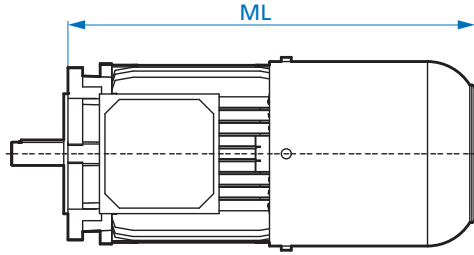


Motor Frame	Efficiency		NEMA Frame	BRE	AG	LC	FU	WE				RD		RDD	
	SE	PE						FS	FR	FV	FES	LS	øAS	LO	øAO
63	S/L	-	56C	5	9.76	11.42	0.500 <sup>+0.000</sup> <sub>-0.0005</sub>	flat	0.453	1.500	-	10.20	4.84	10.79	5.43
71	S/L	-	56C	5	10.71	12.37	0.500 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.453	1.500	-	11.14	5.43	11.65	6.14
80	S	SP	56C	5	11.97	13.63	0.500 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.25	12.56	6.14	12.99	6.93
80	L	-	56C	10	11.97	14.00	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	12.56	6.14	12.99	6.93
80	-	LP	143TC	10	12.40	14.59	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	12.99	6.14	13.43	6.93
90	S/L	SP/LP	145TC	20	14.61	16.88	0.625 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.517	1.875	1.50	15.20	6.93	15.83	7.64
100	L	LP	182TC	20	15.79	18.43	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	16.38	7.64	16.89	8.58
100	LA	AP	184TC	40	15.91	18.43	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	16.50	7.64	17.01	8.58
112	M	-	184TC	60	16.54	19.06	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	17.13	8.58	18.03	10.16
112	-	MP	184TC	60	18.03	20.68	0.875 <sup>+0.000</sup> <sub>-0.0005</sub>	0.188	0.771	2.250	1.63	18.62	8.58	19.53	10.16
132	S	SP	213TC	60	20.67	23.81	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	0.250	0.986	2.750	2.00	21.34	10.12	22.28	12.20
132	M	MP	215TC	100	20.67	23.81	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	0.250	0.986	2.750	2.00	21.34	10.12	22.28	12.20
160	M	MP	254TC	150	24.69	28.41	1.375 <sup>+0.000</sup> <sub>-0.0005</sub>	0.313	1.201	3.380	2.75	25.35	12.20	26.46	14.45
160	L	-	256TC	250	24.69	28.41	1.375 <sup>+0.000</sup> <sub>-0.0005</sub>	0.313	1.201	3.380	2.75	25.35	12.20	26.46	14.45
160	-	LP	256TC	250	26.42	30.15	1.375 <sup>+0.000</sup> <sub>-0.0005</sub>	0.313	1.201	3.380	2.75	27.09	12.20	28.19	14.45
180	MX	-	284TC	250	24.69	29.04	1.625 <sup>+0.000</sup> <sub>-0.0001</sub>	0.375	1.416	4.000	3.25	25.35	12.20	26.46	14.45
180	-	MP	284TC	250	29.73	34.09	1.625 <sup>+0.000</sup> <sub>-0.0001</sub>	0.375	1.416	4.000	3.25	30.40	13.70	32.49	15.87
180	LX	-	286TC	250	26.10	30.46	1.625 <sup>+0.000</sup> <sub>-0.0001</sub>	0.375	1.416	4.000	3.25	26.77	12.20	27.87	14.45
180	-	LP	286TC	250	29.42	33.77	1.625 <sup>+0.000</sup> <sub>-0.0001</sub>	0.375	1.416	4.000	3.25	30.09	13.70	32.17	15.87

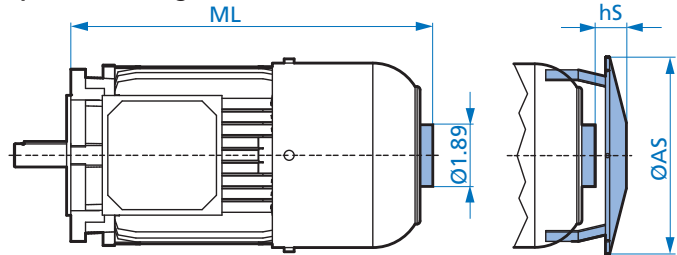


# NEMA C-Face Brakemotor Options

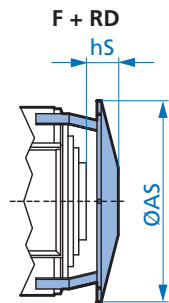
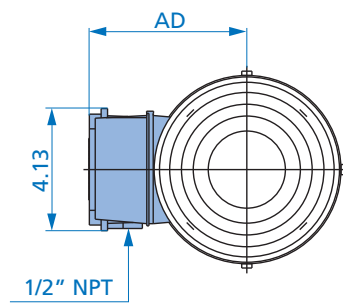
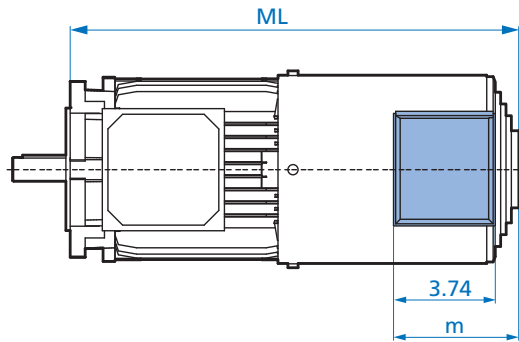
Option IG - Incremental Encoder



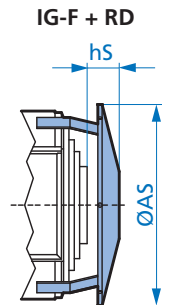
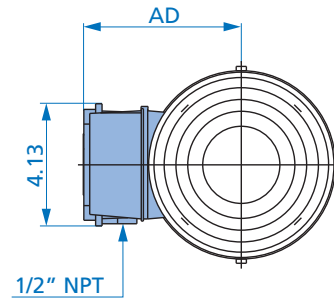
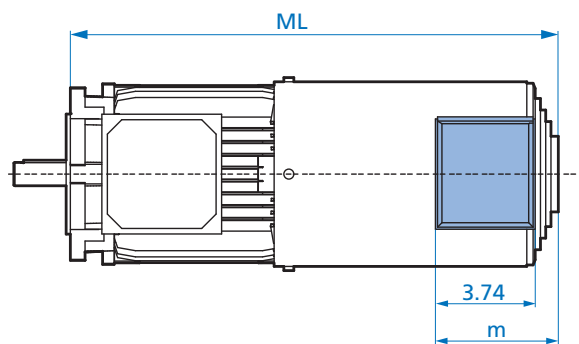
Option MG - Magnetic Encoder



Option F - Forced Cooling Fan



Option IG-F - Incremental Encoder & Forced Cooling Fan

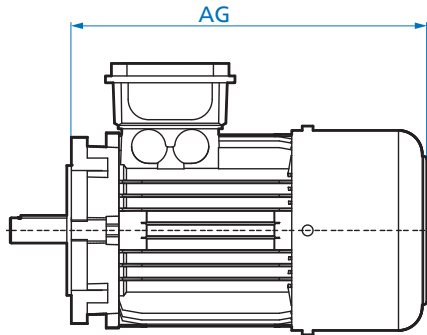


Motor Frame	Efficiency		NEMA Frame	BRE	IG				MG				MG & RD				F				F & RD				IG F				IGF & RD			
	SE	PE			ML	ML	hs	øAS	ML	m	AD	hs	øAS	ML	m	AD	hs	øAS	ML	m	AD	hs	øAS	ML	m	AD	hs	øAS				
63	S/L	-	56C	5	12.20	10.33	0.43	4.84	13.31	4.21	4.84	1.46	5.91	14.69	4.21	4.84	1.46	5.91														
71	S/L	-	56C	5	13.62	11.38	0.43	5.43	14.41	4.21	4.84	1.46	5.91	16.18	4.21	4.84	1.46	5.91														
80	S/L	SP	56C	10	14.21	12.44	0.33	6.14	15.51	4.21	5.20	1.57	6.69	17.48	4.21	5.20	1.57	6.69														
80	-	LP	143TC	10	15.16	12.87	0.33	6.14	16.34	4.21	5.20	1.57	6.69	18.11	4.21	5.20	1.57	6.69														
90	S/L	SP/LP	145TC	20	17.36	15.12	0.35	6.93	18.74	4.61	5.59	1.18	7.40	20.12	4.61	5.59	1.18	7.40														
100	L	LP	182TC	20	18.54	16.30	0.33	7.64	19.92	4.61	5.94	1.10	8.27	21.30	4.61	5.94	1.10	8.27														
100	LA	AP	184TC	40	18.43	16.42	0.33	7.64	20.04	4.61	5.94	1.10	8.27	21.42	4.61	5.94	1.10	8.27														
112	M	-	184TC	60	19.06	17.03	0.35	8.58	20.67	4.61	6.42	1.30	9.80	22.05	4.61	6.42	1.30	9.80														
112	-	MP	184TC	60	20.59	18.52	0.33	8.58	22.95	4.61	6.42	1.30	9.80	24.13	4.61	6.42	1.30	9.80														
132	S	SP	213TC	60	23.23	21.00	0.45	10.12	25.59	5.00	7.20	0.98	11.81	26.77	5.00	7.20	0.98	11.81														
132	M	MP	215TC	100	23.23	21.00	0.45	10.12	25.59	5.00	7.20	0.98	11.81	26.77	5.00	7.20	0.98	11.81														
160	M	MP	254TC	150	27.44	25.35	0.41	12.20	30.39	5.00	8.25	1.26	13.31	33.94	5.00	8.25	1.26	13.31														
160	L	-	256TC	250	27.44	25.35	0.41	12.20	30.39	5.00	8.25	1.26	13.31	33.94	5.00	8.25	1.26	13.31														
160	-	LP	256TC	250	29.17	27.09	0.41	12.20	32.13	5.00	8.25	1.26	13.31	35.67	5.00	8.25	1.26	13.31														
180	MX	-	284TC	250	27.44	25.35	0.41	12.20	30.39	5.00	8.25	1.26	13.31	33.94	5.00	8.25	1.26	13.31														
180	-	MP	284TC	250	32.49	30.44	0.41	13.70	35.44	5.00	8.25	1.26	13.31	38.98	5.00	8.25	1.26	13.31														
180	LX	-	286TC	250	28.86	26.77	0.41	12.20	31.85	5.00	8.25	1.26	13.31	35.98	5.00	8.25	1.26	13.31														
180	-	LP	286TC	250	32.17	30.13	0.41	13.70	35.17	5.00	8.25	1.26	13.31	39.30	5.00	8.25	1.26	13.31														

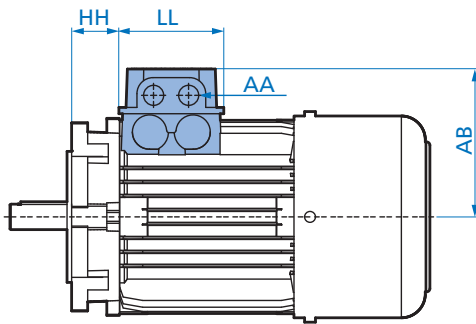
# NEMA C-Face Brakemotor Options



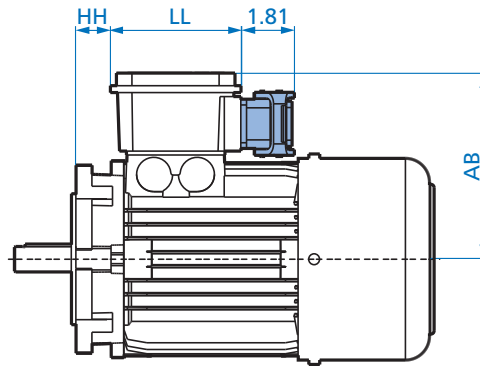
Option OL - Without Fan



Option EKK - One Piece Terminal Box



Option MS - Quick Power Plug Connector

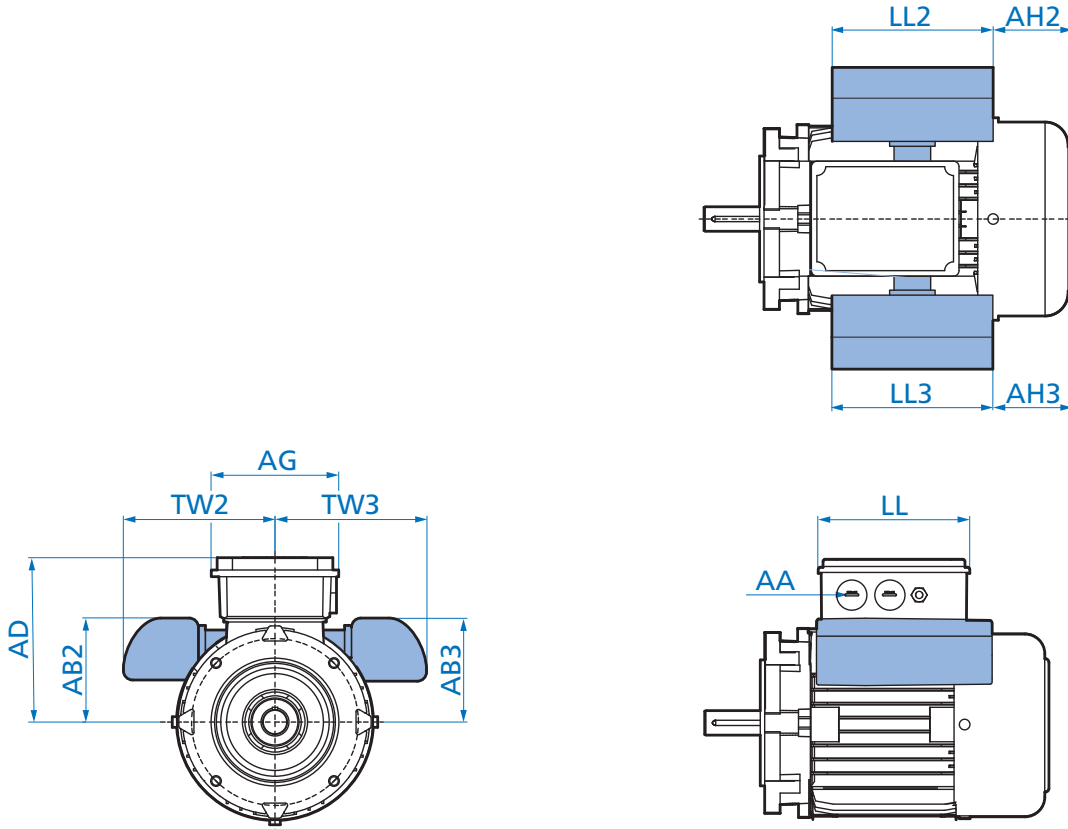


Motor Frame	Efficiency		NEMA Frame	BRE	OL AG	EKK					MS		
	SE	PE				HH	LL	AB	AA (NPT)	AA METRIC"	HH	LL	AB
63	S/L	-	56C	5	9.76	0.98	2.95	4.29	1/2"	M16 x 1.5	0.20	4.49	5.87
71	S/L	-	56C	5	10.71	1.30	2.95	4.29	1/2"	M16 x 1.5	0.51	4.49	5.87
80	S	SP	56C	5	11.97	1.46	2.95	4.88	1/2"	M20 x 1.5	1.02	4.49	6.22
80	L	-	56C	10	11.97	1.46	3.62	4.88	1/2"	M20 x 1.5	1.02	4.49	6.22
80	-	LP	143TC	10	12.40	1.46	3.62	5.08	1/2"	M20 x 1.5	1.02	4.49	6.22
90	S/L	SP/LP	145TC	20	14.61	1.61	3.62	5.08	1/2"	M20 x 1.5	1.18	4.49	6.42
100	L	LP	182TC	20	15.79	1.85	3.62	5.51	1/2"	M20 x 1.5	1.42	4.49	6.85
100	LA	AP	184TC	40	15.91	1.85	3.62	5.51	1/2"	M20 x 1.5	1.42	4.49	6.85
112	M	-	184TC	60	16.54	2.20	3.62	5.91	1/2"	M20 x 1.5	1.77	4.49	7.24
112	-	MP	184TC	60	18.03	2.20	3.62	5.91	1/2"	M20 x 1.5	1.77	4.49	7.24
132	S	SP	213TC	60	20.67	2.48	4.09	6.85	3/4"	M25x1.5	2.13	4.80	8.03
132	M	MP	215TC	100	20.67	2.48	4.09	6.85	3/4"	M25x1.5	2.13	4.80	8.03
160	M	MP	254TC	150	24.69								
160	L	-	256TC	250	24.69								
160	-	LP	256TC	250	26.42								
180	MX	-	284TC	250	24.69								
180	-	MP	284TC	250	29.73								
180	LX	-	286TC	250	26.10								
180	-	LP	286TC	250	29.42								



# NEMA C-Face Brakemotor Options

ECR - Single Phase Motor with Start-up & Run Capacitor

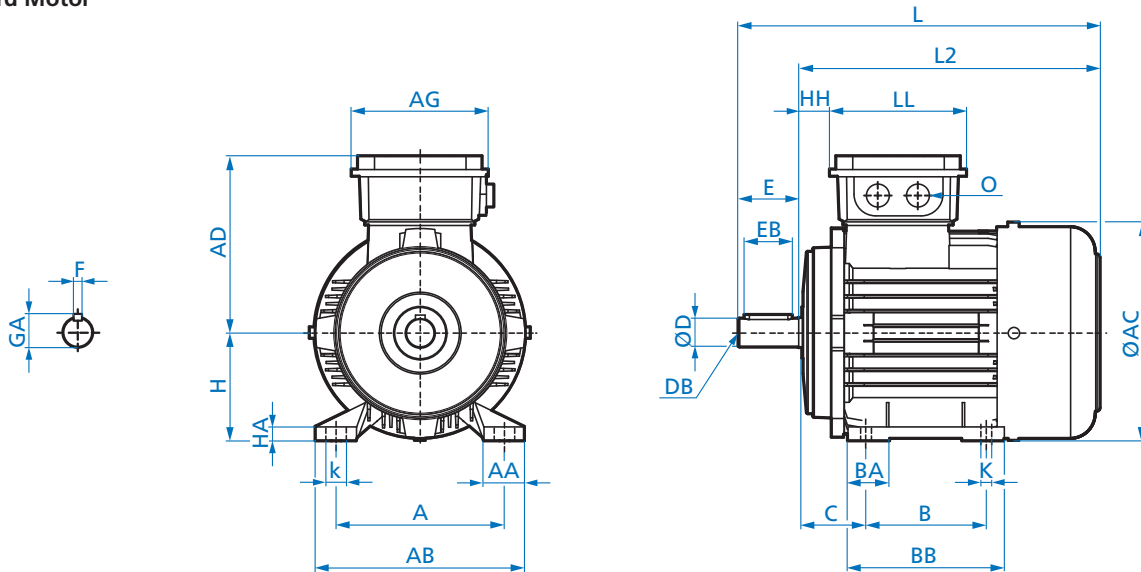


Motor Type	ECR												
	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA (NPT)	AA (metric)
63 LA	5.51	4.25	3.52	3.52	3.43	3.43	4.96	4.96	4.37	4.38	6.02	3/4"	M25 x 1.5
71 L/LA	5.87	4.25	4.15	3.82	3.41	4.02	5.75	4.96	4.81	4.38	6.02	3/4 "	M25 x 1.5
80 L/LA	5.59	4.25	4.45	4.27	4.09	4.88	5.75	4.96	5.03	4.83	6.02	3/4 "	M25 x 1.5
90 L	5.79	4.25	4.65	4.47	5.95	6.73	5.75	4.96	5.03	4.83	6.02	3/4 "	M25 x 1.5
90 LB/LX	5.79	4.25	4.65	4.65	5.95	5.95	5.75	5.75	5.03	4.83	6.02	3/4 "	M25 x 1.5

# IEC B3 Footed Motors



## Standard Motor



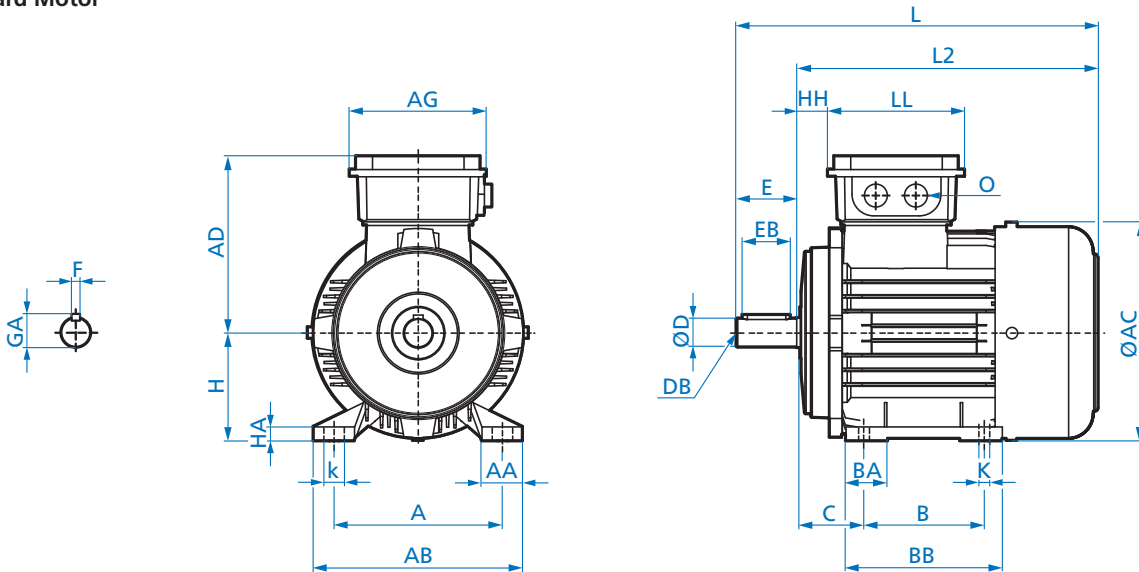
Motor Frame	Efficiency		Overall			Feet									
	IE1	IE3	L	L2	ØAC	A	B	C	AA	BA	AB	BB	k	K	HA
63	S/L	-	215	192	129	100	80	40	21	27	120	105	12	7	9
71	S/L	-	244	214	146	112	90	45	24	24	136	108	12	7	10
80	S/L	LP	276	236	164	125	100	50	30	30	160	125	17	9	11
90	S	-	301	251	183	140	125	56	34	35	174	155	17	9	12
90	L	SP/LP	326	276											
100	L/LA	LP/AP	366	306	201	160	140	63	37	30	192	175	22	12	15
112	-	-	386	326	226	190	140	70	40	34	224	175	22	12	15
112	M	MP	411	351											

Motor Frame	Efficiency		Shaft							Terminal Box				
	IE1	IE3	ØD	DB	E	EB	GA	F	H	AD	HH	LL	AG	O
63	S/L	-	11 <sup>+0.008</sup> <sub>-0.003</sub>	M4	23	16	12.5	4	63	115	12	100	100	M20 x 1.5
71	S/L	-	14 <sup>+0.008</sup> <sub>-0.003</sub>	M5	30	20	16.0	5	71	124	20	100	100	M20 x 1.5
80	S/L	LP	19 <sup>+0.009</sup> <sub>-0.004</sub>	M6	40	32	21.5	6	80	142	22	114	114	M25 x 1.5
90	S	-	24 <sup>+0.009</sup> <sub>-0.004</sub>	M8	50	40	27.0	8	90	147	26	114	114	M25 x 1.5
90	L	SP												
100	L/LA	LP/AP	28 <sup>+0.009</sup> <sub>-0.004</sub>	M10	60	50	31.0	8	100	169	32	114	114	M32 x 1.5
112	M	-	28 <sup>+0.009</sup> <sub>-0.004</sub>	M10	60	50	31.0	8	112	179	35	114	114	M32 x 1.5
112		MP												





Standard Motor



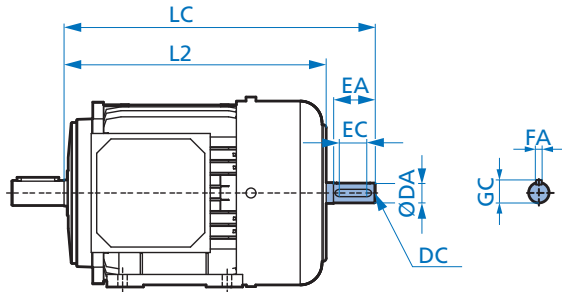
Motor Frame	Efficiency		Overall			Feet									
	IE1	IE3	L	L2	ØAC	A	B	C	AA	BA	AB	BB	k	K	HA
132	S	-	453	373	266	216	178	89	58	37	260	218	89	14	18
132	M/MA	SP/MP	491	411		216	178	89	58	37	260	218	89	14	18
160	M	MP	602	492	319	254	210	108	72	52	318	264	30	14.5	25
160	L	-					254					308			
160	-	LP	646	536	319	254	254	108	72	52	318	308	30	14.5	25
180	-	MP	724	614	362	279	241	121	88.5	-	340	281	30	14.5	27
180	-	LP					279					319			
225	-	SP	882	742	443	356	286	149	79	66	443	359	25	20	20
225	-	MP	882	742	443	356	311	149	79	66	443	359	25	20	20

Motor Frame	Efficiency		Shaft							Terminal Box				
	IE1	IE3	ØD	DB	E	EB	GA	F	H	AD	HH	LL	AG	O
132	S	-	38 <small>+0.018 +0.002</small>	M12	80	70	41.0	10	132	204	47	122	122	M32 x 1.5
132	M/MA	SP/MP												
160	M	MP	42 <small>+0.018 +0.002</small>	M16	110	90	45.0	12	160	242	52	186	186	M40 x 1.5
160	L	-												
160	-	LP	42 <small>+0.018 +0.002</small>	M16	110	90	45.0	12	160	242	52	186	186	M40 x 1.5
180	-	MP	48 <small>+0.021 +0.002</small>	M16	110	100	51.5	14	180	259	54	186	186	M40 x 1.5
180	-	LP												
225	-	SP	60 <small>+0.030 +0.011</small>	M20	140	125	64	18	225	347	94	245	245	M50 X 1.5
225	-	MP	60 <small>+0.030 +0.011</small>	M20	140	125	64	18	225	347	94	245	245	M50 X 1.5

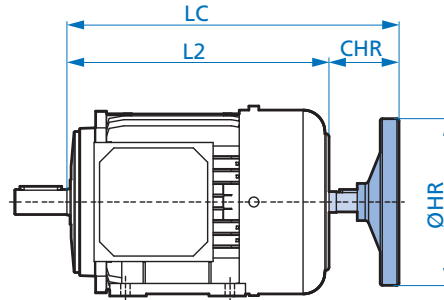
# IEC B3 Footed Motor Options



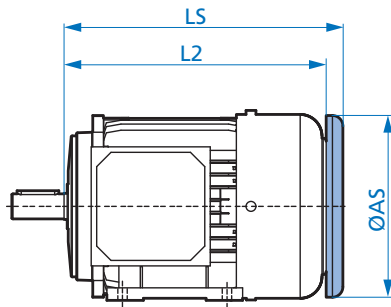
Option WE - 2nd Shaft Extension



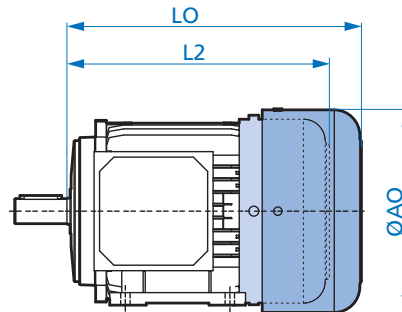
Option HR - Hand Wheel



Option RD - Canopy Drip Cover



Option RDD - Double Fan Cover

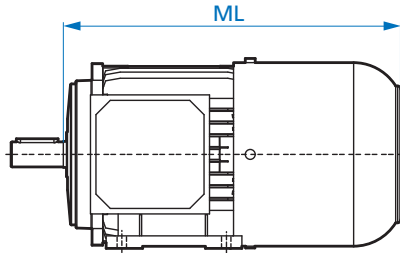


Dimensions

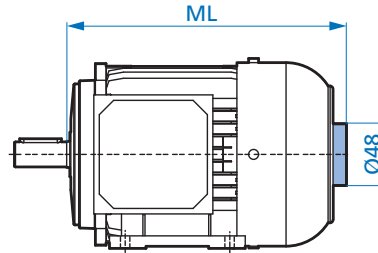
Motor Frame	Efficiency		WE									HR			RD		RDD	
	IE1	IE3	L2	LC	DA	EA	EC	DC	GC	FA	LC	ØHR	CHR	LS	ØAS	LO	ØAO	
63	S/L	-	192	215	11	+0.008 -0.003	23	16	M4	12.5	4	231	100	39	203	123	218	138
71	S/L	-	214	238	11	+0.008 -0.003	23	16	M4	12.5	4	254	100	40	225	138	238	156
80	S/L	LP	236	269	14	+0.008 -0.003	30	20	M5	16.0	5	285	100	49	251	156	262	176
90	S	-	251	298	19	+0.009 -0.004	40	32	M6	16.0	6	318	160	67	266	176	282	194
90	L	SP/LP	276	323								343			291		307	
100	L/LA	LP/AP	306	362	24	+0.009 -0.004	50	40	M8	27.0	8	382	160	76	321	194	334	218
112	-	-	326	380	24	+0.009 -0.004	50	40	M8	27.0	8	400	160	74	341	218	364	258
112	M	MP	351	405								425			366		389	
132	S	-	373	471	32	+0.011 -0.005	80	70	M12	35.0	10	492	200	119	390	257	414	310
132	M/MA	SP/MP	411	509								530			428		452	
160	M/L	MP	492	611	42	+0.018 +0.002	110	90	M16	45.0	12	634	315	142	509	310	537	367
160	-	LP	536	655	42	+0.018 +0.002	110	90	M16	45.0	12	678	315	142	553	310	581	367
180	-	MP/LP	614	733	48	+0.018 +0.002	110	100	M16	51.5	14	756	315	142	631	348	684	403
225	-	SP	742	862	55	+0.030 +0.011	110	100	M20	59.3	16	-	-	-	828.5	348	826	519
225	-	MP	742	862	55	+0.030 +0.011	110	100	M20	59.3	16	-	-	-	828.5	348	826	519



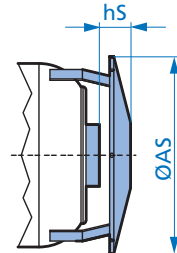
Option IG - Incremental Encoder



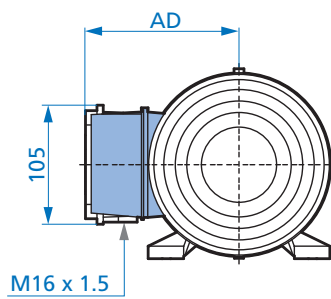
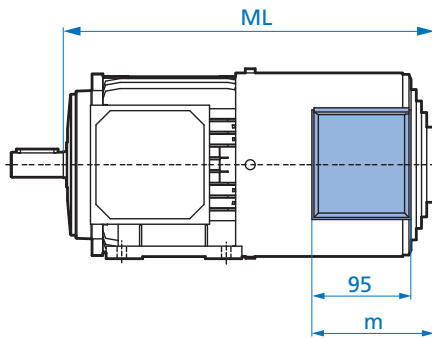
Option MG - Magnetic Encoder



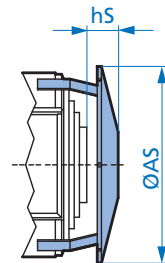
MG + RD



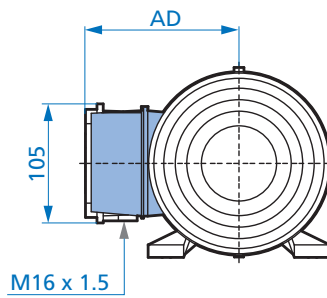
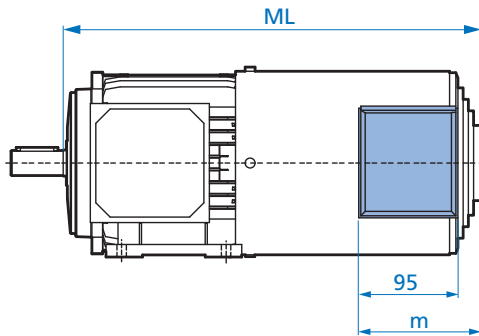
Option F - Forced Cooling Fan



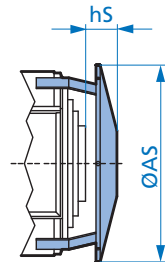
F + RD



Option IG-F - Incremental Encoder & Forced Cooling Fan



IG-F + RD

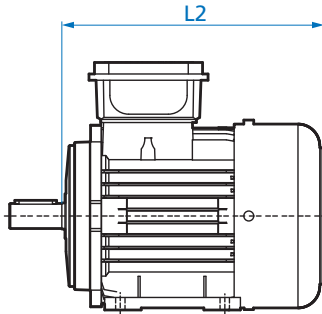


Motor Frame	Efficiency		IG		MG		MG + RD		F			F + RD		IG-F		IG-F + RD	
	IE1	IE3	ML	ML	hs	AS	ML	m	AD	hs	AS	ML	m	AD	hs	AS	
63	S/L	-	247	202.5	11.0	123	280	107	114	37	133	350	107	133	37	133	
71	S/L	-	270	225.5	11.0	138	303	107	123	37	150	358	107	150	37	150	
80	S/L	LP	297	246	9.0	156	326	107	132	40	170	376	107	170	40	170	
90	S	-	323	265	9.0	176	355	117	142	30	188	400	117	188	30	188	
90	L	SP/LP	348	290	9.0	176	380	117	142	30	188	425	117	188	30	188	
100	L/LA	LP/AP	375	318.5	8.5	194	401	117	151	28	210	461	117	210	28	210	
112	M	-	394	338.5	8.5	218	425	117	163	33	249	475	117	249	33	249	
112	-	MP	419	363	8.5	218	450	117	163	33	249	500	117	249	33	249	
132	S	-	436	383	11.0	257	488	127	183	25	300	528	127	300	25	300	
132	M/MA	SP/MP	474	421	11.0	257	526	127	183	25	300	566	127	300	25	300	
160	M/L	MP	562	508	10.5	310	642	127	209.5	32	338	727	127	338	32	338	
160	-	LP	606	552	10.5	310	681	127	209.5	32	338	771	127	338	32	338	
180	-	MP/LP	684	627	10.5	348	767	127	209.5	32	338	847	127	338	32	338	
225	-	SP	809	-	-	-	942.5	144	249.5	-	-	1032.5	144	249.5	-	-	
225	-	MP	809	-	-	-	942.5	144	249.5	-	-	1032.5	144	249.5	-	-	

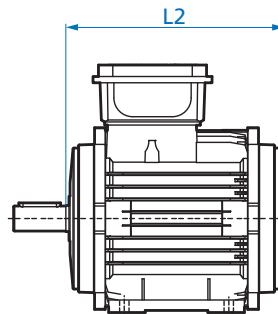
# IEC B3 Footed Motor Options



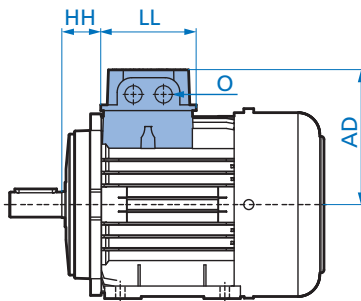
Option OL - Without Fan



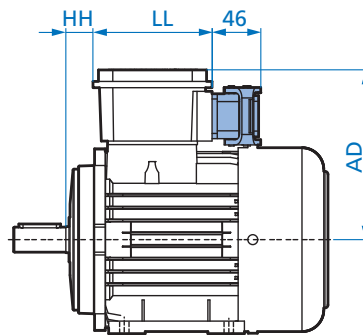
Option OLH - Without Fan Cover



Option EKK - One Piece Terminal Box



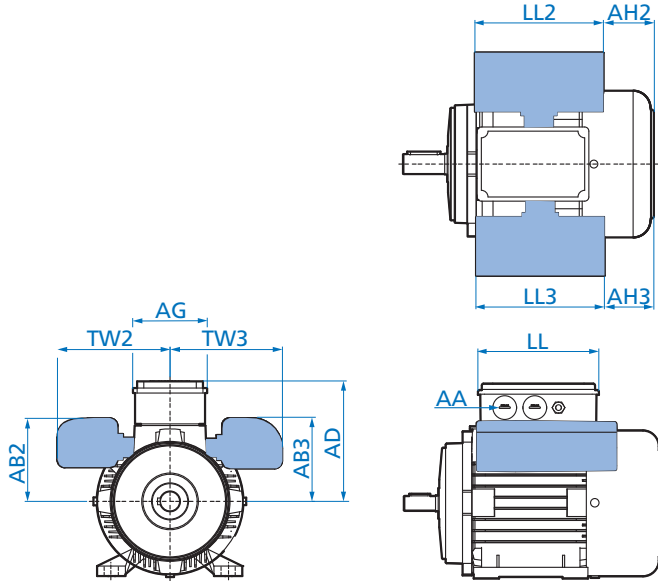
Option MS - Quick Power Plug Connector



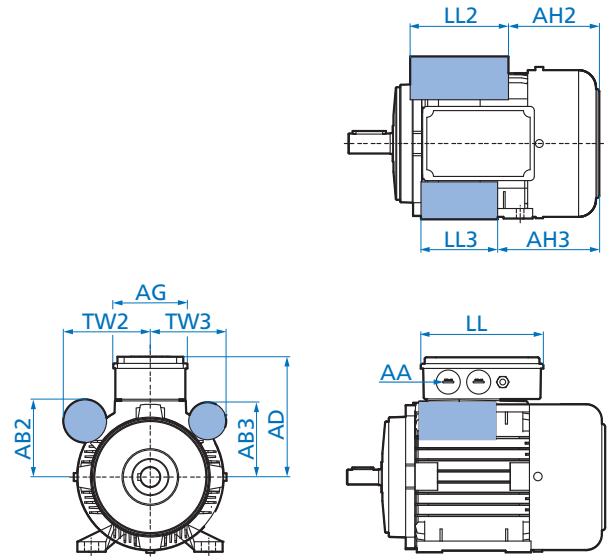
Motor Frame	Efficiency		OL L2	OLH L2	EKK				MS		
	IE1	IE3			HH	LL	AD	O	HH	LL	AD
63	S/L	-	192	160	25	75	100	M16 x 1.5	5	114	140
71	S/L	-	214	177	33	75	109	M16 x 1.5	13	114	149
80	S/L	LP	236	196	33	92	124	M20 x 1.5	22	114	158
90	S	-	251	208	37	92	129	M20 x 1.5	26	114	163
90	L	SP/LP	276	233	37	92	129	M20 x 1.5	26	114	163
100	L/LA	LP/AP	306	262	43	92	140	M20 x 1.5	32	114	174
112	M	-	326	276	56	92	150	M20 x 1.5	45	114	184
112	-	MP	351	301	56	92	150	M20 x 1.5	45	114	184
132	S	-	373	313	56	104	174	M25 x 1.5	47	122	204
132	M/MA	SP/MP	411	351	56	104	174	M25 x 1.5	47	122	204
160	M/L	MP	492	417							
160	-	LP	536	461							
180	-	MP/LP	614	539							



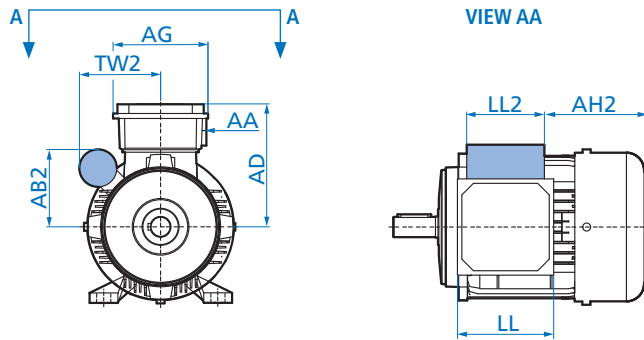
### Option ECR - Single Phase with Start-up & Run Capacitor



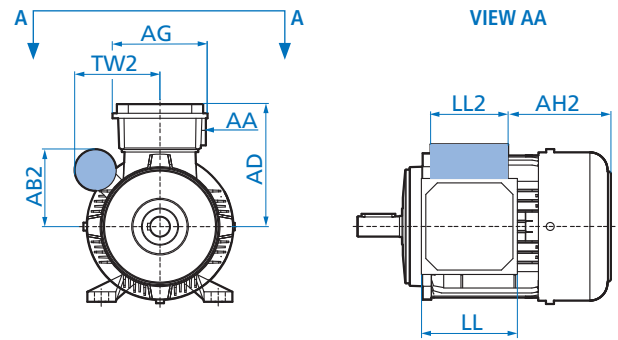
### Option EAR1 - Single Phase with Start-up & Run Capacitor



### Option EHB1 - Single Phase with Single Capacitor



### Option EST - Single Phase with Steinmetz Circuit



Motor Type	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA
63 LA ECR	123	89	90	90	31	31	126	126	111	111	134	M25 x 1.5
71 L/LA ECR	132	89	106	97	29	44	146	126	122	111	134	M25 x 1.5
80 L/LA ECR	142	108	113	109	40	60	146	126	128	123	153	M25 x 1.5
90 L ECR	147	108	118	114	76	96	146	126	128	123	153	M25 x 1.5
90 LB/LX ECR	147	108	118	118	76	76	146	146	128	123	153	M25 x 1.5
63 L/LA EAR1	123	89	70	68	84	95	92	70	85	73	134	M25 x 1.5
71 L/LA EAR1	132	89	79	74	86	109	117	70	95	80	134	M25 x 1.5
80 L/LA EAR1	142	108	88	89	113	111	87	92	95	86	153	M25 x 1.5
90 L/LB EAR1	147	108	93	89	114	122	118	92	105	91	153	M25 x 1.5
63 L/LA EHB1	115	100	70	-	95	-	70	-	81	-	100	M20 x 1.5
71 L/LA EHB1	124	100	79	-	109	-	70	-	85	-	100	M20 x 1.5
80 L/LA EHB1	142	114	88	-	95	-	87	-	113	-	114	M25 x 1.5
90 L/LB EHB1	147	114	93	-	121	-	145	-	98	-	114	M25 x 1.5
63 S/L EST	115	100	70	-	95	-	70	-	85	-	100	M20 x 1.5
71 S/L EST	124	100	79	-	98	-	92	-	85	-	100	M20 x 1.5
80 S/L EST	142	114	88	-	97	-	120	-	98	-	114	M25 x 1.5
90 S/L EST	147	114	93	-	121	-	145	-	113	-	114	M25 x 1.5

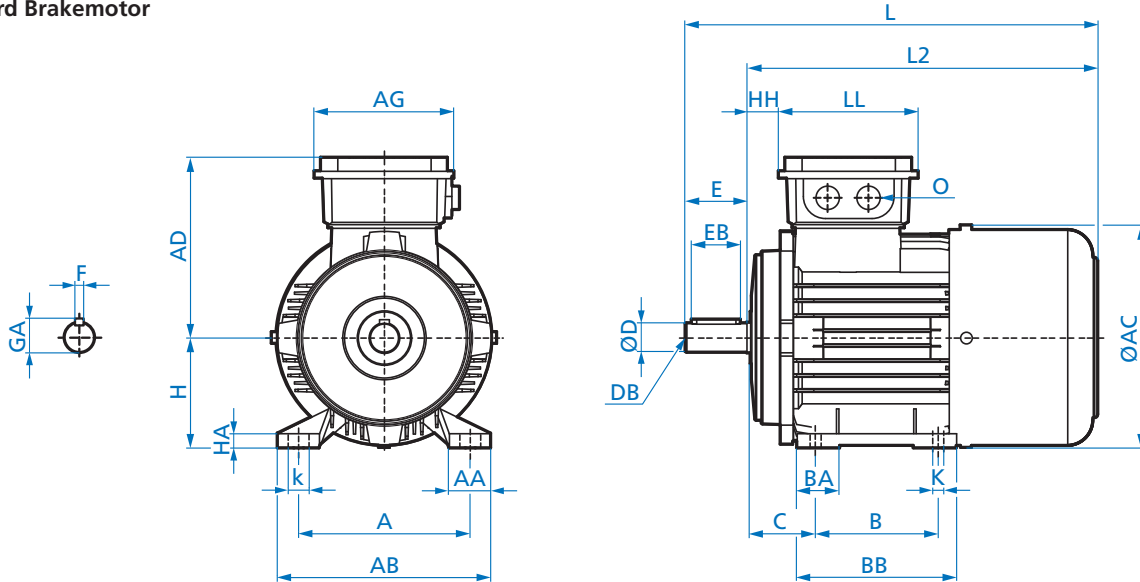
Dimensions



# IEC B3 Footed Brakemotors



## Standard Brakemotor

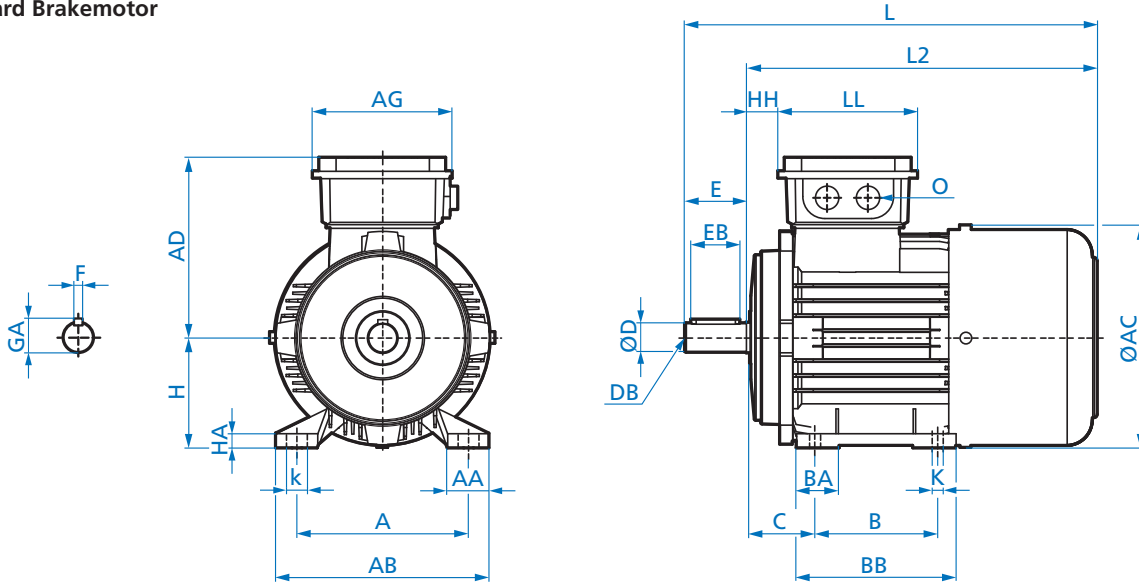


Motor Frame	Efficiency		BRE Size	Overall			Feet									
	IE1	IE3		L	L2	ØAC	A	B	C	AA	BA	AB	BB	k	K	HA
63	S/L	-	5	271	248	129	100	80	40	21	27	120	105	12	7	9
71	S/L	-	5	302	272	146	112	90	45	24	24	136	108	12	7	10
80	S	-	5	340	300	164	125	100	50	30	30	160	125	17	9	11
80	L	LP	10													
90	S	-	20	376	326	183	140	125	56	34	35	174	155	17	9	12
90	L	SP/LP	20	401	351											
100	L	LP	20	457	397	201	160	140	63	37	30	192	175	22	12	15
100	LA	AP	40													
112	M	-	60	480	420	226	190	140	70	40	34	224	175	22	12	15
112	-	MP	60	505	445											

Motor Frame	Efficiency		BRE Size	Shaft							Terminal Box				
	IE1	IE3		ØD	DB	E	EB	GA	F	H	AD	HH	LL	AG	O
63	S/L	-	5	11 <sup>+0.008</sup> <sub>-0.003</sub>	M4	23	16	12.5	4	63	123	19	134	89	M20 x 1.5
71	S/L	-	5	14 <sup>+0.008</sup> <sub>-0.003</sub>	M5	30	20	16.0	5	71	132	27	134	89	M20 x 1.5
80	S	-	5	19 <sup>+0.009</sup> <sub>-0.004</sub>	M6	40	32	21.5	6	80	142	26	153	108	M25 x 1.5
80	L	LP	10												
90	S	-	20	24 <sup>+0.009</sup> <sub>-0.004</sub>	M8	50	40	27.0	8	90	147	30	153	108	M25 x 1.5
90	L	SP/LP	20												
100	L	LP	20	28 <sup>+0.009</sup> <sub>-0.004</sub>	M10	60	50	31.0	8	100	172	36	153	108	M32 x 1.5
100	LA	AP	40												
112	M	-	60	28 <sup>+0.009</sup> <sub>-0.004</sub>	M10	60	50	31.0	8	112	182	39	153	108	M32 x 1.5
112	-	MP	60												



## Standard Brakemotor



Motor Frame	Efficiency		BRE Size	Overall			Feet									
	IE1	IE3		L	L2	ØAC	A	B	C	AA	BA	AB	BB	k	K	HA
132	S	-	60	560	480	266	216	178	89	58	37	260	218	30	14	18
132		SP	60													
132	M	MP	100	598	518											
132	MA	-	150													
160	M	MP	150	737	627	319	254	210	108	72	52	318	264	30	14.5	25
160	L	-	250					254					308			
160	-	LP	250	781	671	319	254	254	108	72	52	318	308	30	14.5	25
180	-	MP	250	851	741	348	279	241	121	88.5	-	340	281	30	14.5	27
180	-	LP	250					279					319			
225	-	SP	400	1062	922	443	356	286	149	79	66	443	359	25	20	20
225	-	MP	400	1062	922	443	356	311	149	79	66	443	359	25	20	20

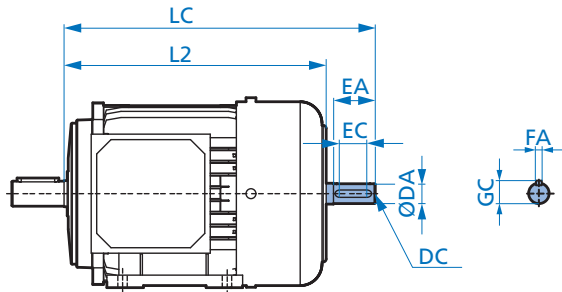
Motor Frame	Efficiency		BRE Size	Shaft							Terminal Box				
	IE1	IE3		ØD	DB	E	EB	GA	F	H	AD	HH	LL	AG	O
132	S	-	60	38 <sup>+0.018</sup> / <sub>+0.002</sub>	M12	80	70	41.0	10	132	201	40	185	139	M32 x 1.5
132		SP	60												
132	M	MP	100												
132	MA	-	150												
160	M	MP	150	42 <sup>+0.018</sup> / <sub>+0.002</sub>	M16	110	90	45.0	12	160	242	52	186	186	M40 x 1.5
160	L	-	250												
160	-	LP	250	42 <sup>+0.018</sup> / <sub>+0.002</sub>	M16	110	90	45.0	12	160	242	52	186	186	M40 x 1.5
180	-	MP	250	48 <sup>+0.021</sup> / <sub>+0.002</sub>	M16	110	100	51.5	14	180	259	54	186	186	M40 x 1.5
180	-	LP	250												
225	-	SP	400	60 <sup>+0.030</sup> / <sub>+0.011</sub>	M20	140	125	64	18	225	347	94	245	245	M50 X 1.5
225	-	MP	400	60 <sup>+0.030</sup> / <sub>+0.011</sub>	M20	140	125	64	18	225	347	94	245	245	M50 X 1.5

Dimensions

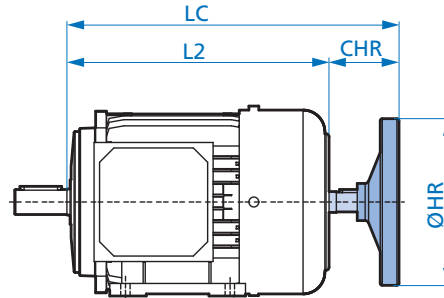
# IEC B3 Footed Brakemotor Options



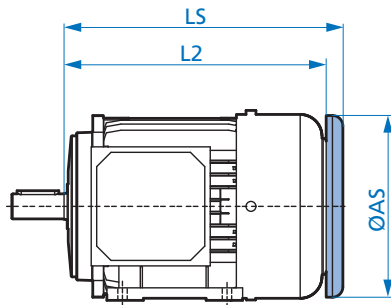
Option WE - 2nd Shaft Extension



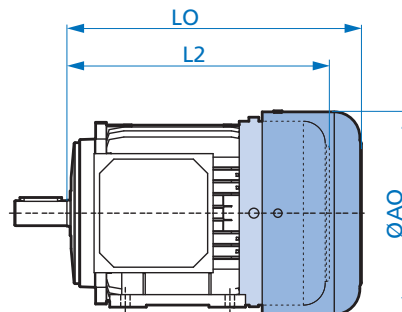
Option HR - Hand Wheel



Option RD - Canopy Drip Cover



Option RDD - Double Fan Cover



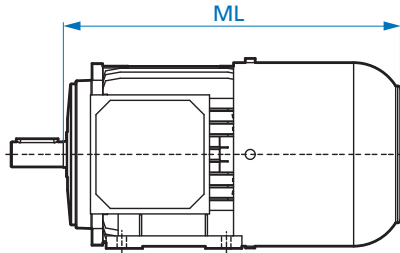
Dimensions

Motor Frame	Efficiency		L2	LC	DA	WE					HR			RD		RDD	
	IE1	IE3				EA	EC	DC	GC	FA	LC	ØHR	CHR	LS	ØAS	LO	ØAO
63	S/L	-	248	275	11 $\begin{smallmatrix} +0.008 \\ -0.003 \end{smallmatrix}$	23	16	M4	12.5	4	291	100	43	259	123	274	138
71	S/L	-	272	299	11 $\begin{smallmatrix} +0.008 \\ -0.003 \end{smallmatrix}$	23	16	M4	12.5	4	315	100	43	283	138	296	156
80	S/L	LP	300	334	14 $\begin{smallmatrix} +0.008 \\ -0.003 \end{smallmatrix}$	30	20	M5	16.0	5	350	100	50	315	156	326	176
90	S	-	326	364	19 $\begin{smallmatrix} +0.009 \\ -0.004 \end{smallmatrix}$	40	32	M6	16.0	6	384	160	58	341	176	356	194
90	L	SP/LP	351	389							409			366		381	
100	L/LA	LP/AP	397	457	24 $\begin{smallmatrix} +0.009 \\ -0.004 \end{smallmatrix}$	50	40	M8	27.0	8	477	160	80	412	194	425	218
112	M	-	420	477	24 $\begin{smallmatrix} +0.009 \\ -0.004 \end{smallmatrix}$	50	40	M8	27.0	8	497	160	77	435	218	458	258
112	-	MP	445	502							522			460		483	
132	S	-	480	570	32 $\begin{smallmatrix} +0.011 \\ -0.005 \end{smallmatrix}$	80	70	M12	35.0	10	591	200	111	497	257	516	310
132	MA	SP/MP	518	608							629			535		554	
160	M/L	MP	627	746	42 $\begin{smallmatrix} +0.018 \\ +0.002 \end{smallmatrix}$	110	90	M16	45.0	12	769	315	142	644	310	672	367
160	-	LP	671	790	42 $\begin{smallmatrix} +0.018 \\ +0.002 \end{smallmatrix}$	110	90	M16	45.0	12	813	315	142	688	310	716	367
180	-	MP/LP	741	860	48 $\begin{smallmatrix} +0.018 \\ +0.002 \end{smallmatrix}$	110	100	M16	51.5	14	883	315	142	758	348	811	403
225	-	SP	922	1042	55 $\begin{smallmatrix} +0.030 \\ +0.011 \end{smallmatrix}$	110	100	M20	59	16	-	-	-	1008.5	348	1006	519
225	-	MP	922	1042	55 $\begin{smallmatrix} +0.030 \\ +0.011 \end{smallmatrix}$	110	100	M20	59	16	-	-	-	1008.5	348	1006	519

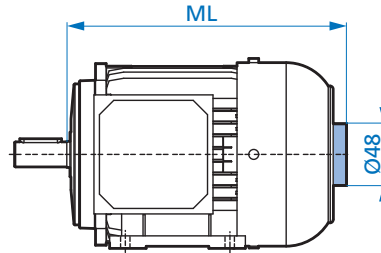


# IEC B3 Footed Brakemotor Options

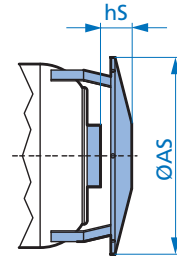
Option IG - Incremental Encoder



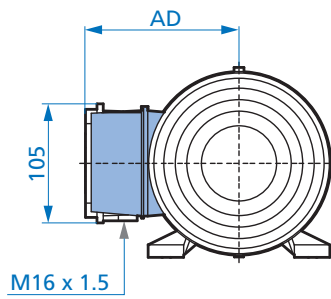
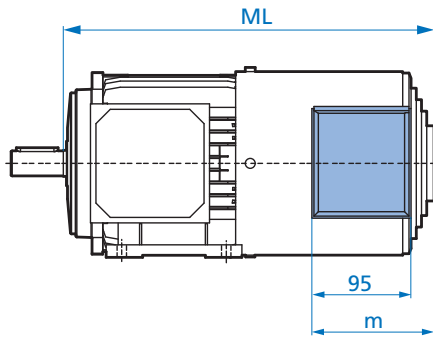
Option MG - Magnetic Encoder



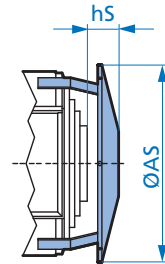
MG + RD



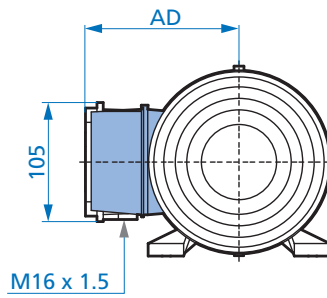
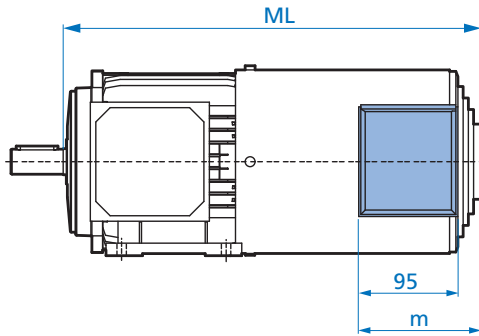
Option F - Forced Cooling Fan



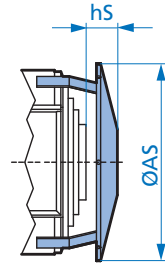
F + RD



Option IG-F - Incremental Encoder & Forced Cooling Fan



IG-F + RD

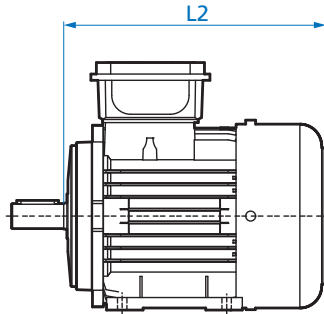


Motor Frame	Efficiency		IG		MG		MG + RD		F		F + RD		IG-F		IG-F + RD	
	IE1	IE3	ML	ML	hs	ØAS	ML	m	AD	hs	ØAS	ML	m	AD	hs	ØAS
63	S/L	-	310	262.5	11.0	123	338	107	114	37	133	373	107	133	37	133
71	S/L	-	346	289	11.0	138	366	107	123	37	150	411	107	150	37	150
80	S/L	LP	357	312	9.0	156	390	107	132	40	170	440	107	170	40	170
90	S	-	396	339	9.0	176	426	117	142	30	188	471	117	188	30	188
90	L	SP/LP	421	364	9.0	176	451	117	142	30	188	496	117	188	30	188
100	L/LA	LP/AP	467	410	8.5	194	502	117	151	28	210	537	117	210	28	210
112	M	-	484	432.5	9.0	218	525	117	163	33	249	560	117	249	33	249
112	-	MP	509	457.5	8.5	218	550	117	163	33	249	585	127	249	33	249
132	S	-	545	488.5	11.5	257	605	127	183	25	300	635	127	300	25	300
132	-	SP/MP	583	526.5	11.5	257	643	127	183	25	300	673	127	300	25	300
160	M/L	MP	697	644	10.5	310	772	127	209.5	32	338	862	127	338	32	338
160	-	LP	741	688	10.5	310	816	127	209.5	32	338	906	127	338	32	338
180	-	MP/LP	811	759	10.5	348	887	127	209.5	32	338	992	127	338	32	338
225	-	SP	989	-	-	-	1112.5	144	249.5	-	-	1202.5	144	249.5	-	-
225	-	MP	989	-	-	-	1112.5	144	249.5	-	-	1202.5	144	249.5	-	-

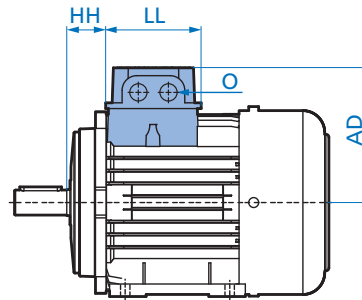
# IEC B3 Footed Brakemotor Options



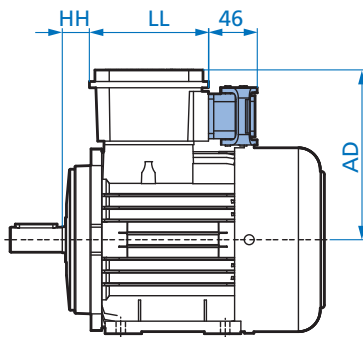
Option OL - Without Fan



Option EKK - One Piece Terminal Box



Option MS - Quick Power Plug Connector

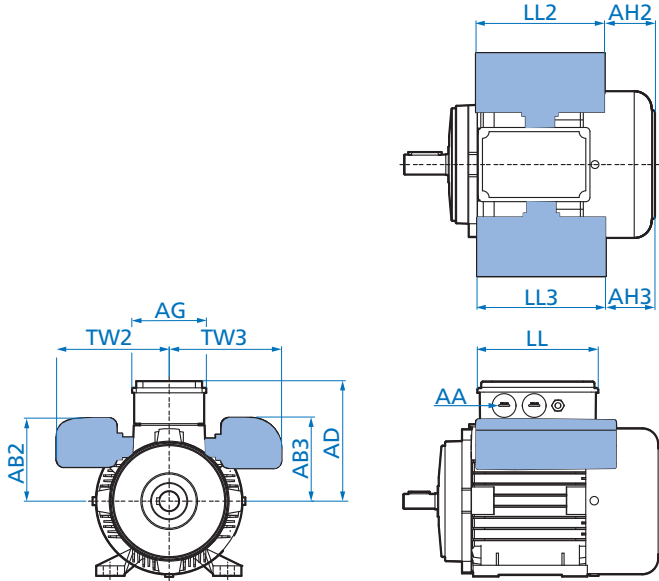


Motor Frame	Efficiency		OL L2	EKK				MS		
	IE1	IE3		HH	LL	AD	O	HH	LL	AD
63	S/L	-	248	25	75	100	M16 x 1.5	5	114	140
71	S/L	-	272	33	75	109	M16 x 1.5	13	114	149
80	S/L	LP	300	33	92	124	M20 x 1.5	22	114	158
90	S	-	326	37	92	129	M20 x 1.5	26	114	163
90	L	SP/LP	351	37	92	129	M20 x 1.5	26	114	163
100	L/LA	LP/AP	397	43	92	140	M20 x 1.5	32	114	174
112	M	-	420	56	92	150	M20 x 1.5	45	114	184
112	-	MP	445	56	92	150	M20 x 1.5	45	114	184
132	S	-	480	56	104	174	M25 x 1.5	47	122	204
132	M/MA	SP/MP	518	56	104	174	M25 x 1.5	47	122	204
160	M/L	MP	627							
160	-	LP	671							
180	-	MP/LP	741							

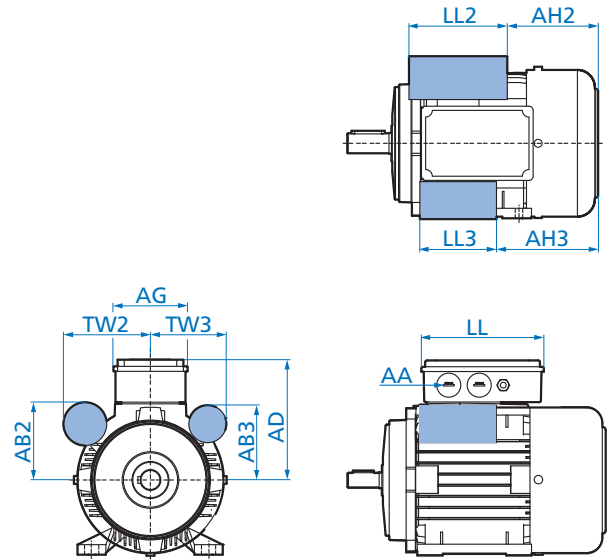




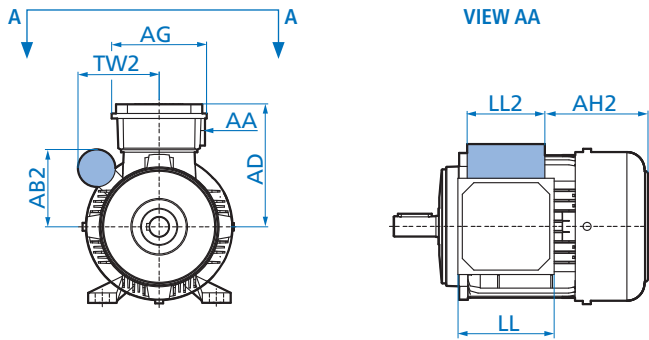
Option ECR - Single Phase with Start-up & Run Capacitor



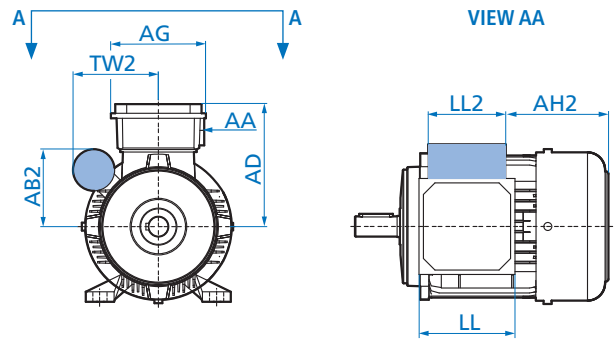
Option EAR1 - Single Phase with Start-up & Run Capacitor



Option EHB1 - Single Phase with Single Capacitor



Option EST - Single Phase with Steinmetz Circuit

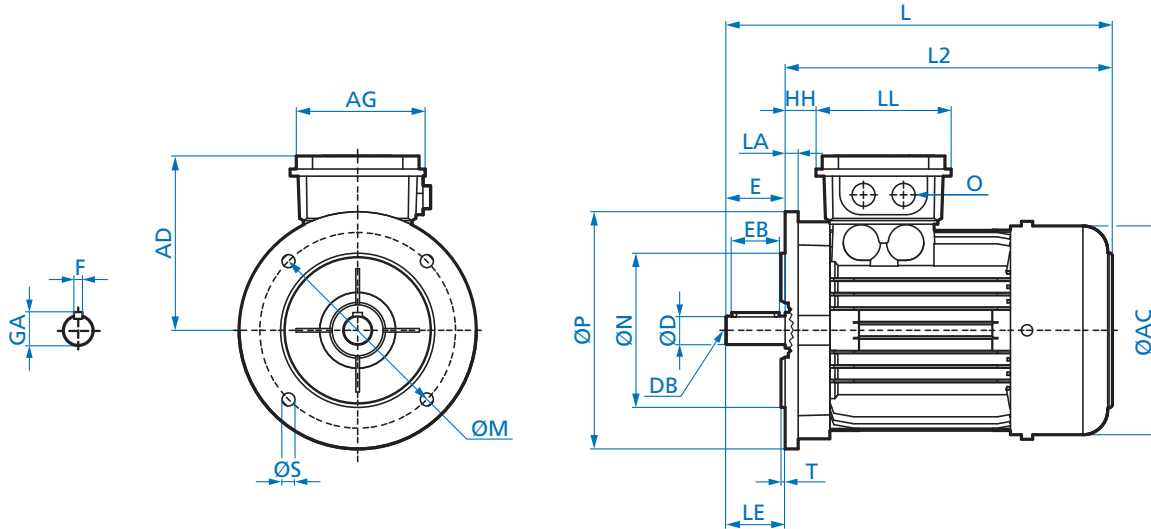


Motor Type	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA
63 LA ECR	140	108	90	90	87	87	126	126	111	111	153	M25 x 1.5
71 L/LA ECR	149	108	106	97	87	102	146	126	122	111	153	M25 x 1.5
80 L/LA ECR	142	108	113	109	104	124	146	126	128	123	153	M25 x 1.5
90 L ECR	147	108	118	114	151	171	146	126	128	123	153	M25 x 1.5
90 LB/LX ECR	147	108	118	118	151	151	146	146	128	123	153	M25 x 1.5
63 L/LA EAR1	140	108	70	68	140	151	92	70	85	73	153	M25 x 1.5
71 L/LA EAR1	149	108	79	74	144	167	117	70	95	80	153	M25 x 1.5
80 L/LA EAR1	142	108	88	89	177	175	87	92	95	86	153	M25 x 1.5
90 L/LB EAR1	147	108	93	89	189	197	118	92	105	91	153	M25 x 1.5
63 L/LA EHB1	123	89	70	-	151	-	70	-	81	-	134	M20 x 1.5
71 L/LA EHB1	132	89	79	-	167	-	70	-	85	-	134	M20 x 1.5
80 L/LA EHB1	142	108	88	-	159	-	87	-	113	-	153	M25 x 1.5
90 L/LB EHB1	147	108	93	-	196	-	145	-	98	-	153	M25 x 1.5
63 S/L EST	123	89	70	-	151	-	70	-	85	-	134	M20 x 1.5
71 S/L EST	132	89	79	-	156	-	92	-	85	-	134	M20 x 1.5
80 S/L EST	142	108	88	-	161	-	120	-	98	-	153	M25 x 1.5
90 S/L EST	147	108	93	-	196	-	145	-	113	-	153	M25 x 1.5

# IEC B5 Flanged Motors



## Standard Motor

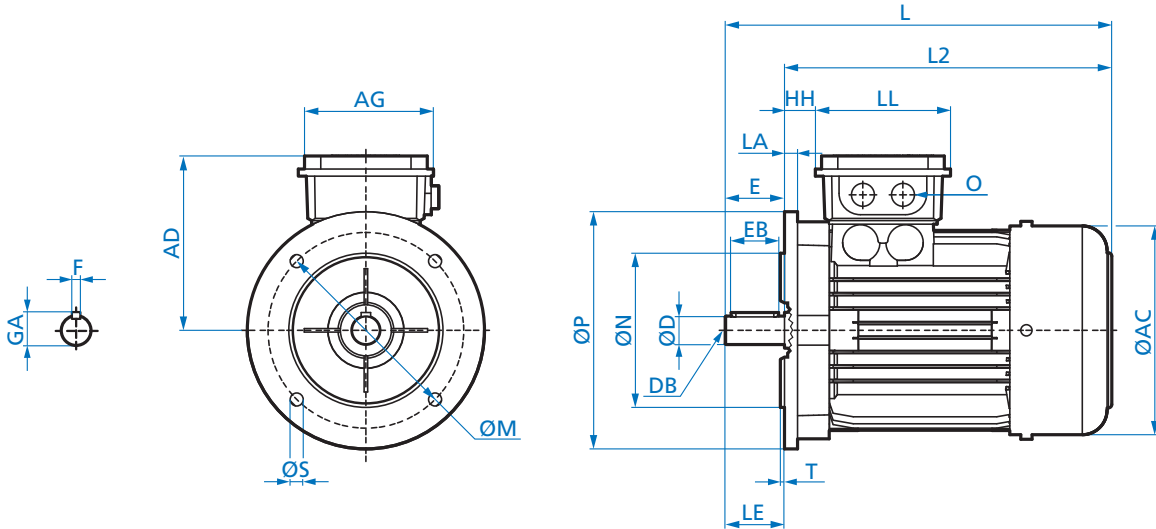


Motor Frame	Efficiency		Flange Size	Overall			Mounting Flange					
	IE1	IE3		L	L2	ØAC	M	N	P	LA	T	S
63	S/L	-	A140	215	192	129	115	95 <sup>+0.013</sup> <sub>-0.009</sub>	140	10	3.0	9
71	S/L	-	A160	244	214	146	130	110 <sup>+0.013</sup> <sub>-0.009</sub>	160	10	3.5	9
80	S/L	SP/LP	A200	276	236	164	165	130 <sup>+0.014</sup> <sub>-0.011</sub>	200	11	3.5	11
90	S/L	SP/LP	A200	326	276	183	165	130 <sup>+0.014</sup> <sub>-0.011</sub>	200	11	3.5	11
100	L/LA	LP/AP	A250	366	306	201	215	180 <sup>+0.014</sup> <sub>-0.011</sub>	250	15	4.0	13.5
112	M		A250	386	326	226	215	180 <sup>+0.014</sup> <sub>-0.011</sub>	250	15	4.0	13
112	-	MP	A250	411	351							

Motor Frame	Efficiency		Flange Size	Shaft							Terminal Box				
	IE1	IE3		ØD	DB	E	LE	EB	GA	F	AD	HH	LL	AG	O
63	S/L	-	A140	11 <sup>+0.008</sup> <sub>-0.003</sub>	M4	23	23	16	12.5	4	115	12	100	100	M20 x 1.5
71	S/L	-	A160	14 <sup>+0.008</sup> <sub>-0.003</sub>	M5	30	30	20	16.0	5	124	20	100	100	M20 x 1.5
80	S/L	SP/LP	A200	19 <sup>+0.009</sup> <sub>-0.004</sub>	M6	40	40	32	21.5	6	142	22	114	114	M25 x 1.5
90	S/L	SP/LP	A200	24 <sup>+0.009</sup> <sub>-0.004</sub>	M8	50	50	40	27.0	8	147	26	114	114	M25 x 1.5
100	L/LA	LP/AP	A250	28 <sup>+0.009</sup> <sub>-0.004</sub>	M10	60	60	50	31.0	8	169	32	114	114	M32 x 1.5
112	M		A250	28 <sup>+0.009</sup> <sub>-0.004</sub>	M10	60	60	50	31.0	8	179	35	114	114	M32 x 1.5
112	-	MP	A250												



Standard Motor



Motor Frame	Efficiency		Flange Size	Overall			Mounting Flange						
	IE1	IE3		L	L2	ØAC	M	N	P	LA	T	S	
132	S/M/MA	SP/MP	A300	491	411	266	265	230	+0.016 -0.013	300	20	4.0	13.0
160	M/L	SP/MP	A350	602	492	319	300	250	+0.016 -0.013	350	20	5.0	17.5
160		LP	A350	646	536								
180	MX		A350	602	492	319	300	250	+0.016 -0.013	350	20	5.0	17.5
180	LX		A350	646	536								
180		MP/LP	A350	724	614	362	300	250	+0.016 -0.013	350	14	5.0	17.5
200	LX	-	A400	724	614	362	350	300	+0.000 -0.032	400	14	5.0	17.5
225	-	SP	A450	882	742	443	400	350	+0.000 -0.036	450	20	5.0	17.5
225	-	MP	A450	882	742	443	400	350	+0.000 -0.036	450	20	5.0	17.5

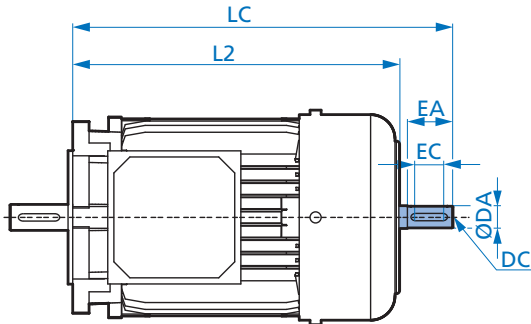
Motor Frame	Efficiency		Flange Size	Shaft							Terminal Box					
	IE1	IE3		ØD	DB	E	LE	EB	GA	F	AD	HH	LL	AG	O	
132	S/M/MA	SP/MP	A300	38	+0.018 +0.002	M12	80	80	70	41.0	10	204	47	122	122	M32 x 1.5
160	M/L	SP/MP	A350	42	+0.018 +0.002	M16	110	110	90	45.0	12	242	52	186	186	M40 x 1.5
160		LP	A350													
180	MX		A350	48	+0.018 +0.002	M16	110	110	100	51.5	12	242	52	186	186	M40 x 1.5
180	LX		A350													
180		MP/LP	A350	48	+0.018 +0.002	M16	110	110	100	51.5	14	259	54	186	186	M40 x 1.5
200	LX	-	A400	55	+0.021 +0.002	M16	110	110	100	59.0	14	259	54	186	186	M40 x 1.5
225	-	SP	A450	60	+0.030 +0.011	M20	140	140	125	64.0	18	347	94	245	245	M50 X 1.5
225	-	MP	A450	60	+0.030 +0.011	M20	140	140	125	64.0	18	347	94	245	245	M50 X 1.5

Dimensions

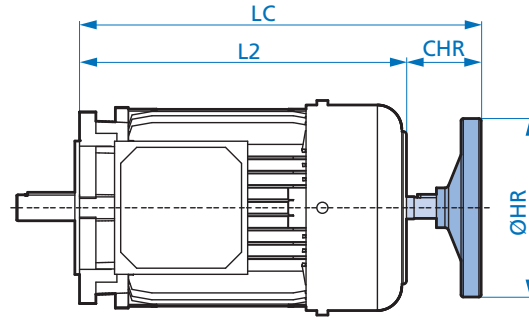
# IEC B5 Flanged Motor Options



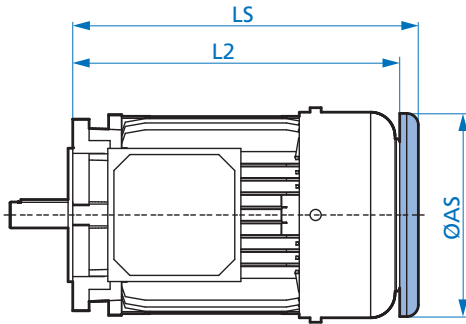
Option WE - 2nd Shaft Extension



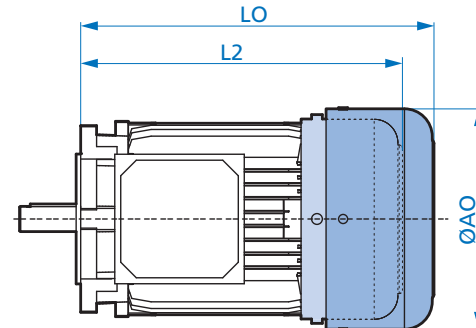
Option HR - Hand Wheel



Option RD - Canopy Drip Cover



Option RDD - Double Fan Cover

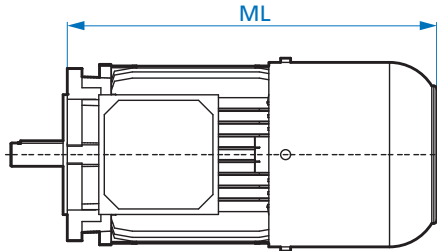


Dimensions

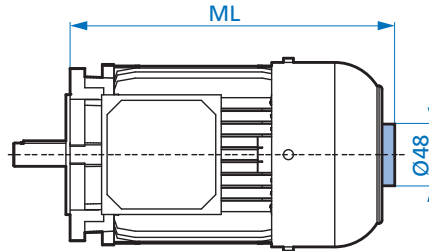
Motor Frame	Efficiency		L2	LC	ØDA	WE					HR			RD		RDD	
	IE1	IE3				EA	EC	DC	GC	FA	LC	ØHR	CHR	LS	ØAS	LO	ØAO
63	S/L	-	192	215	11 <sup>+0.008</sup> <sub>-0.003</sub>	23	16	M4	12.5	4	231	100	39	203	123	218	138
71	S/L	-	214	238	11 <sup>+0.008</sup> <sub>-0.003</sub>	23	16	M4	12.5	4	254	100	40	225	138	238	156
80	S/L	SP/LP	236	269	14 <sup>+0.008</sup> <sub>-0.003</sub>	30	20	M5	16.0	5	285	100	49	251	156	262	176
90	S/L	SP/LP	276	323	19 <sup>+0.009</sup> <sub>-0.004</sub>	40	32	M6	21.5	6	343	160	67	291	176	307	194
100	L/LA	LP/AP	306	362	24 <sup>+0.018</sup> <sub>-0.004</sub>	50	40	M8	27.0	8	382	160	76	321	194	334	218
112	M	-	326	380	24 <sup>+0.009</sup> <sub>-0.004</sub>	50	40	M8	27.0	8	400	160	74	341	218	364	258
112	-	MP	351	405	24 <sup>+0.009</sup> <sub>-0.004</sub>	50	40	M8	27.0	8	425	160	74	366	218	389	258
132	S/M	SP/MP	411	509	32 <sup>+0.011</sup> <sub>-0.005</sub>	80	70	M12	35.0	10	530	200	119	428	257	452	310
160	M/L	MP	492	611	42 <sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	45.0	12	634	315	142	509	310	537	367
160	-	LP	536	655	42 <sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	45.0	12	678	315	142	553	310	581	367
180	MX	-	492	611	42 <sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	49.0	12	634	315	142	509	310	537	367
180	LX	-	536	655	42 <sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	49.0	12	678	315	142	553	310	581	367
180	-	MP/LP	614	733	48 <sup>+0.018</sup> <sub>+0.002</sub>	110	100	M16	51.5	14	756	315	142	631	348	684	403
200	LX	-	614	733	48 <sup>+0.018</sup> <sub>+0.002</sub>	110	100	M16	51.5	14	756	315	142	631	348	684	403
225	-	SP	742	862	55 <sup>+0.030</sup> <sub>+0.011</sub>	110	100	M20	59.3	16	-	-	-	828.5	348	826	519
225	-	MP	742	862	55 <sup>+0.030</sup> <sub>+0.011</sub>	110	100	M20	59.3	16	-	-	-	828.5	348	826	519



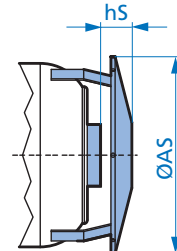
Option IG - Incremental Encoder



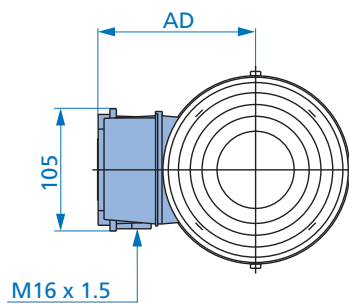
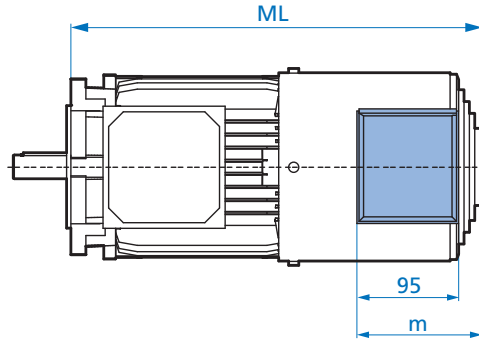
Option MG - Magnetic Encoder



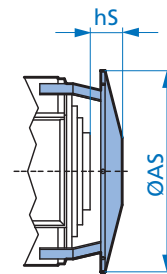
MG + RD



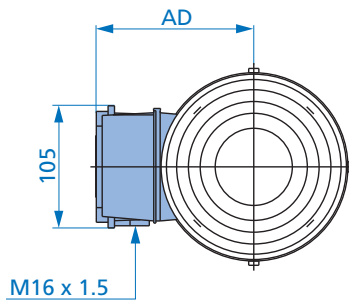
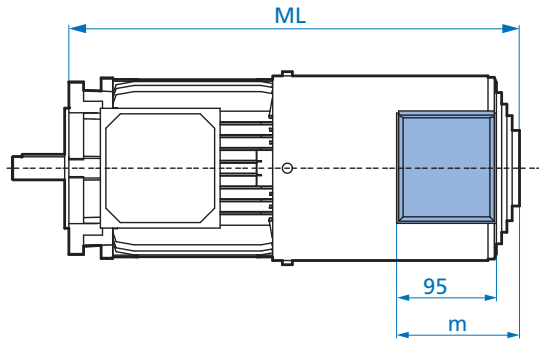
Option F - Forced Cooling Fan



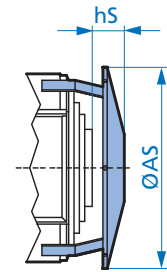
F + RD



Option IG-F - Incremental Encoder & Forced Cooling Fan



IG-F + RD



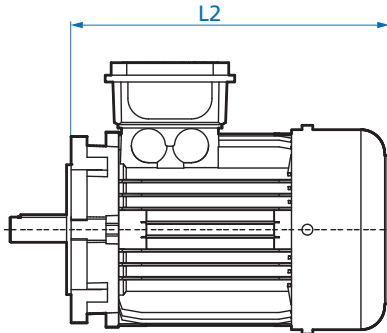
Motor Frame	Efficiency		Encoder Options				Fan Options		Fan + RD		IG-F		IG-F + RD	
	IE1	IE3	IG ML	MG ML	MG + RD hs	MG + RD ØAS	F ML	F m	F + RD hs	F + RD ØAS	IG-F ML	IG-F m	IG-F + RD hs	IG-F + RD ØAS
63	S/L	-	247	202.5	11.0	123	280	107	114	37	133	350	107	133
71	S/L	-	270	225.5	11.0	138	303	107	123	37	150	358	107	150
80	S/L	SP/LP	297	246	10.0	156	326	107	132	40	170	376	107	170
90	S/L	SP/LP	348	290	14.0	176	380	117	142	30	188	425	117	188
100	L/LA	LP/AP	375	318.5	12.5	194	401	117	151	28	210	461	117	210
112	M	-	394	338.5	12.5	218	425	117	163	33	249	475	117	249
112	-	MP	419	363	12.0	218	450	117	163	33	249	500	117	249
132	S/M	SP/MP	474	421	10.0	257	526	127	183	25	300	566	127	300
160	M/L	MP	562	508	10.5	310	642	127	209.5	32	338	727	127	338
160	-	LP	606	552	10.5	310	681	127	209.5	32	338	771	127	338
180	MX		562	508	10.5	310	642	127	209.5	32	338	727	127	338
180	LX		606	552	10.5	310	681	127	209.5	32	338	771	127	338
180		MP/LP	684	627	10.5	348	767	127	209.5	32	338	847	127	338
200	LX	-	684	627	10.5	348	767	127	209.5	32	338	847	127	338
225	-	SP	809	-	-	-	942.5	144	249.5	-	-	1032.5	144	249.5
225	-	MP	809	-	-	-	942.5	144	249.5	-	-	1032.5	144	249.5



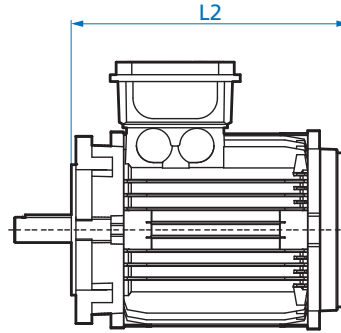
# IEC B5 Flanged Motor Options



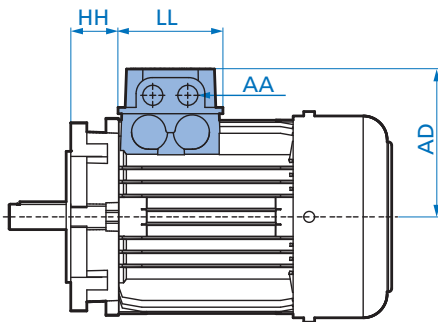
Option OL - Without Fan



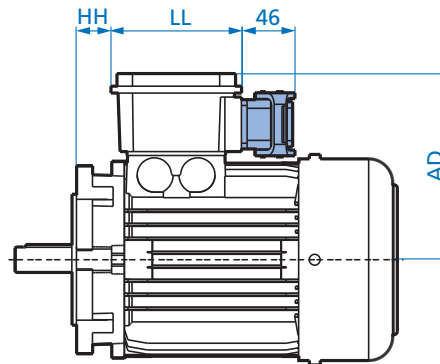
Option OL/H - Without Fan Cover



Option EKK - One Piece Terminal Box



Option MS - Quick Power Plug Connector

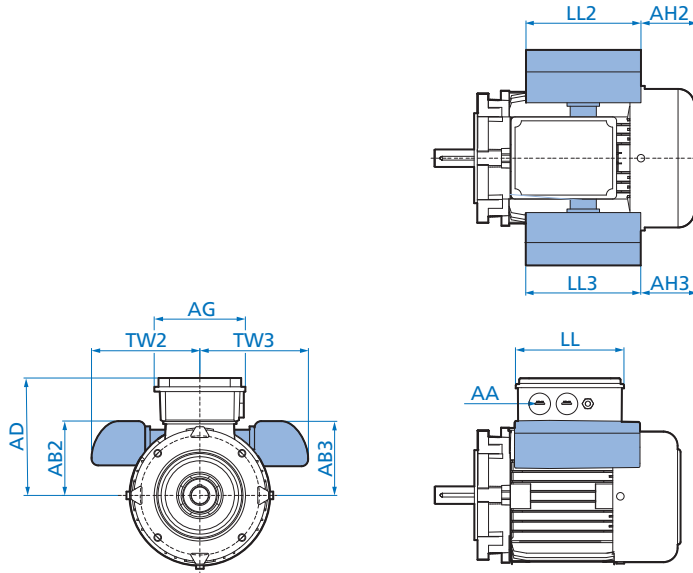


Dimensions

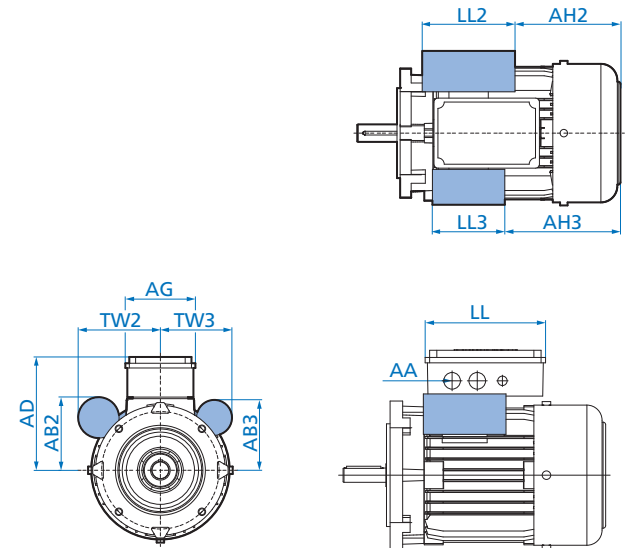
Motor Frame	Efficiency		OL L2	OL/H L2	EKK				MS		
	IE1	IE3			HH	LL	AD	AA	HH	LL	AD
63	S/L	-	192	160	25	75	100	M16 x 1.5	5	114	140
71	S/L	-	214	177	33	75	109	M16 x 1.5	13	114	149
80	S/L	SP/LP	236	196	33	92	124	M20 x 1.5	22	114	158
90	S/L	SP/LP	276	233	37	92	129	M20 x 1.5	26	114	163
100	L/LA	LP/AP	306	262	43	92	140	M20 x 1.5	32	114	174
112	M	-	326	276	56	92	150	M20 x 1.5	45	114	184
112	-	MP	351	301	56	92	150	M20 x 1.5	45	114	184
132	S/M	SP/MP	411	351	56	104	174	M25 x 1.5	47	122	204
160	M/L	MP	492	417							
160	-	LP	536	461							
180	MX	-	492	417							
180	LX	-	536	461							
180	-	MP/LP	614	509							
200	LX	-	614	509							



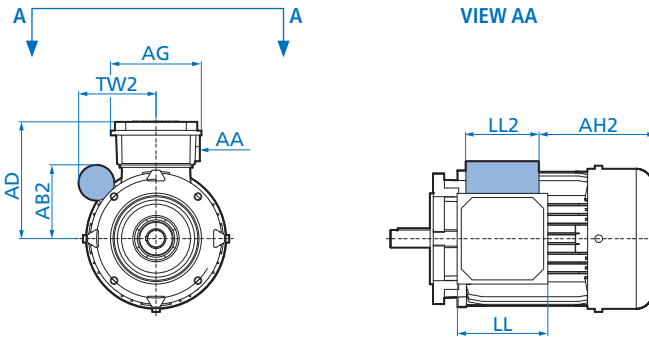
### Option ECR - Single Phase with Start-up & Capacitor



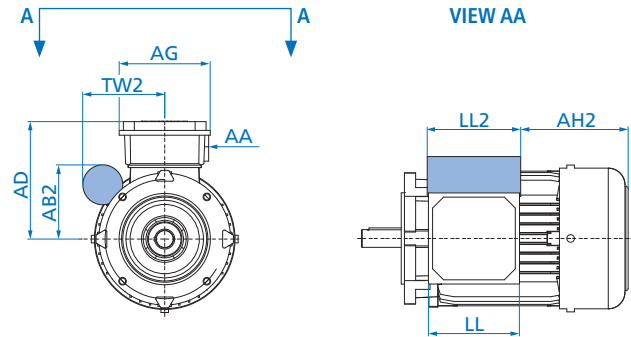
### Option EAR1 - Single Phase with Start-up & Capacitor



### Option EHB1 - Single Phase with Capacitor



### Option EST - Single Phase with Steinmetz Circuit

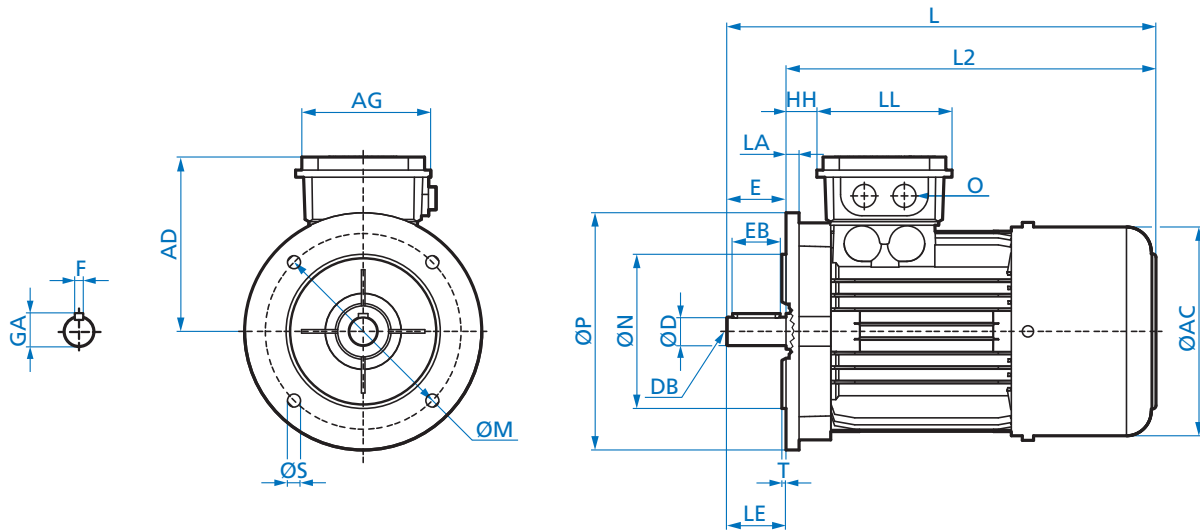


Motor Type	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA
63 LA ECR	123	89	90	90	31	31	126	126	111	111	134	M25 x 1.5
71 L/LA ECR	132	89	106	97	29	44	146	126	122	111	134	M25 x 1.5
80 L/LA ECR	142	108	113	109	40	60	146	126	128	123	153	M25 x 1.5
90 L ECR	147	108	118	114	76	96	146	126	128	123	153	M25 x 1.5
90 LB/LX ECR	147	108	118	118	76	76	146	146	128	123	153	M25 x 1.5
63 L/LA EAR1	123	89	70	68	84	95	92	70	85	73	134	M25 x 1.5
71 L/LA EAR1	132	89	79	74	86	109	117	70	95	80	134	M25 x 1.5
80 L/LA EAR1	142	108	88	89	113	111	87	92	95	86	153	M25 x 1.5
90 L/LB EAR1	147	108	93	89	114	122	118	92	105	91	153	M25 x 1.5
63 L/LA EHB1	115	100	70	-	95	-	70	-	81	-	100	M20 x 1.5
71 L/LA EHB1	124	100	79	-	109	-	70	-	85	-	100	M20 x 1.5
80 L/LA EHB1	142	114	88	-	95	-	87	-	113	-	114	M25 x 1.5
90 L/LB EHB1	147	114	93	-	121	-	145	-	98	-	114	M25 x 1.5
63 S/L EST	115	100	70	-	95	-	70	-	85	-	100	M20 x 1.5
71 S/L EST	124	100	79	-	98	-	92	-	85	-	100	M20 x 1.5
80 S/L EST	142	114	88	-	97	-	120	-	98	-	114	M25 x 1.5
90 S/L EST	147	114	93	-	121	-	145	-	113	-	114	M25 x 1.5

# IEC B5 Flanged Brakemotors



## Standard Brakemotor

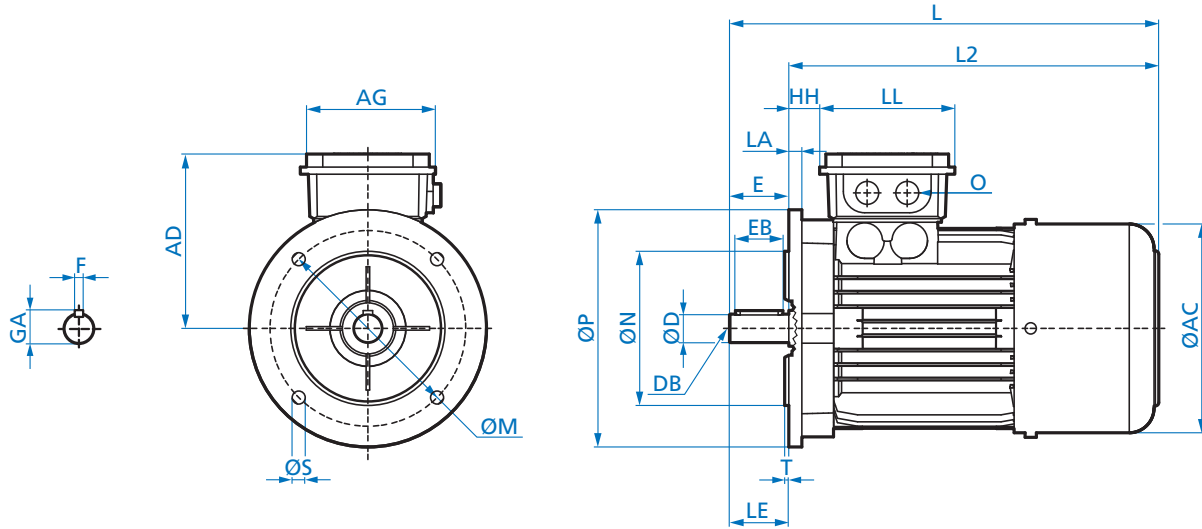


Motor Frame	Efficiency		Flange Size	Brake Size	Overall			Mounting Flange						
	IE1	IE3			L	L2	ØAC	M	N	P	LA	T	S	
63	S/L	-	A140	5	271	248	129	115	95	+0.013 -0.009	140	10	3.0	9.0
71	S/L	-	A160	5	302	272	146	130	110	+0.013 -0.009	160	10	3.5	9.0
80	S	SP	A200	5	340	300	164	165	130	+0.014 -0.011	200	11	3.5	11.0
	L	LP	A200	10										
90	S/L	SP/LP	A200	20	401	351	183	165	130	+0.014 -0.011	200	11	3.5	11.0
100	L	LP	A250	20	457	397	201	215	180	+0.014 -0.011	250	15	4.0	13.5
	LA	AP	A250	40										
112	M	-	A250	60	480	420	226	215	180	+0.014 -0.011	250	15	4.0	13.0
112	-	MP	A250	60	505	445								

Motor Frame	Efficiency		Flange Size	Brake Size	Shaft							Terminal Box					
	IE1	IE3			ØD	DB	E	LE	EB	GA	F	AD	HH	LL	AG	O	
63	S/L	-	A140	5	11	+0.008 -0.003	M4	23	23	16	12.5	4	123	19	134	89	M20 x 1.5
71	S/L	-	A160	5	14	+0.008 -0.003	M5	30	30	20	16.0	5	132	27	134	89	M20 x 1.5
80	S	SP	A200	5	19	+0.009 -0.004	M6	40	40	32	21.5	6	142	26	153	108	M25 x 1.5
	L	LP	A200	10													
90	S/L	SP/LP	A200	20	24	+0.009 -0.004	M8	50	50	40	27.0	8	147	30	153	108	M25 x 1.5
100	L	LP	A250	20	28	+0.009 -0.004	M10	60	60	50	31.0	8	173	36	153	108	M32 x 1.5
	LA	AP	A250	40													
112	M	-	A250	60	28	+0.009 -0.004	M10	60	60	50	31.0	8	182	39	153	108	M32 x 1.5
112	-	MP	A250	60													



## Standard Brakemotor



Motor Frame	Efficiency		Flange Size	Brake Size	Overall			Mounting Flange							
	IE1	IE3			L	L2	ØAC	M	N	P	LA	T	S		
132	S	SP	A300	60											
132	M	MP	A300	100	598	518	266	265	230	<sup>+0.016</sup> <sub>-0.013</sub>	300	20	4.0	13.0	
132	MA	-	A300	150											
160	M	MP	A350	150	737	627									
160	L	-	A350	250	737	627	319	300	250	<sup>+0.016</sup> <sub>-0.013</sub>	350	20	5.0	17.5	
160	-	LP	A350	250	781	671									
180	MX	-	A350	250	737	627	319	300	250	<sup>+0.016</sup> <sub>-0.013</sub>	350	20	5.0	17.5	
180	LX	-	A350	250	781	671						14			
180	-	MP/LP	A350	250	851	741	362								
200	LX	-	A400	400	851	741	362	350	300	<sup>+0.000</sup> <sub>-0.032</sub>	400	14	5.0	17.5	
225	-	SP	A450	400	1062	922	443	400	350	<sup>+0.000</sup> <sub>-0.036</sub>	450	20	5.0	17.5	
225	-	MP	A450	400	1062	922	443	400	350	<sup>+0.000</sup> <sub>-0.036</sub>	450	20	5.0	17.5	

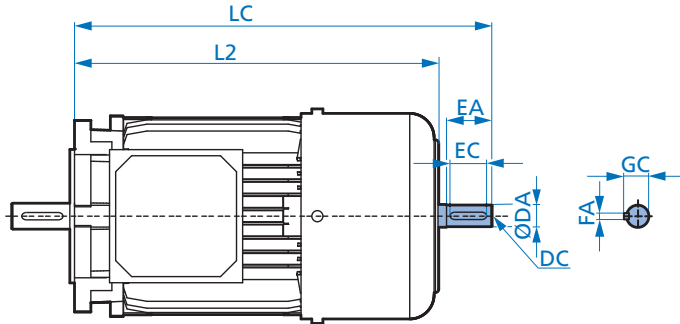
Motor Frame	Efficiency		Flange Size	Brake Size	Shaft							Terminal Box					
	IE1	IE3			ØD	DB	E	LE	EB	GA	F	AD	HH	LL	AG	O	
132	S	SP	A300	60													
132	M	MP	A300	100	38	<sup>+0.018</sup> <sub>+0.002</sub>	M12	80	80	70	41.0	10	201	40	185	139	M32 x 1.5
132	MA	-	A300	150													
160	M	MP	A350	150													
160	L	-	A350	250	42	<sup>+0.018</sup> <sub>+0.002</sub>	M16	110	110	90	45.0	12	242	52	186	186	M40 x 1.5
160	-	LP	A350	250													
180	MX	-	A350	250													
180	LX	-	A350	250	48	<sup>+0.018</sup> <sub>+0.002</sub>	M16	110	110	100	51.5	12	242	52	186	186	M40 x 1.5
180	-	MP/LP	A350	250								14	259	54			
200	LX	-	A400	400	55	<sup>+0.021</sup> <sub>+0.002</sub>	M16	110	110	100	59.0	14	259	54	186	186	M40 x 1.5
225	-	SP	A450	400	60	<sup>+0.030</sup> <sub>+0.011</sub>	M20	140	140	125	64.0	18	347	94	245	245	M50 X 1.5
225	-	MP	A450	400	60	<sup>+0.030</sup> <sub>+0.011</sub>	M20	140	140	125	64.0	18	347	94	245	245	M50 X 1.5

Dimensions

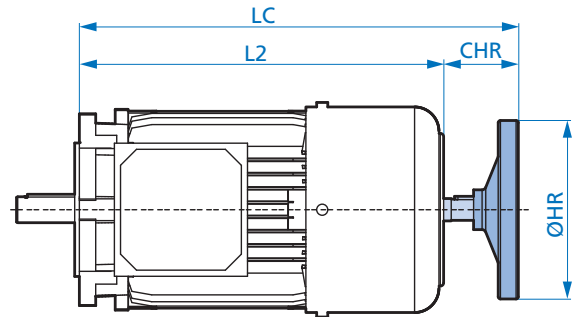
# IEC B5 Flanged Brakemotor Options



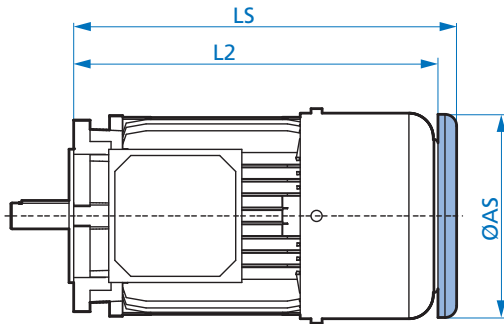
Option WE - 2nd Shaft Extension



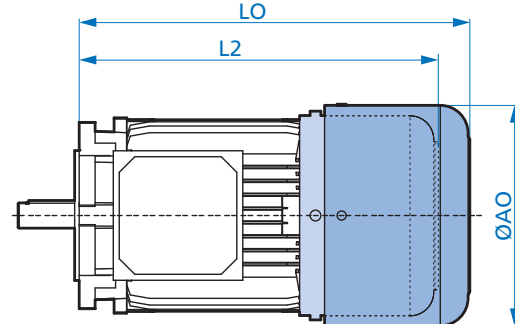
Option HR - Hand Wheel



Option RD - Canopy Drip Cover



Option RDD - Double Fan Cover



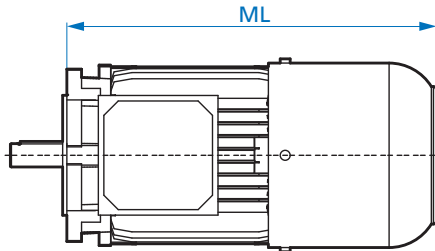
Motor Frame	Efficiency		L2	LC	ØDA	WE					HR			RD		RDD	
	IE1	IE3				EA	EC	DC	GC	FA	LC	ØHR	CHR	LS	ØAS	LO	ØAO
63	S/L	-	248	275	11 <sup>+0.008</sup> <sub>-0.003</sub>	23	16	M4	12.5	4	291	100	43	259	123	274	138
71	S/L	-	272	299	11 <sup>+0.008</sup> <sub>-0.003</sub>	23	16	M4	12.5	4	315	100	43	283	138	296	156
80	S/L	SP/LP	300	334	14 <sup>+0.008</sup> <sub>-0.003</sub>	30	20	M5	16.0	5	350	100	50	315	156	326	176
90	S/L	SP/LP	351	389	14 <sup>+0.009</sup> <sub>-0.004</sub>	30	20	M5	21.5	6	409	160	58	366	176	381	194
100	L/LA	LP/AP	397	457	24 <sup>+0.009</sup> <sub>-0.004</sub>	50	40	M8	27.0	8	477	160	80	412	194	425	218
112	M	-	420	477	24 <sup>+0.009</sup> <sub>-0.004</sub>	50	40	M8	27.0	8	497	160	77	435	218	458	258
112	-	MP	445	502							522			460		483	
132	S/M	SP/MP	518	608	32 <sup>+0.011</sup> <sub>-0.005</sub>	80	70	M12	35.0	10	629	200	111	535	257	554	310
160	M/L	MP	627	746	42 <sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	45.0	12	769	315	142	644	310	672	367
160	-	LP	671	790							813			688		716	
180	MX	-	627	746	42 <sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	49.0	12	769	315	142	644	310	672	367
180	LX	-	671	790							813			688		716	
180	-	MP/LP	741	860	48 <sup>+0.018</sup> <sub>+0.002</sub>	110	100	M16	51.5	14	883	315	142	758	348	811	403
200	LX	-	741	860	48 <sup>+0.018</sup> <sub>+0.002</sub>	110	100	M16	51.5	14	883	315	142	758	348	811	403
225	-	SP	922	1042	55 <sup>+0.030</sup> <sub>+0.011</sub>	110	100	M20	59.3	16	-	-	-	1008.5	348	1006	519
225	-	MP	922	1042	55 <sup>+0.030</sup> <sub>+0.011</sub>	110	100	M20	59.3	16	-	-	-	1008.5	348	1006	519



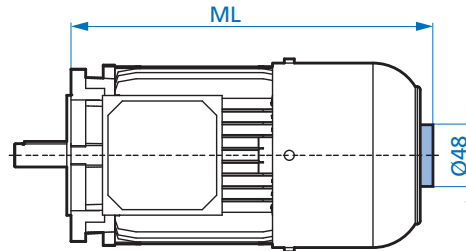


# IEC B5 Flanged Brakemotor Options

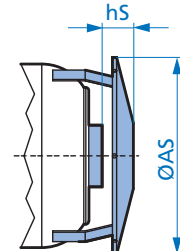
Option IG - Incremental Encoder



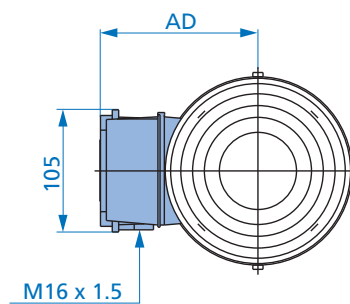
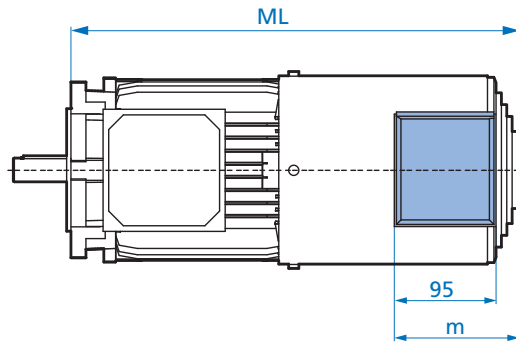
Option MG - Magnetic Encoder



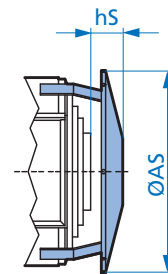
MG + RD



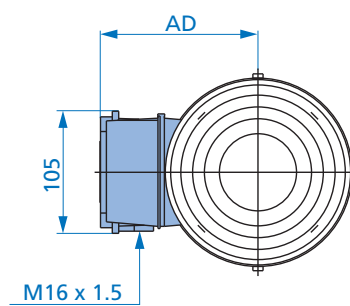
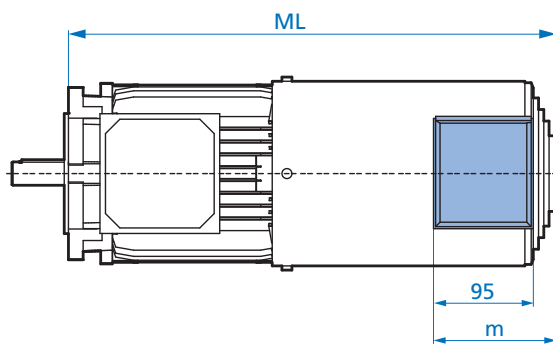
Option F - Forced Cooling Fan



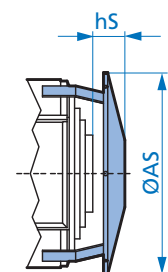
F + RD



Option IG-F - Incremental Encoder & Forced Cooling Fan



IG-F + RD

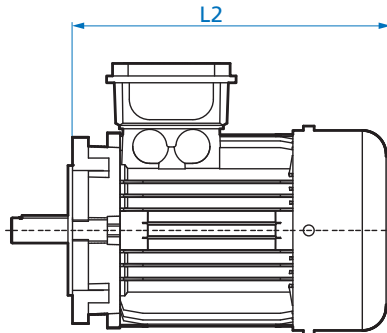


Motor Frame	Efficiency		IG		MG		MG + RD		F		-F + RD		IG-F		IG-F + RD	
	IE1	IE3	ML	ML	hs	ØAS	ML	m	AD	hs	AS	ML	m	AD	hs	AS
63	S/L	-	310	262.5	14.5	123	338	107	114	37	133	373	107	133	37	133
71	S/L	-	346	289	17	138	366	107	123	37	150	411	107	150	37	150
80	S/L	SP/LP	357	312	9.0	156	390	107	132	40	170	440	107	170	40	170
90	S/L	SP/LP	421	364	9.0	176	451	117	142	30	188	496	117	188	30	188
100	L/LA	LP/AP	467	410	8.5	194	502	117	151	28	210	537	117	210	28	210
112	M	-	484	432.5	9.0	218	525	117	163	33	249	560	117	249	33	249
112	-	MP	509	457.5	8.5	218	550					585				
132	S/M	SP/MP	583	526.5	11.5	257	643	127	183	25	300	673	127	300	25	300
160	M/L	MP	697	644	10.5	310	772	127	209.5	32	338	862	127	338	32	338
160	-	LP	741	688	10.5	310	816					906				
180	MX	-	697	644	10.5	310	772	127	209.5	32	338	862	127	338	32	338
180	LX	-	741	688	10.5	310	816					906				
180	-	MP/LP	811	759	10.5	348	887					992				
200	LX	XP	811	759	10.5	348	887	127	209.5	32	338	992	127	338	32	338
225	-	SP	989	-	-	-	1112.5	144	249.5	-	-	1202.5	144	249.5	-	-
225	-	MP	989	-	-	-	1112.5	144	249.5	-	-	1202.5	144	249.5	-	-

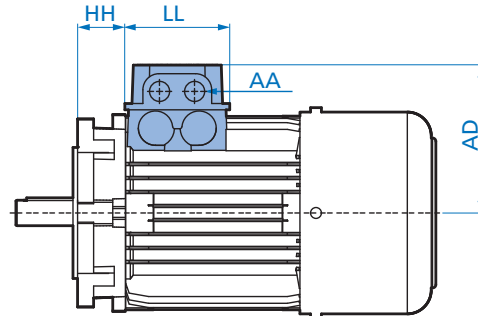
# IEC B5 Flanged Brakemotor Options



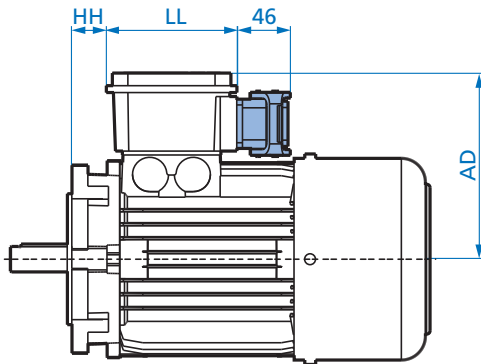
Option OL - Without Fan



Option EKK - One Piece Terminal Box



Option MS - Quick Power Plug Connector



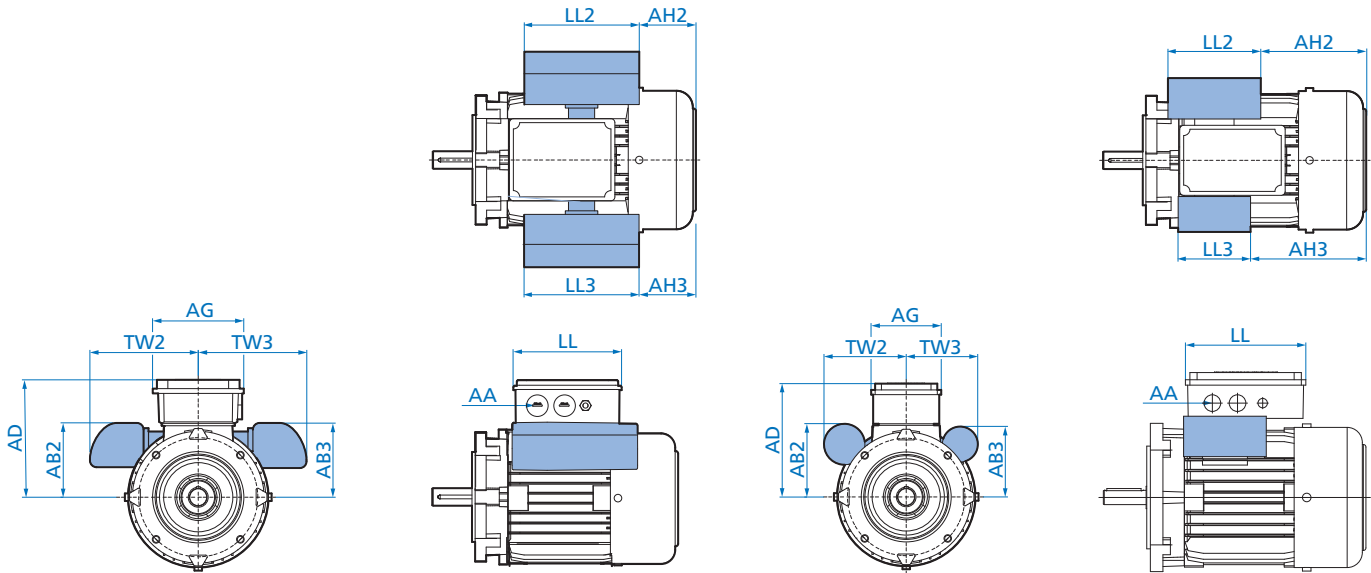
Motor Frame	Efficiency		OL L2	EKK				MS		
	IE1	IE3		HH	LL	AD	AA	HH	LL	AD
63	S/L	-	248	25	75	100	M16 x 1.5	5	114	140
71	S/L	-	272	33	75	109	M16 x 1.5	13	114	149
80	S/L	SP/LP	300	33	92	124	M20 x 1.5	22	114	158
90	S/L	SP/LP	351	37	92	129	M20 x 1.5	26	114	163
100	L/LA	LP/AP	397	43	92	140	M20 x 1.5	32	114	174
112	M	-	420	56	92	150	M20 x 1.5	45	114	184
112	-	MP	445	56	92	150	M20 x 1.5	45	114	184
132	S/M	SP/MP	518	56	104	174	M25 x 1.5	47	122	204
160	M/L	MP	627							
160	-	LP	671							
180	MX	-	627							
180	LX	-	671							
180	-	MP/LP	741							
200	LX	-	741							



# IEC B5 Flanged Brakemotor Options

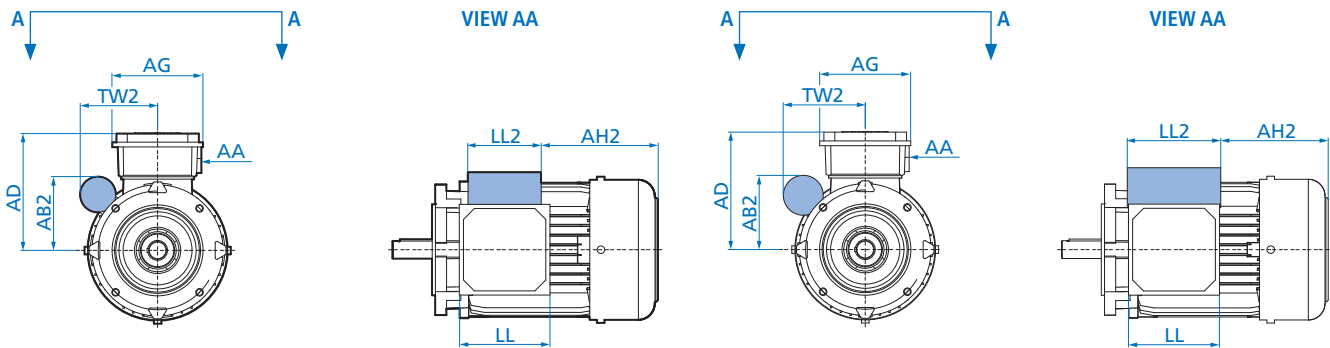
**Option ECR - Single Phase with Start-up & Capacitor**

**Option EAR1 - Single Phase with Start-up & Capacitor**



**Option EHB1 - Single Phase with Capacitor**

**Option EST - Single Phase with Steinmetz Circuit**



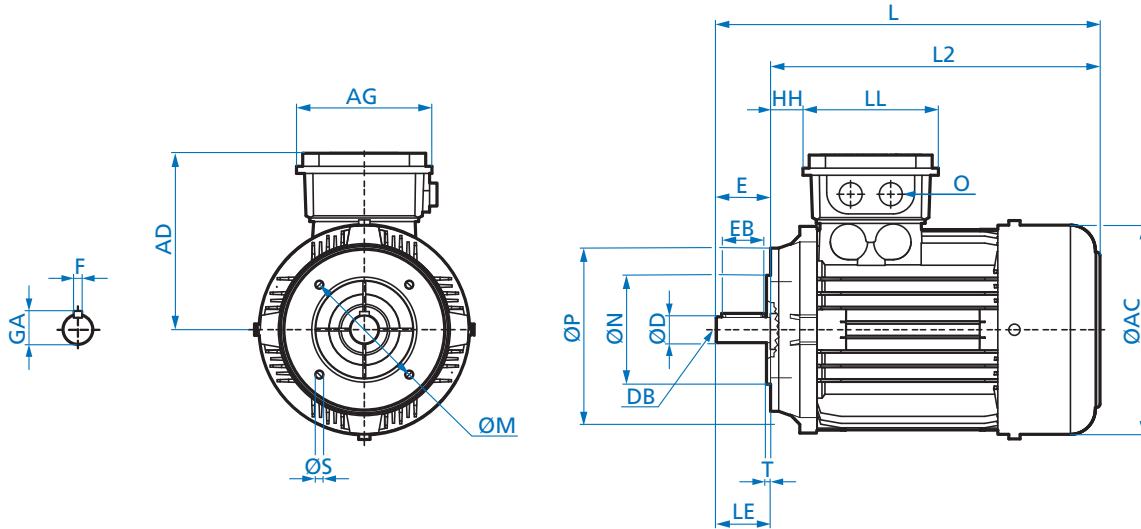
Motor Type	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA
63 LA ECR	140	108	90	90	87	87	126	126	111	111	153	M25 x 1.5
71 L/LA ECR	149	108	106	97	87	102	146	126	122	111	153	M25 x 1.5
80 L/LA ECR	142	108	113	109	104	124	146	126	128	123	153	M25 x 1.5
90 L ECR	147	108	118	114	151	171	146	126	128	123	153	M25 x 1.5
90 LB/LX ECR	147	108	118	118	151	151	146	146	128	123	153	M25 x 1.5
63 L/LA EAR1	140	108	70	68	140	151	92	70	85	73	153	M25 x 1.5
71 L/LA EAR1	149	108	79	74	144	167	117	70	95	80	153	M25 x 1.5
80 L/LA EAR1	142	108	88	89	177	175	87	92	95	86	153	M25 x 1.5
90 L/LB EAR1	147	108	93	89	189	197	118	92	105	91	153	M25 x 1.5
63 L/LA EHB1	123	89	70	-	151	-	70	-	81	-	134	M20 x 1.5
71 L/LA EHB1	132	89	79	-	167	-	70	-	85	-	134	M20 x 1.5
80 L/LA EHB1	142	108	88	-	159	-	87	-	113	-	153	M25 x 1.5
90 L/LB EHB1	147	108	93	-	196	-	145	-	98	-	153	M25 x 1.5
63 S/L EST	123	89	70	-	151	-	70	-	85	-	134	M20 x 1.5
71 S/L EST	132	89	79	-	156	-	92	-	85	-	134	M20 x 1.5
80 S/L EST	142	108	88	-	161	-	120	-	98	-	153	M25 x 1.5
90 S/L EST	147	108	93	-	196	-	145	-	113	-	153	M25 x 1.5

Dimensions

# IEC B14 Flanged Motors



Standard Motor



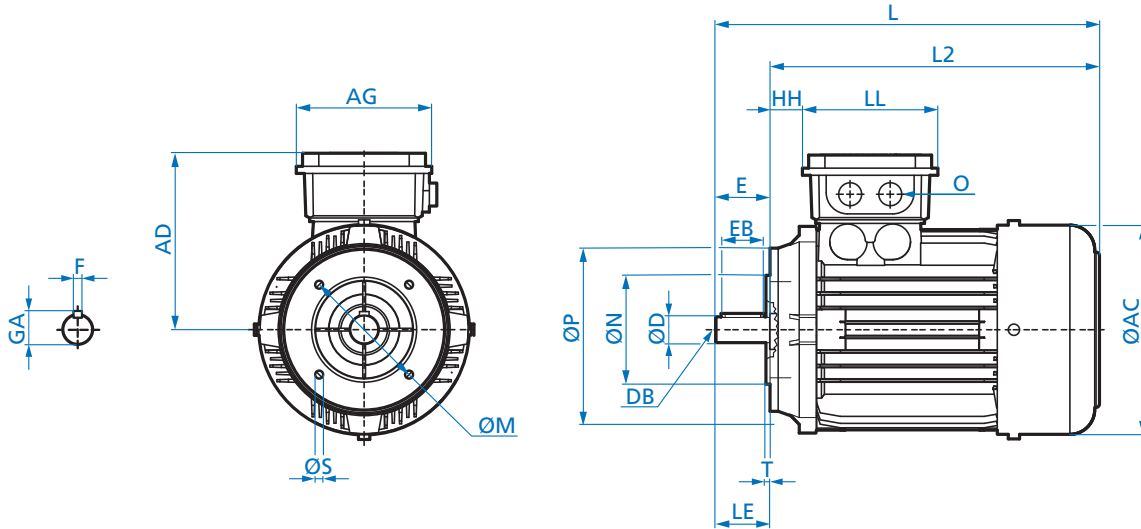
Dimensions

Motor Frame	Efficiency		Flange Size	Overall			Mounting Flange				
	IE1	IE3		L	L2	ØAC	M	N	P	T	S
63	S/L	-	C90	215	192	129	75	60 <sup>+0.012</sup> <sub>-0.007</sub>	90	2.5	M5 x 8
71	S/L	-	C105	244	214	146	85	70 <sup>+0.012</sup> <sub>-0.007</sub>	105	2.5	M6 x 12
80	S/L	SP/LP	C120	276	236	164	100	80 <sup>+0.012</sup> <sub>-0.007</sub>	120	3.0	M6 x 12
90	S/L	SP/LP	C140	326	276	183	115	95 <sup>+0.013</sup> <sub>-0.009</sub>	140	3.0	M8 x 15
100	L/LA	LP/AP	C160	366	306	201	130	110 <sup>+0.013</sup> <sub>-0.009</sub>	160	3.5	M8 x 16
112	M	-	C160	386	326	226	130	110 <sup>+0.013</sup> <sub>-0.009</sub>	160	3.5	M8 x 12
112	-	MP	C160	411	351						

Motor Frame	Efficiency		Flange Size	Shaft						Terminal Box					
	IE1	IE3		ØD	DB	E	LE	EB	GA	F	AD	HH	LL	AG	O
63	S/L	-	C90	11 <sup>+0.008</sup> <sub>-0.003</sub>	M4	23	23	16	12.5	4	115	12	100	100	M20 x 1.5
71	S/L	-	C105	14 <sup>+0.008</sup> <sub>-0.003</sub>	M5	30	30	20	16.0	5	124	20	100	100	M20 x 1.5
80	S/L	SP/LP	C120	19 <sup>+0.009</sup> <sub>-0.004</sub>	M6	40	40	32	21.5	6	142	22	114	114	M25 x 1.5
90	S/L	SP/LP	C140	24 <sup>+0.009</sup> <sub>-0.004</sub>	M8	50	50	40	27.0	8	147	26	114	114	M25 x 1.5
100	L/LA	LP/AP	C160	28 <sup>+0.009</sup> <sub>-0.004</sub>	M10	60	60	50	31.0	8	169	32	114	114	M32 x 1.5
112	M	-	C160	28 <sup>+0.009</sup> <sub>-0.004</sub>	M10	60	60	50	31.0	8	179	35	114	114	M32 x 1.5
112	-	MP	C160												



Standard Motor



Motor Frame	Efficiency		Flange Size	Overall			Mounting Flange				
	IE1	IE3		L	L2	ØAC	M	N	P	T	S
132	S/M/MA	SP/MP	C200	491	411	266	165	130 <sup>+0.014</sup> <sub>-0.011</sub>	200	3.5	M10 x 18
160	M/L	SP/MP	C200	602	492	319	165	130 <sup>+0.014</sup> <sub>-0.011</sub>	200	3.5	M10 x 20
160	-	LP	C200	646	536						
180	MX	-	C200	602	492	319	165	130 <sup>+0.014</sup> <sub>-0.011</sub>	200	3.5	M10 x 20
180	LX	-	C200	646	536						

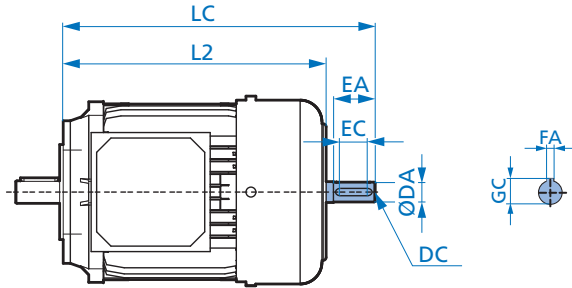
Motor Frame	Efficiency		Flange Size	Shaft							Terminal Box				
	IE1	IE3		ØD	DB	E	LE	EB	GA	F	AD	HH	LL	AG	O
132	S/M/MA	SP/MP	C200	38 <sup>+0.018</sup> <sub>+0.002</sub>	M12	80	80	70	41.0	10	204	47	122	122	M32 x 1.5
160	M/L	SP/MP	C200	42 <sup>+0.018</sup> <sub>+0.002</sub>	M16	110	110	90	45.0	12	242	52	186	186	M40 x 1.5
160	-	LP	C200												
180	MX	-	C200	48 <sup>+0.018</sup> <sub>+0.002</sub>	M16	110	110	100	51.5	12	242	52	186	186	M40 x 1.5
180	LX	-	C200												



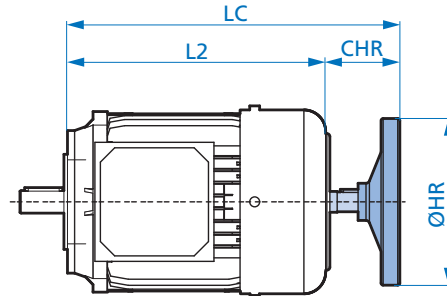
# IEC B14 Flanged Motor Options



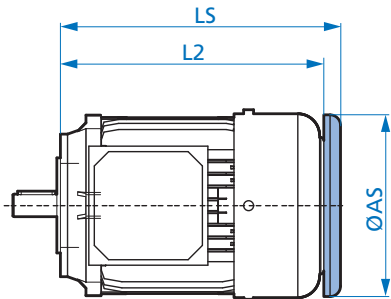
Option WE - 2nd Shaft Extension



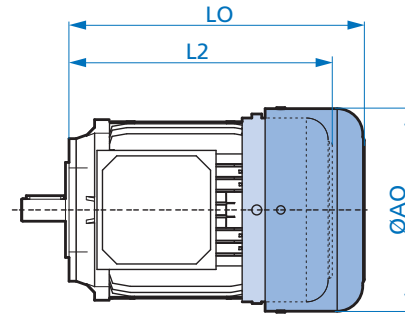
Option HR - Hand Wheel



Option RD - Canopy Drip Cover



Option RDD - Double Fan Cover

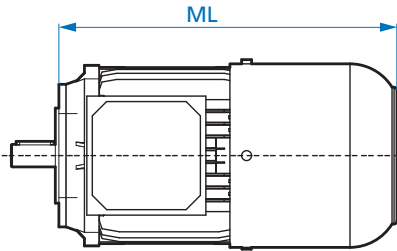


Dimensions

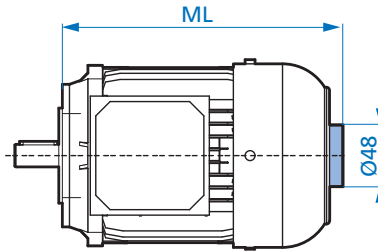
Motor Frame	Efficiency		L2	LC	ØDA	WE						HR			RD		RDD	
	IE1	IE3				EA	EC	DC	GC	FA	LC	ØHR	CHR	LS	ØAS	LO	ØAO	
63	S/L	-	192	215	11	<sup>+0.008</sup> <sub>-0.003</sub>	23	16	M4	12.5	4	231	100	39	203	123	218	138
71	S/L	-	214	238	11	<sup>+0.008</sup> <sub>-0.003</sub>	23	16	M4	12.5	4	254	100	40	225	138	238	156
80	S/L	SP/LP	236	269	14	<sup>+0.008</sup> <sub>-0.003</sub>	30	20	M5	16.0	5	285	100	49	251	156	262	176
90	S/L	SP/LP	276	323	19	<sup>+0.009</sup> <sub>-0.004</sub>	40	32	M6	21.5	6	343	160	67	291	176	307	194
100	L/LA	LP/AP	306	362	24	<sup>+0.009</sup> <sub>-0.004</sub>	50	40	M8	27.0	8	382	160	76	321	194	334	218
112	M	-	326	380	24	<sup>+0.009</sup> <sub>-0.004</sub>	50	40	M8	27.0	8	400	160	74	341	218	364	258
112	-	MP	351	405	24	<sup>+0.009</sup> <sub>-0.004</sub>	50	40	M8	27.0	8	425	160	74	366	218	389	258
132	S/M	SP/MP	411	509	32	<sup>+0.011</sup> <sub>-0.005</sub>	80	70	M12	35.0	10	530	200	119	428	257	452	310
160	M/L	MP	492	611	42	<sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	45.0	12	634	315	142	509	310	537	367
160	-	LP	536	655	42	<sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	45.0	12	678	315	142	553	310	581	367
180	MX	-	492	611	42	<sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	49.0	12	634	315	142	509	310	537	367
180	LX	-	536	655	42	<sup>+0.018</sup> <sub>+0.002</sub>	110	90	M16	49.0	12	678	315	142	553	310	581	367



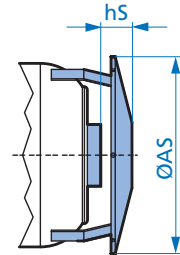
Option IG - Incremental Encoder



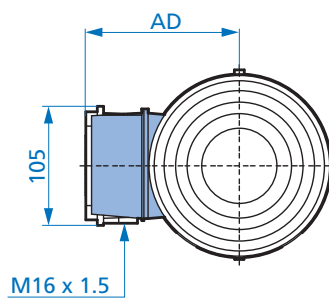
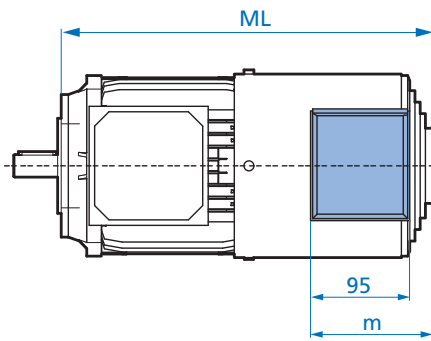
Option MG - Magnetic Encoder



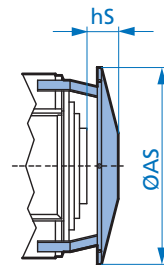
MG + RD



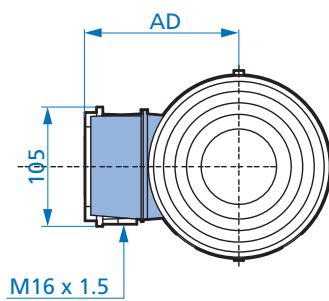
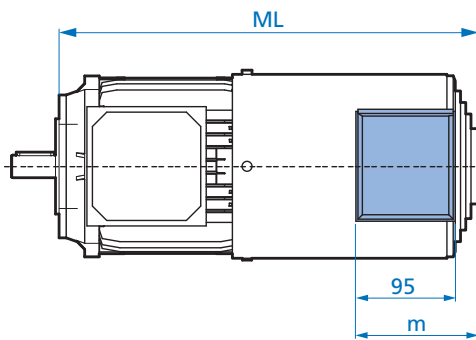
Option F - Forced Cooling Fan



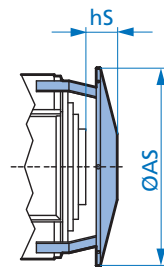
F + RD



Option IG-F - Incremental Encoder & Forced Cooling Fan



IG-F + RD

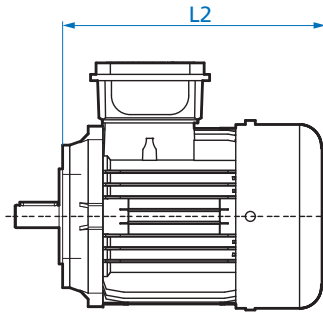


Motor Frame	Efficiency		IG		MG		MG + RD		F		F + RD		IG-F		IG-F + RD	
	IE1	IE3	ML	ML	hs	ØAS	ML	m	AD	hs	ØAS	ML	m	AD	hs	ØAS
63	S/L	-	247	202.5	11.0	123	280	107	114	37	133	350	107	133	37	133
71	S/L	-	270	225.5	11.0	138	303	107	123	37	150	358	107	150	37	150
80	S/L	SP/LP	297	246	10.0	156	326	107	132	40	170	376	107	170	40	170
90	S/L	SP/LP	348	290	14.0	176	380	117	142	30	188	425	117	188	30	188
100	L/LA	LP/AP	375	318.5	12.5	194	401	117	151	28	210	461	117	210	28	210
112	M	-	394	338.5	12.5	218	425	117	163	33	249	475	117	249	33	249
112	-	MP	419	363	12.0	218	450	117	163	33	249	500	117	249	33	249
132	S/M	SP/MP	474	421	10.0	257	526	127	183	25	300	566	127	300	25	300
160	M/L	MP	562	508	10.5	310	642	127	209.5	32	338	727	127	338	32	338
160	-	LP	606	552	10.5	310	681	127	209.5	32	338	771	127	338	32	338
180	MX	-	562	508	10.5	310	642	127	209.5	32	338	727	127	338	32	338
180	LX	-	606	552	10.5	310	681	127	209.5	32	338	771	127	338	32	338

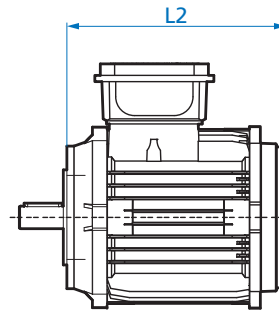
# IEC B14 Flanged Motor Options



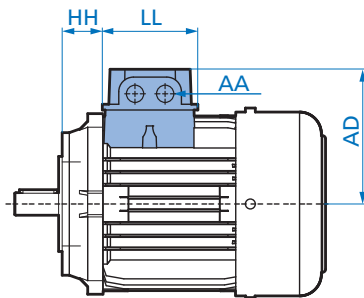
Option OL - Without Fan



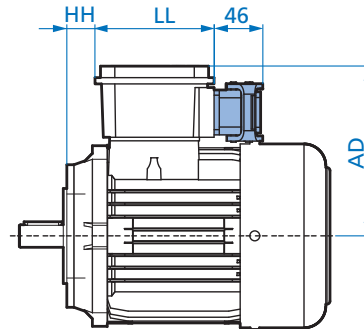
Option OLH - Without Fan Cover



Option EKK - One Piece Terminal Box



Option MS - Quick Power Plug Connector

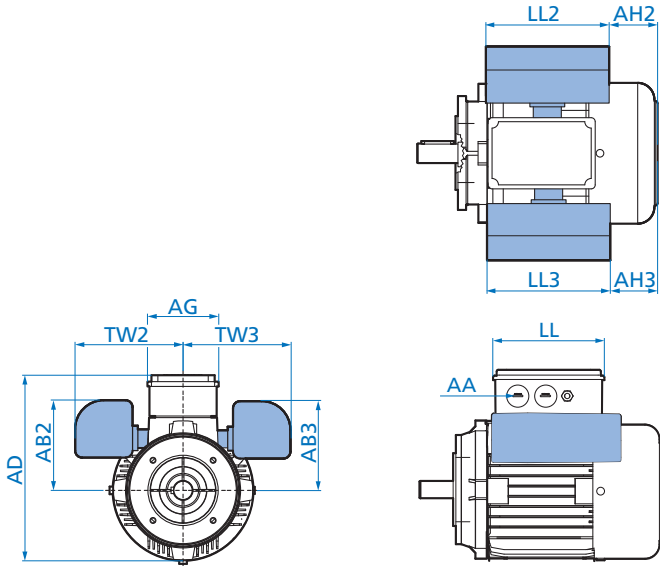


Dimensions

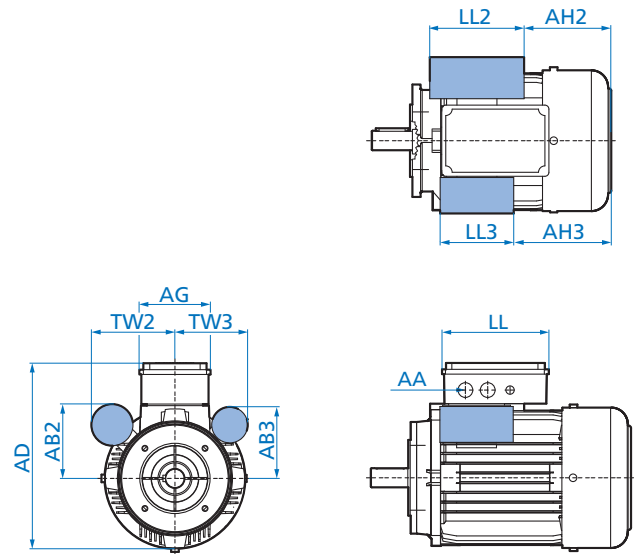
Motor Frame	Efficiency		OL L2	OL/H L2	EKK				MS		
	IE1	IE3			HH	LL	AD	AA	HH	LL	AD
63	S/L	-	192	160	25	75	100	M16 x 1.5	5	114	140
71	S/L	-	214	177	33	75	109	M16 x 1.5	13	114	149
80	S/L	SP/LP	236	196	33	92	124	M20 x 1.5	22	114	158
90	S/L	SP/LP	276	233	37	92	129	M20 x 1.5	26	114	163
100	L/LA	LP/AP	306	262	43	92	140	M20 x 1.5	32	114	174
112	M	-	326	276	56	92	150	M20 x 1.5	45	114	184
112	-	MP	351	301	56	92	150	M20 x 1.5	45	114	184
132	S/M	SP/MP	411	351	56	104	174	M25 x 1.5	47	122	204
160	M/L	MP	492	417							
160	-	LP	536	461							
180	MX		492	417							
180	LX	MP/LP	536	461							



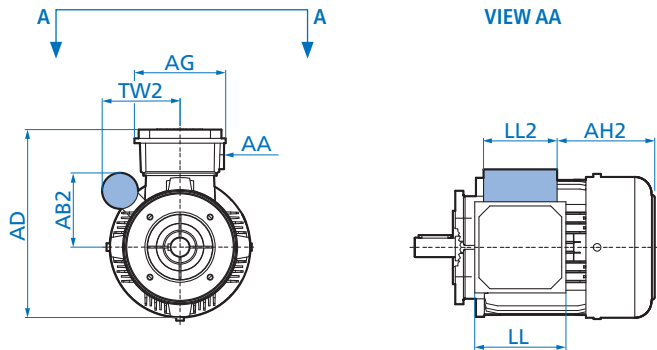
### Option ECR - Single Phase with Start-up & Capacitor



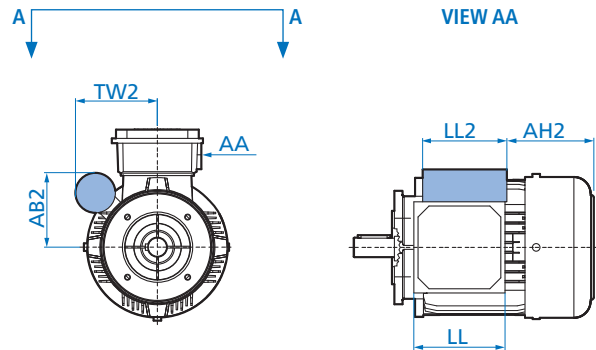
### Option EAR1 - Single Phase with Start-up & Capacitor



### Option EHB1 - Single Phase with Capacitor



### Option EST - Single Phase with Steinmetz Circuit

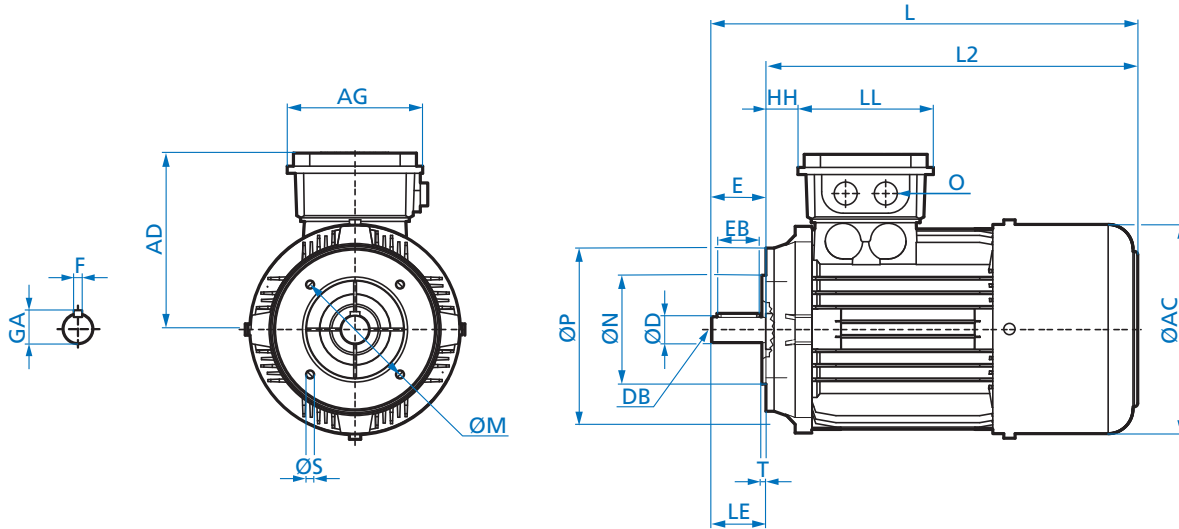


Motor Type	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA
63 LA ECR	123	89	90	90	31	31	126	126	111	111	134	M25 x 1.5
71 L/LA ECR	132	89	106	97	29	44	146	126	122	111	134	M25 x 1.5
80 L/LA ECR	142	108	113	109	40	60	146	126	128	123	153	M25 x 1.5
90 L ECR	147	108	118	114	76	96	146	126	128	123	153	M25 x 1.5
90 LB/LX ECR	147	108	118	118	76	76	146	146	128	123	153	M25 x 1.5
63 L/LA EAR1	123	89	70	68	84	95	92	70	85	73	134	M25 x 1.5
71 L/LA EAR1	132	89	79	74	86	109	117	70	95	80	134	M25 x 1.5
80 L/LA EAR1	142	108	88	89	113	111	87	92	95	86	153	M25 x 1.5
90 L/LB EAR1	147	108	93	89	114	122	118	92	105	91	153	M25 x 1.5
63 L/LA EHB1	115	100	70	-	95	-	70	-	81	-	100	M20 x 1.5
71 L/LA EHB1	124	100	79	-	109	-	70	-	85	-	100	M20 x 1.5
80 L/LA EHB1	142	114	88	-	95	-	87	-	113	-	114	M25 x 1.5
90 L/LB EHB1	147	114	93	-	121	-	145	-	98	-	114	M25 x 1.5
63 S/L EST	115	100	70	-	95	-	70	-	85	-	100	M20 x 1.5
71 S/L EST	124	100	79	-	98	-	92	-	85	-	100	M20 x 1.5
80 S/L EST	142	114	88	-	97	-	120	-	98	-	114	M25 x 1.5
90 S/L EST	147	114	93	-	121	-	145	-	113	-	114	M25 x 1.5

# IEC B14 Flanged Brakemotors



## Standard Brakemotor



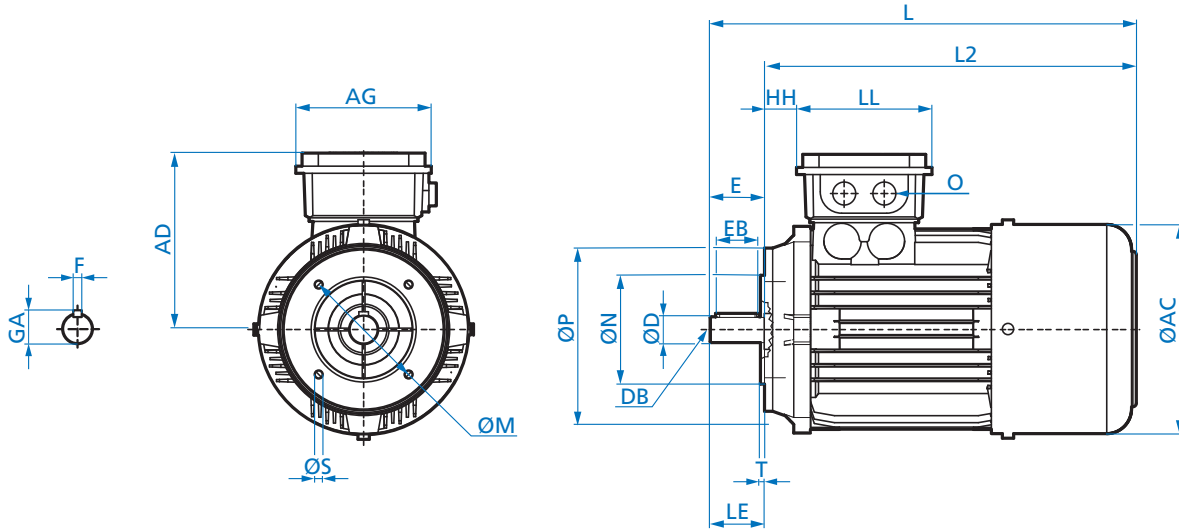
Motor Frame	Efficiency		Flange Size	Brake Size	Overall			Mounting Flange					
	IE1	IE3			L	L2	ØAC	M	N	P	T	S	
63	S/L	-	C90	5	271	248	129	75	60	<sup>+0.012</sup> <sub>-0.007</sub>	90	2.5	M5 x 8
71	S/L	-	C105	5	302	272	146	85	70	<sup>+0.012</sup> <sub>-0.007</sub>	105	2.5	M6 x 12
80	S	SP	C120	5	340	300	164	100	80	<sup>+0.012</sup> <sub>-0.007</sub>	120	3.0	M6 x 12
80	L	LP		10									
90	S/L	SP/LP	C140	20	401	351	183	115	95	<sup>+0.013</sup> <sub>-0.009</sub>	140	3.0	M8 x 15
100	L	LP	C160	20	457	397	201	130	110	<sup>+0.013</sup> <sub>-0.009</sub>	160	3.5	M8 x 16
100	LA	AP		40									
112	M	-	C160	60	480	420	226	130	110	<sup>+0.013</sup> <sub>-0.009</sub>	160	3.5	M8 x 12
112	-	MP	C160	60	505	445							

Motor Frame	Efficiency		Flange Size	Brake Size	Shaft							Terminal Box					
	IE1	IE3			ØD	DB	E	LE	EB	GA	F	AD	HH	LL	AG	O	
63	S/L	-	C90	5	11	<sup>+0.008</sup> <sub>-0.003</sub>	M4	23	23	16	12.5	4	123	19	134	89	M20 x 1.5
71	S/L	-	C105	5	14	<sup>+0.008</sup> <sub>-0.003</sub>	M5	30	30	20	16.0	5	132	27	134	89	M20 x 1.5
80	S	SP	C120	5	19	<sup>+0.009</sup> <sub>-0.004</sub>	M6	40	40	32	21.5	6	142	26	153	108	M25 x 1.5
80	L	LP		10													
90	S/L	SP/LP	C140	20	24	<sup>+0.009</sup> <sub>-0.004</sub>	M8	50	50	40	27.0	8	147	30	153	108	M25 x 1.5
100	L	LP	C160	20	28	<sup>+0.009</sup> <sub>-0.004</sub>	M10	60	60	50	31.0	8	173	36	153	108	M32 x 1.5
100	LA	AP		40													
112	M	-	C160	60	28	<sup>+0.009</sup> <sub>-0.004</sub>	M10	60	60	50	31.0	8	182	39	153	108	M32 x 1.5
112	-	MP	C160	60													





## Standard Brakemotor



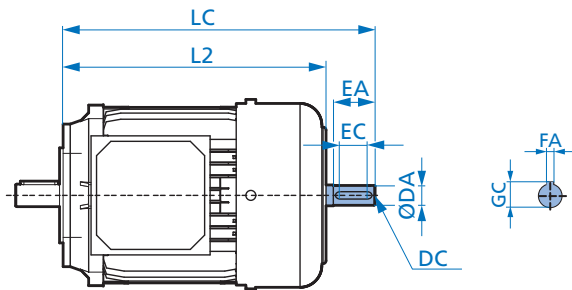
Motor Frame	Efficiency		Flange Size	Brake Size	Overall			Mounting Flange				
	IE1	IE3			L	L2	AC	M	N	P	T	S
132	S	SP	C200	60	598	518	266	165	130 <sup>+0.014</sup> <sub>-0.011</sub>	200	3.5	M10 x 18
132	M	MP	C200	100								
132	MA		C200	150								
160	M/L	SP/MP	C200	150	737	627	319	165	130 <sup>+0.014</sup> <sub>-0.011</sub>	200	3.5	M10 x 20
160	L	-	C200	250								
160	-	LP	C200	250								
180	MX	-	C200	250	737	627	319	165	130 <sup>+0.014</sup> <sub>-0.011</sub>	200	3.5	M10 x 20
180	LX	-	C200	250								

Motor Frame	Efficiency		Flange Size	Brake Size	Shaft							Terminal Box				
	IE1	IE3			D	DB	E	LE	EB	GA	F	AD	HH	LL	AG	O
132	S	SP	C200	60	38 <sup>+0.018</sup> <sub>+0.002</sub>	M12	80	80	70	41.0	10	201	40	185	139	M32 x 1.5
132	M	MP	C200	100												
132	MA	-	C200	150												
160	M/L	SP/MP	C200	150	42 <sup>+0.018</sup> <sub>+0.002</sub>	M16	110	110	90	45.0	12	242	52	186	186	M40 x 1.5
160	L	-	C200	250												
160	-	LP	C200	250												
180	MX	-	C200	250	48 <sup>+0.018</sup> <sub>+0.002</sub>	M16	110	110	100	51.5	12	242	52	186	186	M40 x 1.5
180	LX	-	C200	250												

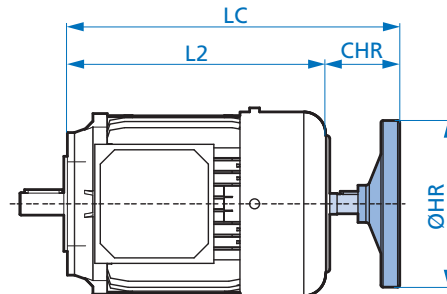
# IEC B14 Flanged Brakemotor Options



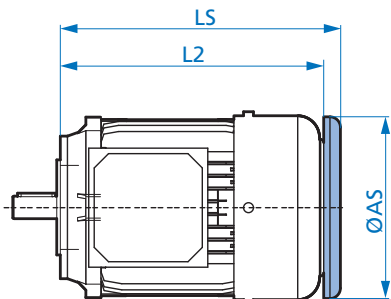
Option WE - 2nd Shaft Extension



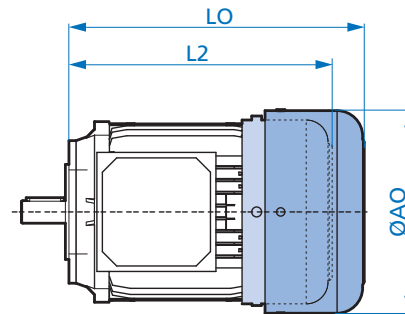
Option HR - Hand Wheel



Option RD - Canopy Drip Cover



Option RDD - Double Fan Cover

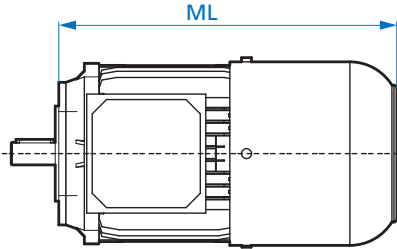


Motor Frame	Efficiency		L2	LC	ØDA	WE					LC2	HR		RD		RDD	
	IE1	IE3				EA	EC	DC	GC	FA		ØHR	CHR	LS	AS	LO	ØAO
63	S/L	-	248	275	11	23	16	M4	12.5	4	291	100	43	259	123	274	138
71	S/L	-	272	299	11	23	16	M4	12.5	4	315	100	43	283	138	296	156
80	S/L	SP/LP	300	334	14	30	20	M5	16.0	5	350	100	50	315	156	326	176
90	S/L	SP/LP	351	389	14	30	20	M5	16.0	6	409	160	58	366	176	381	194
100	L/LA	LP/AP	397	457	24	50	40	M8	27.0	8	477	160	80	412	194	425	218
112	-	-	420	477	24	50	40	M8	27.0	8	497	160	77	435	218	458	258
112	M	MP	445	502							522					483	
132	S/M	SP/MP	518	608	32	80	70	M12	35.0	10	629	200	111	535	257	554	310
160	M/L	MP	627	746	42	110	90	M16	45.0	12	769	315	142	644	310	672	367
160	-	LP	671	790							813			688		716	
180	MX	-	627	746	42	110	90	M16	49.0	12	769	315	142	644	310	672	367
180	LX	-	671	790							813			688		716	

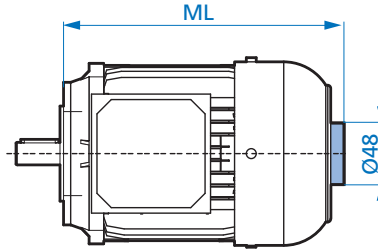


# IEC B14 Flanged Brakemotor Options

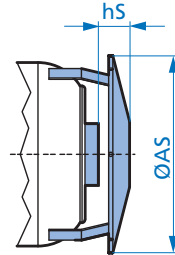
Option IG - Incremental Encoder



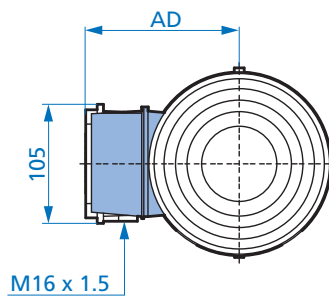
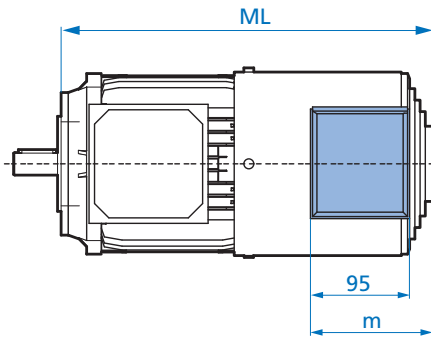
Option MG - Magnetic Encoder



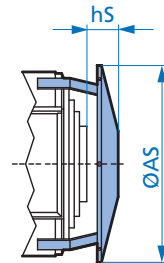
MG + RD



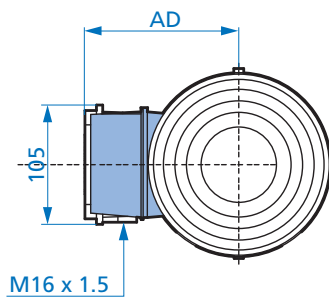
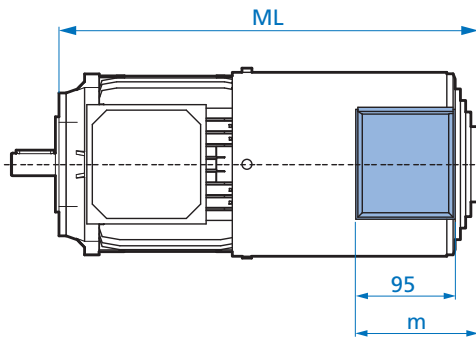
Option F - Forced Cooling Fan



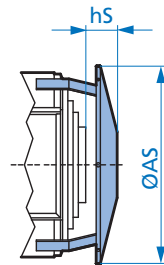
F + RD



Option IG-F - Incremental Encoder & Forced Cooling Fan



IG-F + RD

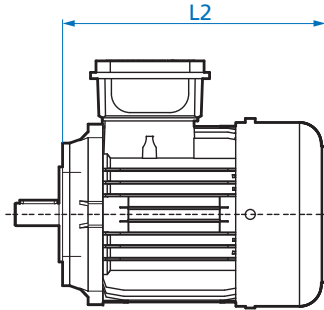


Motor Frame	Efficiency		IG		MG		MG + RD		F		F + RD		IG-F		IG-F + RD	
	IE1	IE3	ML	ML	hs	ØAS	ML	m	AD	hs	AS	ML	m	AD	hs	AS
63	S/L	-	310	262.5	14.5	123	338	107	114	37	133	373	107	133	37	133
71	S/L	-	346	289	17.0	138	366	107	123	37	150	411	107	150	37	150
80	S/L	SP/LP	357	312	9.0	156	390	107	132	40	170	440	107	170	40	170
90	S/L	SP/LP	421	364	9.0	176	451	117	142	30	188	496	117	188	30	188
100	L/LA	LP/AP	467	410	8.5	194	502	117	151	28	210	537	117	210	28	210
112	-	-	484	432.5	9.0	218	525	117	163	33	249	560	117	249	33	249
112	M	MP	509	457.5	8.5	218	550					585				
132	S/M	SP/MP	583	526.5	11.5	257	643	127	183	25	300	673	127	300	25	300
160	M/L	MP	697	644	10.5	310	772	127	209.5	32	338	862	127	338	32	338
160	-	LP	741	688	10.5	310	816					906				
180	MX	-	697	644	10.5	310	627	127	209.5	32	338	862	127	338	32	338
180	LX	-	741	688	10.5	310	816					906				

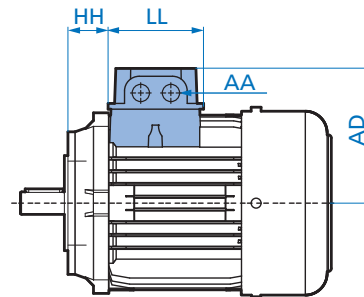
# IEC B14 Flanged Brakemotor Options



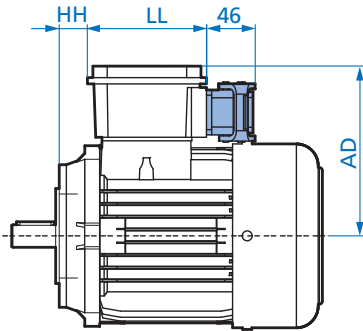
Option OL - Without Fan



Option EKK - One Piece Terminal Box



Option MS - Quick Power Plug Connector

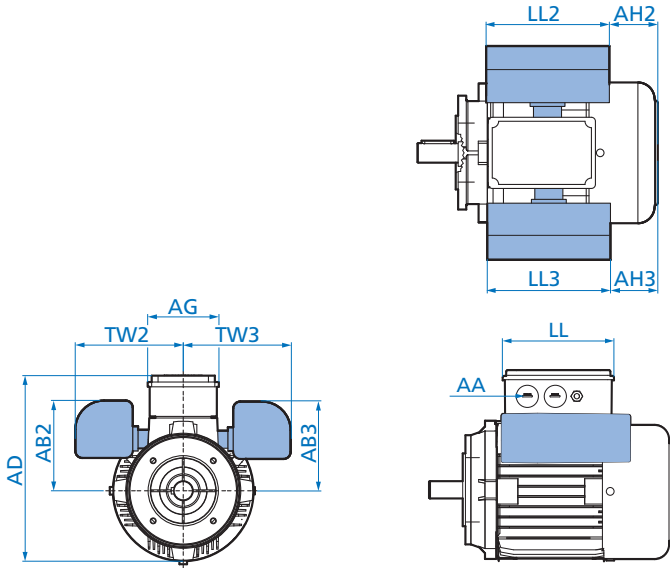


Motor Frame	Efficiency		OL L2	EKK				MS		
	IE1	IE3		HH	LL	AD	AA	HH	LL	AD
63	S/L	-	248	25	75	100	M16 x 1.5	5	114	140
71	S/L	-	272	33	75	109	M16 x 1.5	13	114	149
80	S/L	SP/LP	300	33	92	124	M20 x 1.5	22	114	158
90	S/L	SP/LP	351	37	92	129	M20 x 1.5	26	114	163
100	L/LA	LP/AP	397	43	92	140	M20 x 1.5	32	114	174
112	M	-	420	56	92	150	M20 x 1.5	45	114	184
112	-	MP	445	56	92	150	M20 x 1.5	45	114	184
132	S/M	SP/MP	518	56	104	174	M25 x 1.5	47	122	204
160	M/L	MP	627							
160	-	LP	671							
180	MX	-	627							
180	LX	-	671							

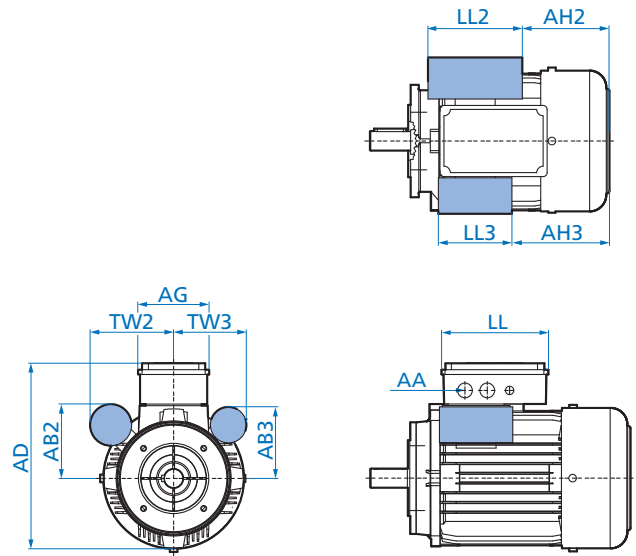


# IEC B14 Flanged Brakemotor Options

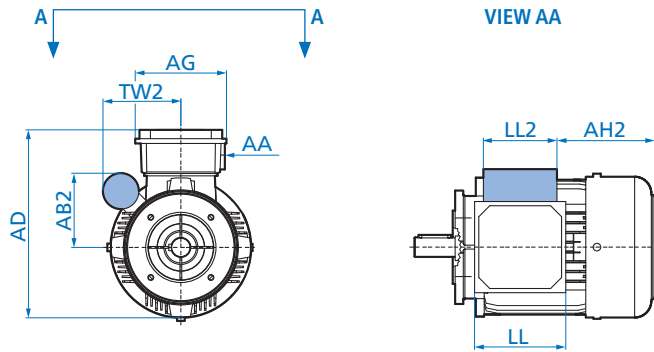
Option ECR - Single Phase with Start-up & Capacitor



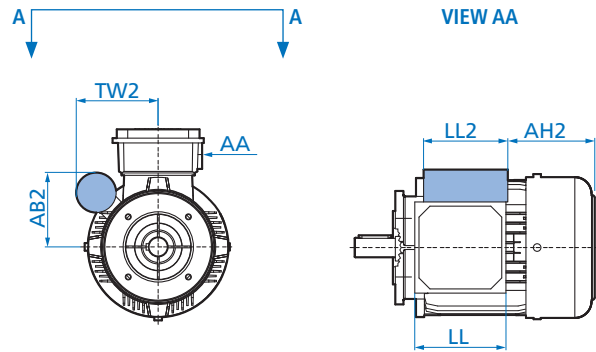
Option EAR1 - Single Phase with Start-up & Capacitor



Option EHB1 - Single Phase with Capacitor



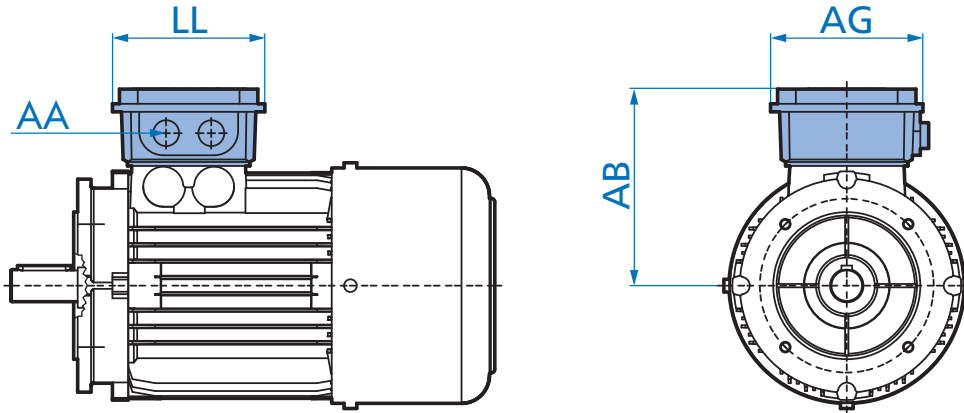
Option EST - Single Phase with Steinmetz Circuit



Motor Type	AD	AG	AB2	AB3	AH2	AH3	LL2	LL3	TW2	TW3	LL	AA
63 LA ECR	140	108	90	90	87	87	126	126	111	111	153	M25 x 1.5
71 L/LA ECR	149	108	106	97	87	102	146	126	122	111	153	M25 x 1.5
80 L/LA ECR	142	108	113	109	104	124	146	126	128	123	153	M25 x 1.5
90 L ECR	147	108	118	114	151	171	146	126	128	123	153	M25 x 1.5
90 LB/LX ECR	147	108	118	118	151	151	146	146	128	123	153	M25 x 1.5
63 L/LA EAR1	140	108	70	68	140	151	92	70	85	73	153	M25 x 1.5
71 L/LA EAR1	149	108	79	74	144	167	117	70	95	80	153	M25 x 1.5
80 L/LA EAR1	142	108	88	89	177	175	87	92	95	86	153	M25 x 1.5
90 L/LB EAR1	147	108	93	89	189	197	118	92	105	91	153	M25 x 1.5
63 L/LA EHB1	123	89	70	-	151	-	70	-	81	-	134	M20 x 1.5
71 L/LA EHB1	132	89	79	-	167	-	70	-	85	-	134	M20 x 1.5
80 L/LA EHB1	142	108	88	-	159	-	87	-	113	-	153	M25 x 1.5
90 L/LB EHB1	147	108	93	-	196	-	145	-	98	-	153	M25 x 1.5
63 S/L EST	123	89	70	-	151	-	70	-	85	-	134	M20 x 1.5
71 S/L EST	132	89	79	-	156	-	92	-	85	-	134	M20 x 1.5
80 S/L EST	142	108	88	-	161	-	120	-	98	-	153	M25 x 1.5
90 S/L EST	147	108	93	-	196	-	145	-	113	-	153	M25 x 1.5



# Dimensions Conduit Box & Cable Entry



Motor Frame Size		Motor Conduit Box & Cable Entry Dimensions								
60 Min. (IE1)	Prem. Eff. (IE3)	AB		LL		AG		AA	Conduit Adapter	
		inch	mm	inch	mm	inch	mm			
63 S/L	-	4.51	115	3.95	100	3.95	100	M20 x 1.5	1/2" NPT	
71 S/L	-	4.86	124	3.95	100	3.95	100	M20 x 1.5	1/2" NPT	
80 S	80 LP	5.59	142	4.49	114	4.49	114	M25 x 1.5	3/4" NPT	
90 S/L	90 SP/LP	5.79	147	4.49	114	4.49	114	M32 x 1.5	1" NPT	
100 L/LA	100 LP/AP	6.65	169	4.49	114	4.49	114	M32 x 1.5	1" NPT	
112 M	112 MP	7.05	179	4.49	114	4.49	114	M40 x 1.5	1" NPT	
132 S/M	132 SP/MP	8.03	204	4.80	122	4.80	122	M40 x 1.5	1" NPT	
160 M/L	160 SP/MP/LP	9.53	242	7.32	186	7.32	186	M40 x 1.5	1" NPT	
180 MX/LX	-	9.53	242	7.32	186	7.32	186	M40 x 1.5	1" NPT	
-	180 MP/LP	10.18	259	7.32	186	7.32	186	M40 x 1.5	1" NPT	
200 LX	-	10.18	259	7.32	186	7.32	186	M40 x 1.5	1" NPT	
-	225 RP/SP/MP	13.68	348	9.65	245	9.65	245	M50 x 1.5	1-1/2" NPT	
-	250 WP	13.68	348	9.65	245	9.65	245	M50 x 1.5	1-1/2" NPT	

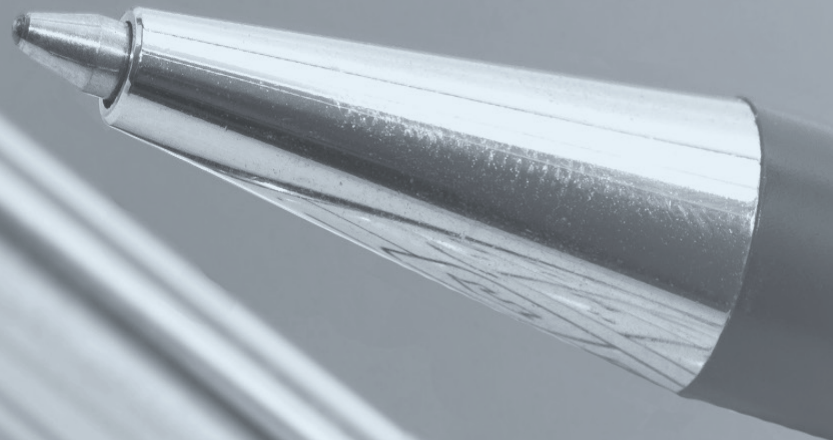
Motor Frame Size		Brakemotor Conduit Box & Cable Entry Dimensions								
60 Min. (IE1)	Prem. Eff. (IE3)	AB		LL		AG		AA	Conduit Adapter	
		inch	mm	inch	mm	inch	mm			
63 S/L	-	4.84	123	5.28	134	3.50	89	M20 x 1.5	1/2" NPT	
71 S/L	-	5.24	133	5.28	134	3.50	89	M20 x 1.5	1/2" NPT	
80 S	80 LP	5.59	142	6.02	153	4.25	108	M25 x 1.5	3/4" NPT	
90 S/L	90 SP/LP	5.79	147	6.02	153	4.25	108	M32 x 1.5	1" NPT	
100 L/LA	100 LP/AP	6.77	172	6.02	153	4.25	108	M32 x 1.5	1" NPT	
112 M	112 MP	7.17	182	6.02	153	4.25	108	M40 x 1.5	1" NPT	
132 S/M	132 SP/MP	7.91	201	7.29	185	5.48	139	M40 x 1.5	1" NPT	
160 M/L	160 SP/MP/LP	9.53	242	7.32	186	7.32	186	M40 x 1.5	1" NPT	
180 MX/LX	-	9.53	242	7.32	186	7.32	186	M40 x 1.5	1" NPT	
-	180 MP/LP	10.18	259	7.32	186	7.32	186	M40 x 1.5	1" NPT	
200 LX	-	10.18	259	7.32	186	7.32	186	M40 x 1.5	1" NPT	
-	225 RP/SP/MP	13.68	348	9.65	245	9.65	245	M50 x 1.5	1-1/2" NPT	
-	250 WP	13.68	348	9.65	245	9.65	245	M50 x 1.5	1-1/2" NPT	



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## United States

**NORD Gear Corporation - Midwest Headquarters**  
800 Nord Drive, P.O. 367  
Waunakee, WI 53597

toll free: 1-888-314-6673  
phone: 1-608-849-7300  
fax: 1-800-373-6673  
email: info.us@nord.com

**NORD Gear Corporation - East**  
300-E Forsyth Hall Drive  
Charlotte, NC 28273

toll free: 1-888-314-6673  
phone: 1-608-849-0140  
fax: 1-888-259-6673  
email: info.us@nord.com

**NORD Gear Corporation - West**  
1180 Railroad Street  
Corona, CA 92882

toll free: 1-888-314-6673  
phone: 1-608-849-0190  
fax: 1-888-408-6673  
email: info.us@nord.com

For Sales office or distributors please contact us or see our website at [www.nord.com](http://www.nord.com)



## Global Headquarters Germany

**Getriebebau NORD GmbH & Co. KG**  
Getriebebau-Nord-Straße 1  
22941 Bargteheide  
Germany

phone: +49-4532-2890  
Fax: +49 4532-289-2253  
eMail: info@nord.com

For Sales office or distributors please contact us or see our website at [www.nord.com](http://www.nord.com)



## Canada

**NORD Gear Limited**  
41 West Drive  
Brampton, Ontario L6T 4A1

toll free: 1-800-668-4378  
phone: 1-905-796-3606  
fax: 1-905-796-8130  
eMail: info.ca@nord.com

**Engrenages NORD Limitée**  
1405 Trans-Canada Hwy.  
Suite 245  
Dorval, Quebec H9P 2V9

toll free: 1-800-668-4378  
phone: 1-514-421-1044  
fax: 1-514-421-3973  
eMail: info.ca@nord.com

For Sales office or distributors please contact us or see our website at [www.nord.com](http://www.nord.com)



## Mexico

**Mexico NORD Drivesystems SA DE CV**  
Mexico Regional Office  
Av. Lázaro Cárdenas 1007 Pte.  
San Pedro Garza García, N.L.  
México, C.P. 66266

phone: +52-81-8220-9165  
fax: +52-81-8220-9044  
eMail: info.mx@nord.com

For Sales office or distributors please contact us or see our website at [www.nord.com](http://www.nord.com)



## Nord Locator Tool

For international contacts (outside of North America), NORD makes it easy for you to locate address and phone number of the sales contact or facility nearest you on our homepage or with the web address: [www.locator.nord.com](http://www.locator.nord.com).



**SALES CONTACT** →

1 **Country**  
United States ▾

2 **or State search**  
please select a State ▾

3 **Distance**  
25 miles ▾

**Zip code**

**or Phone number search**  
(Include at least the first 6 digits)

It is as easy as submitting your location and we provide you with a list of our nearest district managers, distributors and plant locations for your convenience.

**NORD Office for**

**United States/Idaho** Print List

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**NORD district manager(s) for Idaho**

**NORD Gear Corp**  
Scott Patzer  
7645 E Arnhem Ave  
Denver, CO 80231  
Phone: 1-720-535-5371  
Fax: 1-800-551-3732  
E-Mail: [scott.patzer@nord.com](mailto:scott.patzer@nord.com)  
Homepage: <http://www.nord.com> Save VCard  
Print

**NORD Gear Corp**  
DuWayne Weber  
2201 13th Ave Ct SW  
Puyallup, WA 98373-4011  
Phone: 1-253-386-2150  
Fax: 1-800-564-3707  
E-Mail: [duwayne.weber@nord.com](mailto:duwayne.weber@nord.com)  
Homepage: <http://www.nord.com> Save VCard  
Print

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**NORD plant for Idaho**

**NORD Gear Corp - West**  
1180 Railroad St  
Corona, CA 92882  
Phone: 1-988-314-6673  
Fax: 1-988-498-6073  
E-Mail: [info.us@nord.com](mailto:info.us@nord.com)  
Homepage: <http://www.nord.com> Save VCard  
Google Maps  
Print

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**Distributors Idaho**

**Bearings & Industrial Sales Inc**  
625 Lindsay Blvd  
Idaho Falls, ID 83402  
Phone: 1-208-522-0266  
Fax: 1-208-522-0272 Print



# NORD GEAR CORPORATION

## Terms and Conditions of Sale

### 1. CONTRACT

Any contract between Nord Gear Corporation, hereinafter designated as Seller, and the Buyer is subject to the terms and conditions of sale hereinafter set forth. Any deviation from such terms and conditions must be specifically set forth in writing and consented to by Seller. Accordingly, the Buyer and Seller acknowledge and agree that the terms and conditions set forth below and on the face hereof shall govern Buyer's purchase of the goods described on the face hereof and shall take precedence over and represents the final agreement between Buyer and Seller, notwithstanding any inconsistent, contradictory or other prior or further conditions contained in any oral or written request or purchase order issued by Buyer or any other document furnished by Buyer in connection with its purchase of the Goods, regardless of whether such document or documents are exchanged simultaneously with this Invoice or prior or subsequent thereto. Any additional or different terms or conditions which may appear in any communication, oral or written, from Seller, its officers, employees, agents or representatives, are hereby expressly rejected and shall not be effective or binding upon the Seller, unless specifically hereafter agreed to in writing by Seller and no such additional or different terms or conditions in any document submitted to Seller by Buyer shall become part of the contract between Buyer and Seller, unless such written acceptance by Seller specifically recognizes and assents to their inclusion. Any objection by Buyer to the terms and conditions hereof shall be ineffective unless Seller is advised in writing thereof within two (2) days of the date of this Invoice.

### 2. CONFIRMATION

An order shall be deemed accepted only when duly confirmed by Seller, at Nord Gear Corporation's home office in Waunakee, Wisconsin, and upon such confirmation the order shall become a contract binding upon the parties hereto, their successors and assigns.

### 3. PRICES

Prices shown are list prices and may be subject to applicable discounts. Unless otherwise agreed upon in writing, prices are FOB factory Waunakee, Wisconsin. Prices and discounts are subject to change without notice until order is accepted. Seller's prices do not include cost of any inspection permits required.

### 4. LIMITED WARRANTY

Seller warrants the goods sold hereunder to be free from defects in material and workmanship under normal use and service not arising from misuse, negligence, or accident, including but not limited to the use, installation, and transportation of the goods by the Buyer, its agents, servants, employees, or by carriers. Such obligations under this warranty are limited to remedying any deficiencies in the goods at Waunakee, Wisconsin, or at such place or places in the United States of America as may be designated by Seller. THIS WARRANTY SHALL PERTAIN TO ANY PART OR PARTS OF ANY GOODS TO WHICH BUYER OR ITS ASSIGNS HAS GIVEN WRITTEN NOTICE OF CLAIMED DEFECTS TO SELLER. NORD GEAR CORP. WARRANTS ITS PRODUCTS AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF 12 MONTHS FROM DATE OF INSTALLATION OR 18 MONTHS FROM DATE OF SHIPMENT WHICHEVER COMES FIRST ON ALL COMPONENTS. 36 MONTHS FROM DATE OF INVOICE OR 24 MONTHS FROM DATE OF INSTALLATION WHICHEVER COMES FIRST ON GEARS AND HOUSINGS ONLY. PARTS WHICH ARE SUBJECT TO OPERATIONAL WEAR AND TEAR, SUCH AS BELTS & TRACTION DISCS, ARE NOT COVERED BY THE LIMITED WARRANTY. Buyer shall be required to furnish Seller with details of such defects and this warranty shall be effective as to such goods which Seller's examination shall disclose to its satisfaction to have been defective and which of Seller's option shall promptly thereafter be returned to Seller or its nominees. THE LIMITED WARRANTY SET FORTH HEREIN IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. EXCEPT FOR THE EXPRESS WARRANTIES SET FORTH HEREIN, SELLER HAS MADE AND MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. AS TO THE GOODS SOLD HEREUNDER, INCLUDING, BUT NOT LIMITED TO, THEIR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. ANY DESCRIPTION OR MODEL OF THE GOODS IS FOR IDENTIFICATION OR ILLUSTRATIVE PURPOSES ONLY AND SHALL NOT BE DEEMED TO CREATE ANY WARRANTY, EXPRESS OR IMPLIED. SELLER MAKES NO REPRESENTATIONS AS TO THE CAPACITY OR PERFORMANCE OF THE GOODS SOLD HEREUNDER, EXCEPT AS SET FORTH IN THE INVOICE'S SPECIFICATIONS OR OTHER VALID AGREEMENT OR CONDITION AGREED TO BETWEEN THE PARTIES, AND ANY SUCH REPRESENTATIONS ARE EXPRESSLY CONDITIONED UPON THE CORRECTNESS OF THE DATA AND INFORMATION FURNISHED BY THE BUYER AND UPON THE GOODS BEING PROPERLY INSTALLED AND MAINTAINED. THE REMEDIES OF THE BUYER PROVIDED HEREUNDER ARE EXCLUSIVE. In no event shall the Seller be liable to the Buyer or to any other person for any loss or damage, direct or indirect, arising out of or caused by the use or operation of the goods, or for the loss of profits, business, or good will, or for any incidental, special or consequential damages. Seller shall in no event be liable to any person or firm (including any assignee or Buyer) except Buyer and its successors. Unless specifically authorized by Seller in writing, Seller shall not become responsible for any repair work done by Buyer or any other party on any goods sold. Any and all costs of the return to the Seller of such goods and all related costs to remove and re-install such goods, shall be borne by Buyer. Goods sold but not manufactured by the Seller are being warranted as to defects in material and workmanship consistent with the limited warranty policy of the original manufacturer of the goods and if there is not such a limited warranty policy, the warranty shall be limited to the provision of the preceding paragraph of Article 4 herein. Standards for the operating characteristics of the gearboxes and the gearmotors are in conformity with Seller's tests.

### 5. SHORTAGE AND NONCONFORMITY

Any claim of shortage or that the goods do not conform with the specifications of the order or model must be made in writing within ten (10) days after delivery of the goods (as to which such claim is made) to Buyer or its nominees, but in no event shall the claim be later than within the time limit provided by the carrier or insurance company, otherwise such claim shall be deemed waived. Buyer may not return any goods claimed to be in non-conformity without Seller's prior written authorization. Goods returned without permission will not be accepted, including for credit, and will be returned to Buyer, F.O.B. Seller's plant. Any claim based on the receipt of damaged Goods must be filed with the carrier which delivered the goods. The samples, measurements, dimensions and weights contained in the Seller's catalogs, sales manuals, photographs and drawings constitute only an approximate guide. The Seller reserves the right to make any change which the Seller, in its absolute discretion, considers necessary. While the goods will be delivered principally according to specifications or standards or quantities agreed upon, insignificant deviations or insignificant changes in construction are permissible. The same applies to partial deliveries. In the event that Buyer has a verified claim of shortage or nonconformity of the goods to the specifications of the order or the model, and if such claim has been submitted within the required time limit as set forth above, the Seller shall, at its own expense, make up for the shortage of the goods, or replace or repair the goods, as the case may be, but in no event shall Seller be or become liable to Buyer or to any other person or persons for any loss in damage, direct or indirect, arising out of or caused by such incidents or for the loss of profits, business or good will. The liability of the Seller to Buyer, if any hereunder, for breach of warranty, contract, negligence or otherwise, shall in no event exceed the amount of the purchase price of the goods sold with respect to which any damages are claimed. Shipping dates are estimates unless parties expressly agree on time of the essence.

### 6. FORCE MAJEURE

The obligation of the Seller shall be modified or excused, as the case may be, for reasons of Acts of God, war, governmental law regulations, strikes or lock-outs, fire, breakdown of machinery, whether in its own business enterprise, or if for any other cause beyond Seller's control, the goods cannot be delivered or their delivery becomes delayed in whole or in part. In the above instances time for delivery shall be extended for the period of the delay caused, with the proviso, however, that either party may cancel in writing the undelivered portion of the order or contract if the delay exceeds six (6) months from the delivery date originally confirmed by Seller. In no event shall Seller become liable in the aforesaid instances to Buyer or any third party for consequential damages or business loss.

### 7. SHIPMENT AS UNIT

Each shipment by Seller shall be treated as a separate and distinct unit with respect, but only with respect to forwarding, terms of payment, and the making of claims by the Buyer: provided, however, that if the Buyer defaults in the payment of any obligation to Seller or any installments thereof, under any agreement between Buyer and Seller, or if Buyer refuses to accept any goods when tendered for delivery, the Seller may, on fifteen (15) days written notice to the Buyer, without prejudice to Seller's other lawful remedies, either defer further performance until the defaulted payments are made in full, or make future deliveries for cash in advance only, or treat the entire contract or contracts with Buyer as breached by the Buyer and pursue its remedies for breach.

### 8. BUYER'S REFUSAL OF DELIVERY

If Buyer refuses to accept delivery of any goods tendered for delivery, then Seller, without prejudice to Seller's other lawful remedies, may either store or cause such goods to be stored in a warehouse, for buyer's account and at Buyer's cost, risk and expense, or sell such goods (without notice) to any purchasers at public or private sale, and hold the Buyer liable for any difference between (a) the contract price of the goods, and (b) the price at which goods are resold less the costs and expense of such resale including brokerage commissions, or restocking charges.

### 9. GOODS IN TRANSIT

If prior to delivery or while the goods are in transit, Buyer or Seller becomes bankrupt or insolvent, or any petition in bankruptcy or for the reorganization or for a state court receivership is filed against Buyer or Seller, as the case may be, then the other party hereto may forthwith terminate this contract by giving written notice of such termination. Such termination shall not affect any claim for damages available to the Buyer, provided that if Buyer is then indebted to Seller, the amount of any such damage claim shall be abated to the extent that the indebtedness of Buyer to Seller, as actually paid in money, is abated by any order of judgement entered or any plan adopted in any bankruptcy, reorganization, receivership, or similar proceeding. Such termination shall not prejudice the Seller's rights to any amounts then due under the contract. If Buyer becomes bankrupt or insolvent or any petition in bankruptcy or for reorganization or if a state court receivership is filed against Buyer, then, at its option Seller may take possession of any goods theretofore sold to Buyer, in connection with which the full purchase price has not been paid, analogous to the terms and provisions set forth in Paragraphs 11 and 12 hereinafter.

### 10. DELIVERY

(a) Any indicated dates of delivery are approximate only, but NORD Gear will attempt to meet them whenever possible. (b) NORD Gear will not be liable for any penalty clauses contained in any specifications or order submitted unless agreed to in writing by an authorized officer of NORD Gear Corporation. (c) Unless otherwise agreed, delivery of the goods to any carrier shall constitute delivery to the Buyer, and thereafter the risk of loss or damage to the goods shall be upon the Buyer. (d) If the Buyer does not give delivery instructions to the Seller at least (10) days prior to the delivery date ex factory confirmed by the Seller, the Seller may deliver the goods to a carrier of its own choosing, at Buyer's cost and risk, or, at Seller's option, may store the goods on the pier or any warehouse, at Buyer's cost and risk. Any purchase price in such event becomes due and payable within ten (10) days of such storage.

### 11. PAYMENT OF PURCHASE PRICE

Time of payment is of the essence under the contract. Unless otherwise provided, terms of payment are 30 days net from the date of invoice with a 1% discount if paid within 10 days of date of invoice. Upon default in any of the terms of the contract, or failure to comply with any of the conditions thereof, or upon seizure of the property under execution or other legal process, or if the Buyer becomes bankrupt or insolvent, or any petition for reorganization or for a state court receivership is filed against Buyer, or if the Buyer makes any assignment for the benefit of its creditors or otherwise sells, encumbers or disposes of the goods, or if for any other reason the Seller should deem itself insecure, the full amount of the purchase price then remaining unpaid shall at once become due and payable at the option of the Seller.

### 12. BUYER'S DEFAULT

Upon the Buyer's default, the Seller may dispose of the merchandise in any manner that it deems fit and, if it desires to resell same, may do so at private or public sale, with or without notice, and with or without the property being at the place of sale, subject, however, to applicable laws. The Seller or its assigns shall have the right to bid at such sale and may become the purchaser of the property. The proceeds of the sale shall first be applied to the expenses incurred in retaking, repairing, storing and selling the goods, reasonable attorney's fees included, and then shall be applied to the payment of the balance due under the contract. Any surplus amount shall be paid to the Buyer. If a deficiency results after the resale, the Buyer agrees to pay such forthwith, together with reasonable attorney's fees, for the recovery of the goods incurred by the Seller. If upon the Buyer's default, the Seller elects not to resell any goods which it may repossess, then the cost of repossession, including reasonable attorney's fees, shall forthwith be due and payable from Buyer to Seller. Buyer agrees to pay all reasonable costs and reasonable attorney's fees incurred by Seller in enforcing Seller's rights against Buyer, including Seller's right to payment of the purchase price of the goods and Buyer's payment of all other amounts owing to Seller required under this Invoice and Conditions of Sale.

### 13. SECURITY INTEREST AND TITLE

In states and localities which are governed by the Uniform Commercial Code, this contract shall serve as security agreement, reserving in Seller a security interest until full payment of purchase price. The provisions of the Uniform Commercial Code regarding security interest shall have preference and apply if inconsistent with other terms of the conditions of sale. In states and localities where the Uniform Commercial Code does not apply, title to the goods shall remain in the Seller or its assigns until full payment of the purchase price. Buyer agrees to execute forthwith any and all documents in such a way and form as Seller may need for filing or recording the security interest under the Uniform Commercial Code with the proper registers or offices, or for filing or recording the conditional sales contract.

### 14. SALES AND USE TAX

Buyer agrees to bear and pay any sales or use tax in connection with the purchase herein, and to hold the Seller harmless from payment. At the option the Seller, Buyer shall give evidence of payment or of exemption certificate.

### 15. INSURANCE

The Buyer shall keep the goods insured against damage by fire, water or other casualty as required by Seller, with a company acceptable to Seller, with loss payable to Seller for the total purchase price until the Seller is fully paid. Seller, if it so elects, may place said insurance at Buyer's expense; Seller may cancel such insurance at any time and without notice and may receive the return premium, if any.

### 16. MODIFICATION BY SELLER

Any contract may be assigned or transferred by the Seller, or the time for the making of any payment due by Buyer may be extended by Seller without derogation of any of the rights of the Seller or its assigns. Waiver by any party of any default shall not be deemed a waiver of any subsequent default.

### 17. RETURNED GOODS

No goods will be accepted for return unless authorized in writing by Seller. In all cases, transportation and restocking charges will be borne by Buyer.

### 18. PACKING

The Buyer will be charged for export packaging or other special packing desired. Cost for cartage to ship or transfer express will be added to the invoice. No credit will be allowed if no packing is required.

### 19. CHANGES/CANCELLATION

NORD Gear will not accept changes in specifications to a confirmed order unless such changes are requested in writing and confirmed back in writing. In addition, the purchaser must to agree to any additional charges that may arise from the change. Placing orders on hold or cancellation of orders require Seller's written approval, and are subject to cancellation and/or restocking charges.

### 20. BUYER'S RESPONSIBILITY AS TO MAINTENANCE

Buyer shall use and shall require its employees and agents to use all safety devices and guards and shall maintain the same in proper working order. Buyer shall use and require its employees and agents to use safe operation procedures in operating the equipment and shall further obey and have its employees and agents obey safety instructions given by Seller. If Buyer fails to meet the obligations herein, Buyer agrees to defend, indemnify and save Seller harmless from any liability or obligation with regard to any personal injuries or property damages directly or indirectly connected with the operation of the equipment. Buyer further agrees to notify Seller promptly and in any event not later than ten (10) days after notice or knowledge of any accident or malfunction involving Seller's equipment which has caused personal injury or property damages and to cooperate fully with Seller in investigating and determining the causes of such accident and malfunction. In the event that Buyer fails to give such notice to Seller or to cooperate with Seller, Buyer shall be obligated to defend, indemnify and save Seller harmless from any such claims arising from such accident.

### 21. MISCELLANEOUS PROVISIONS

(a) If for any reason a provision of a contract is legally invalid, then in such event the rest of the contract shall remain in full force and effect, except that the parties shall try to replace such invalid provision closest to their original mutual intentions. (b) This Invoice and these Conditions of Sale constitute the entire agreement between the parties regarding the subject matter hereof and supercedes all prior agreements, understandings and statements, whether oral or written, regarding such subject matter. No modification to, change in or departure from, the provisions of this Invoice and Conditions of Sale shall be valid or binding on Seller, unless approved in writing by Seller. No course of dealing or usage of trade shall be applicable unless expressly incorporated into this Invoice and Conditions of Sale. Any amendments to any contract or contracts between the parties shall be valid only upon the written consent of both parties.

### 22. NON ASSIGNMENT BY BUYER

Contract or contracts may not be assigned by the Buyer without prior written consent of the Seller.

### 23. APPLICABLE LAW AND VENUE

All contracts and their interpretation are governed by the applicable, substantive laws of the State of Wisconsin. Any litigation brought by the Buyer regarding this Invoice or goods purchased hereunder may only be brought in the Circuit Court for Dane County, Wisconsin.

# NORD GEAR LIMITED

## Terms and Conditions of Sale

### 1. CONTRACT

Any contract between Nord Gear Limited, hereinafter designated as "Seller", and the party or parties accepting these terms and conditions of sale and any agent, officer, servant, employee or subcontractor of such party or parties, hereinafter designated as "Buyer", is subject to the terms and conditions of sale hereinafter set forth. Any deviation from such terms and conditions must be specifically set forth in writing and consented to by Seller.

### 2. CONFIRMATION

An order shall be deemed accepted only when duly confirmed by Seller, at Nord Gear Limited's home office in Brampton, Ontario, and upon such confirmation the orders shall become a contract binding upon the parties hereto, their successors and assigns.

### 3. PRICES

Prices shown are list prices and may be subject to applicable discounts. Unless otherwise agreed upon in writing, prices are FOB factory Brampton, Ontario. Prices and discounts are subject to change without notice until the order is accepted. Seller's prices do not include cost of any inspection permits required.

### 4. LIMITED WARRANTY

Seller warrants the goods sold hereunder to be free from defects in material and workmanship under normal use and service not arising from misuse, negligence, or accident, including but not limited to the use, installation, and transportation of the goods by Buyer, its agents, servants, employees, or by carriers. This warranty shall pertain to any part or parts of any goods to which Buyer or its assigns has within one year from date of delivery given written notice of claimed defects to Seller. Buyer shall be required to furnish Seller with details of such defects and this warranty shall be effective as to such goods which Seller's examination shall disclose to its satisfaction to have been defective and which at Seller's option shall promptly thereafter be returned to Seller or its nominees. EXCEPT FOR THE EXPRESS WARRANTIES SET FORTH ABOVE, SELLER HAS MADE NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE GOODS SOLD HEREUNDER, INCLUDING, BUT NOT LIMITED TO THEIR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. ANY DESCRIPTION OR MODEL OF THE GOODS IS FOR IDENTIFICATION OR ILLUSTRATIVE PURPOSES ONLY AND SHALL NOT BE DEEMED TO CREATE AN EXPRESS WARRANTY. The Buyer's exclusive remedy for claims arising from defective or nonconforming goods shall be limited to the repair or replacement thereof at the Seller's sole option. THE SELLER SHALL NOT BE RESPONSIBLE OR LIABLE FOR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE SALE, DELIVERY, USE, PERFORMANCE, OR SERVICE OF THE GOODS SOLD UNDER THIS AGREEMENT. SELLER SHALL NOT BE LIABLE FOR ANY LOST PROFITS OR FOR ANY CLAIM OR DEMAND AGAINST SELLER BY ANY PARTY. IN NO EVENT WILL SELLER BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SELLER'S AGGREGATE LIABILITY FOR DAMAGES UNDER THIS AGREEMENT, WHETHER ARISING FROM OR BASED UPON BREACH OF WARRANTY, BREACH OF CONTRACT, TORT OR OTHER CAUSE OF ACTION, SHALL IN NO CASE EXCEED THE PURCHASE PRICE THAT BUYER PAYS FOR THE PARTICULAR GOODS INVOLVED. Seller shall in no event be liable to any person or firm (including any assignee or Buyer) except Buyer and its successors. Unless specifically authorized by Seller in writing, Seller shall not become responsible for any repair work done by Buyer or any other party on any goods sold. Any costs of the return of such goods to Seller shall be borne by Buyer. Goods sold but not manufactured by Seller are being warranted as to defects in material and workmanship consistent with the limited warranty policy of the original manufacturer of the goods and if there is not such a limited warranty policy, the warranty shall be limited to the provisions of Article 4 herein. Standards for the operating characteristics of the gearboxes and the gear motors are in conformity with Seller's tests. THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE SELLER DOES NOT ASSUME, NOR DOES IT AUTHORIZE ANY PERSON TO ASSUME, ON ITS BEHALF, ANY OTHER OBLIGATION OR LIABILITY.

### 5. SHORTAGE AND NONCONFORMITY

Any claim of shortage or that the goods do not conform with the specifications of the order or model must be made in writing within ten (10) days after delivery of the goods (as to which such claim is made) to Buyer or its nominees, but in no event shall the claim be later than within the time limit provided by the carrier or insurance company, otherwise such claim shall be deemed waived. The samples, measurements, dimensions and weights contained in Seller's catalogs, sales manuals, photographs and drawings constitute only an approximate guide. Seller reserves the right to make any changes which Seller, in its absolute discretion, considers necessary. While the goods will be delivered principally according to specifications of standards or quantities agreed upon, insignificant deviations or insignificant changes in construction are permissible. The same applies to partial deliveries. In the event that Buyer has a verified claim of shortage or nonconformity of the goods to the specifications of the order or the model, and if such claim has been submitted within the required time limit as set forth above, Seller shall, at its own expense, make up for the shortage of the goods, or replace or repair the goods, as the cause may be, but in no event shall Seller be or become liable to Buyer or to any other person or persons for any loss in damage, direct or indirect, arising out of or caused by such incidents or for the loss of profits, business of good will. Shipping dates are estimates unless parties expressly agree on time of the essence.

### 6. FORCE MAJEURE

The obligation of Seller shall be modified or excused, as the case may be, for reasons of Acts of God, war, governmental law regulations, strikes or lock-outs, fire, breakdown of machinery, whether in its own business enterprise, or if for any other cause beyond Seller's control, the goods cannot be delivered or their delivery becomes delayed in whole or in part. In the above instances time for delivery shall be extended for the period of the delay caused, with the proviso, however, that either party may cancel in writing the undelivered portion of the order of contract if the delay exceeds six (6) months from the delivery date originally confirmed by Seller. In no event shall Seller become liable in the aforesaid instances to Buyer or any third party for consequential damages or business loss.

### 7. SHIPMENT AS UNIT

Each shipment by Seller shall be treated as a separate and distinct unit with respect, but only with respect to forwarding, terms of payment, and the making of claims by Buyer, provided, however, that if Buyer defaults in the payment of any obligation to Seller or any installments thereof, under any agreement between Buyer and Seller, or if Buyer refuses to accept any goods when tendered for delivery, Seller may, on fifteen (15) days written notice to Buyer, without prejudice to Seller's other lawful remedies, either defer further performance until the defaulted payments are made in full, or make future deliveries for cash in advance only, or to treat the entire contract or contracts with Buyer as breached by Buyer and pursue its remedies for breach.

### 8. BUYER'S REFUSAL OF DELIVERY

If Buyer refuses to accept delivery of any goods tendered for delivery, then Seller, without prejudice to Seller's other lawful remedies, may either store or cause such goods to be stored in a warehouse, for Buyer's account and at Buyer's cost, risk and expense, or sell such goods (without notice) to any purchaser at public or private sale, and hold Buyer liable for any difference between (A) the contract price of the goods, and (B) the price at which goods are resold less the costs and expense of such resale including brokerage commissions, or restocking charges.

### 9. GOODS IN TRANSIT

If prior to delivery or while the goods are in transit, Buyer or Seller becomes bankrupt or insolvent, or any petition in bankruptcy or for the reorganization or for appointment of a receiver is filed against Buyer or Seller, as the case may be, then the other party hereto may forthwith terminate this contract by giving written notice of such termination. Such termination shall not affect any claim for damages available to Buyer, to Seller, as actually paid in money, is abated by any order of judgment entered or any plan adopted in any bankruptcy, reorganization, receivership, or similar proceeding. Such termination shall not prejudice Seller's rights to any amounts then due under the contract. If Buyer becomes bankrupt or insolvent or any petition in bankruptcy or for reorganization or if a state court receivership is filed against Buyer, then, at its option, Seller may take possession of any goods theretofore sold to Buyer, in connection with which the full purchase price has not been paid, analogous to the terms and provisions set forth in Paragraphs 11 and 12 hereinafter.

### 10. DELIVERY

(A) Unless otherwise agreed, delivery of the goods to any carrier shall constitute delivery to Buyer, and thereafter the risk of loss or damage to the goods shall be upon Buyer. (B) If Buyer does not give delivery instructions to Seller at least ten (10) days prior to the delivery date ex factory confirmed by Seller, Seller may deliver the goods to a carrier of its own choosing, at Buyer's cost and risk, or, at Seller's option may store the goods on the pier or on any warehouse at Buyer's cost and risk. Any purchase price in such event becomes due and payable within ten (10) days of such storage.

### 11. PAYMENT OF PURCHASE PRICE

Time of payment is of the essence under the contract. Upon default in any of the terms of the contract, or failure to comply with any of the conditions thereof, or upon seizure of the property under execution or other legal process, or if Buyer becomes bankrupt or insolvent, or any petitions for reorganization or for appointment of a receiver is filed against Buyer, or if Buyer makes any assignment for the benefit of its creditors or otherwise sells, encumbers or disposes of the goods, or if for any other reason Seller should deem itself insecure, the full amount of the purchase price then remaining unpaid shall at once become due and payable at the option of Seller. Interest on the delinquent payment from the due date thereof until paid shall be at a rate of two (2%) percent per month.

### 12. BUYER'S DEFAULT

Upon Buyer's default, Seller may dispose of the merchandise in any manner that it deems fit and, if it desires to resell same, may do so at private or public sale, with or without notice, and with or without the property being at the place of sale, subject, however, to applicable laws. Seller or its assigns shall have the right to bid at such sale and may become the purchaser of the property. The proceeds of the sale shall first be applied to the expenses incurred in retaking, repairing, storing and selling the goods; reasonable solicitor's fees included, and then shall be applied to the payment of the balance due under the contract. Any surplus amount shall be paid to Buyer. If a deficiency results after the sale, Buyer agrees to pay such forthwith, together with reasonable solicitor's fees, for the recovery of the goods incurred by Seller. If upon Buyer's default, Seller elects not to resell any goods which it may repossess, then the cost of repossession, including reasonable solicitor's fees, shall forthwith be due and payable from Seller to Buyer.

### 13. SECURITY INTEREST AND TITLE

In provinces which are governed by a Personal Property Security Act, this contract shall serve as a security agreement, reserving in Seller a security interest until full payment of the purchase price. The provisions of the Personal Property Security Act regarding security interest shall have preference and apply if inconsistent with other terms of the conditions of sale hereunder. In provinces where a Personal Property Security Act does not apply, title to the goods shall remain in the Seller or its assigns until full payment of the purchase price. Buyer agrees to execute forthwith any and all documents in such a way and form as Seller may need for filing or recording the security interest under a Personal Property Security Act with the proper registers or offices, or for filing or recording the Conditional Sales Contract herein.

### 14. SALES AND USE TAX

Seller's prices do not include sales, use, excise or other taxes payable to any governmental authority in respect of the sale of Seller's goods. Buyer shall pay, in addition to Seller's price, the amount of any such taxes or shall reimburse Seller for the amount thereof that Seller may be required to pay. At the option of Seller, Buyer shall give evidence of payment or of exemption certificate.

### 15. INSURANCE

Buyer shall keep the goods insured against damage by fire, water or other casualty as required by Seller, with a company acceptable to Seller, with loss payable to Seller for the total purchase price until Seller is fully paid. Seller, if it so elects, may place said insurance at Buyer's expense; Seller may cancel such insurance at any time and without notice and may receive the return premium, if any.

### 16. MODIFICATION BY SELLER

Seller may be assigned or transferred by Seller, or the time for the making of any payment due by Buyer may be extended by Seller without derogation of any of the rights of Seller or its assigns. Waiver by any party of any default shall not be deemed a waiver of any subsequent default.

### 17. RETURNED GOODS

No goods will be accepted for return unless authorized in writing by Seller. In all cases, transportation and restocking charges will be borne by Buyer.

### 18. PACKING

Seller does not charge for standard packaging for domestic shipment. Buyer will be charged, however, for export packaging or other special packing desired. Cost for cartage to ship or transfer express will be added to the invoice. No credit will be allowed if no packing is required.

### 19. EXPORT ORDER

Export orders are to be accompanied by a confirmed irrevocable Letter of Credit in Seller's favor, in Canadian currency, with an accredited Canadian bank, subject to Seller's draft, with shipping documents attached.

### 20. CANCELLATION

Placing orders on hold or cancellation of orders require Seller's written approval, and are subject to cancellation and/or restocking charges.

### 21. BUYER'S RESPONSIBILITY AS TO MAINTENANCE

Buyer shall use and shall require its employees and agents to use all safety devices and guards and shall maintain the same in proper working order. Buyer shall use and require its employees and agents to use safe operating procedures in operating the equipment and shall further obey and have its employees and agents obey safety instructions given by Seller. If Buyer fails to meet the obligations herein, Buyer agrees to indemnify and save Seller harmless from any liability or obligation with regard to any personal injuries or property damages directly or indirectly connected with the operation of the equipment. Buyer further agrees to notify Seller promptly and in any event not later than ten (10) days after notice or knowledge of any accident or malfunction involving Seller's equipment which has caused personal injury or property damages and to cooperate fully with Seller in investigating and determining the causes of such accident and malfunction. In the event that Buyer fails to give such notice to Seller or to cooperate with Seller, Buyer shall be obligated to indemnify and save Seller harmless from any such claims arising from such accident.

### 22. MISCELLANEOUS PROVISIONS

(A) If for any reason a provision of a contract is legally invalid, then in such event the rest of the contract shall remain in full force and effect, except that the parties shall try to replace such invalid provision with a provision closest to their original mutual intentions. (B) Any amendments to any contract or contracts require the consent in writing by both parties. Headings in this document are for ease of reference only.

### 23. NON ASSIGNMENT BY BUYER

Contract or contracts may not be assigned by Buyer without prior written consent of Seller.

### 24. APPLICABLE LAW

This agreement shall be governed by the laws of the Province of Ontario and the applicable laws of Canada. Buyer and Seller agree that any judicial proceeding with respect to this agreement must be brought and maintained in the City of Toronto, in the Province of Ontario.

### 25.

This instrument sets forth the entire understanding and agreement of the parties hereto in respect of the subject matter hereof, and all prior undertaking between the parties hereto, together with all representations and obligations of such parties in respect of such subject matter, shall be superseded by and merged into this instrument.

### 26.

The provisions of this agreement shall bind and ensure to the benefit of the parties hereto and their respective heirs, executors, administrators, successors and (subject to any restrictions or assignment herein above set forth) assigns, as the case may be.

### 27.

The parties acknowledge that they have requested this document and all notices or other documents relating thereto be drafted in the English language.

Les parties reconnaissent qu'ils ont requis que ce contrat et tous les avis ou autres documents qui s'y rapportent soient rédigés en langue anglaise.

\*Terms and Conditions in French available upon request.\*

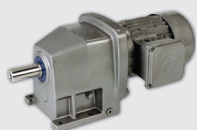


# Notes



A large grid of light blue lines intended for taking notes, consisting of approximately 24 columns and 38 rows.

## UNICASE™ SPEED REDUCERS



### HELICAL IN-LINE

- Foot or Flange Mount
- Torque up to 205,000 lb-in
- Gear ratios – 1.82:1 to over 300,000:1



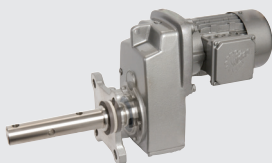
### NORDBLOC®.1 HELICAL IN-LINE

- Foot or Flange Mount
- Torque up to 26,550 lb-in
- Gear ratios – 1.88:1 to over 370:1



### PARALLEL HELICAL CLINCHER™

- Shaft, Flange or Foot Mount
- Torque up to 797,000 lb-in
- Gear ratios – 4.26:1 to over 300,000:1



### SCP SCREW CONVEYOR PACKAGE

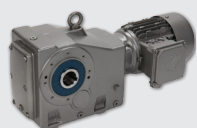
- Shaft, or Flange Mount
- Torque up to 53,100 lb-in
- Gear ratios – 4.32:1 to over 1500:1



### RIGHT ANGLE

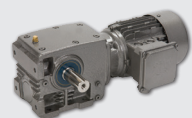
#### HELICAL-BEVEL 2-STAGE

- Foot, Flange or Shaft Mount
- Torque up to 5,840 lb-in
- Gear ratios – 4.1:1 to 70:1



### RIGHT ANGLE HELICAL-BEVEL

- Foot, Flange or Shaft Mount
- Torque up to 283,000 lb-in
- Gear ratios – 8.04:1 to over 300,000:1



### RIGHT ANGLE HELICAL-WORM

- Foot, Flange or Shaft Mount
- Torque up to 27,585 lb-in
- Gear ratios – 4.40:1 to over 300,000:1

## HIGH PERFORMANCE MOTORS & BRAKEMOTORS



### INVERTER/VECTOR DUTY

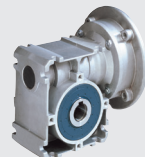
- Standard or Energy Efficient
- Integral, NEMA or Metric IEC
- 1/6 to 250 hp

## UNICASE™ SPEED REDUCERS



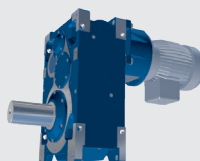
### MINICASE™ RIGHT ANGLE WORM

- Foot, Flange or Shaft Mount
- Torque up to 3,540 lb-in
- Gear ratios – 5:1 to 500:1



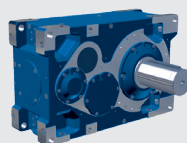
### FLEXBLOC™ WORM

- Modular bolt-on options
- Torque up to 4,683 lb-in
- Gear ratios – 5:1 to 3,000:1



### MAXXDRIVE™ LARGE INDUSTRIAL GEAR UNITS PARALLEL HELICAL

- Modular bolt-on options
- Torque up to 2,027,000 lb-in
- Gear ratios – 5:1 to 1,600:1



### MAXXDRIVE™ LARGE INDUSTRIAL GEAR UNITS HELICAL-BEVEL

- Modular bolt-on options
- Torque up to 2,027,000 lb-in
- Gear ratios – 5:1 to 1,600:1

## NORDAC AC VECTOR DRIVES



### SK180E FAMILY

- Distributed, simple speed control
- 380-480V, 3-phase to 3.0 hp
- 200-240V, 3-phase to 1.5 hp
- 200-240V, 1-phase to 1.5 hp
- 100-120V, 1-phase to 0.75 hp



### SK200E FAMILY

- Distributed, high performance
- 380-480V, 3-phase to 30 hp
- 200-240V, 3-phase to 15 hp
- 200-240V, 1-phase to 1.5 hp
- 100-120V, 1-phase to 1 hp



### SK500E FAMILY

- Compact, cabinet mount, high performance
- 380-480V, 3-phase, to 125 hp
- 200-240V, 3-phase, to 25 hp
- 200-240V, 1-phase, to 3 hp
- 100-120V, 1-phase, to 1.5 hp

## Global Vision, Local Support

NORD makes its wide product range easily available through a global network that includes representation in over 60 countries. By providing all of our customers with prompt delivery, and expert support services, we are firmly committed to exceeding customer expectations and being responsive to the ideas and specifications of every customer, anywhere in the world.





**Global Presence**

Allows for short lead times and quick response times throughout the world.

**Modular Design**

More than 20 million totally unique product combinations guarantees that you won't need to look anywhere else.

**Quality Manufacturing**

NORD produces maintenance free products that have a long life in order to save you money for the long haul.

**Dependable Service**

With emergency service available 24/7 we can help you out when you need us most.

**Innovative Products**

Our engineers are hard at work creating solutions to everyday problems.

**We Have you Covered**

NORD provides Gear Drives, Motors & AC inverters in order to provide you with a complete Drivesystem solution.



**NORD Gear Corporation**

MEMBER OF THE NORD DRIVESYSTEMS GROUP  
info.us@nord.com

**Waunakee, WI**  
800 NORD Drive  
Waunakee, WI 53597  
Tel. 608.849.7300

**Corona, CA**  
1180 Railroad St.  
Corona, CA 92882  
Tel. 951.393.6565

**Charlotte, NC**  
300 Forsyth Hall Dr.  
Charlotte, NC 53597  
Tel. 980.215.7575

**NORD Gear Limited - Canada**

MEMBER OF THE NORD DRIVESYSTEMS GROUP  
info.ca@nord.com

**Brampton, ON**  
41 West Drive  
Brampton, ON L6T4A1  
Tel. 800.668.4378