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IRONHORSE®

marathon™ Motors

AC and DC Motors

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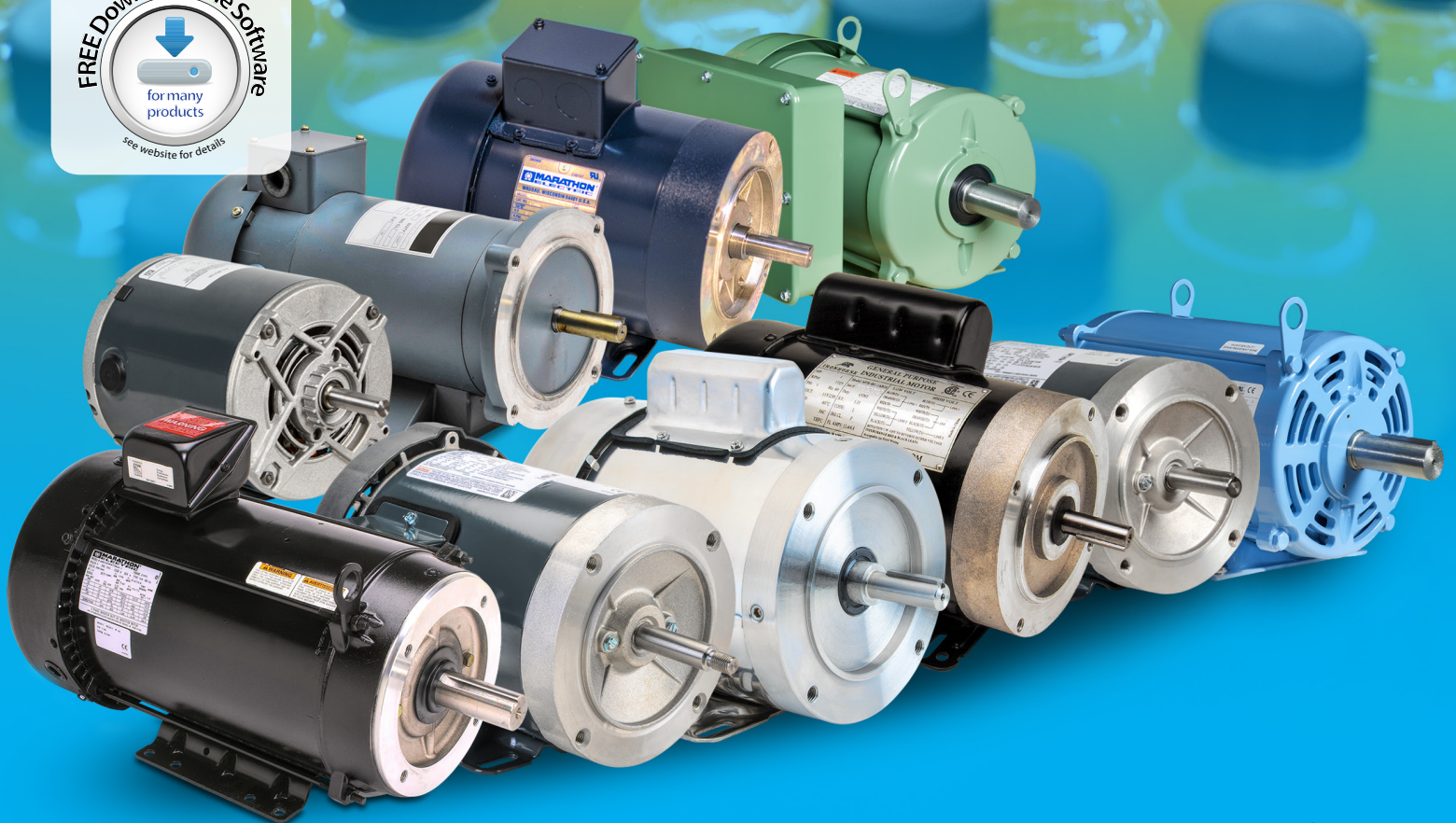


Order Today, Ships Fast*

Premium Efficiency Motors that pay for themselves...

starting at **$168.00**

marathon™ Motors

**We stock hundreds of Marathon motors at AutomationDirect for immediate shipment. Other models are shipped direct from Marathon. Check our Web site for stocking location and availability.*

These Marathon® Electric motor lines have been carefully selected to be performance-matched with the WEG and GS series AC drives.

Inverter-duty AC motors up to 100 hp

Models ranging from ¼ hp to 100 hp, that feature dual 230/460 and 575 VAC voltages and base speeds of 1200, 1800, or 3600 RPM. Factory-mounted encoders are available on select models.

Powerwash™ SXT

- All stainless steel, washdown duty
- TENV or TEFC, up to 2hp
- Mounting options: C-face with rigid base or footless
- Single phase models (non-inverter duty) also available

Jet Pump

- TEFC (up to 2hp) or Drip-Proof (up to 3hp)
- Stainless steel threaded shaft
- Rated for continuous duty
- Single phase models (non-inverter duty) also available

MicroMax™

- TENV and TEFC motors
- Dual mounting options, C-face rigid base and C-face round body
- Cooler running and lighter weight design, allowing an easy transition from PMDC

MAX+™ with Encoder

- Integrated Dynapar HS20 1024 ppr encoder
- Optimized for operation with IGBT inverter
- 230/460 VAC, replaces 90 volt and 180 volt PMDC motors (when used with AC variable frequency drives)

Black Max®

- Class F MAX GUARD® insulation system
- Constant torque operation from 0 to base speed on vector drive
- Constant horsepower operation to twice base RPM
- Optional factory-installed encoder available

Blue Max® 2000

- Class H MAX GUARD® insulation system
- Constant torque operation from 0 to base speed on vector drive, including TEFC
- Constant horsepower operation to 1.5 times base RPM
- Optional factory-installed encoder available

Blue Chip® XRI®

- Meets or exceeds NEMA Premium Efficiency ratings
- 10:1 variable torque and constant torque
- 1.15 service factor on sinewave; 1.0 service factor on IGBT power

XRI 4in1 General Purpose

- Meets or exceeds all NEMA Premium efficiencies, except as noted
- Class F insulation, except as noted
- Rated 60/50 hertz, 190/380 or 380 volt, at next lower horsepower, as noted

Single-Phase Open Drip-Proof Motors

- Ball bearings
- Capacitor start
- UL recognized and CSA certified

Marathon Replacement Encoder Kits

- A772 kit for Black Max, A774 kit for Blue Max TEFC, A775 kit for Blue Max TEBC motors
- Encoder kits are complete, nothing else to buy

For the latest prices, please check AutomationDirect.com.

2-year warranty on all IronHorse motors!

IRONHORSE®

AC T-Frame, Premium Efficiency, Cast Iron, Industrial Duty, three-phase, 208-230/460 Volt up to 300 hp, TEFC enclosure

AC TC-Frame (C-Face), Premium Efficiency, Cast Iron, Industrial Duty, three-phase, 208-230/460 Volt up to 30 hp**, TEFC enclosure

****C-face kits available for motors above 30 hp**

1200 RPM, 1800 RPM, and 3600 RPM Premium Efficiency motors, starting at retired

- **Meets or exceeds Premium Efficiency standards**
- Cast iron frame has ribbed design for maximum cooling
- NSK/NTN/SKF brand premium quality ball or roller bearings
- Maintenance free bearings (10 hp and below)
- V-ring shaft seals on drive end and on opposite drive end
- Class F insulation
- Class I, Div 2 hazardous locations
- $_{c}$CSA$_{us}$ certified, CE
- Inverter ratings: 20:1 (variable torque); 10:1 (constant torque)
- Available in 1200, 1800, and 3600 rpm, electrically reversible
- Two year warranty

**See Terms and Conditions for details and restrictions*

General purpose AC motors in the most popular sizes

AC Motors starting at **$83.00**

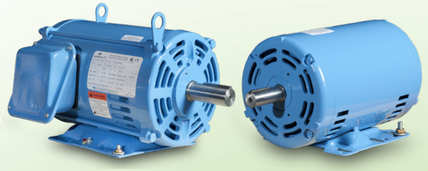
AC 56C Frame Rolled Steel single-phase, 115/208-230 Volt 0.33 to 2 hp, TEFC enclosure

- Capacitor start (1.5HP and 2HP are also capacitor run)
- 1800 RPM, electrically reversible
- Removable bolt on - bolt off base
- NEMA design B, L, or N (varies by model)
- NEMA 56C or 56HC flange mount (varies by model)
- Industrial gauge steel motor frame and base
- Class F insulation

AC 56C/56HC Frame Rolled Steel, 0.33 to 3 hp 56C Stainless Steel, 0.33 to 2 hp Three-Phase 208-230/460 Volt, TEFC Enclosure

- Premium efficiency 1 to 3 hp (rolled steel)
- 1800 or 3600 RPM, electrically reversible
- Removable bolt on - bolt off base (rolled steel)
- Welded base or round body (stainless steel)
- Industrial gauge motor frames and bases
- Class F insulation
- **Stainless Steel motors designed for IP56 washdown applications!** Case, JBox and fan shroud are made of 304 stainless and the shaft is 303 stainless.

starting at **$197.00**

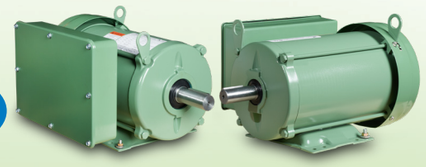


AC AC Open Drip-proof Three-phase Premium Efficiency Motors (up to 50 hp)

IronHorse ® MTDP, open drip-proof motors range in size from 1hp to 50hp at 1800 rpm and 3hp, 5hp and 7.5hp at 3600 rpm. Frame sizes available from 143T to 326T. All models have a rolled steel frame. All frame sizes have a fixed base.

- Open drip-proof enclosure
- Inverter capable
- NEMA design B
- Class F winding insulation
- Service Factor: 1.15 across-the-line (1.0 for inverter applications)
- cURus certified, CE

starting at **$359.00**

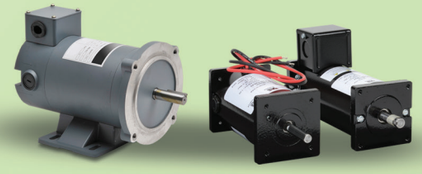


AC AC TEFC T-frame Single-phase Farm-duty AC Motors (up to 10 hp)

IronHorse® MTF2, farm-duty motors are rugged single-phase AC motors designed to withstand the rugged environment of farming and other industrial environments. These motors range in size from 2 hp to 10 hp and operate on 208-230 VAC single-phase. Frame sizes available from 182T to 215T. All models have a TEFC rolled steel housing with a rigid mounting base.

- IP55 environmental rating
- Class-10 manual-reset locked-rotor thermal protector
- Electrically reversible
- NEMA design L
- Class F winding insulation
- Service Factor: 1.15 @ 230 VAC; 1.0 @ 208 VAC
- cURus certified, CE

IronHorse® Permanent Magnet DC Motors (SCR Rated)



DC Motors starting at **$77.00**

DC DC Motors (up to 2 hp)

IronHorse DC motors are designed for use on unfiltered SCR (Thyristor) type and PWM (pulse width modulated) type DC adjustable speed drives, and on across-the-line DC controls. The IronHorse line of DC motors features:

- Replacement brush sets
- Simple two-lead connection
- Class F insulation
- Small-frame motors (1/4 hp and under), available models: 12VDC, 24VDC, 90VDC (110 VAC DC drive), and 180VDC (230 VAC DC drive)
- Motors 1/3 hp and above:

  NEMA 56C flange mount
  - 90 VDC (0.33 - 1.5 hp)
  - 180 VDC (0.33 - 2.0 hp)

DC DC Gearmotors (up to 0.25 hp)

IronHorse industrial grade DC gearmotors are designed for use on unfiltered SCR (Thyristor) type rectified AC input. They may also be used with PWM (pulse width modulated) type DC adjustable speed drives, and in across-the-line applications.

- 386:1 to 11:1 gear ratios
- Available in 12, 24, and 90 VDC
- 1/31 to 1/4 hp
- Replacement brush sets
- Models available with parallel or right-angle gear shafts
- Simple two-lead connection
- Class F insulation

IronHorse worm Gearboxes

Aluminum or cast iron

starting at **$169.00**

- Three output types: Dual Shaft, Right Hand Shaft and Hollow Shaft
- Four frame sizes: 1.75", 2.06", 2.37", 2.62"
- Six ratios: 5:1, 10:1, 15:1, 20:1, 40:1, 60:1
- IronHorse gearboxes utilize C-face mounting interfaces for C-face motors
- Worm gear reducer mounting bases are also available for ease of installation

Motor Bases

starting at **$10.00**

Motor slide bases are used to accurately and easily position your motor. Available in sizes from NEMA 56 - NEMA 449T, you can use these bases to mount all IronHorse or Marathon® motors. See the motor and base selection chart later in this section.

AutomationDirect is proud to team up with Marathon Electric to provide our customers with premium quality motors at great prices.

Marathon Electric has over 25 years experience in the design, manufacturing and application of AC variable speed motors and more.

The models we carry are cost-effective, high performance motors that provide enhanced performance in virtually any industrial or commercial application.

From the Leader in AC Variable Speed Products

Marathon inverter-duty motors

These Marathon Electric motor lines have been carefully selected to be performance-matched with the ***DURA***PULSE and GS series AC drives. The offering includes models ranging from ¼ hp to 100 hp, that feature 575 VAC and dual 230/460 VAC voltages and base speeds of 1200, 1800, and 3600 RPM

marathon™ Motors

Powerwash SXT series stainless-steel housed TE (Totally Enclosed) three-phase motors, up to 2HP, are suitable for washdown applications and are inverter capable. Models are available in various NEMA frame styles, and are either "footless" (no base, intended for C-face mounting) or choose from models with rigid bases and C-face mounting provisions.

Jet Pump (Centrifugal) Motors are used to power industrial, commercial, centrifugal, hydraulic pumps, well pumps, and other liquid pumping applications. Marathon TEFC (Totally Enclosed Fan Cooled) up to 2 HP, or Drip-Proof three-phase jet pump motors, up to 3 HP, are rated for continuous duty. They are excellent replacements for 90 Volt and 180 volt PMDC motors when used with variable frequency AC drives.

microMAX™ TENV and TEFC motors (1/4 to 10 hp) offer dual mounting options, C-face rigid base and C-face round body, cooler running and lighter weight design, allowing an easy transition from PMDC.

MAX+™ with Encoder TENV motors (1/2 to 5 hp) with integrated Dynapar HS20 1024 ppr encoder are optimized for operation with IGBT inverters. These 230/460 VAC motors can replace 90 volt and 180 volt PMDC motors (when used with AC variable frequency drives).

Black Max® TENV motors are used in any high performance application with closed or open loop vector controls or Volts/Hertz drives and for countless machinery applications where full torque at zero speed is required. The low inertia design provides extremely quick response to accel and decel commands, as well as changes in direction. Uses include machine tools, conveyors, crane and hoist systems, extruders and packaging/converting equipment.

NEMA Premium® Efficiency XRI® series motors, from 1 to 10 hp, are compliant with the Energy Independence and Security Act of 2007, giving you both a low purchase price and long-term energy savings.

Blue Chip XRI® Ultra High Efficiency motors optimize motor system efficiency, reduce electrical power consumption and costs, and improve system reliability. They offer substantial enegy savings when used on high cycle or long run time applications and meet NEMA Premium® efficiency levels. Uses include compressors, pumps, conveyors, blowers, and other machinery in dirty or dusty environments.

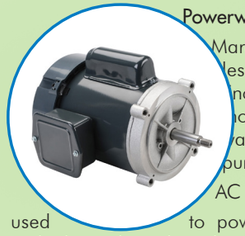
Blue Max® 2000 TEFC and TEBC motors are used in variable frequency drive applications requiring full rated torque at zero speed with closed or open loop (sensorless) vector controls. The cast iron construction makes this motor an ideal choice for process lines, chemical plants, paper mills or other environment requiring cast iron or "severe duty" construction

Marathon replacement encoder kits

The A772 kit for Black Max, A774 kit for Blue Max TEFC, and A775 kit for Blue Max TEBC motors can be used to replace or add an encoder on these motor series.

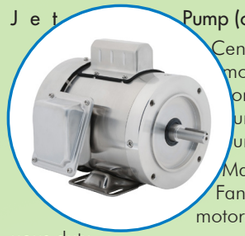
Marathon single phase motors

These general-purpose motor lines from Marathon Electric are suitable for washdown, food and beverage, or jet-pump and water-pump applications. They are available up to 3hp, with dual 115/230VAC voltages, and base speeds of 1800 or 3600 RPM.



Powerwash™ SXT

Marathon Powerwash series stainless-steel housed TEFC (Totally Enclosed Fan Cooled) single-phase motors, up to 2HP, are suitable for washdown applications. General purpose AC induction motors are widely used to power pumps, blowers, conveyors and other industrial machinery. These motors have an encapsulated electronic starting switch that is impervious to moisture, and one-way condensation drains in each end shield and conduit box for all angle mounting. These NEMA 56C or 145TC frame models have a capacitor start induction run design for high starting torque and include rigid base and C-face mounting provisions.



Jet Pump (centrifugal) Motors

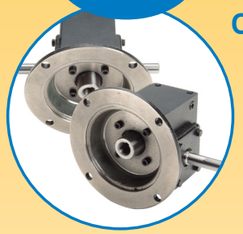
Centrifugal jet pump AC induction motors are used to power industrial, commercial, centrifugal, hydraulic pumps, well pumps, and other liquid pumping applications.

Marathon TEFC (Totally Enclosed Fan Cooled) single-phase jet pump motors, up to 2 HP, are rated for continuous duty.

They offer double-sealed bearings and a 416 stainless steel threaded shaft with slinger. These models, with NEMA 56J frames, are "footless" (no base) and are intended for C-face mounting.

Compatible components for Marathon motors

starting at **$169.00**



Cast Iron worm gears

- Heavy Duty
- C-face mounting
- Six Ratios: 5:1 to 60:1
- Multiple output shaft options
- Input power: 1 to 5 hp

starting at **$101.00**

Aluminum worm gears

- Light weight – medium duty gears
- Hollow shaft output
- Gear ratios: 10:1 to 100:1
- Input faces: 56C, 145TC, 182/4TC
- Input power: 0.25 to 5 hp

starting at **$420.00**

Helical gears

- Heavy duty – cast iron frames
- C-face mounting
- Eight ratios: 5:1 to 60:1
- Sized to handle 1 to 20 hp

starting at **$614.00**

Shaft mount gearboxes

- Cast iron housings
- 9:1, 15:1 and 25:1 ratios
- Frame sizes 2 to 5
- Input power up to 40 hp (depending on service class

starting at **$10.00**

Stable™ Motor Slide Bases

Motor slide bases are used to accurately and easily position your motor. Available in sizes from NEMA 56 - NEMA 449T, you can use these bases to mount all Marathon motors. See the motor and base selection chart at the end of this section.

IronHorse® Permanent-Magnet DC Motors (SCR Rated) Model Overview

MTPM-P10-1JK43

MTPM-P25-1JK44

MTPM-P33-1L18

MTPM-P75-1L18

MTPM-1P5-1M18

IronHorse motors are manufactured by leading motor suppliers with over 20 and 45 years experience delivering high-quality motors to the demanding U.S. market. Our suppliers test the motors during production and after final assembly. This is how we can stand behind our IronHorse motors with a **two-year warranty** (motors 1/3 hp and above only; motors 1/4 hp and less have a one-year warranty).

IronHorse DC motors are designed for use on unfiltered SCR (Thyristor) type and PWM (pulse width modulated) type DC adjustable speed drives, and on across-the-line DC controls.

The IronHorse line of DC motors features:

- Replacement brush sets
- Simple two-lead connection
- Class F insulation

Features for Small-Frame Motors 1/4 hp and Under

- Available models accommodate 12VDC, 24VDC, 90VDC (110VAC DC drive), and 180VDC (230VAC DC drive)
- Rated for SCR drives
- TENV enclosure
- IP40 environmental rating
- Class F insulation
- High energy ceramic magnets
- Double shielded ball bearings
- Dynamically balanced armature
- Reversible design
- 18-inch leads, or junction boxes with 8-inch leads
- Externally replaceable brushes
- Can be mounted in any orientation
- Not intended for DC power generation
- UL recognized (E365956), CSA certified (259724), RoHS

Features for Motors 1/3 hp and Above

- Input power of 115 or 230 volts rectified AC can be used with an appropriate SCR drive
- Linear speed/torque characteristics over entire speed range
- High starting torque for heavy load applications
- Capable of dynamic braking for faster stops
- Available in TENV or TEFC housings, depending on model
- NEMA 56C flange mount
- Rolled steel shell frame / cast aluminum end bell
- Removable base (0.33–2 hp)
- STABLE motor slide bases for adjustable mounting of NEMA motors from 56–449T
- Space-saving design
- Large replaceable brushes for longer brush life
- Easy access to DC motor brushes (DC motors ship with one set of brushes installed and one set of spare brushes in the box)
- Large easy-to-wire junction box with rubber gasket and six-inch leads
- Heavy duty oversized ball bearings
- High tensile strength steel shaft
- Large easy to read nameplate
- Electrically reversible
- Not intended for DC power generation
- Service Factor: 1.0
- Two year warranty
- $_{C}CSA_{US}$ certified (247070), CE, RoHS

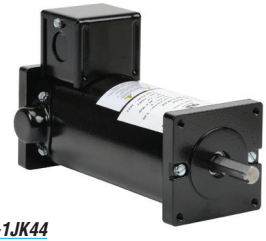
Applications

- Conveyors
- Turntables
- Where adjustable speed and constant torque are required
- When dynamic braking and reversing capabilities are needed

IronHorse® DC Motors

MTPM Small-Frame Permanent Magnet DC Motors – 1/31 hp – 1/4 hp

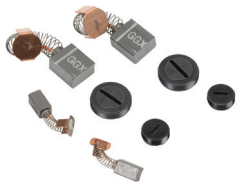
MTPM-P10-1JK43
with flying leads



MTPM-P25-1JK44
with junction box

Selection and Specifications

Motor Specifications – MTPM Series Small-Frame Permanent Magnet DC Motors												
Part Number	Price	Voltage (VDC)	HP	Speed (rpm)	F/L Torque (oz-in)	F/L Current (A)	Shaft Dia (in)	Pilot Shaft (in)	Overhung Load (lb)	Axial/ Thrust Load (lb)	Wiring Type	Weight (lb)
MTPM-P10-1JK43	$77.00	12 24	1/20 1/10	1746 4252	28	4.83	0.3125	1.00	85	70	flying leads	2.75
MTPM-P13-1JK42	$84.00	12 24	1/17 1/8	1825 4224	32	5.39	0.3125					3.25
MTPM-P17-1JK43	$113.00	12 24	1/13 1/6	1841 4290	42	7.54	0.50	2.02	130	150	junction box	5.3
MTPM-P25-1JK40	$137.00	12 24	1/6 1/4	1732 3996	96 80	14.3 12.2	0.50					7.8
MTPM-P25-1JK44	$137.00	12 24	1/5 1/4	1854 4375	113 70	18.1 11.9	0.50					9
MTPM-P03-1L18	$82.00	90	1/31	1797	18	0.39	0.3125	1.00	85	70	flying leads	2.75
MTPM-P04-1L17	$86.00		1/26	1749	22	0.46	0.3125					3.25
MTPM-P05-1L19	$113.00		1/19	1917	28	0.68	0.50	2.02	130	150	junction box	5.3
MTPM-P13-1L19	$131.00		1/8	1917	73	1.4	0.50					7.8
MTPM-P14-1L19	$143.00		1/7	1740	86	1.61	0.50					9
MTPM-P07-1M24	$118.00	180	1/15	2440	28	0.42	0.50					5.3
MTPM-P13-1M19	$143.00		1/8	1865	73	0.73	0.50					7.8
MTPM-P14-1M18	$143.00		1/7	1828	84	0.83	0.50					9



MTPM-BRUSH-x

MTGA-KIT-1

Replacement Parts

Replacement Parts for MTPM Series Small-Frame Permanent Magnet DC Motors *			
Part Number	Price	Description	For Motors MTPM-
MTPM-BRUSH-4	$30.00	DC motor brushes, replacement, for 1/4 hp 24VDC MTPM series permanent magnet DC motors. Package includes one set of 2 brushes and 2 brush caps.	P25-1JK40, P25-1JK44
MTPM-BRUSH-5	$22.50	DC motor brushes, replacement, for 24VDC MTPM series permanent magnet DC motors 1/6 hp and smaller. Package includes one set of 2 brushes and 2 brush caps.	P10-1JK43, P13-1JK42, P17-1JK43
MTPM-BRUSH-6	$25.50	DC motor brushes, replacement, for 1/7 or 1/8 hp 90VDC or 180VDC MTPM series permanent magnet DC motors. Package includes one set of 2 brushes and 2 brush caps.	P13-1L19, P14-1L19, P13-1M19, P14-1M18
MTPM-BRUSH-7	$20.50	DC motor brushes, replacement, for 90VDC or 180VDC MTPM series permanent magnet DC motors 1/10 hp and smaller. Package includes one set of 2 brushes and 2 brush caps.	P03-1L18, P04-1L17, P05-1L19, P07-1M24
MTGA-KIT-1	$39.50	DC motor spare parts kit, for certain MTPM series permanent magnet DC motors as listed. Includes: two metal brush cap covers, one terminal box, one 1/8 (0.125 inch) shaft key and one 3/16 (0.187 inch) shaft key.	P05-1L19, P13-1L19, P14-1L19, P17-1JK43, P25-1JK40, P25-1JK44, Pxx-1Mxx

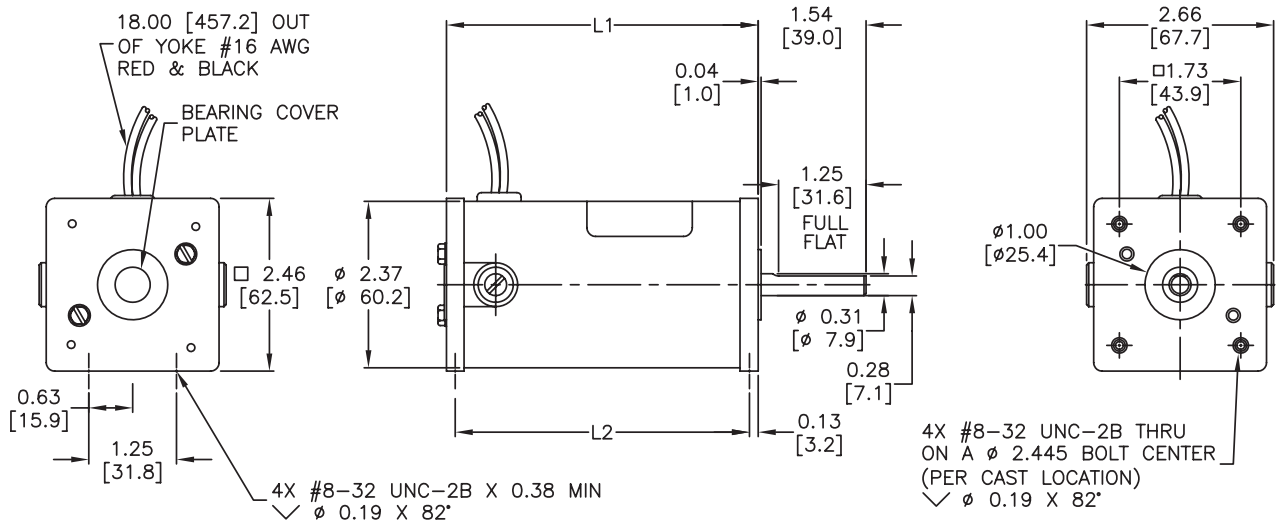
** These replacement parts also fit many AutomationDirect DC gearmotors. Refer to the Gearmotors section for gearmotor application information.*

IronHorse® DC Motors

MTPM Small-Frame Permanent Magnet DC Motors – 1/31 hp – 1/4 hp

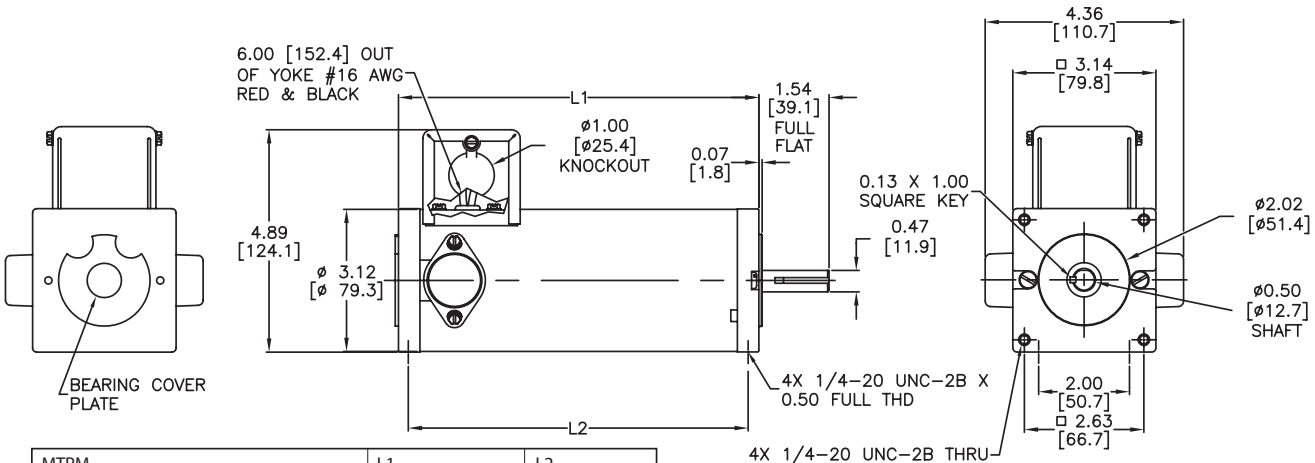
Dimensions (in [mm])

Model Numbers (MTPM-): P03-1L18, P04-1L17, P10-1JK43, P13-1JK42



MTPM-	L1	L2
P03-1L18, P10-1JK34	4.44 [112.8]	4.16 [105.5]
P04-1L17, P13-1JK42	4.94 [125.5]	4.69 [119.1]

Model Numbers (MTPM-): P05-1L19, P07-1M24, P13-1L19, P13-1M19, P14-1L19, P14-1M18, P17-1JK43, P25-1JK40, P25-1JK44



MTPM-	L1	L2
P05-1L19, P07-1M24, P17-JK43	4.92 [125.0]	4.56 [115.8]
P13-1L19, P13-1M19, P25-1JK40	6.92 [175.8]	6.46 [164.1]
P14-1L19, P14-1M18, P25-1JK44	7.92 [201.2]	7.46 [189.5]

IronHorse® DC Motors

56C Frame TEFC/TENV Motors – DC – 0.33 to 2 hp

Motor Specifications – DC 56C Frame Motors – 1800 RPM									
Part Number	Price	HP	Base RPM	Armature Voltage	Housing	NEMA Frame	Service Factor	F.L. Amps	Weight (lb)
MTPM-P33-1L18	$144.00	1/3	1800	90 VDC	TENV	56C flange mount	1.0	3.5	17.70
MTPM-P50-1L18	$185.00	1/2						5.2	20.74
MTPM-P75-1L18	$210.00	3/4			TEFC			7.8	25.30
MTPM-001-1L18	$233.00	1						10.4	28.36
MTPM-1P5-1L18	$253.00	1-1/2						15.4	34.97
MTPM-P33-1M18	$143.00	1/3		180 VDC	TENV			1.75	17.60
MTPM-P50-1M18	$184.00	1/2						2.6	20.74
MTPM-P75-1M18	$210.00	3/4			TEFC			3.9	25.58
MTPM-001-1M18	$233.00	1						5.2	28.32
MTPM-1P5-1M18	$253.00	1-1/2						7.7	35.70
MTPM-002-1M18	$402.00	2						9.8	61.95

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

Performance Data – DC 56C Frame Motors – 1800 RPM																
Part Number	HP	Armature Voltage	Torque (lb-ft) Full Load	Form Factor *	Ambient Temp.	Insulation Class	Ball Bearings DE Bearing	Ball Bearings ODE Bearing	Mounting	Wire / Housing	Shaft	Constant Torque Speed Range	Overall Speed Range	Base / Type	Paint Color	Rotor Inertia (kG/m^2)	Efficiency (%)
MTPM-P33-1L18	1/3	90 VDC	0.97	1.35	40°C (104°F)	F	6203	6203	Top Mounted	Junction Box	Keyed	90-1800 RPM	0-2000 RPM	Rigid Removable	Gray	0.01956	79
MTPM-P50-1L18	1/2		1.46													0.02365	80
MTPM-P75-1L18	3/4		2.19													0.02795	
MTPM-001-1L18	1		2.92													0.03225	
MTPM-1P5-1L18	1-1/2		4.38													0.04945	81
MTPM-P33-1M18	1/3	180 VDC	0.97													0.01956	79
MTPM-P50-1M18	1/2		1.46													0.02365	80
MTPM-P75-1M18	3/4		2.19													0.02795	
MTPM-001-1M18	1		2.92													0.03225	
MTPM-1P5-1M18	1-1/2		4.38													0.04945	81
MTPM-002-1M18	2		5.84													0.09675	85

** See additional information in Form Factor Table.*

Form Factor

The voltage used to power a permanent magnet (PM) DC motor is not pure DC; it is derived by rectifying a supplied AC voltage. The resulting DC voltage has a ripple that is related to the frequency of the AC input.

Form factor is the ratio of I_{rms} to I_{dc}, and it indicates how close the driving voltage is to pure DC. The form factor for a DC battery is 1.0. The higher the form factor is above 1.0, the more it deviates from pure DC. The Form Factor Table shows examples of commonly used voltages.

Form factor should not exceed 1.40 for continuous operation. Half wave rectification is not recommended, as it drastically increases form factor.

Operating Ironhorse PMDC motors with DC voltages with form factors higher than 1.40 can result in premature brush failure and excessive motor heating.

Form Factor Table	
Form Factor	DC Voltage Source
1.0	Battery (pure DC)
1.05 *	Pulse width modulation (PWM)
1.40 **	Full wave rectification (single phase)
1.9 ***	Half wave rectification (single phase) **

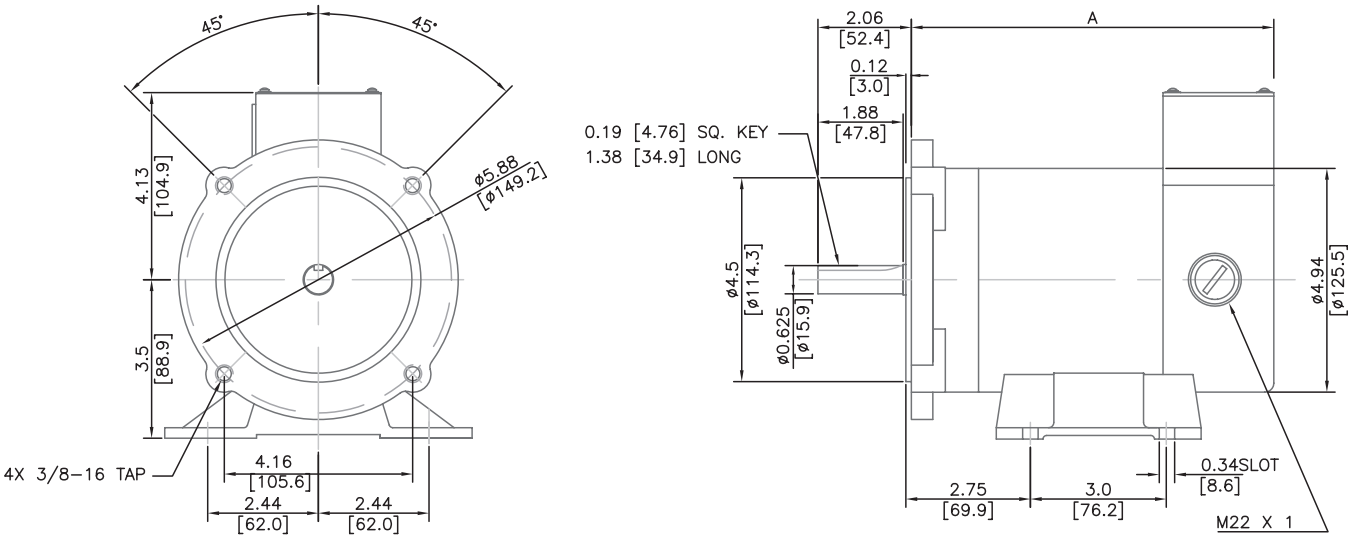
** All DC-input IronHorse GSD series DC drives are 1.05. IronHorse AC-input GSD5 DC drive is 1.05.*

*** Single phase full wave rectification is the most common form of DC drive in 0.33–2 hp range. All IronHorse GSD series DC drives are 1.40 or better.*

**** Not Recommended.*

IronHorse® DC Motors

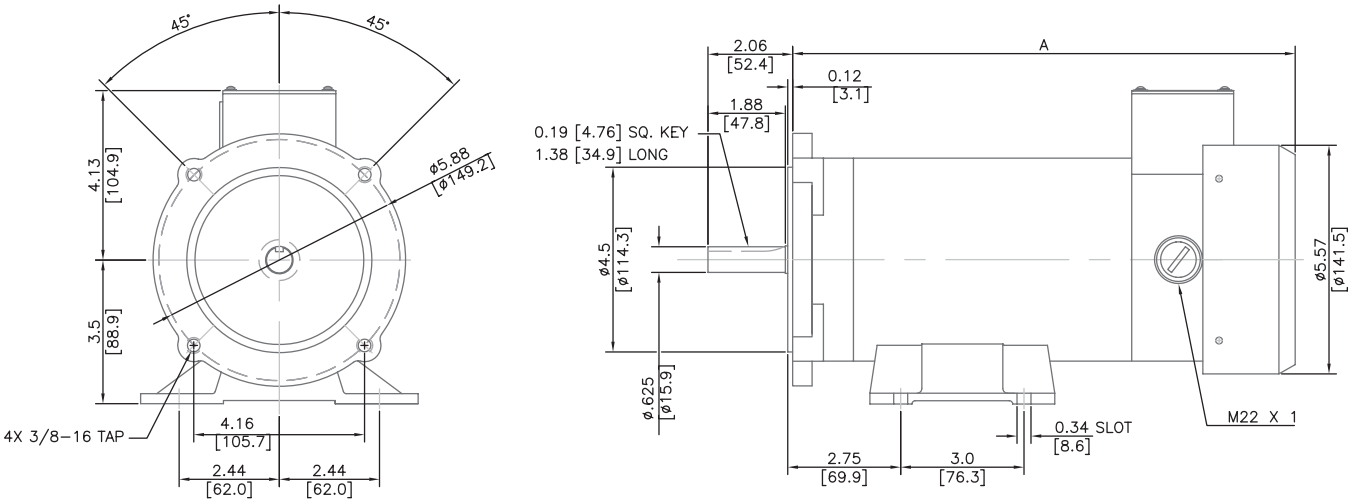
56C Frame TENV DC Motors – 0.33 to 0.5 hp – Dimensions



A = 8.0" [203.2] – 0.33 HP, 90VDC, 1800RPM
A = 8.0" [203.2] – 0.33 HP, 180VDC, 1800RPM
A = 8.88" [225.5] – 0.50 HP, 90VDC, 1800RPM
A = 8.88" [225.5] – 0.50 HP, 180VDC, 1800RPM

UNITS: INCHES [mm]

56C Frame TEFC DC Motors - 0.75 to 1.5 hp - Dimensions



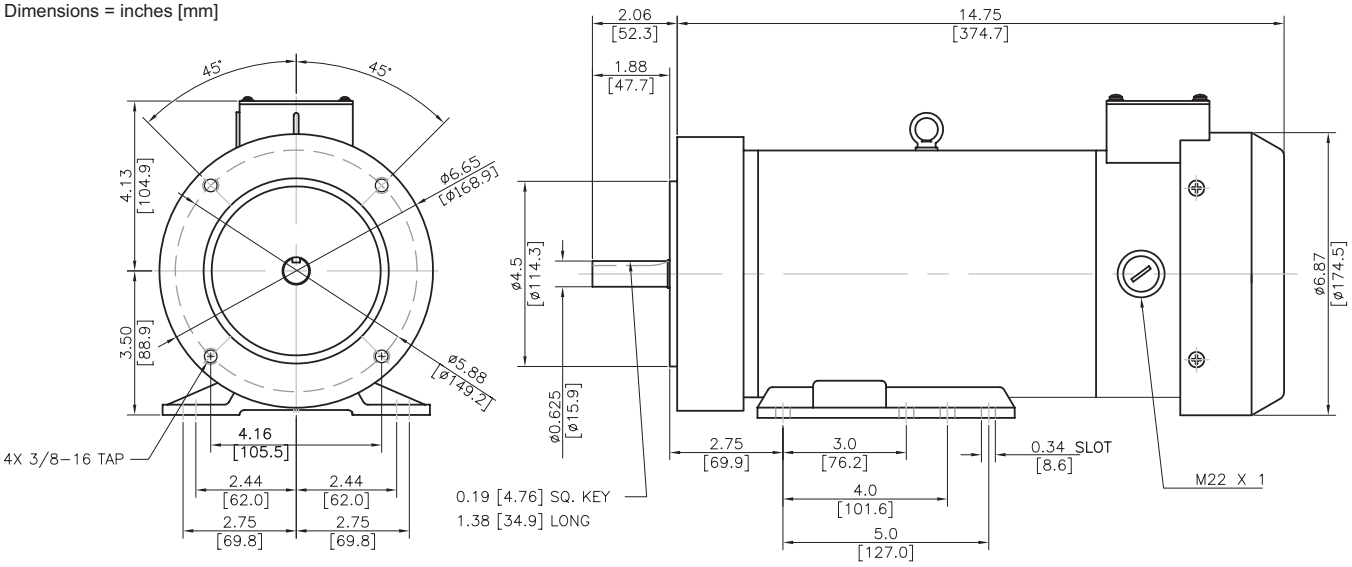
A = 11.45" [290.8] – .75 HP, 90VDC, 1800RPM
A = 11.45" [290.8] – .75 HP, 180VDC, 1800RPM
A = 12.24" [311.0] – 1 HP, 90VDC, 1800RPM
A = 12.24" [311.0] – 1 HP, 180VDC, 1800RPM
A = 14.39" [365.5] – 1.5 HP, 90VDC, 1800RPM
A = 14.39" [365.5] – 1.5 HP, 180VDC, 1800RPM

UNITS: INCHES [mm]

IronHorse® DC Motors

56C Frame TEFC DC Motors – 2 hp – Dimensions

Dimensions = inches [mm]



56C Frame Motors – DC – 0.33 to 2 hp – Accessories

DC motor brushes

Brushes commutate the incoming current in a DC motor. All IronHorse PMDC motors are shipped with a set of brushes in the motor. An extra set of brushes is included in the box. The brushes below can be ordered for spare.

IronHorse DC brushes should be changed at a maximum interval of 2500 hours motor runtime. When changing brushes, always change them as a set (never change only one brush).

DC Motor Accessories

Part Number	Price	Description	Applicable Motor Type	Rated Voltage	Motor HP	Brush Materials	Dimension L x W x H
MTPM-BRUSH-1	$9.50	Brushes with springs, one set of 2	IronHorse MTPM	90 VDC 180 VDC	0.33–1.5 hp	Resin class Graphite	0.75 in x 0.27 in x 0.70 in 19 mm x 6.9 mm x 18 mm
MTPM-BRUSH-2	$12.00	Brushes with springs, one set of 2		180 VDC	2hp		0.71 in x 0.49 in x 0.70 in 18 mm x 12 mm x 18 mm
MTPM-BRUSH-3	$11.00	Brushes with springs, one set of 2		90 VDC	1.5 hp		0.73 in x 0.35 in x 0.63 in 19 mm x 8.9 mm x 16 mm

All IronHorse 56C-frame DC motors ship with one set of brushes installed and one extra set in the box.

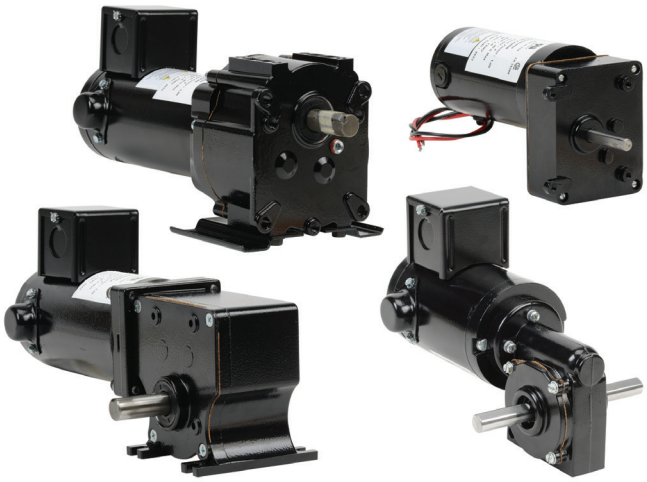
IronHorse® DC Gearmotors

Series MTG Gearmotors – 1/19 hp – 1/5 hp

Model Overview

IronHorse DC gearmotors are manufactured in the U.S.A. by a leading motor supplier with over 65 years experience delivering high-quality motors and gearmotors to the demanding U.S. market. Our supplier does 100% dynamic testing of the gearmotors before shipment.

IronHorse DC gearmotors are designed for use on unfiltered SCR (Thyristor) type rectified AC input. They may also be used with PWM (pulse width modulated) type DC adjustable speed drives, and in across-the-line applications.



Applications

- Conveyors
- Turntables
- Pick and place
- Indexers
- Small machinery
- Where reduced speed and/or increased torque are required

General Features

- Available in 12, 24, and 90 VDC
- Available from 1/19 to 1/5 hp
- Available with parallel or right-angle gear shafts

Gearmotor Features

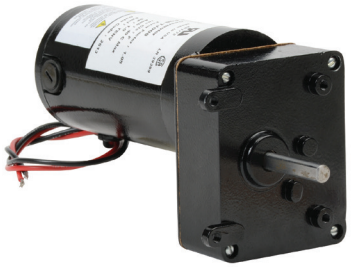
- TENV enclosure
- IP40 environmental rating
- Class F insulation
- SCR rated
- Externally replaceable brushes
- Double-shielded bearings
- Dynamically balanced armature
- Reversible design
- 18-inch leads, or junction box with 8-inch Leads
- Replacement components are available
- Orientation restrictions vary depending on model. See illustrations for details
- Not intended for DC power generation
- UL recognized (E365956), CSA certified (259724), RoHS

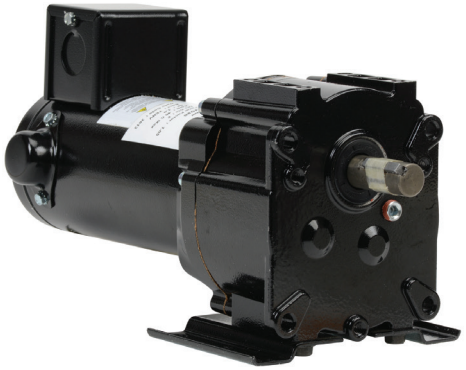
Replacement Parts for MTGP and MTGR DC Gearmotors

Replacement Parts for MTGP and MTGR Series DC Gearmotors *			
Part Number	***Price***	***Description***	***For Gearmotors***
MTPM-BRUSH-4	$30.00	DC motor brushes, replacement, for 1/5 hp 12VDC or 24VDC MTGR and MTGP series DC gearmotors. Package includes one set of 2 brushes and 2 brush caps.	MTGx-P20-1Jxxx, MTGx-P20-1Kxxx
MTPM-BRUSH-5	$22.50	DC motor brushes, replacement, for 12VDC or 24VDC MTGR and MTGP series DC gearmotors 1/7 hp and smaller. Package includes one set of 2 brushes and 2 brush caps.	MTGx-P06-1Jxxx, MTGx-P07-1Jxxx
MTPM-BRUSH-6	$25.50	DC motor brushes, replacement, for 1/7 hp 90VDC or 180VDC MTGR and MTGP series DC gearmotors. Package includes one set of 2 brushes and 2 brush caps.	MTGx-P14-1Lxxx
MTPM-BRUSH-7	$20.50	DC motor brushes, replacement, for 90VDC or 180VDC MTGR and MTGP series DC gearmotors 1/15 hp and smaller. Package includes one set of 2 brushes and 2 brush caps.	MTGx-P06-1Lxxx, MTGx-P05-1Lxxx
MTGA-KIT-1	$39.50	DC motor spare parts kit, for certain MTGP and all MTGR series DC gearmotors as shown in dimension drawings P-B, R-A, & R-B. Includes: two metal brush cap covers, one terminal box, one 1/8 (0.125) inch shaft key and one 3/16 (0.187) inch shaft key.	MTGP-P14-1xxxx, MTGP-P20-1xxxx, MTGR-Pxx-1xxxx
**** These replacement parts also fit many AutomationDirect small-frame DC motors. Refer to the DC Motors section for small-frame motor application information.***			

IronHorse® DC Gearmotors

MTGP Parallel Shaft Gearmotors – 1/17 hp – 1/5 hp





Selection and Specifications

Gearmotor Specifications – MTGP Series Parallel Shaft Gearmotors													
Part Number	Price	Voltage (VDC)	Motor HP	Speed (rpm)	Gear Ratio	F/L Torque (in·lb)	F/L Current (A) *	Shaft Dia (in)	Overhung Load (lb)	Axial/ Thrust Load (lb)	Weight (lb)	Gearbox Features	Dimension Drawing #
MTGP-P06-1J008	$175.00	12	1/16	7.9	386:1	50	1.39	0.3125	50	None (not suitable for applications with axial/thrust loading)	4.0	Grease lubrication ** Sleeve bearings 18-inch wiring leads Face mounted	P-A
MTGP-P06-1J024	$194.00			24	120:1	50	2.41						
MTGP-P06-1J034	$198.00			34	83:1	45	2.86						
MTGP-P06-1J050	$175.00			50	55:1	45	3.88						
MTGP-P06-1J097	$175.00			97	26:1	36	5.68						
MTGP-P06-1L008	$187.00	90	1/17	8.4	386:1	50	0.19						
MTGP-P06-1L012	$194.00			12	269:1	50	0.23						
MTGP-P06-1L037	$194.00			37	83:1	45	0.40						
MTGP-P06-1L055	$175.00			55	55:1	45	0.54						
MTGP-P06-1L114	$175.00			114	26:1	26	0.61						
MTGP-P14-1L026	$312.00	90	1/7	26	69:1	280	1.58	0.625	150	200	11.4	Oil lubrication ** Needle bearings Junction box with 8-inch wiring leads Face mounted or foot mounted Designed to AGMA standards	P-B
MTGP-P14-1L039	$312.00			39	46:1	189	1.59						
MTGP-P14-1L061	$304.00			61	30:1	130	1.59						
MTGP-P14-1L091	$304.00			91	20:1	86	1.58						
MTGP-P14-1L165	$304.00			165	11:1	47	1.57						
MTGP-P20-1J026	$321.00	12	1/5	26	69:1	280	12.60						
MTGP-P20-1J037	$321.00			37	46:1	245	15.80						
MTGP-P20-1J056	$314.00			56	30:1	168	15.70						
MTGP-P20-1J084	$314.00			84	20:1	112	15.70						
MTGP-P20-1J154	$302.00			154	11:1	61	15.60						
MTGP-P20-1K018	$314.00	24	1/5	18	110:1	280	4.41						
MTGP-P20-1K036	$314.00			36	46:1	245	7.89						
MTGP-P20-1K084	$310.00			84	20:1	112	7.87						
MTGP-P20-1K153	$310.00			153	11:1	61	7.81						

** Current must be limited so that it does not exceed 125% of the gearmotor rated current.*
*** Permanently lubricated.*

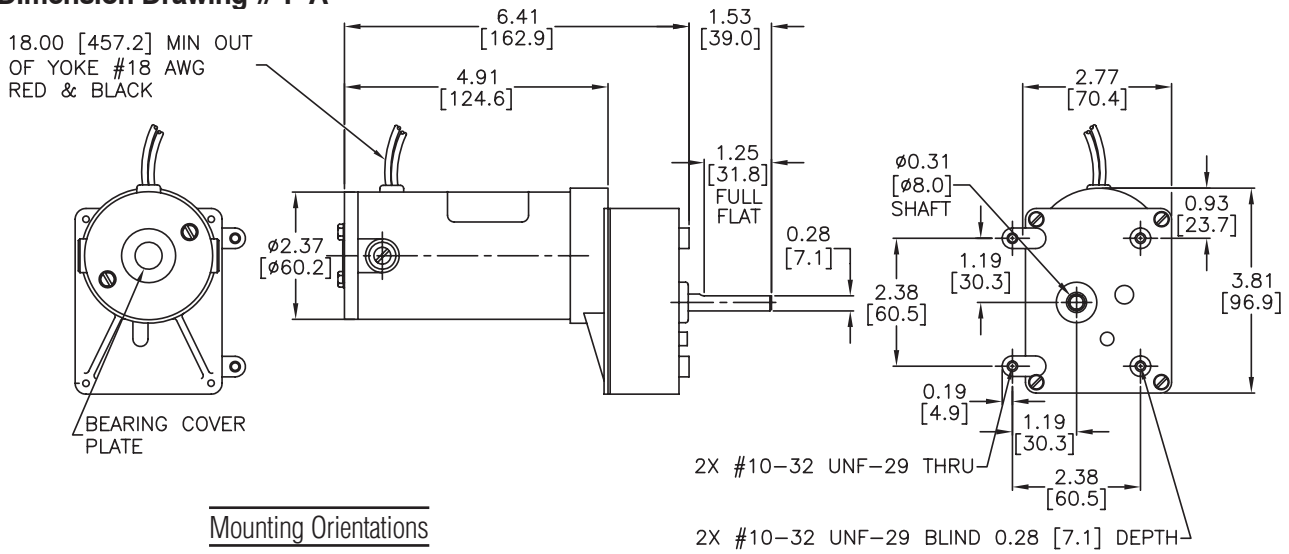
Replacement parts are available, as shown in "Replacement Parts for MTGP and MTGR DC Gearmotors" subsection.

IronHorse® DC Gearmotors

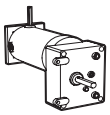
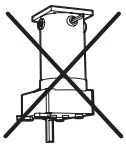
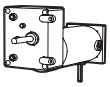
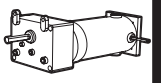
MTGP Parallel Shaft Gearmotors – 1/17 hp – 1/5 hp

Dimensions (in [mm])

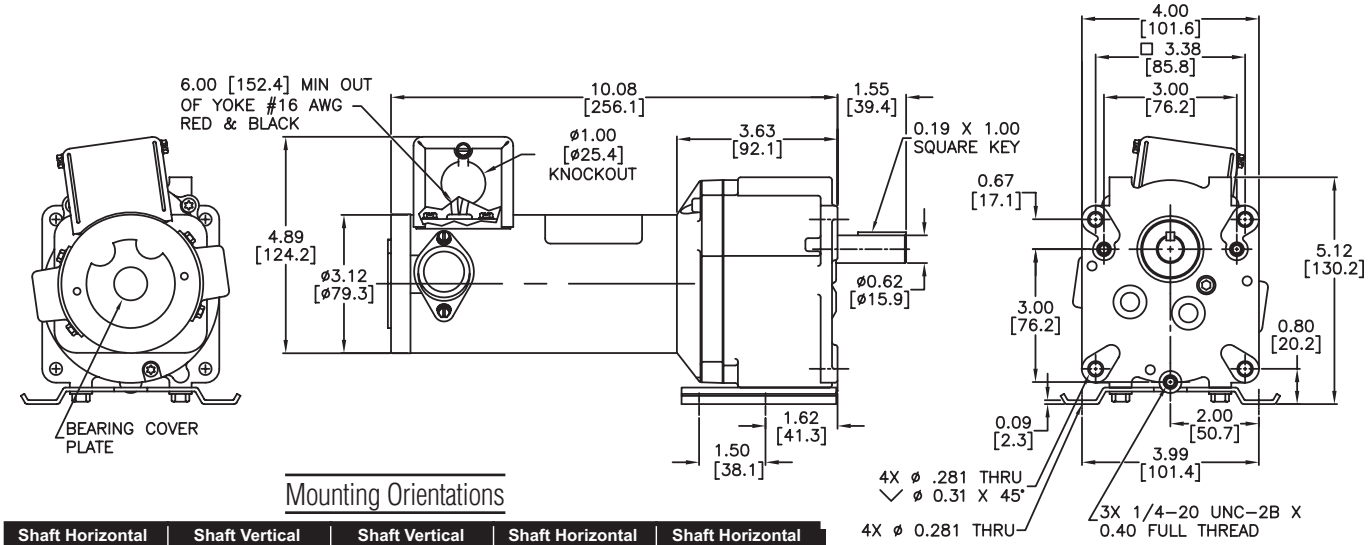
Dimension Drawing # P-A



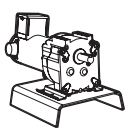
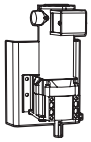
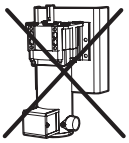
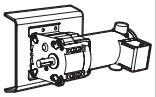
Mounting Orientations

Shaft Horizontal Rightside Up	Shaft Vertical Down	Shaft Vertical Up	Shaft Horizontal Upside Down	Shaft Horizontal Base Rolled 90°
				

Dimension Drawing # P-B

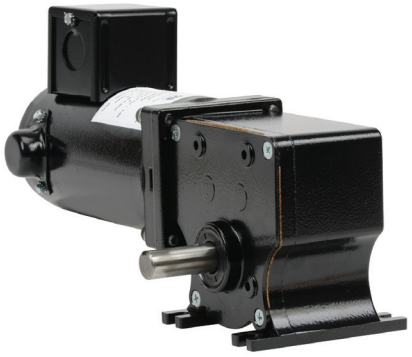


Mounting Orientations

Shaft Horizontal Rightside Up	Shaft Vertical Down	Shaft Vertical Up	Shaft Horizontal Upside Down	Shaft Horizontal Base Rolled 90°
				

IronHorse® DC Gearmotors

MTGR Right Angle Gearmotors – 1/19 hp – 1/5 hp



Selection and Specifications

Gearmotor Specifications – MTGR Series Right-Angle Shaft Gearmotors

Part Number	Price	Voltage (VDC)	Motor HP	Speed (rpm)	Gear Ratio	F/L Torque (in-lb)	F/L Current (A) *	Shaft	Overhung Load (lb)	Axial/ Thrust Load (lb)	Weight (lb)	Gearbox Features	Dimension Drawing #
MTGR-P05-1L038	$300.00	90	1/19	38	50:1	42	0.68	dual shaft 0.5 in diameter	200	150	8.3	Grease lubrication ** Ball bearings Junction box with 8-inch wiring leads Face or Foot mounted Single worm	R-A
MTGR-P05-1L053	$300.00			53	36:1	33	0.68						
MTGR-P05-1L093	$300.00			93	20.5:1	23	0.68						
MTGR-P05-1L132	$300.00			132	14.5:1	17	0.67						
MTGR-P05-1L197	$300.00			197	9.75:1	12	0.68						
MTGR-P07-1J036	$240.00	12	1/15	36	50:1	50	5.69						
MTGR-P07-1J084	$240.00			84	20.5:1	34	6.78						
MTGR-P07-1J177	$240.00			177	9.75:1	18	6.78						
MTGR-P14-1L022	$310.00	90	1/7	22	82:1	280	1.41	single shaft 0.625 in diameter	150	200	14.4	Double shielded ball bearings Junction box with 8-inch wiring leads Foot mounted Bevel gears 80 – 90% efficient Can be backdriven ***	R-B
MTGR-P14-1L040	$312.00			40	44:1	185	1.64						
MTGR-P14-1L064	$334.00			64	28:1	116	1.65						
MTGR-P14-1L077	$310.00			77	23:1	97	1.65						
MTGR-P14-1L178	$310.00			178	10:1	44	1.64						
MTGR-P20-1K023	$318.00	24	1/5	23	82:1	280	5.64						
MTGR-P20-1K039	$314.00			39	44:1	263	8.74						
MTGR-P20-1K075	$318.00			75	23:1	137	8.72						
MTGR-P20-1K174	$318.00			174	10:1	63	8.75						

** Current must be limited so that it does not exceed 125% of the gearmotor rated current.*
*** Permanently lubricated.*
**** Not intended for DC power generation.*

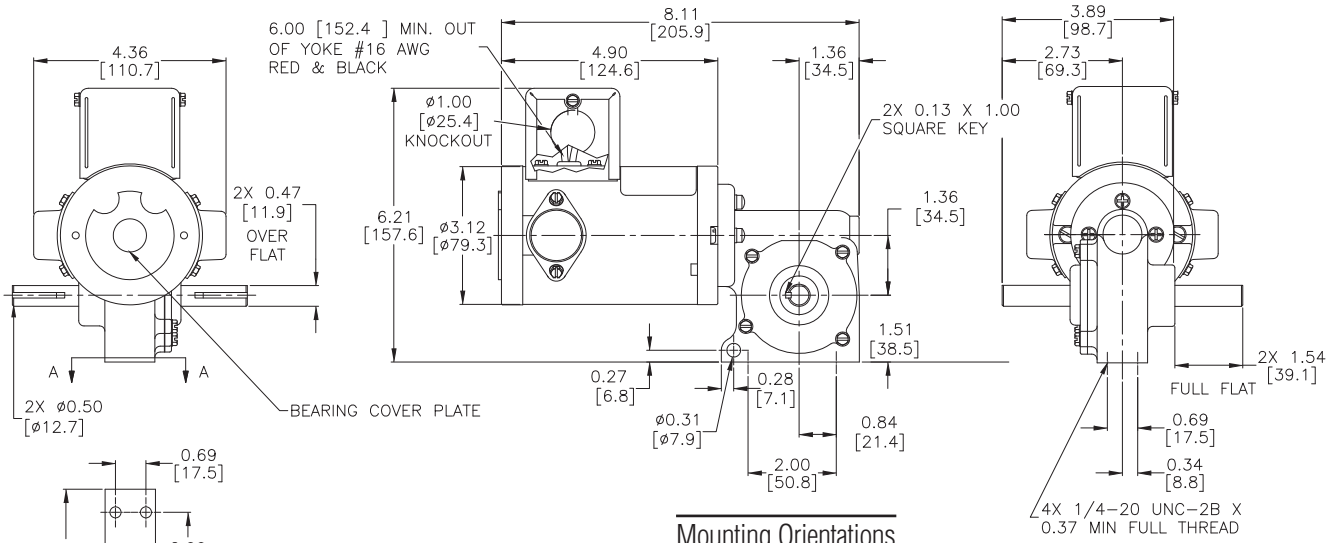
Replacement parts are available, as shown in "Replacement Parts for MTGP and MTGR DC Gearmotors" subsection.

IronHorse® DC Gearmotors

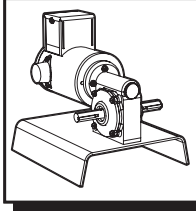
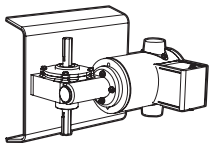
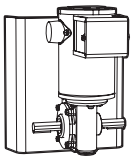
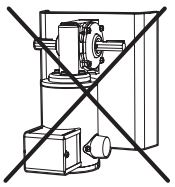
MTGR Right Angle Gearmotors – 1/19 hp – 1/5 hp

Dimensions (in [mm])

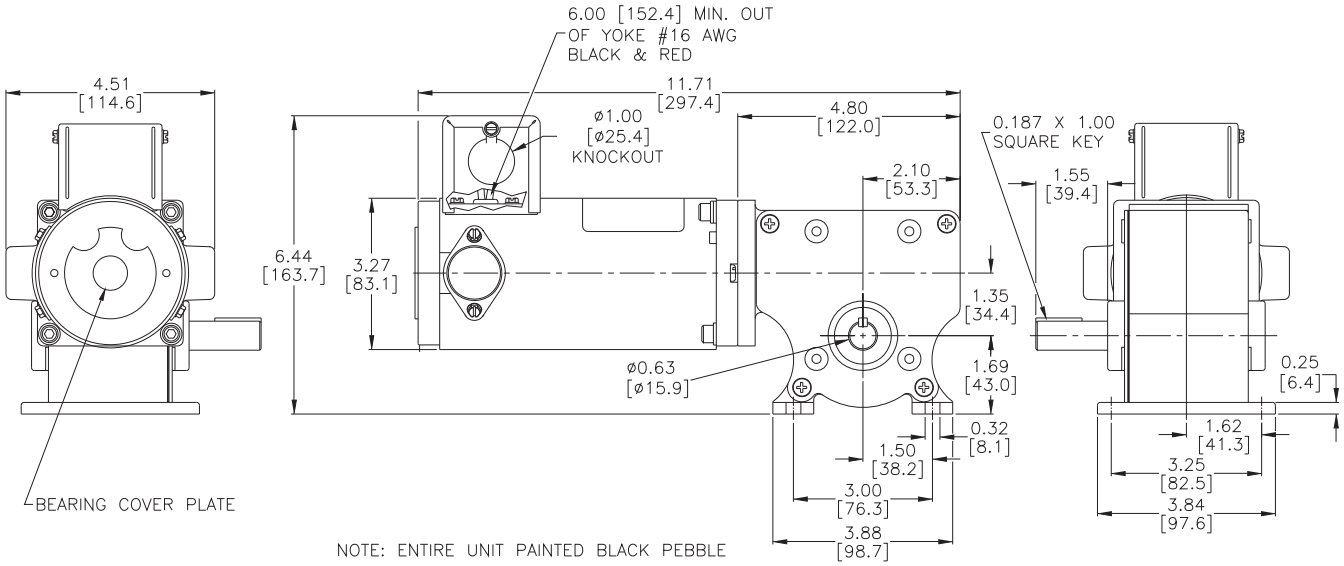
Dimension Drawing # R-A



Mounting Orientations

Shaft Horizontal Rightside Up	Shaft Vertical Up/Down Motor Horizontal	Shaft Horizontal Motor Vertical & Above	Shaft Horizontal Motor Vertical & Below
			

Dimension Drawing # R-B



The Only Acceptable Orientation is Shown in the Above Illustration

AutomationDirect AC Motors Selection Overview

EPAct, High and Premium Efficiency
What does it all mean?

EPAct (1992)

In 1992, the U.S. Congress passed legislation requiring that general purpose Design A & B motors meet minimum efficiency requirements, and this legislation was called the Energy Policy Act of 1992. Previously, there had been no U.S. standards set forth for motor energy efficiency. Since 1997 (when EPAct '92 was first enforced), two-, four-, and six-pole general purpose Design A & B motors had to meet EPAct guidelines. Since then, most general purpose motors manufactured and/or sold in the U.S. have met these requirements.

Premium Efficiency (EISA 2007)

In December 2010, a new level of energy efficiency mandate went into effect. The Energy Independence and Security Act of 2007 mandated that all AC industrial motors as described below must meet Premium Efficiency standards. The NEMA trade group was instrumental in getting this legislation passed, so many people refer to the high efficiency motors by their nickname – NEMA Premium®. All applicable motors manufactured or imported into the U.S. after December 2010 must meet the Premium Efficiency guidelines.

Motors Covered Under EISA 2007 (Premium Efficiency Mandate)
Included – must meet the new Premium Efficiency standards – Industrial AC electric squirrel-cage general-purpose motors as follows:
Single speed; Polyphase; 1–200 hp with 3-digit frame sizes; 2, 4, & 6 pole (3600, 1800, & 1200 rpm); NEMA design A & B (including IEC equivalent); Continuous rated
Not Included in Premium Efficiency standards, but must now meet EPAct standards:
JM; JP; Round body (footless); 201–500 hp; Fire pump; U-frame; Design C; 8-pole
Certain motors (Inverter/Vector Duty, NEMA design D, etc.) are not covered by EISA 2007. ***For full text, visit www.energy.senate.gov and click "ENERGY INDEPENDENCE & SECURITY ACT OF 2007".***

Nominal Full-Load Efficiency Standards Comparisons (%)

Enclosed Electric Motors, Random Wound, 60 Hz, 600V or Less

Motor HP	1200 rpm [6-pole]		1800 rpm [4-pole]		3600 rpm [2-pole]	
	EPAct	Premium Efficiency	EPAct	Premium Efficiency	EPAct	Premium Efficiency
1	80.0	82.5	82.5	85.5	75.5	77.0
1.5	85.5	87.5	84.0	86.5	82.5	84.0
2	86.5	88.5	84.0	86.5	84.0	85.5
3	87.5	89.5	87.5	89.5	85.5	86.5
5	87.5	89.5	87.5	89.5	87.5	88.5
7.5	89.5	91.0	89.5	91.7	88.5	89.5
10	89.5	91.0	89.5	91.7	89.5	90.2
15	90.2	91.7	91.0	92.4	90.2	91.0
20	90.2	91.7	91.0	93.0	90.2	91.0
25	91.7	93.0	92.4	93.6	91.0	91.7
30	91.7	93.0	92.4	93.6	91.0	91.7
40	93.0	94.1	93.0	94.1	91.7	92.4
50	93.0	94.1	93.0	94.5	92.4	93.0
60	93.6	94.5	93.6	95.0	93.0	93.6
75	93.6	94.5	94.1	95.4	93.0	93.6
100	94.1	95.0	94.5	95.4	93.6	94.1
125	94.1	95.0	94.5	95.4	94.5	95.0
150	95.0	95.8	95.0	95.8	94.5	95.0
200	95.0	95.8	95.0	96.2	95.0	95.4

AutomationDirect AC Motors Selection Overview

General-purpose or inverter-duty motor?

How to choose a general purpose motor vs. an inverter-duty motor

General purpose motors have been around for many years. They are the workhorse of almost every industry. An inverter-duty motor is a much newer concept that was necessary as general purpose motors began to be driven by VFDs (inverters or AC drives). An inverter duty motor can withstand the higher voltage spikes produced by all VFDs (amplified at longer cable lengths) and can run at very slow speeds without overheating. This performance comes at a cost: inverter-duty motors can be much more expensive than general purpose motors. Guidelines for choosing an IronHorse general purpose motor vs. an inverter-duty motor are given below. If your application falls within the guidelines below, there is no need to apply an inverter-duty motor.

NOTE: Marathon inverter-duty motors have limitations as well. Please see the Marathon section for more details.

Background: For many years, AC motors were driven by across-the-line contactors and starters. The electricity sent to the motor was a very clean sine wave at 60Hz. Noise and voltage peaks were relatively small. However, there were drawbacks: they only ran electrically at one speed (speed reduction was usually handled by gearboxes or some other, usually inefficient, mechanical means) and they had an inrush of electrical current (when the motor was first turned on) that was usually 5 to 6 times the normal current that the motor would consume. The speed reduction apparatus was expensive and bulky, and the inrush would wreak havoc with power systems and loading (imagine an air conditioning system in an old house - when the compressor would kick on, the lights would dim; now imagine the same circumstances with a motor the size of a small car).

Note: The following discussion applies only to 3-phase motors.

Enter the VFDs (variable frequency drives): Drives were introduced to allow the speed of these motors to be changed while running and to lessen the inrush current when the drive first starts up. To do this, the drive takes the incoming 60Hz AC power and rectifies it to a DC voltage (every drive has a DC bus that is around 1.414 (sqrt of 2) * incoming AC Line Voltage).

This DC voltage is then "chopped" by power transistors at very high frequencies to simulate a sine wave that is sent to the motor [see Figure 1]. By converting the incoming power to DC and then reconverting it to AC, the drive can vary its output voltage and output

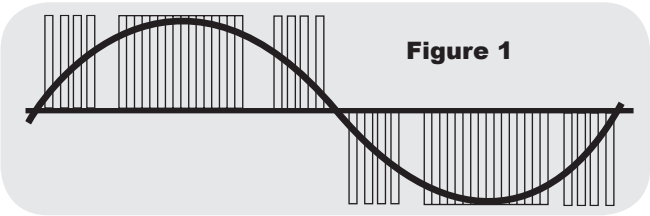


Figure 1

frequency, thus varying the speed of a motor. Everything sounds great, right? We get to control the frequency and voltage going out to the motor, thus controlling its speed.

Some things to watch out for: A VFD-driven general purpose motor can overheat if it is run too slowly. *(Motors can get hot if they're run slower than their rated speed.)* Since most general purpose motors cool themselves with shaft-mounted fans, if the motor overheats, bearing and insulation life will be reduced. Therefore there are minimum speed requirements for all motors.

The voltage "chopping" that occurs in the drive actually sends high-voltage spikes (at the DC bus level) down the wire to the motor. If the system contains long cabling, there are actually instances where a reflected wave occurs at the motor. The reflected wave can effectively double the voltage on the wire. This can lead to premature failure of the motor insulation. Long cable lengths between the motor and drive increase the harmful effects of the reflected wave, as do high chopping frequencies (listed in drive manuals as carrier frequencies). Line reactors, 1:1 transformers placed at the output of the drive, can help reduce the voltage spikes going from the drive to the motor. Line reactors are used in many instances when the motor is located far from the drive [see Figure 2].

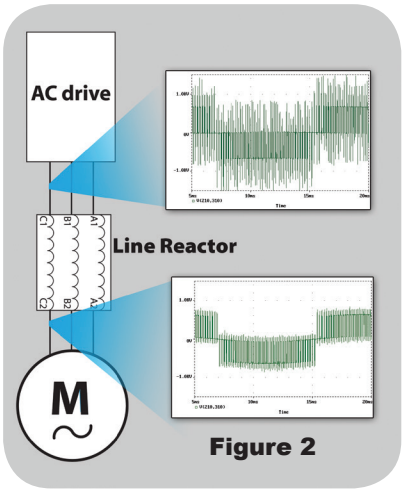


Figure 2

In summary, general purpose motors can be run with drives in many applications; however inverter-duty motors are designed to handle much lower speeds without overheating and they are capable of withstanding higher voltage spikes without their insulation failing. With the increased performance comes an increase in cost. This additional cost can be worth it if you need greater performance.

The considerations for applying IronHorse motors are given below.

Heat considerations

	IronHorse speed ratio	For an 1800 RPM motor, minimum IronHorse speed is:
Variable Torque applications (fans, centrifugal pumps, etc.)	5:1 (EPAct motors) 10:1 (PE motors)	1800/5 = 360RPM 1800/5 = 180RPM
Constant Torque Applications (conveyors, extruders, etc.)	2:1 (EPAct motors) 4:1 (PE motors)	1800/2 = 900RPM 1800/4 = 450RPM

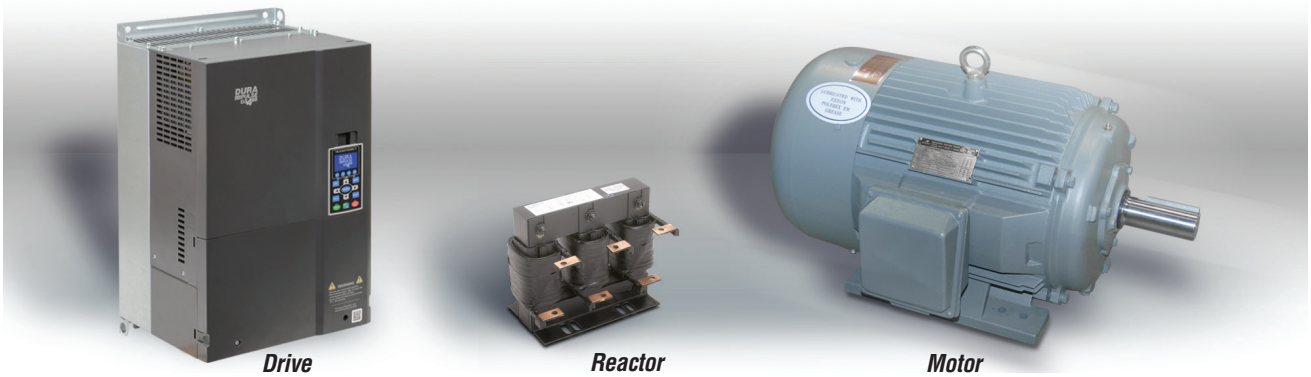
Voltage Spike considerations

	Max cable distance from drive to IronHorse motor	Max cable distance with a 3% line reactor between drive and IronHorse motor
For use with 230V and 460V VFDs*	125 ft	250 ft

** Up to 6kHz carrier frequency*

IronHorse® General-Purpose AC Motors

Using IronHorse General-Purpose Motors with AC Drives



Drive *Reactor* *Motor*

AC drive motor control vs. across-the-line motor control

General purpose AC induction motors are typically controlled by across-the-line starters, i.e. contactors, manual motor starters, etc. However, three-phase general purpose motors can also be controlled by AC drives under certain conditions. (Single-phase AC motors cannot be controlled by typical three-phase AC drives.)

Across-the-line control applies full voltage to the motor at startup, and has several disadvantages.

- High inrush current - startup inrush current is typically 5-6 times the normal motor full load current, and can significantly increase utility bills.
- Inability to change speeds - the motor runs only at its rated speed.
- Inefficiency in some applications - fan and pump applications require ON/OFF control or valves/dampers to control flow.
- Contact maintenance - arcing caused by high inrush and breaking currents significantly reduce the motor starter's life span.

Many applications can use AC drive control for three-phase AC induction motors, which has several advantages:

- Lower inrush current at motor startup
- Ability to change motor speed
- Greater efficiency in some applications. - fan and pump applications can use the AC drive to provide both motor control and flow control. The drive can control the flow by varying the motor speed, and therefore eliminate the need for inefficient valves/dampers.
- Solid state power delivery; minimal maintenance.

NOTE: AC drive (VFD) control is applicable only for three-phase AC motors (three-phase AC drives cannot be used to control single-phase motors)

General purpose AC induction motors are not designed specifically for use with AC drives, so there are three major considerations for AC drive control of three-phase general purpose motors:

1. Heat considerations for AC drive control

Fan-cooled motors are designed to provide sufficient insulation cooling when the motors run at rated speed. The cooling ability of fans is reduced when motors run at lower speeds, and the insulation in general purpose motors is not designed for this condition. Therefore, there are limitations on how slowly general purpose motors can be continuously run without prematurely causing motor insulation failure.

- **Constant Torque (CT) Applications**
  PE motors: 4:1 (1/4 rated speed)
  EPAct motors: 2:1 (1/2 rated speed)
  The CT minimum continuous speed for an IronHorse general purpose motor is either one quarter or one half of its rated speed, as shown in the motor Performance Data tables. (Constant torque loads require the same amount of torque from the motor regardless of speed; e.g., conveyors, cranes, machine tools.)
- **Variable Torque (VT) Applications**
  PE motors: 10:1 (1/10 rated speed)
  EPAct motors: 5:1 (1/5 rated speed)
  The VT minimum continuous speed for an IronHorse general purpose motor is either one tenth or one fifth of its rated speed, as shown in the motor Performance Data tables. (Variable torque loads require less torque at lower speeds, resulting in less heat generated by the motor; e.g., fans, centrifugal pumps.)

If your application requires motors to run at speeds below those described above, use our Marathon inverter duty motors. Inverter duty motors can run fully loaded at very low speeds without being damaged by overheating.

2. Voltage spike considerations for AC drive control

All AC drives cause large voltage spikes between the drive and the motor, and long cable distances increase these spikes even more. Therefore, there are maximum cable lengths that can be run between the drive and the motor. Line (load) reactors can be installed near the drive output to reduce the voltage spikes.

- 230V and 460V **Without Reactor – 125 ft maximum cable length** between drive and motor
- 230V and 460V **With Reactor – 250 ft maximum cable length** between drive and motor

If your application requires cable lengths longer than those described above, please use our Marathon inverter-duty motors.

3. Carrier frequency limitation for AC drive control

The AC Drive carrier frequency should be set to 6kHz or less.

AC Motor Selection – IronHorse® General Purpose Motors

IRONHORSE®
AUTOMATIONDIRECT

IronHorse® General Purpose Motor Selection					
Characteristics	1-Phase		3-Phase		
	56C/56HC Frame Rolled Steel***	T-Frame Farm Duty	56C/56HC Frame Rolled Steel***	56C Frame Stainless Steel	Cast Iron and Rolled Steel T & TC Frames
Electrical Characteristics					
Horsepower range	1/3 – 2	2 - 10	1/3 – 3	1/3 – 3/4	1-300(T); 1-30(TC)
Base speed (# Poles)	1800 (4), 3600 (2)	1800 (4)	1800 (4), 3600 (2)		1200 (6); 1800 (4); 3600 (2)
Standard Voltage	115/208-230, 115/230	208-230	208-230/460		208-230/460, 460
Phase / Base Frequency (Hz)	1 / 60		3 / 60		
Service Factor	1.15		1.15 (line) ; 1.0 (drive)		1.25 (TEFC, Line); 1.15 (ODP, Line); 1.00 (drive)
Design Code (NEMA)	L, N	L	B		
Insulation Class	F				
Insulation System	dip & bake twice	Double VPI	dip & bake	double dip & bake	TEFC : VI (Vacuum Impregnation); ODP: Double VPI
Duty Cycle	continuous				
Thermal protection	none	yes	none		
Mechanical Characteristics					
Frame size (mounting)	56C or 56HC	182T – 215T	56C or 56HC		143T/TC - 449T
Enclosure	TEFC				TEFC / ODP (MTCP2 / MTDP)
Frame material	rolled steel			304 stainless steel	Cast Iron / Rolled Steel
End bracket material	aluminum	aluminum	aluminum	304 stainless steel	Cast Iron / Aluminum 143T-256T, Cast Iron 284T-326T (TEFC / ODP)
Junction box material	steel	Base: Aluminum, Cover: Steel	steel	304 stainless steel	Cast Iron / Steel
Fan guard material	steel	steel	steel	304 stainless steel	Steel / N/A for ODP
Fan material	polypropylene plastic	plastic	plastic	heat-resistant polyethylene	Plastic / N/A for ODP
Lead termination	junction box				
Standard mounting	C-Face with Removable Rigid Base	Rigid Base	C-Face with Removable Rigid Base	C-Face with Rigid Base C-Face with Round Body	Rigid Base, C-Face with Rigid Base (1-100 hp)
Drive end shaft slinger	yes	no	yes		Yes / No 143T-256T, Yes 284T-326T
Paint	black	green	black	n/a	Grey / Blue
Bearings	ball				1-300HP - 2P, 1-75 HP - 4P & 6P: Ball; 100-300 HP - 4P & 6P: Roller
Grease	Mobil Polyrex EM	NS7 ENS	Mobil Polyrex EM	Korschun lithium-based	Mobil Polyrex EM / NS7 ENS (TEFC / ODP)
Standard junction box assembly position	F1				F1 (Some sizes reversible to F2)
Performance Characteristics					
Constant Torque speed range	n/a	n/a	2:1 (MTR2, MTSS); 4:1 (MTRP, MTR2)		10:1
Variable Torque speed range	n/a	n/a	5:1 (MTR, MTSS); 10:1 (MTRP, MTR2)		20:1
Constant Horsepower speed range	n/a	n/a	1.5:1		1.5:1
Temperature rise	F	B			
Encoder provisions	none				
Other Characteristics					
Warranty*	2 years			1 year	2 Years
Agency Approvals **	CE, $_{C}$CSA$_{US}$	CE, $_{C}$UR$_{US}$	$_{C}$CSA$_{US}$		CE, $_{C}$CSA$_{US}$ / CE, $_{C}$UR$_{US}$

** See Terms and Conditions for motor warranty explanation.*
1) For warranty on IronHorse motors below 50 hp, warranty service can be arranged through AutomationDirect.
2) For warranty on IronHorse motors 50 hp and above, motors must be inspected by a local EASA motor repair or service center; (see AutomationDirect Terms & Conditions).

*** To obtain the most current agency approval information, see the Agency Approval Checklist on the specific part number's web page.*

**** 56HC motors are capable of 56C C-face mounting, and are also compatible with 56, 143T, and 145T foot mounting dimensions.*

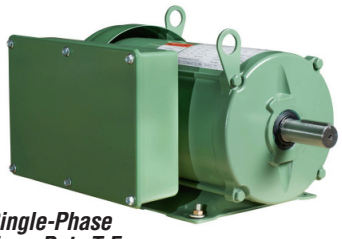
IronHorse® General-Purpose AC Motors MTF2, MTDP, MTR2, MTCP2, & MTSS

Model Overview

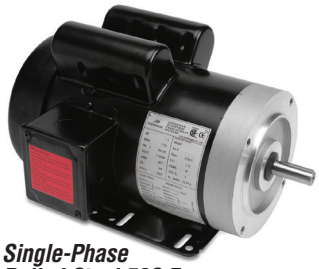
IronHorse motors are manufactured by leading motor suppliers with over 20 years experience delivering high-quality motors to the demanding U.S. market. Our suppliers produce motors in IS09001 facilities, and test the motors during production and after final assembly. This is how we can stand behind our IronHorse motors with a two-year warranty (one year for Stainless Steel).

The IronHorse line of motors includes:

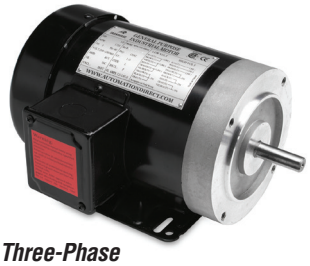
- **MTR2 Series:** TEFC 56(H)C-frame **single-phase** AC motors with rolled-steel frames; flange mount and removable mounting feet; 0.33–2 hp
- **MTF2 Series:** TEFC T-frame **single-phase** Farm-Duty AC motors with rolled-steel frames and mounting feet; 2–10 hp
- **MTR2 Series:** TEFC 56C-frame **three-phase** AC motors with rolled-steel frames; flange mount and removable mounting feet; 0.33–0.75 hp
- **MTRP Series:** TEFC 56C/HC-frame **three-phase** AC motors with rolled-steel frames; removable base and C-face mount; 1–3 hp
- **MTSS Series:** TEFC 56C-frame **three-phase** AC motors with stainless-steel frames; flange mount and round bodies or rigid mounting feet; 0.33–0.75 hp
- **MTCP2 Series:** TEFC T-frame **three-phase** Premium Efficiency AC motors with cast-iron frames and mounting feet; 1–300 hp (TC-frame [C-face] 1–30 hp)
- **MTDP Series:** Open Drip-Proof **three-phase** Premium Efficiency AC motors with rigid base mount; motor rating range - 1 to 50 hp.
- Replacement switches, junction boxes, and start and run capacitors available for IronHorse single-phase motors
- Replacement bases, fans, and fan shrouds available for many IronHorse motors
- Accessory C-flange kits available for flange mounting of IronHorse three-phase cast iron and rolled steel T-frame Premium Efficiency motors
- STABLE motor slide bases for adjustable mounting of NEMA motors from 56 to 449T (adjustable stainless steel bases not available)



Single-Phase
Farm Duty T-Frame

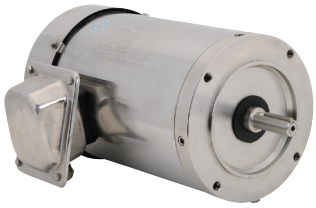


Single-Phase
Rolled Steel 56C Frame

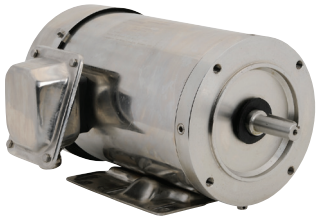


Three-Phase
Rolled Steel 56C Frame

Three-Phase Premium Efficiency
Rolled Steel Open Drip-Proof

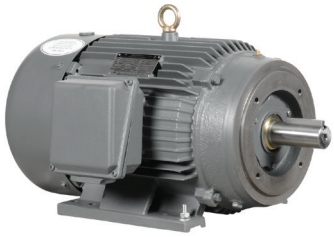


Three-Phase
Stainless Steel 56C – Round Body



Three-Phase
Stainless Steel 56C – Rigid Base

Three-Phase Premium Efficiency
Cast Iron T-Frame



Three-Phase Premium Efficiency
Cast Iron TC Frame

IronHorse® Farm-Duty AC Motors – 1-Phase

T-Frame TEFC Motors – Single-Phase 2 to 10 hp

Features

- 208-230VAC 1-phase
- Totally Enclosed Fan Cooled (TEFC) enclosure
- IP55 environmental rating
- NEMA T-frame
- Rolled-steel housing
- Rigid mounting base
- Can be mounted in horizontal or vertical orientation
- Steel fan cover
- Class-10 manual-reset locked-rotor thermal protector (motor thermal overload must be provided separately)
- Large easy-to-wire junction box with rubber gasket
- Heavy duty oversized ball bearings
- High tensile strength steel shaft
- Mylar nameplate with easy-to-read wiring diagram
- Electrically reversible
- NEMA design L
- Class F winding insulation
- VPI (Vacuum and Pressure Impregnation) insulation process
- Service Factor: 1.15 @ 230VAC; 1.0 @ 208VAC
- Two year warranty
- $_{C}$UR $_{US}$ certified, CE

Accessories Available

- Start capacitors (replacement/spare)
- Run capacitors (replacement/spare)
- Centrifugal switches (replacement/spare)
- Stationary switches (replacement/spare)
- Locked rotor thermal overload switches (replacement/spare)
- Junction boxes (replacement/spare)
- Fans (replacement/spare)
- Fan shrouds (replacement/spare)
- C-face kits

Applications

- Conveyors
- Fans
- Pumps
- Air compressors
- Other farm equipment

Motor Specifications – Single-Phase Farm-Duty Motors

Part Number	Price	HP	Base RPM	Voltage	Housing	NEMA Frame	Service Factor	F.L. Amps @ 208/230VAC	Approx Weight (lb)	Drawing Link
MTF2-002-1B18-182	$359.00	2	1800rpm	208-230 VAC	TEFC IP55	182T	1.15 @ 230 VAC, 1.0 @ 208 VAC	9.3 / 8.5	67	PDF
MTF2-003-1B18	$429.00	3				184T		13.5 / 12.5	76	PDF
MTF2-005-1B18	$519.00	5				184T		22.2 / 20.2	100	PDF
MTF2-7P5-1B18-215	$813.00	7 1/2				215T		31.5 / 28.7	134	PDF
MTF2-010-1B18	$898.00	10				215T		45.2 / 38.8	149	PDF

Notes:

1) Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

2) Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.

3) Operate on 230VAC +/- 10% (1.15 @ 230VAC; 1.0 S.F. @ 208V), single-phase power only.

Performance Data – Single-Phase Farm-Duty Motors

Part Number	HP	NEMA Design	FL RPM	Current @ 230V (Amps)			Torque (lb·ft)			FL Efficiency (%)	FL Power Factor	Rotor Inertia (lb·ft^2)
				230V No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break -down			
MTF2-002-1B18-182	2	215T	1764	3.0	8.5	78.6	6.01	21.8	22.1	84.0	0.92	0.27
MTF2-003-1B18	3		1769	4.2	12.5	89.2	8.76	24.9	24.4	84.4	0.91	0.34
MTF2-005-1B18	5		1769	6.3	20.2	170.7	14.7	57.2	57.3	86.4	0.92	0.49
MTF2-7P5-1B18-215	7 1/2		1767	8.2	28.7	238.5	21.91	82.8	82.2	86.6	0.96	0.74
MTF2-010-1B18	10		1765	11.79	38.8	365.8	29.93	119.7	122.7	87.5	0.96	0.85

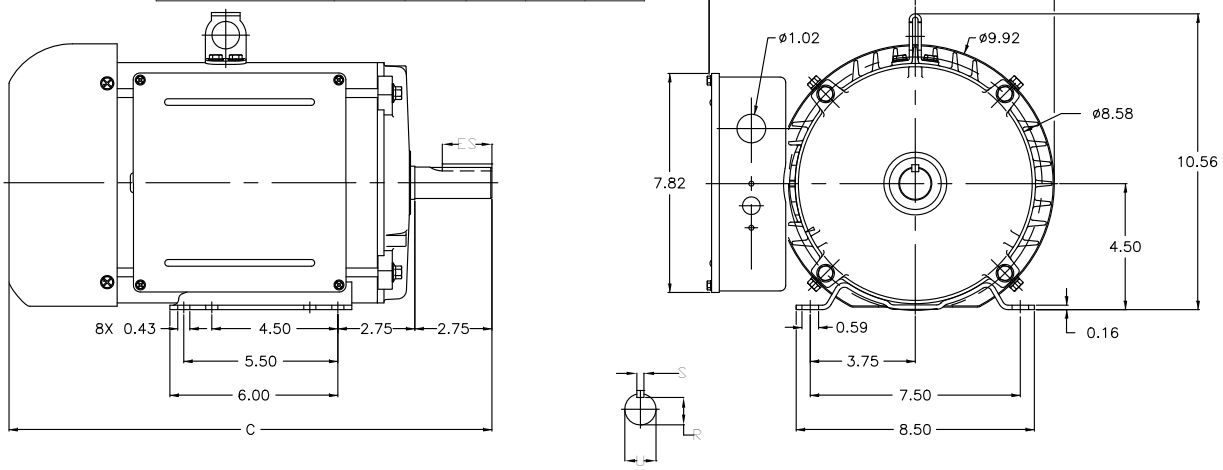
IronHorse® Farm-Duty AC Motors – 1-Phase

T-Frame TEFC Motors – Single-Phase 2 to 10 hp

Dimensions – (units = inches)

MTF2-00x-1B18-xxx

PART NUMBER	DIM. C	U	R	S	ES
MTF2-002-1B18-182	18.6	1.125	0.986	0.25	1.78
MTF2-003-1B18	18.6	1.125	0.986	0.25	1.78
MTF2-005-1B18	18.6	1.125	0.986	0.25	1.78
MTF2-7P5-1B18-215	20.46	1.375	1.201	0.312	2.41
MTF2-010-1B18	20.46	1.375	1.201	0.312	2.41



IronHorse® Farm-Duty AC Motor Accessories

T-Frame TEFC Motors – Single-Phase 2 to 10 hp

Start Capacitors

Single-phase motors use capacitors to provide starting torque when power is first applied to the motor. AutomationDirect offers *spare/replacement* starting capacitors for our single-phase IronHorse motors.

Run Capacitors

In addition to the start capacitors and centrifugal switches, IronHorse single-phase farm-duty motors also have run capacitors which allow the motors to develop higher running torque, greater efficiency, and improved power factor. We offer *spare/replacement* run capacitors for single-phase IronHorse motors.

Centrifugal Switches

The start capacitors are no longer needed once the motors begin turning, so they are then taken out of the circuit by a centrifugal switch. We also offer *spare/replacement* switches for our motors.

Centrifugal Switch MTAF2-CSW-05

Locked Rotor Overload Switches

IronHorse Farm Duty motors have a built-in manual overload switch to disable the motor if the load stops the motor (locked rotor). The overload is located in the motor's junction box, and has a manual reset switch. This switch is for locked rotor only. A separate motor thermal overload must be provided.

Manual Overload Switch MTAF2-MOL-1

Start Capacitor MTAF2-CAP-16

Run Capacitor MTAF2-CAP-19

Stationary Switch MTAF2-SSW-05

MTF Farm-Duty Single-Phase Motor Spare/Replacement Parts *

Part Number	Price	Accessory Type	Capacitance (µF)	Rated Voltage	Dimension Height x Ø (in [mm])	Applicable Motor Number	Motor HP
MTAF2-CAP-16	$23.00	start capacitor	250	300	3.39 x 1.81 [86.1 x 46.0]	MTF2-002-1B18-182, MTF2-003-1B18	2, 3
MTAF2-CAP-17	$33.00		550		3.39 x 1.81 [86.1 x 46.0]	MTF2-005-1B18	5
MTAF2-CAP-18	$73.00		400	330	4.33 x 1.97 [110.0 x 50.0]	MTF2-7P5-1B18-215	7.5
MTAF2-CAP-19	$85.00		550	330	3.96 x 1.77 [100.6 x 45.0]	MTF2-010-1B18	10
MTAF2-CAP-20	$19.00	run capacitor	25	450	3.96 x 1.97 [100.6 x 50.0]	MTF2-002-1B18-182	2
MTAF2-CAP-21	$24.00		30	450	4.17 x 1.97 [106.0 x 50.0]	MTF2-003-1B18	3
MTAF2-CAP-22	$29.00		50	450	3.54 x 2.01 [90.0 x 51.0]	MTF2-005-1B18	5
MTAF2-CAP-23	$35.00		45	500	4.13 x 2.13 [105.0 x 54.0]	MTF2-7P5-1B18-215	7.5
MTAF2-CAP-24	$43.00		60	500	4.72 x 1.97 [120.0 x 50.0]	MTF2-010-1B18	10
MTAF2-CSW-05	$47.00	centrifugal switch	n/a	n/a	n/a	MTF2-002-1B18-182 MTF2-003-1B18 MTF2-005-1B18	2, 3, 5
MTAF2-CSW-06	$58.00			250		MTF2-7P5-1B18-215	7.5, 10
MTAF2-SSW-05	$97.00	stationary switch		n/a		MTF2-002-1B18-182 MTF2-003-1B18 MTF2-005-1B18	2,3, 5
MTAF2-SSW-06	$171.00					MTF2-7P5-1B18-215 MTF2-010-1B18	7.5, 10
MTAF2-MOL-1	$81.00	manual overload switch		n/a		MTF2-002-1B18-182	2
MTAF2-MOL-2	$193.00					MTF2-003-1B18	3
MTAF2-MOL-3	$219.00					MTF2-005-1B18	5
MTAF2-MOL-4	$219.00					MTF2-7P5-1B18-215	7.5
MTAF2-MOL-5	Not Done					MTF2-010-1B18	10

*** These accessories are spare/replacement components only for IronHorse MTF2 series single-phase farm-duty motors.***

IronHorse® Farm-Duty AC Motor Accessories

T-Frame TEFC Motors – Single-Phase 2 to 10 hp

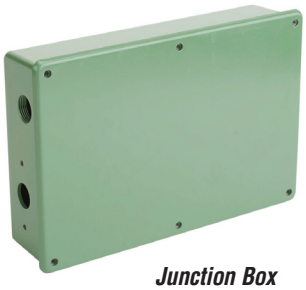
Fans

Fan Shrouds

Fan
MTAF2-FAN-180

Fan
Shroud
MTAF2-SHROUD-180

Junction Boxes



Junction Box
MTAF2-JBOX-180

C-face Flanges

C-face Flange MTAF2-CFACE-180TC

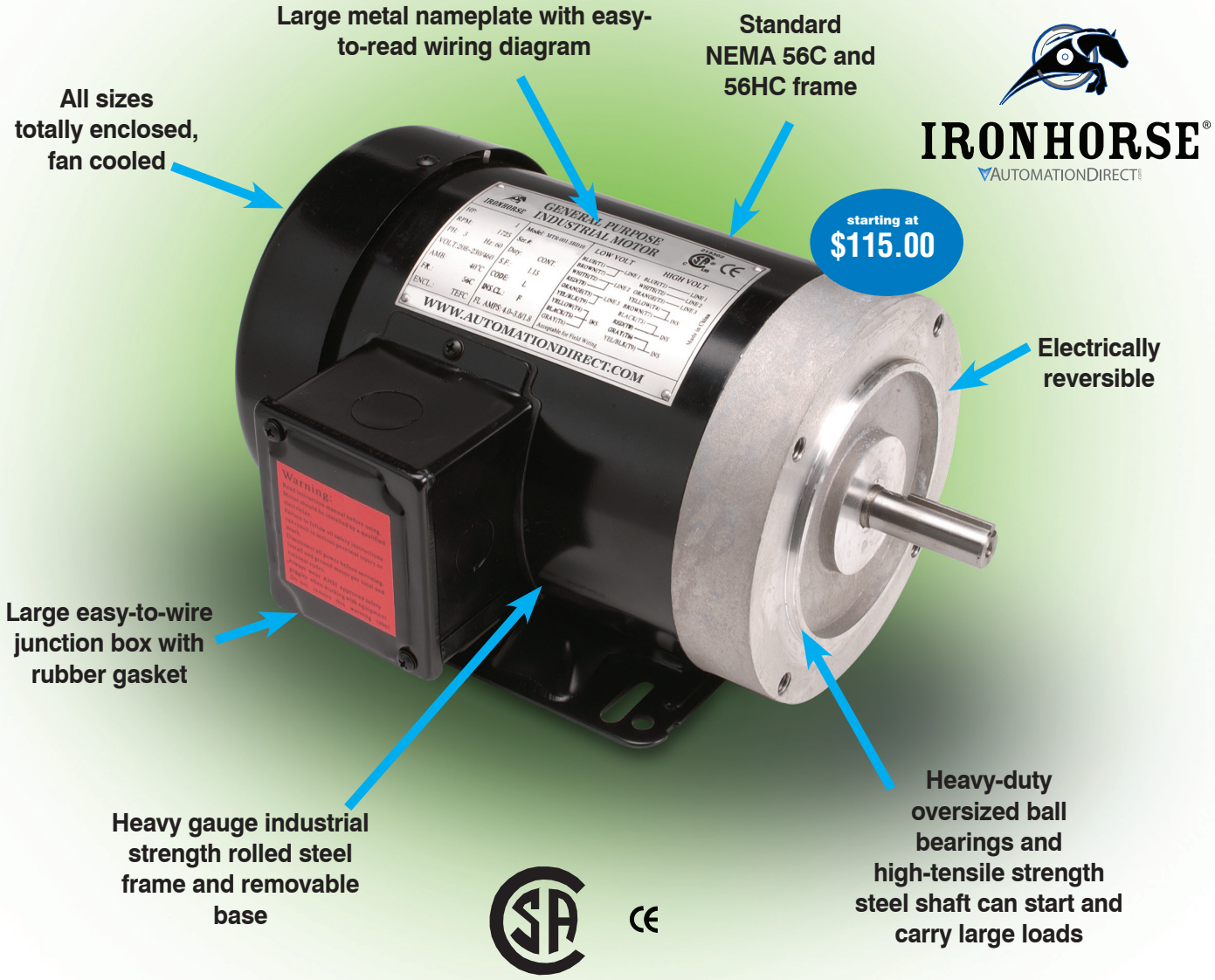
MTF2 Farm-Duty Single-Phase Motor Spare/Replacement Parts *					
Part Number	*Price*	*Accessory Type*	*Dimension Height x Ø (in [mm])*	*Applicable Motor Number*	*Motor HP*
MTAF2-CFACE-180TC	$89.00	c-face kit	n/a	MTF2-002-1B18-182 MTF2-003-1B18 MTF2-005-1B18	2, 3, 5
MTAF2-CFACE-210TC	$143.00			MTF2-7P5-1B18-215 MTF2-010-1B18	7.5, 10
MTAF2-JBOX-180	$51.00	junction box		MTF2-002-1B18-182 MTF2-003-1B18 MTF2-005-1B18	2, 3, 5
MTAF2-JBOX-210	$58.00			MTF2-7P5-1B18-215 MTF2-010-1B18	7.5, 10
MTAF2-FAN-180	$7.00	fan		MTF2-002-1B18-182 MTF2-003-1B18 MTF2-005-1B18	2, 3, 5
MTAF2-FAN-210	$11.00			MTF2-7P5-1B18-215 MTF2-010-1B18	7.5, 10
MTAF2-SHROUD-180	$35.00	fan shroud		MTF2-002-1B18-182 MTF2-003-1B18 MTF2-005-1B18	2, 3, 5
MTAF2-SHROUD-210	$41.00			MTF2-7P5-1B18-215 MTF2-010-1B18	7.5, 10

** These accessories are spare/replacement components only for IronHorse MTF2 series single-phase farm-duty motors.*

Independently tested for quality at www.advancedenergy.org

Advanced Energy is North America's leading independent motor test lab and also the first motor lab to receive NVLAP (National Voluntary Laboratory Accreditation Program) compliance for motor efficiency testing through NIST. We commissioned them to put all IronHorse motors through rigorous mechanical and electrical tests to confirm our quality requirements. We were very satisfied with the results, and we're sure you will be too!

Rolled Steel 56C Frame Motors 0.33 to 3 hp



Single-phase - 115/208-230 Volt, 56C Frame - TEFC Enclosure, 1800 & 3600 RPM

- 0.33 to 2 hp
- Electrically reversible
- Capacitor start
- Removable bolt-on / bolt-off base
- Industrial gauge steel motor, frame and base

Three-phase - 208-230/460 Volt, 56C Frame - TEFC Enclosure, 1800 & 3600 RPM

- 0.33 to 3 hp
- Electrically reversible
- Removable bolt-on / bolt-off base
- Industrial gauge steel motor, frame and base

IronHorse® Rolled-Steel AC Motors – 1-Phase

56C/56HC Frame TEFC Motors – Single-Phase 0.33 to 2 hp

Features

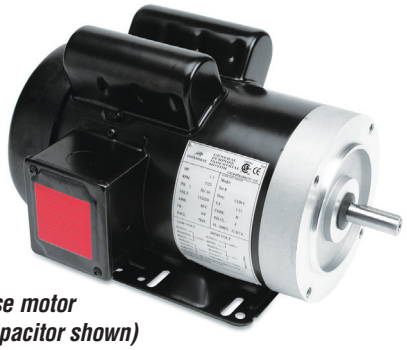
- Totally Enclosed Fan Cooled (TEFC) enclosure
- IP43 environmental rating
- NEMA 56C or 56HC flange mount (varies by model)
- Rolled steel shell frame / cast aluminum end bell
- Removable base / bolt-on/bolt-off mounting feet
- No mounting orientation restrictions
- Steel fan cover
- Large all-metal capacitor cover with rubber gasket and oversized capacitors
- Large easy-to-wire junction box with rubber gasket
- Heavy duty oversized ball bearings
- High tensile strength steel shaft
- Large Mylar nameplate with easy-to-read wiring diagram
- Electrically reversible
- NEMA design L or N (varies by model)
- Class F winding insulation
- Service Factor: 1.15
- Two year warranty
- $_{C}CSA_{US}$ certified, CE

Accessories Available

- Start capacitors (replacement/spare)
- Run capacitors (replacement/spare)
- Centrifugal switches (replacement/spare)
- Stationary switches (replacement/spare)
- Junction boxes (replacement/spare)
- Fans (replacement/spare)
- Fan shrouds (replacement/spare)
- Motor bases (replacement/spare)

Applications

- Conveyors
- Fans
- Gear reducers
- Pumps



MTR Series 1-phase motor (model with run capacitor shown)

MTR2 Series 1-phase motor (model without run capacitor shown)

Motor Specifications – Single-Phase 56C/56HC Frame Motors

Part Number	Price	HP		Base RPM		1-phase Voltage		Housing	NEMA Frame	Service Factor		F.L. Amps		Approx Weight (lb)
		60 Hz	50 Hz	60 Hz	50 Hz	60Hz	50Hz			60Hz	50Hz	115V/230V 60Hz	110/220V 50Hz	
MTR2-P33-1AB18	$115.00	1/3	1/4	1800	1500	115/230	110/220	TEFC rolled steel frame with cast aluminum end bell; F1 conduit box location	56C flange mount	1.15	1	5.2 / 2.6	5.4 / 2.7	22
MTR2-P50-1AB18	$121.00	1/2	1/3									7.2 / 3.6	7.2 / 3.6	25
MTR2-P75-1AB18	$132.00	3/4	1/2									10.0 / 5.0	9.6 / 4.8	29
MTR2-001-1AB18	$146.00	1	3/4						56HC			13.0 / 6.5	12.4 / 6.2	36
MTR2-1P5-1AB18	$190.00	1-1/2	1									14.5 / 7.3	14.0 / 7.0	37
MTR2-002-1AB18	$220.00	2	1-1/2									19.6 / 9.8	23.4 / 11.7	44
MTR2-P33-1AB36	$129.00	1/3	1/4	3600	3000	115/230	110/220	TEFC rolled steel frame with cast aluminum end bell; F1 conduit box location	56C	1.15	1	5.4 / 2.7	5.4 / 2.7	21
MTR2-P50-1AB36	$136.00	1/2	1/3									6.5 / 3.3	6.4 / 3.2	23
MTR2-P75-1AB36	$150.00	3/4	1/2									9.2 / 4.6	9.2 / 4.6	27
MTR2-001-1AB36	$159.00	1	3/4									11.5 / 5.8	10.2 / 5.1	30
MTR2-1P5-1AB36	$174.00	1-1/2	1		3000	115/230	110/220				1	13.0 / 6.5	11.4 / 5.7	31
MTR2-002-1AB36	$204.00	2	1-1/2						56HC			17.0 / 8.5	14.6 / 7.3	37

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

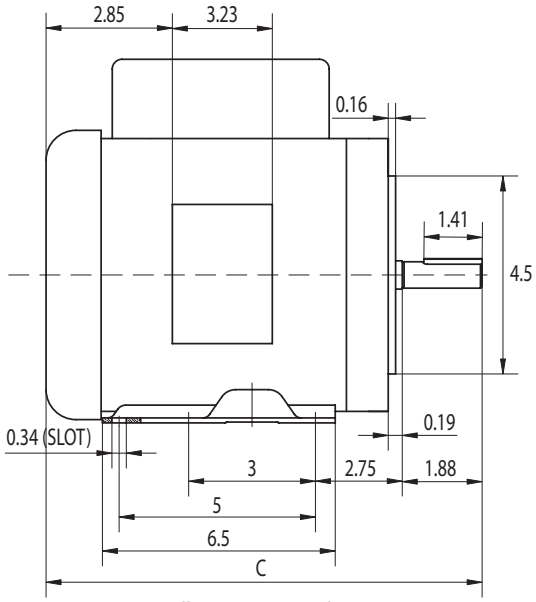
IronHorse® Rolled-Steel AC Motors – 1-Phase

56C/56HC Frame TEFC Motors – Single-Phase 0.33 to 2 hp

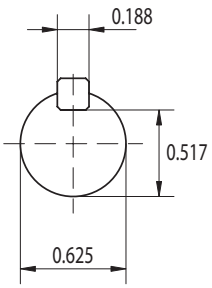
Performance Data – Single-Phase 56C/56HC Frame Motors (230V/60Hz data except as indicated)														
Part Number	HP		NEMA Design	F.L. RPM		Current @ 115V/230V (Amps)			Torque (lb·ft)			F.L. Efficiency (%)	F.L. Power Factor	Rotor Inertia (lb·ft²)
	60 Hz	50 Hz		60 Hz	50 Hz	230V No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break -down			
1800 RPM														
MTR2-P33-1AB18	1/3	1/4	N	1725	1425	2.05	5.2 / 2.6	33 / 16	1.01	3.54	2.57	63.0	0.58	0.048
MTR2-P50-1AB18	1/2	1/3				2.74	7.2 / 3.6	44 / 21	1.49	5.09	3.54	64.5	0.68	0.059
MTR2-P75-1AB18	3/4	1/2				3.14	10.0 / 5.0	62 / 30	2.26	7.06	5.16	67.0	0.71	0.074
MTR2-001-1AB18	1	3/4				4.39	13.0 / 6.5	80 / 40	3.03	9.30	8.23	70.0	0.69	0.095
MTR2-1P5-1AB18	1-1/2	1	L			5.23	14.5 / 7.3	110 / 55	4.46	8.70	10.45	77.0	0.84	0.095
MTR2-002-1AB18	2	1-1/2				8.07	19.6 / 9.8	152 / 76	6.06	12.17	13.81	79.0	0.82	0.121
MTR-P33-1AB18	1/3	–	N		–	2.2	6.6 / 3.3	31 / 18	1.02	3.06	2.81	56.0	0.62	0.075
MTR-P50-1AB18	1/2					2.93	8.8 / 4.4	37 / 21	1.52	4.56	4.18	57.0	0.63	0.080
MTR-P75-1AB18	3/4					3.67	11.0 / 5.5	55 / 32	2.29	6.30	5.73	65.0	0.65	0.095
MTR-001-1AB18	1					4.53	13.6 / 6.8	75 / 43	3.04	8.36	7.60	68.0	0.66	0.120
3600 RPM														
MTR2-P33-1AB36	1/3	1/4	N	3450	2850	2.14	5.4 / 2.7	37 / 19	0.50	2.18	1.96	59.5	0.72	0.031
MTR2-P50-1AB36	1/2	1/3				2.23	6.5 / 3.3	47 / 23	0.74	2.59	2.42	63.0	0.74	0.034
MTR2-P75-1AB36	3/4	1/2				2.82	9.2 / 4.6	66 / 33	1.12	4.62	3.44	66.5	0.78	0.041
MTR2-001-1AB36	1	3/4				3.04	11.5 / 5.8	82 / 41	1.50	4.48	3.83	69.5	0.80	0.047
MTR2-1P5-1AB36	1-1/2	1	L		2850	3.90	13.0 / 6.5	109 / 55	2.21	3.22	5.08	77.0	0.94	0.047
MTR2-002-1AB36	2	1-1/2				4.51	17.0 / 8.5	131 / 65	3.02	4.45	6.82	79.5	0.94	0.060
MTR-1P5-1AB36	1-1/2	–	N		–	3.0	14.2 / 7.1	116 / 58	2.2	7.5	5.4	72.0	0.9	0.030

Dimensions – (units = inches)

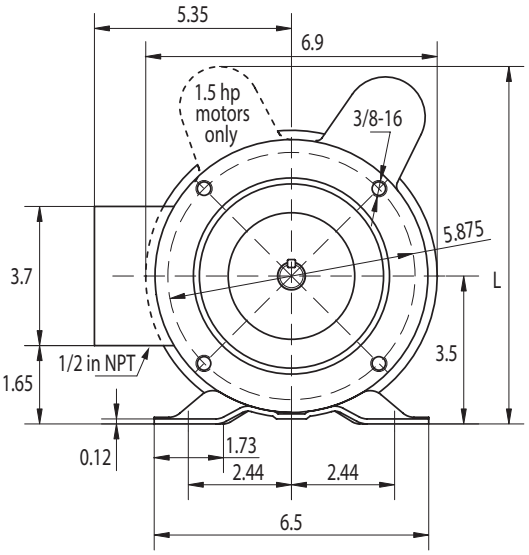
MTR-xxx-1ABxx



C = 12.4 in; all except 1 & 1.5 hp motors
C = 13 in; 1 hp (1800 rpm) & 1.5 hp (3600 rpm)
C = 13.8 in; 1.5 hp (1800 rpm)



MTR-xxx-1ABxx IronHorse Motors
(single-phase rolled steel)



L = 8.19 in; all except 1.5 hp motors
L = 8.5 in; 1.5 hp motors

IronHorse® Rolled-Steel AC Motors – 1-Phase

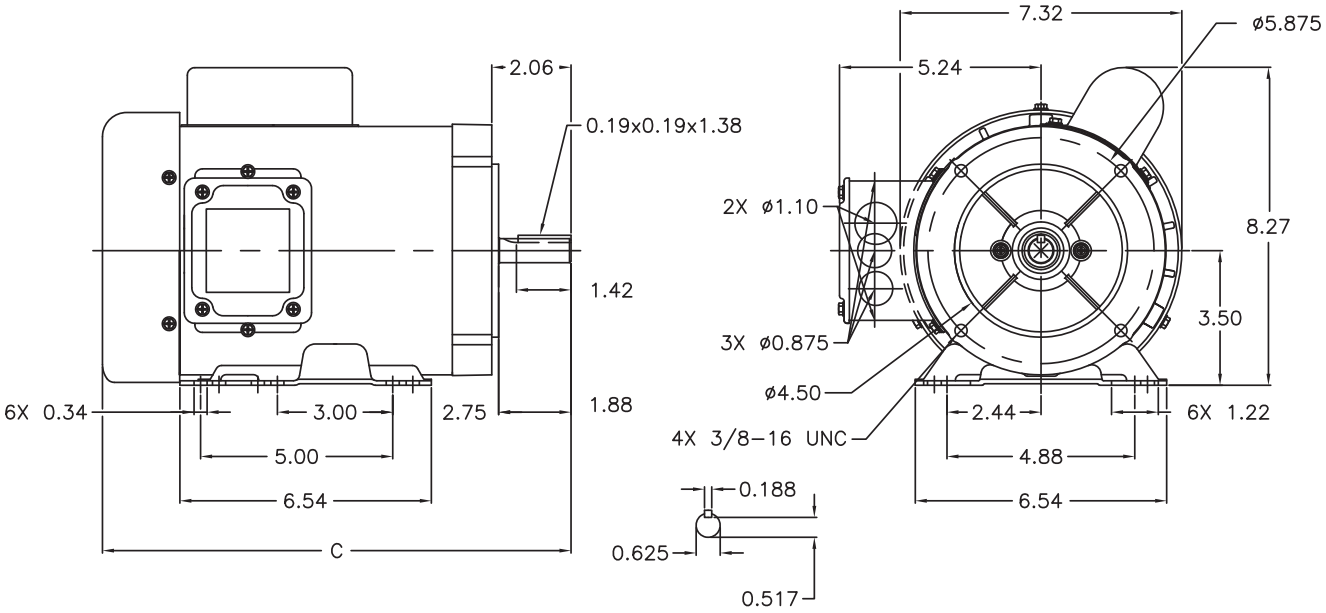
56C/56HC Frame TEFC Motors – Single-Phase 0.33 to 2 hp

Dimensions – (units = inches)

MTR2-Pxx-1ABxx, MTR2-001-1ABxx

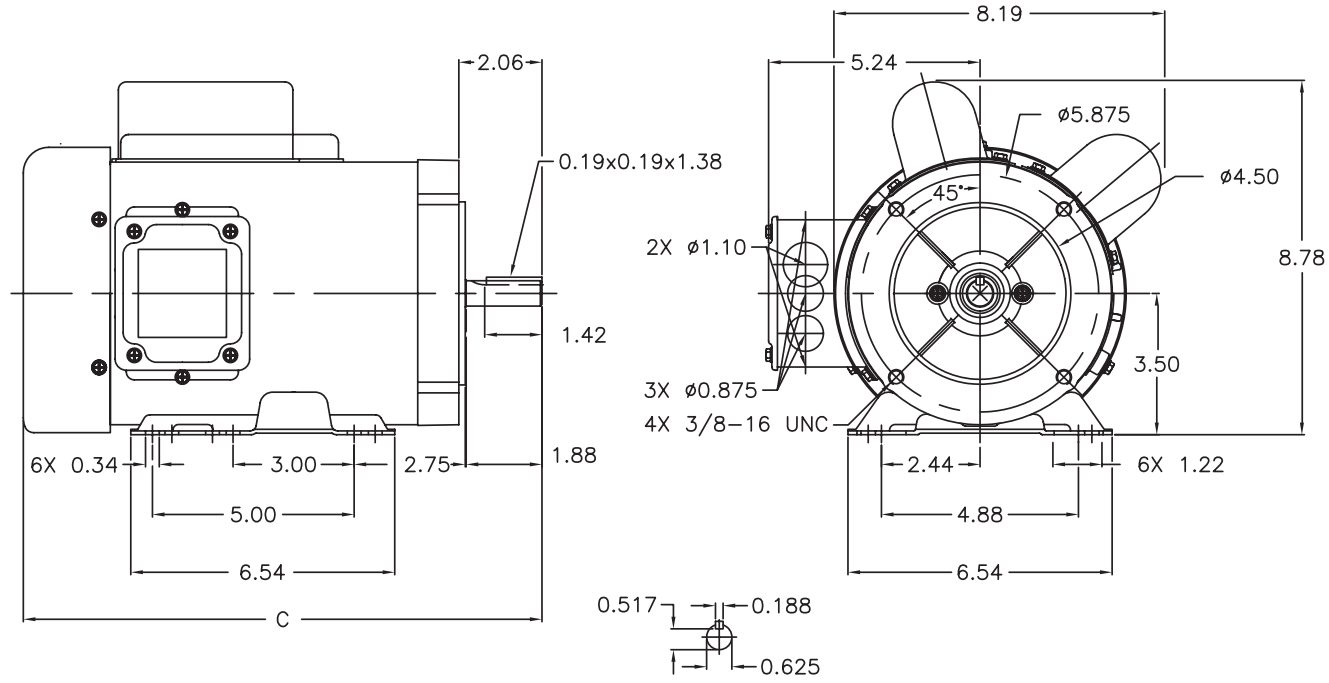
PART NUMBER	DIM. C
MTR2-P33-1AB18	11.90
MTR2-P33-1AB36	11.90
MTR2-P50-1AB18	11.90
MTR2-P50-1AB36	11.90

PART NUMBER	DIM. C
MTR2-P75-1AB18	12.40
MTR2-P75-1AB36	11.90
MTR2-001-1AB18	12.90
MTR2-001-1AB36	12.40



MTR2-1P5-1ABxx, MTR2-002-1ABxx

PART NUMBER	DIM. C
MTR2-1P5-1AB18	12.90
MTR2-002-1AB18	13.90
MTR2-1P5-1AB36	12.40
MTR2-002-1AB36	12.90



IronHorse® AC Motor Accessories – 1-Phase

56C/56HC Frame TEFC Motors – Single-Phase – 0.33 to 2 hp – Motor Accessories

Start Capacitors

Single-phase motors use capacitors to provide starting torque when power is first applied to the motor. AutomationDirect offers *spare/replacement* starting capacitors for our single-phase IronHorse motors.

Run Capacitors

In addition to the start capacitors and centrifugal switches, IronHorse 1-1/2 and 2 hp single-phase motors also have run capacitors which allow the motors to develop higher running torque, greater efficiency, and improved power factor. We offer *spare/replacement* run capacitors for single-phase IronHorse motors.

Centrifugal Switches

The start capacitors are no longer needed once the motors begin turning, so they are then taken out of the circuit by a centrifugal switch. We also offer *spare/replacement* switches for our motors.

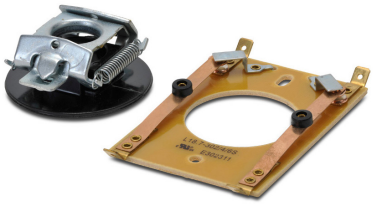
Stationary Switches

MTR2 series motors have a separate stationary switch that works with the centrifugal switch; both switches are required.

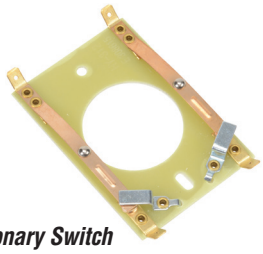
(MTR series motors have only the one centrifugal switch.)

Start Capacitor
MTA-CAP-02

Run Capacitor
MTA-CAP-07

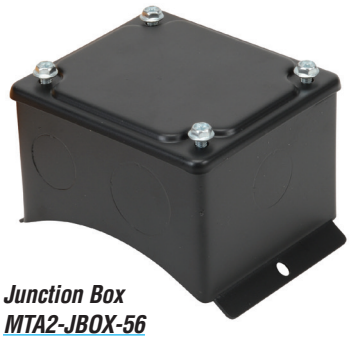


Centrifugal Switch ***MTA-CSW-01***



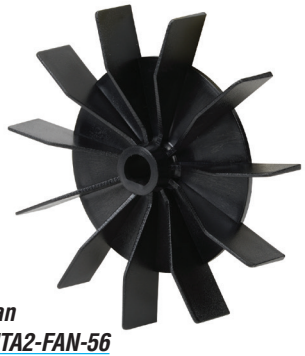
Stationary Switch
MTA-CSW-04

Junction Box
MTAR-JBOX-56



Junction Box
MTA2-JBOX-56

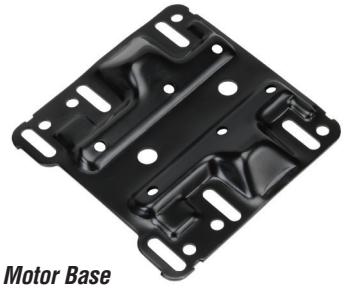
Fan
MTAR-FAN-56



Fan
MTA2-FAN-56

Fan Shroud
MTAR-SHROUD-56

Fan Shroud
MTA2-SHROUD-56



Motor Base
MTAR-BASE-56

Motor Base
MTA2-BASE-56

IronHorse® AC Motor Accessories – 1-Phase

56C/56HC Frame TEFC Motors – Single-Phase – 0.33 to 2 hp – Motor Accessories

MTR Series Single-Phase Motor Spare/Replacement Parts (NOT for MTR2 Motors)*							
Part Number	Price	Accessory Type	Capacitance (µF)	Rated Voltage	Dimension Height x Ø (in [mm])	Applicable MTR Motor Number	MTR Motor HP : RPM
MTA-CAP-01	$11.50	start capacitor	200	165	3.15 x 1.65 [80.0 x 41.9]	MTR-P33-1AB18	1/3 : 1800
MTA-CAP-02	$11.50	start capacitor	250			MTR-P50-1AB18 MTR-P75-1AB18	1/2 : 1800 3/4 : 1800
MTA-CAP-03	$11.50	start capacitor	300			MTR-001-1AB18	1 : 1800
MTA-CAP-08	$11.50	start capacitor	400			MTR-1P5-1AB36	1-1/2 : 3600
MTA-CAP-09	$11.50	run capacitor	35		4.0 x 1.8 [101 x 45]	MTR-1P5-1AB36	1-1/2 : 3600
MTA-CSW-01	$11.50	centrifugal switch	n/a	250	n/a	MTR-xxx-1AB18	all 1800 rpm
MTA-CSW-02	$11.50					MTR-1P5-1AB36	all 3600 rpm
MTAR-BASE-56	$13.50	motor base		n/a		MTR-xxx-1ABxx	all
MTAR-FAN-56	$13.50	fan					
MTAR-JBOX-56	$13.50	junction box					
MTAR-SHROUD-56	$13.50	fan shroud					

** These accessories are spare/replacement components only for MTR series IronHorse motors. Accessories for MTR series motors are not compatible with MTR2 series motors.*

MTR2 Series Single-Phase Motor Spare/Replacement Parts (NOT for MTR Motors)*							
Part Number	Price	Accessory Type	Capacitance (µF)	Rated Voltage	Dimension Height x Ø (in [mm])	Applicable MTR2 Motor Number	MTR2 Motor HP : RPM
MTA-CAP-10	$14.50	start capacitor	200	165	2.80 x 1.46 [71.1 x 37.1]	MTR2-P33-1AB36	1/3 : 3600
MTA-CAP-11	$15.50	start capacitor	300		3.39 x 1.85 [86.1 x 47.0]	MTR2-P33-1AB18 MTR2-P50-1AB36	1/3: 1800 1/2 : 3600
MTA-CAP-12	$16.50	start capacitor	400			MTR2-P50-1AB18 MTR2-P75-1AB36	1/2: 1800 3/4 : 3600
MTA-CAP-13	$23.50	start capacitor	500			MTR2-P75-1AB18 MTR2-001-1AB18 MTR2-001-1AB36	3/4: 1800 1: 1800 1 : 3600
MTA-CAP-14	$23.50	run capacitor	40	250	3.38 x 1.81 [85.9 x 46.0]	MTR2-1P5-1ABxx MTR2-002-1ABxx	1-1/2 : 1800 1-1/2 : 3600 2 : 1800 2 : 3600
MTA-CAP-15	$41.50	start capacitor	800	165	4.41 x 1.85 [112.0 x 47.0]		
MTA-CAP-22	$44.50	start capacitor	900	165	4.375 x 1.8125 [111.1 x 46.0]	MTR2-1P5-1AB18	1-1/2; 1800
MTA-CSW-03	$12.00	centrifugal switch	n/a	125	n/a	MTR2-xxx-1AB36	all 3600 rpm
MTA-CSW-04	$12.00	stationary switch				MTR2-xxx-1ABxx	all
MTA-CSW-08	$12.00	centrifugal switch				MTR2-xxx-1AB18	all 1800 rpm
MTA2-BASE-56	$13.50	motor base		n/a		MTR2-xxx-1ABxx	all
MTA2-FAN-56	$13.50	fan					
MTA2-JBOX-56	$13.50	junction box					
MTA2-SHROUD-56	$13.50	fan shroud					

** These accessories are spare/replacement components only for MTR2 series IronHorse motors. Accessories for MTR2 series motors are not compatible with MTR series motors.*

IronHorse® Open Drip-Proof AC Motors – 3-Phase

T-Frame ODP Motors – Three-Phase – 1 to 50hp

MTDP Series 3-Phase Motor

IronHorse® MTDP, open drip-proof motors range in size from 1hp to 50hp at 1800 rpm and 3hp, 5hp, and 7.5 hp at 3600 rpm. Frame sizes are available from 143T to 326T. All models have a rolled steel frame; frame sizes up to 256T have cast aluminum end bells, while frame sizes of 284T or larger have cast iron end bells. All frame sizes have a fixed base.

Features

- Open drip-proof enclosure
- Rolled steel shell frame / cast aluminum or cast iron end bells
- Large easy-to-wire junction box with rubber gasket
- Heavy duty oversized ball bearings
- High tensile strength steel shaft
- Electrically reversible
- Inverter capable (3-phase only)
- NEMA design B
- Class F winding insulation
- Service Factor: 1.15 across-the-line (1.0 for 3-phase with AC drive)
- Two year warranty
- $_{C}UR_{US}$ certified, CE

Accessories Available

- Junction boxes (replacement/spare)
- C-face kits
- Drive end endbell
- Opposite drive end endbell
- Current diverter rings (CDRs)

Applications

- Conveyors
- Fans
- Gear reducers
- Pumps

IronHorse® Open Drip-Proof AC Motors – 3-Phase

T-Frame ODP Motors – Three-Phase – 1 to 50 hp

Motor Specifications – Three-Phase T-Frame ODP Motors – 1800 & 3600 RPM									
Part Number	**Price**	**HP**	**Voltage**	**Housing**	**NEMA Frame**	**Service Factor**	**F.L. Amps @ 208/230V/460V 60Hz**	**Approx Weight (lb)**	**Drawing Links**
1800 RPM									
MTDP-001-3BD18	$197.00	1	208-230/460	ODP IP23	143T	1.15 (sine), 1.0 (drive)	2.9 / 2.6 / 1.3 3.1 / 2.8 / 1.4	33.1	PDF
MTDP-1P5-3BD18	$245.00	1 1/2			145T		4.6 / 4.2 / 2.1	34.2	PDF
MTDP-002-3BD18	$260.00	2			145T		5.9 / 5.4 / 2.7	38.6	PDF
MTDP-003-3BD18	$315.00	3			182T		8.4 / 7.6 / 3.8 8.7 / 7.8 / 3.9	68.3	PDF
MTDP-005-3BD18	$372.00	5			184T		13.6 / 12.4 / 6.2 13.7 / 12.4 / 6.2	91.5	PDF
MTDP-7P5-3BD18	$508.00	7 1/2			213T		20.7 / 18.8 / 9.4 21.7 / 19.6 / 9.8	140.2	PDF
MTDP-010-3BD18	$605.00	10			215T		28.3 / 25.6 / 12.8	156.0	PDF
MTDP-015-3BD18	$829.00	15			254T		37.6 / 34.2 / 17.1 38.5 / 34.8 / 17.4	214.9	PDF
MTDP-020-3BD18	$1,016.00	20			256T		49.5 / 45.0 / 22.5 51.5 / 46.6 / 23.3	260.1	PDF
MTDP-025-3BD18	$1,236.00	25			284T		66.3 / 60.0 / 30.0	300.0	PDF
MTDP-030-3BD18	$1,408.00	30			286T		79.4 / 71.8 / 35.9 77.6 / 70.2 / 35.1	330.0	PDF
MTDP-040-3BD18	$1,839.00	40			324T		105.6 / 95.8 / 47.9	440.0	PDF
MTDP-050-3BD18	$2,119.00	50			326T		130.3 / 117.4 / 58.7 131.2 / 118.6 / 59.3	470.0	PDF
3600 RPM									
MTDP-003-3BD36	$313.00	3	208-230/460	ODP IP23	145T	1.15 (sine), 1.0 (drive)	7.9 / 7.2 / 3.6 8.2 / 7.4 / 3.7	39.7	PDF
MTDP-005-3BD36	$359.00	5			182T		12.3 / 11.8 / 5.9	64.9	PDF
MTDP-7P5-3BD36	$509.00	7 1/2			184T		18.9 / 17.2 / 8.6 19.2 / 17.4 / 8.7	78.1	PDF

Specifications in GREEN apply to motors manufactured after September 2020

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

IronHorse Motors with product numbers ending in P are Premium Efficiency motors and meet or exceed all current efficiency guidelines.

IronHorse® Open Drip-Proof AC Motors – 3-Phase

T-Frame ODP Motors – Three-Phase – 1 to 50hp

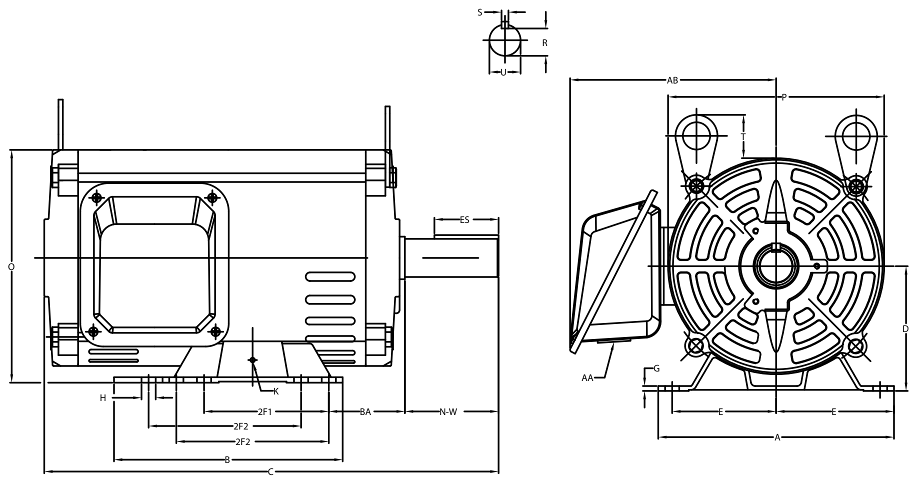
Performance Data – Three-Phase Open Drip-Proof Motors (230V / 60Hz data except as indicated)												
Part Number	HP	NEMA Design	FL RPM	Current @ 230/460V (Amps)			Torque (lb·ft)			FL Efficiency (%)	FL Power Factor	Rotor Inertia (lb·ft²)
				No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break -down			
1800 RPM												
MTDP-001-3BD18	1	B	1745	1.32 / 0.66	2.6 / 1.3	21.46 / 10.73	3.03	8.18	10.09	85.5	0.81	0.09
			1742	1.40 / 0.70	2.8 / 1.4	21.18 / 10.59		9.51	10.03			
MTDP-1P5-3BD18	1 1/2		1747	2.44 / 1.22	4.2 / 2.1	34.52 / 17.26	4.44	15.63	16.56	86.5	0.76	0.09
MTDP-002-3BD18	2		1744	2.96 / 1.48	5.4 / 2.7	47.24 / 23.62	6.06	21.15	23.45	86.5	0.79	0.10
MTDP-003-3BD18	3		1759	3.38 / 1.69	7.6 / 3.8	69.9 / 34.95	8.8	32.12	37.58	89.5	0.82	0.36
			1753	3.74 / 1.87	7.8 / 3.9	63.64 / 31.82		30.36	31.68		0.8	
MTDP-005-3BD18	5		1749	4.46 / 2.23	12.4 / 6.2	105.76 / 52.88	14.9	50.21	57.07	89.5	0.83	0.48
			1745			93.34 / 46.67		40.83	46.04		0.84	
MTDP-7P5-3BD18	7 1/2		1763	9.52 / 4.76	18.8 / 9.4	141.26 / 70.63	21.98	101.11	87.04	91	0.81	0.95
			1758	10.56 / 5.28	19.6 / 9.8	118.62 / 59.31	22.02	78.39	81.03		0.78	
MTDP-010-3BD18	10		1753	10.24 / 5.12	25.6 / 12.8	160.8 / 80.4	30.14	97.35	100.67	91.7	0.81	1.16
MTDP-015-3BD18	15		1776	10.2 / 5.1	34.2 / 17.1	261.8 / 130.9	43.63	101.22	128.27	93	0.87	2.03
			1774	11.4 / 5.7	34.8 / 17.4	235.6 / 117.8	43.6	113.36	120.30		0.85	
MTDP-020-3BD18	20		1765	11.06 / 5.53	45.0 / 22.5	325.2 / 162.6	59.84	175.93	166.36	93	0.9	2.44
			1769	13.96 / 6.98	46.6 / 23.3	303.4 / 151.7	59.67	154.54	178.40		0.86	
MTDP-025-3BD18	25		1775	24.6 / 12.3	60.0 / 30.0	380 / 190	72.30	175.69	184.37	93.6	0.83	3.25
MTDP-030-3BD18	30		1780	31.4 / 15.7	71.8 / 35.9	499.6 / 249.8	86.87	241.50	277.12	94.1	0.82	3.69
			1775	24.8 / 12.4	70.2 / 35.1	433 / 216.5	87.47	252.79	291.28		0.84	
MTDP-040-3BD18	40		1778	36.8 / 18.4	95.8 / 47.9	630 / 315	118.10	419.26	457.05	94.1	0.84	7.35
MTDP-050-3BD18	50		1776	46 / 23	117.4 / 58.7	818 / 409	145.2	512.56	441.41	94.5	0.84	8.99
			1781	46.2 / 23.1	118.6 / 59.3	771 / 385.5	146.7	476.78	517.85		0.83	
3600 RPM												
MTDP-003-3BD36	3	B	3439	2.82 / 1.41	7.2 / 3.6	68.62 / 34.31	4.51	17.27	18.67	85.5	0.87	0.07
			3441	3.02 / 1.51	7.4 / 3.7	63.26 / 31.63	4.5	18.09	22.28		0.86	
MTDP-005-3BD36	5		3509	3.64 / 1.82	11.8 / 5.9	94.02 / 47.01	7.43	25.26	26.15	86.5	0.89	0.15
MTDP-7P5-3BD36	7 1/2		3502	4.2 / 2.3	17.2 / 8.6	135.06 / 67.53	11.06	33.73	38.38	88.5	0.9	0.20
			3499	4.86 / 2.43	17.36 / 8.68	132.26 / 66.13	11.02	33.17	41.99		0.89	

Specifications in GREEN apply to motors manufactured after September 2020

IronHorse® Open Drip-Proof AC Motors – 3-Phase

T-Frame ODP Motors – Three-Phase – 1 to 50 hp

MTDP Three-Phase T-Frame Motor Dimensions



PART #	FRAME #	"E"	"2F1"	"2F2"	"H"	"BA"	"A"	"B"	"C"	"D"	"G"	"K"
MTDP-001-3BD18	143T	2.75	4.00	5.00	0.34	2.25	6.50	6.50	11.97	3.50	0.12	0.36
MTDP-1P5-3BD18	145T	2.75	4.00	5.00	0.34	2.25	6.50	6.50	11.97	3.50	0.12	0.36
MTDP-002-3BD18	145T	2.75	4.00	5.00	0.34	2.25	6.50	6.50	11.97	3.50	0.12	0.36
MTDP-003-3BD36	145T	2.75	4.00	5.00	0.34	2.25	6.50	6.50	11.97	3.50	0.12	0.36
MTDP-003-3BD18	182T	3.75	4.50	5.50	0.41	2.75	8.54	6.50	15.40	4.50	0.44	0.36
MTDP-005-3BD36	182T	3.75	4.50	5.50	0.41	2.75	8.54	6.50	15.40	4.50	0.44	0.36
MTDP-005-3BD18	184T	3.75	4.50	5.50	0.41	2.75	8.54	6.50	15.40	4.50	0.44	0.36
MTDP-7P5-3BD36	184T	3.75	4.50	5.50	0.41	2.75	8.54	6.50	15.40	4.50	0.44	0.36
MTDP-7P5-3BD18	213T	4.25	5.50	7.00	0.48	3.50	10.00	8.49	17.00	5.25	0.18	0.36
MTDP-010-3BD18	215T	4.25	5.50	7.00	0.48	3.50	10.00	8.49	17.00	5.25	0.18	0.36
MTDP-015-3BD18	254T	5.00	8.25	10.00	0.53	4.25	12.85	11.57	22.30	6.25	0.24	0.36
MTDP-020-3BD18	256T	5.00	8.25	10.00	0.53	4.25	12.85	11.57	22.30	6.25	0.24	0.36
MTDP-025-3BD18	284T	5.50	9.50	11.00	0.53	4.75	12.80	12.80	25.80	7.00	0.24	0.36
MTDP-030-3BD18	286T	5.50	9.50	11.00	0.53	4.75	12.80	12.80	25.80	7.00	0.24	0.36
MTDP-040-3BD18	324T	6.25	10.50	12.00	0.66	5.25	15.06	14.00	27.50	8.00	0.28	[illegible]
MTDP-050-3BD18	326T	6.25	10.50	12.00	0.66	5.25	15.06	14.00	27.50	8.00	0.28	[illegible]

PART #	FRAME #	"R"	"ES"	"S"	"U"	"N-W"	"P"	"AB"	"AA"	"O"	"T"
MTDP-001-3BD18	143T	0.771	1.41	0.188	0.875	2.25	6.40	5.38	1.00	6.70	–
MTDP-1P5-3BD18	145T	0.771	1.41	0.188	0.875	2.25	6.40	5.38	1.00	6.70	–
MTDP-002-3BD18	145T	0.771	1.41	0.188	0.875	2.25	6.40	5.38	1.00	6.70	–
MTDP-003-3BD36	145T	0.771	1.41	0.188	0.875	2.25	6.40	5.38	1.00	6.70	–
MTDP-003-3BD18	182T	0.986	1.78	0.250	1.125	2.75	7.72	2.56	1.00	8.40	1.60
MTDP-005-3BD36	182T	0.986	1.78	0.250	1.125	2.75	7.72	2.56	1.00	8.40	1.60
MTDP-005-3BD18	184T	0.986	1.78	0.250	1.125	2.75	7.72	2.56	1.00	8.40	1.60
MTDP-7P5-3BD36	184T	0.986	1.78	0.250	1.125	2.75	7.72	2.56	1.00	8.40	1.60
MTDP-7P5-3BD18	213T	1.201	2.41	0.312	1.375	3.38	8.80	4.46	1.38	9.74	1.50
MTDP-010-3BD18	215T	1.201	2.41	0.312	1.375	3.38	8.80	4.46	1.38	9.74	1.50
MTDP-015-3BD18	254T	1.416	2.91	0.375	1.625	4.00	10.63	4.71	1.38	11.60	2.36
MTDP-020-3BD18	256T	1.416	2.91	0.375	1.625	4.00	10.63	4.71	1.38	11.60	2.36
MTDP-025-3BD18	284T	1.591	3.28	0.500	1.875	4.62	12.20	11.00	2.00	13.00	2.36
MTDP-030-3BD18	286T	1.591	3.28	0.500	1.875	4.62	12.20	11.00	2.00	13.00	2.36
MTDP-040-3BD18	324T	1.845	3.88	0.500	2.125	5.25	14.00	13.00	2.50	15.00	2.36
MTDP-050-3BD18	326T	1.845	3.88	0.500	2.125	5.25	14.00	13.00	2.50	15.00	2.36

IronHorse® Open Drip-Proof AC Motors – 3-Phase

Current Diverter Rings (CDRs)

CDRs provide a premium shaft grounding solution that uses proprietary conductive filaments and maintenance free shaft sleeve to divert harmful shaft currents away from the bearings to ground.

Current Diverter Ring

Features

Conductive Filaments - provide a path to ground for shaft currents, away from the bearings.

Shaft Sleeve - promotes premium grounding performance through consistent contact with conductive filaments; prevents conduction inhibiting oxidation from forming on the shaft.

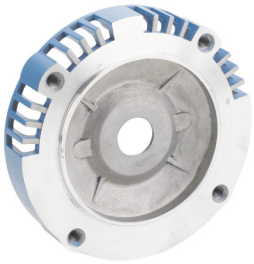
Conductive Rings - maintain conductivity for shaft currents and drives shaft sleeve.

- Standard Material: Bearing Bronze
- Movement: Axial- 0.13 mm [0.005 in] | Radial- 0.64 mm [0.025in] Consult Inpro/Seal engineering for shaft movement outside limits shown.
- Temperature (Elastomers): Conductive O-Ring: Conductive Silicone- -65ºC [-85ºF] – 232ºC [450ºF]
- Speed: 10,000 SFPM Consult Inpro/Seal engineering for speeds exceeding 6,000 SFPM.
- Shaft Size: 15.88 mm [0.625 in] – 508 mm [20 in] Consult engineering for shaft sizes above 203.2 mm [8 in]
- Mounting Configurations: Press-In, Clip-On, Side-Mount, Epoxy, Flexbracket, Bolt-Through
- Standard Overall Length: 8.89 mm [0.350 in]

IronHorse® Drip-Proof AC Motors – 3-Phase

T-Frame ODP Motors – Three-Phase – 1 to 50 hp

Junction Box
MTADP-JBOX-140



C-Face Flange
MTADP-CFACE-140TC

Current Diverter Ring
MTADP-CDR-140

Drive End Endbell
MTADP-DEB-140

Opposite End Endbell
MTADP-OEB-140

MTDP Series Three-Phase Motor Spare/Replacement Parts				
Part Number	***Price***	***Accessory Type***	***Applicable MTDP Motor Number***	***Motor HP***
MTADP-JBOX-140	$10.00	junction box	140T frame ODP	1, 1.5, 2, 3 HP
MTADP-JBOX-180	$12.00		180T frame ODP	3, 5, 7.5HP
MTADP-JBOX-210	$21.00		210T frame ODP	7.5, 10HP
MTADP-JBOX-250	$21.00		250T frame ODP	15, 20HP
MTADP-JBOX-280	$79.00		280T frame ODP	25, 30HP
MTADP-JBOX-320	$100.00		320T frame ODP	40, 50HP
MTADP-CFACE-140TC	$45.00	c-face flange	140T frame ODP	1, 1.5 HP
MTADP-CFACE-180TC	$49.00		180T frame ODP	3, 5 HP
MTADP-CFACE-210TC	$110.00		210T frame ODP	7.5, 10HP
MTADP-CFACE-250TC	$120.00		250T frame ODP	15, 20HP
MTADP-CFACE-280TC	$146.00		280T frame ODP	25, 30HP
MTADP-CFACE-320TC	$179.00		320T frame ODP	40, 50HP
MTADP-DEB-140	$32.00	drive end (DE) endbell	140T frame ODP	1, 1.5, 2, 3 HP
MTADP-DEB-180	$33.00		180T frame ODP	3, 5, 7.5 HP
MTADP-DEB-210	$47.00		210T frame ODP	7.5, 10HP
MTADP-DEB-250	$75.00		250T frame ODP	15, 20HP
MTADP-DEB-280	$285.00		280T frame ODP	25, 30HP
MTADP-DEB-320	$441.00		320T frame ODP	40, 50HP
MTADP-OEB-140	$31.00	opposite drive end (ODE) endbell	140T frame ODP	1, 1.5, 2, 3 HP
MTADP-OEB-180	$35.00		180T frame ODP	3, 5 HP
MTADP-OEB-210	$47.00		210T frame ODP	7.5, 10HP
MTADP-OEB-250	$75.00		250T frame ODP	15, 20HP
MTADP-OEB-280	$267.00		280T frame ODP	25, 30HP
MTADP-OEB-320	$433.00		320T frame ODP	40, 50HP
MTADP-CDR-140	$113.00	current diverter ring	140T frame ODP	1, 1.5, 2, 3 HP
MTADP-CDR-180	$143.00		180T frame ODP	3, 5, 7.5 HP
MTADP-CDR-210	$176.00		210T frame ODP	7.5, 10HP
MTADP-CDR-250	$207.00		250T frame ODP	15, 20HP
MTADP-CDR-280	$246.00		280T frame ODP	25, 30HP
MTADP-CDR-320	$269.00		320T frame ODP	40, 50HP
**** These accessories are spare/replacement components only for MTDP series IronHorse motors.***				

IronHorse® Rolled-Steel AC Motors – 3-Phase

56C/56HC-Frame TEFC Motors – Three-Phase – 0.33 to 3 hp

Features

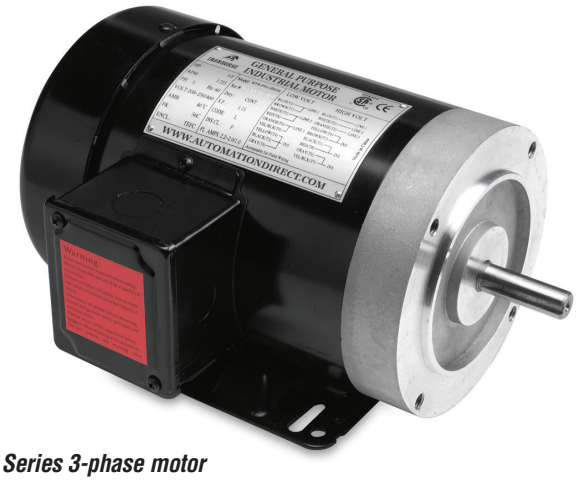
- Totally Enclosed Fan Cooled (TEFC) enclosure
- NEMA 56C or 56HC flange mount (56HC are suitable for 56, 143T, or 145T frame mounting dimensions)
- Rolled steel shell frame / cast aluminum end bell
- Removable base / bolt-on/bolt-off mounting feet
- Steel fan cover
- Large easy-to-wire junction box with rubber gasket
- Heavy duty oversized ball bearings
- High tensile strength steel shaft
- Electrically reversible
- Inverter capable (3-phase only)
- NEMA design B
- Class F winding insulation
- Service Factor: 1.15 across-the-line (1.0 for 3-phase with AC drive)
- Two year warranty
- $_{C}CSA_{US}$ certified, CE

Accessories Available

- Junction boxes (replacement/spare)
- Fans (replacement/spare)
- Fan shrouds (replacement/spare)
- Motor bases (replacement/spare)
- Adjustable mounting slide bases

Applications

- Conveyors
- Fans
- Gear reducers
- Pumps



MTR Series 3-phase motor

MTRP Series 3-phase motor

MTR2 Series 3-phase motor

IronHorse® Rolled-Steel AC Motors – 3-Phase

56C/56HC-Frame TEFC Motors – Three-Phase – 0.33 to 3 hp

Motor Specifications – Three-Phase 56C/56HC-Frame Motors – 1800 & 3600 RPM

Part Number	Price	HP	Base RPM	Phase	Voltage	Housing	NEMA Frame	Service Factor	F.L. Amps @ 230V/460V	Approx Weight (lb)
MTR2-P33-3BD18	$117.00	1/3	1800	3	230/460	TEFC rolled steel frame with cast aluminum end bell F1 conduit box location	56C flange mount (MTRP = 56HC)*	1.15	1.4 / 0.7	18
MTR2-P33-3BD36	$91.00		3600						1.3 / 0.65	18
MTR2-P50-3BD18	$123.00	1/2	1800						1.9 / 0.95	19
MTR2-P50-3BD36	$100.00		3600						1.7 / 0.85	19
MTR2-P75-3BD18	$134.00	3/4	1800						2.6 / 1.3	22
MTR2-P75-3BD36	$110.00		3600						2.4 / 1.2	21
MTRP-001-3BD18	$169.00	1	1800						3.2 / 1.6	35
MTRP-001-3BD36	$138.00		3600						3.0 / 1.50	23
MTRP-1P5-3BD18	$194.00	1-1/2	1800						4.5 / 2.25	43
MTRP-1P5-3BD36	$156.00		3600						4.0 / 2.0	31
MTRP-002-3BD18	$227.00	2	1800						6.0 / 3.0	49
MTRP-002-3BD36	$169.00		3600						5.2 / 2.6	33
MTRP-003-3BD36	$220.00	3	3600						7.4 / 3.7	39

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

IronHorse Motors with product numbers ending in P are Premium Efficiency motors and meet or exceed all current efficiency guidelines.

****56HC motors are capable of 56C C-face mounting, and are also compatible with 56, 143T, and 145T foot mounting dimensions.***

IronHorse® Rolled-Steel AC Motors – 3-Phase

56C/56HC-Frame TEFC Motors – Three-Phase – 0.33 to 3 hp – Performance Data

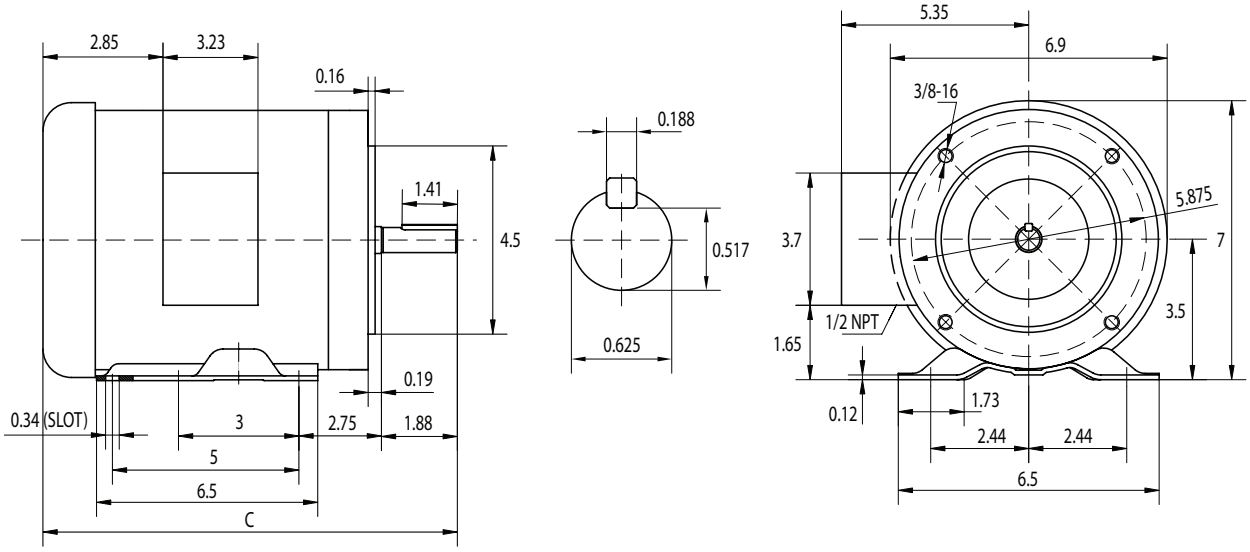
Performance Data – Three-Phase 56C/56HC-Frame Motors (460V data except as indicated) – 1800 & 3600 RPM																
Part Number	HP	NEMA Design	FL RPM	Minimum Speed (rpm)		Current @ 230V/460V (Amps)			Torque (lb·ft)			Maximum Speed (rpm)		FL Efficiency (%)	FL Power Factor	Rotor Inertia (lb·ft²)
				CT	VT	No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break-down	CHP*	Safe			
MTR2-P33-3BD18	1/3	B	1725	431	172	1.10 / 0.55	1.4 / 0.7	7 / 3.5	1.03	2.93	3.77	2700	5400	67.0	0.65	0.0329
MTR2-P33-3BD36			3450	862	345	0.8 / 0.4	1.3 / 0.65	7.6 / 3.8	0.50	1.14	1.99	5400		60.0	0.75	0.0245
MTR2-P50-3BD18	1/2		1725	431	172	1.36 / 0.68	1.9 / 0.95	10 / 5	1.53	3.81	4.96	2700		70	0.69	0.038
MTR2-P50-3BD36			3450	862	345	1.0 / 0.5	1.7 / 0.85	10.8 / 5.4	0.74	1.81	2.96	5400		67.5	0.74	0.0277
MTR2-P75-3BD18	3/4		1725	431	172	1.60 / 0.80	2.6 / 1.3	12.2 / 6.6	2.31	5.41	7.17	2700		73.0	0.73	0.048
MTR2-P75-3BD36			3450	862	345	1.3 / 0.7	2.4 / 1.2	16 / 8	1.14	2.95	4.25	5400		71.5	0.78	0.031
MTR-P33-3BD36			3450	1725	690	1.2 / 0.59	1.6 / 0.8	9 / 5	0.50	3.0	3.0	5400		57.0	0.71	0.084
MTR-P50-3BD18	1/2		1725	863	345	0.67 / 0.33	2.0 / 1.0	12 / 6	1.52	3.80	4.18	2700		69.0	0.72	0.068
MTR-P50-3BD36			3450	1725	690	1.4 / 0.7	2.2 / 1.1	14 / 7	0.75	4.4	4.5	5400		62.0	0.71	0.095
MTR-P75-3BD18	3/4		1725	863	345	0.93 / 0.47	2.8 / 1.4	18 / 9	2.29	5.73	6.30	2700		71.0	0.74	0.075
MTR-P75-3BD36			3450	1725	690	1.5 / 0.75	2.9 / 1.45	17 / 8.9	1.13	6.0	5.8	5400		67.0	0.78	0.107
MTR-001-3BD18	1		1725	863	345	1.2 / 0.6	3.6 / 1.8	24 / 12	3.02	7.55	8.31	2700		73.0	0.76	0.086
MTR-001-3BD36			3450	1725	690	1.7 / 0.85	3.6 / 1.8	25 / 13	1.50	7.9	7.1	5400		69.0	0.82	0.122
MTRP-001-3BD18			1760	440	176	2.18 / 1.09	3.22 / 1.61	31 / 16	3	12.35	14.51	2700	2700	85.5	0.69	0.107
MTRP-001-3BD36			3500	875	350	1.52 / 0.76	3.00 / 1.50	22 / 11	1.51	3.98	4.93	5400	5400	77	0.83	0.034
MTR-1P5-3BD18	1-1/2		1725	863	345	1.53 / 0.77	4.8 / 2.4	36 / 18	4.57	10.28	11.43	2700	5400	75.0	0.78	0.108
MTR-1P5-3BD36			3450	1725	690	1.8 / 0.9	4.6 / 2.3	29 / 17	2.25	11.2	8.4	5400	5400	72.0	0.85	0.143
MTRP-1P5-3BD18			1760	440	176	2.8 / 1.4	4.52 / 2.26	47 / 24	4.4	21.68	21.76	2700	2700	86.5	0.72	0.135
MTRP-1P5-3BD36			3500	875	350	1.8 / 0.9	3.96 / 1.98	38 / 19	2.21	7.94	9.03	5400	5400	84.0	0.85	0.048
MTR-002-3BD18	2		1725	863	345	2.0 / 1.0	6.0 / 3.0	48 / 24	6.09	13.70	15.23	2700	5400	77.0	0.80	0.143
MTR-002-3BD36			3450	1725	690	3.4 / 1.7	6.0 / 3.0	57 / 30	3.06	18.9	13.4	5400	5400	75.0	0.78	0.188
MTRP-002-3BD18			1760	440	176	3.62 / 1.81	5.92 / 2.96	61 / 31	6.03	27.3	27.46	2700	2700	86.5	0.74	0.158
MTRP-002-3BD36			3500	875	350	2.28 / 1.14	5.22 / 2.61	53 / 27	3.02	12.23	12.8	5400	5400	85.5	0.86	0.056
MTRP-003-3BD36	3		3500	875	350	3.54 / 1.77	7.38 / 3.69	89 / 45	4.49	19.44	20.39	5400	5400	86.5	0.85	0.069

** Maximum Constant HP RPM is for direct coupled loads.*

IronHorse® Rolled-Steel AC Motors – 3-Phase

56C Frame TEFC Motors – Three-Phase – 0.33 to 3 hp – Dimensions

MTR Three-Phase
56C-Frame Motor Dimensions

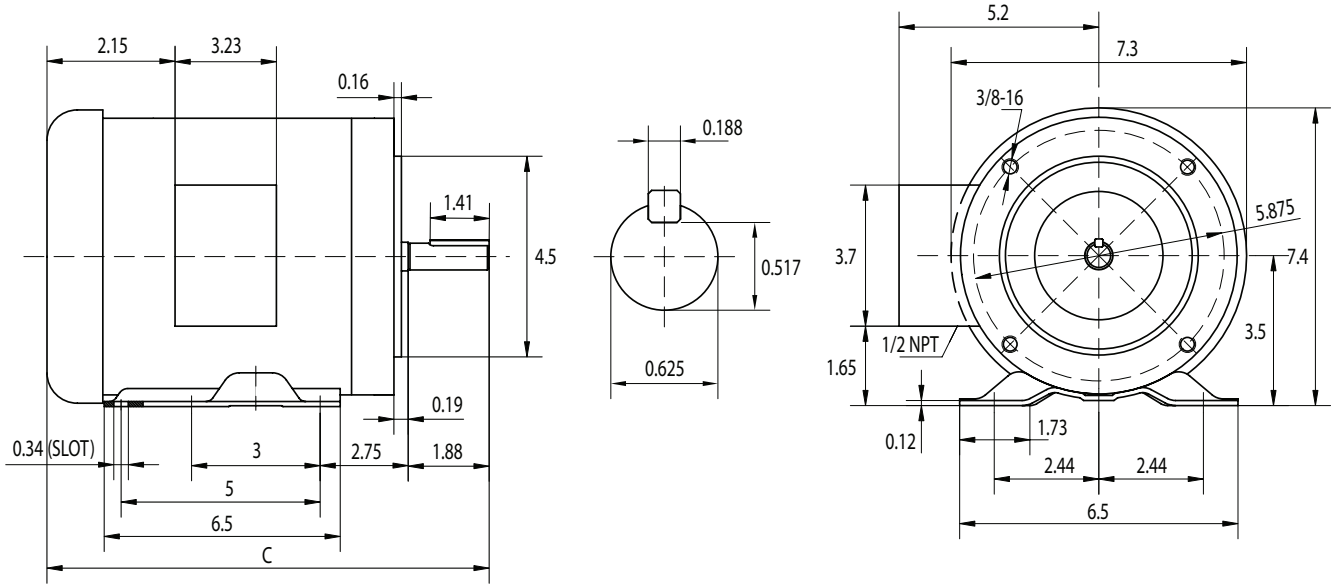


C = 12.2″; 0.33 to 1hp motors
C = 12.6″; 1.5hp MTR-1P5-3BD18
C = 12.2″; 1.5hp MTR-1P5-3BD36
C = 13.8″; 2hp MTR-002-3BD18
C = 12.4″; 2hp MTR-002-3BD36

UNITS = INCHES

MTR-xxx-3BDxx IronHorse Motors
(3-phase rolled steel)

MTRP Three-Phase
56HC-Frame Motor Dimensions
Suitable for 56, 143T, and 145T Frame Mounting



C = 12.4″; 1.0 hp MTRP-001-3BD18
C = 13.4″; 1.5hp MTRP-1P5-3BD18
C = 13.9″; 2hp MTRP-002-3BD18
C = 11.9″; 1 to 2hp MTRP-xxx-3BD36
C = 12.9″; 3hp MTRP-003-3BD36

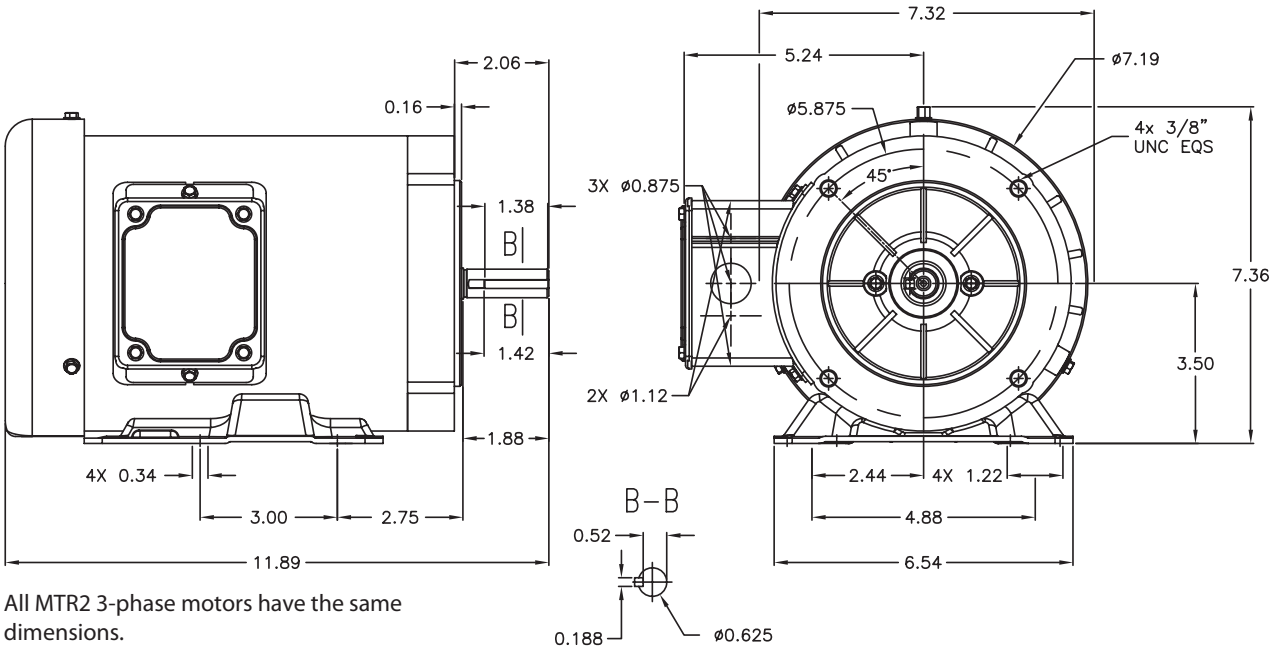
UNITS = INCHES

MTRP-xxx-3BDxx IronHorse Motors
(3-phase rolled steel)

IronHorse® Rolled-Steel AC Motors – 3-Phase

56C Frame TEFC Motors – Three-Phase – 0.33 to 3 hp – Dimensions

MTR2 Three-Phase
56C-Frame Motor Dimensions



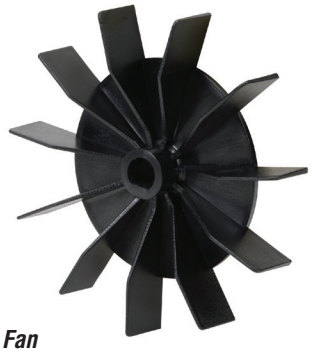
All MTR2 3-phase motors have the same dimensions.

IronHorse® AC Motor Accessories – 3-Phase

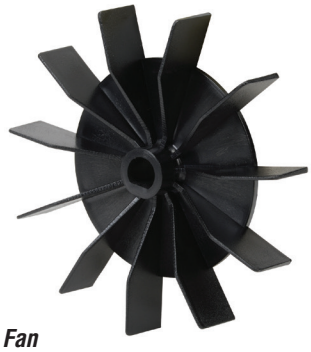
56C-Frame TEFC Motors – Three-Phase – 0.33 to 3 hp – Motor Accessories

Motor Base
MTAR-BASE-56

Fan
MTAR-FAN-56



Fan
MTA2-FAN-56



Fan
MTA2-FAN-56-1

Junction Box
MTAR-JBOX-56

Fan Shroud
MTAR-SHROUD-56

MTR Series Three-Phase Motor Spare/Replacement Parts*				
Part Number	*Price*	*Accessory Type*	*Applicable MTR Motor Number*	*MTR Motor HP : RPM*
MTAR-BASE-56	$13.50	Motor base	MTR-xxx-xBDxx	All
MTAR-FAN-56	$13.50	Fan		
MTAR-JBOX-56	$13.50	Junction box		
MTAR-SHROUD-56	$13.50	Fan shroud		
** These accessories are spare/replacement components only for MTR series IronHorse motors.*				

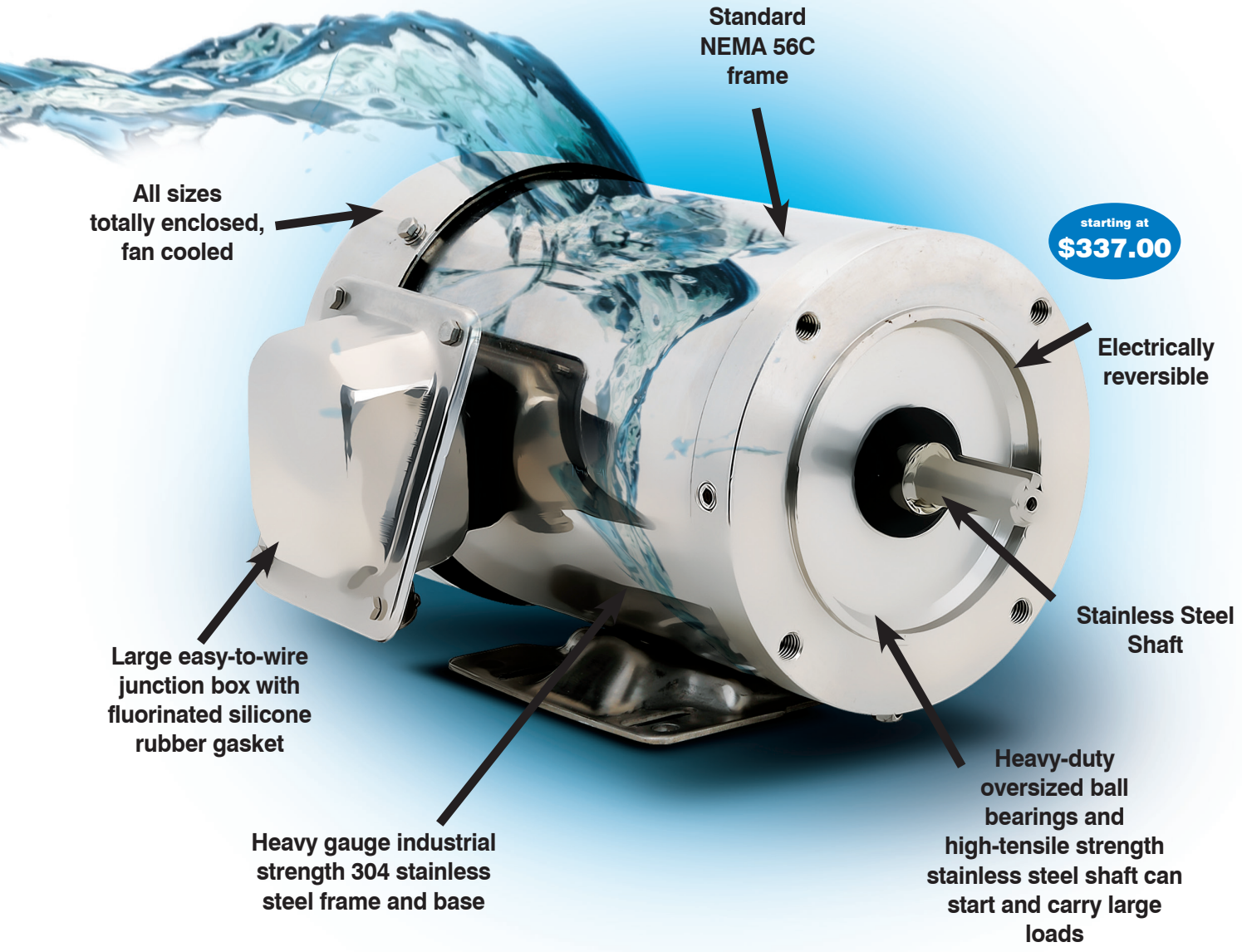
MTR2/MTRP Series Three-Phase Motor Spare/Replacement Parts				
Part Number	*Price*	*Accessory Type*	*Applicable MTRP Motor Number*	*MTRP Motor HP : RPM*
MTA2-BASE-56	$13.50	Motor base	MTRP-xxx-3BDxx MTR2-Pxx-3BDxx	All
MTA2-SHROUD-56	$13.50	Fan shroud		
MTA2-JBOX-56	$13.50	Junction box		
MTA2-FAN-56	$13.50	Fan	MTR2-Pxx-3BDxx	
*MTA2-FAN-56-1 **	$8.75	Fan	MTRP-xxx-3BDxx	
** This accessory is a spare/replacement component only for MTRP series IronHorse motors.*				

IronHorse is ready for washdowns and harsh environments!

IRONHORSE®
AUTOMATIONDIRECT

IP56 environmental rating

MTSS Stainless Steel 56C Frame Motors 0.33 to 0.75 hp

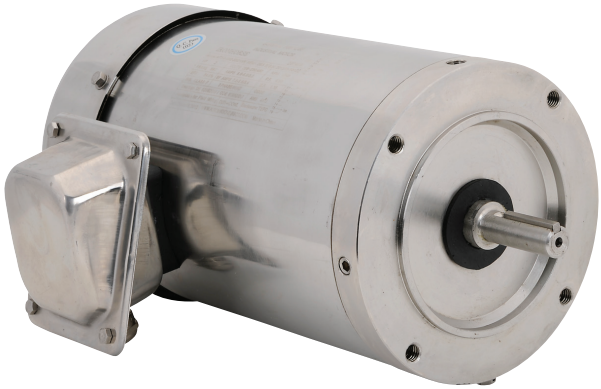


Three-phase - 208-230/460 Volt, 56C Frame - TEFC Enclosure, 1800 & 3600 RPM

- 0.33 to 0.75 hp
- Electrically reversible
- Round body motors (no base) also available
- Heavy gauge stainless steel shaft, frame and base
- Available with or without mounting feet
- Includes pre-installed IP66 cord grip

IronHorse® MTSS Stainless-Steel Three-Phase General-Purpose AC Motors

MTSS Stainless Steel TEFC Motors – Three Phase – 0.33 to 0.75 hp



MTSS-xxx-3BDxxR
3-Phase Stainless Steel 56C Frame without Feet

MTSS-xxx-3BDxx
3-Phase Stainless Steel 56C Frame with Feet

MTAS-CG-M22
Spare/Replacement Nickel-plated Brass Cable Gland

Features

- Totally Enclosed Fan Cooled (TEFC) enclosure
- NEMA 56C flange mount
- 304 stainless steel shell frame
- Stainless steel shaft
- Large easy-to-wire junction box with fluorinated silicone rubber gasket
- Nickel-plated brass cable gland included
- IP56 environmental rating
- Available with or without mounting feet
- Heavy-duty permanently-sealed oversized ball bearings
- Nameplate information with wiring diagram etched into frame
- Electrically reversible
- NEMA design B
- Class F winding insulation
- Service Factor: 1.15 across-the-line (1.0 with AC drive)
- One year warranty
- $_{c}CSA_{us}$ certified

Accessories & Spare Parts Available

- Nickel-plated brass cable gland (spare/replacement)

Applications

- Conveyors
- Fans
- Gear reducers
- Pumps
- Inverter capable
- Washdown environments

IronHorse® MTSS Stainless-Steel Three-Phase General-Purpose AC Motors

56C Frame Stainless Steel TEFC Motors – Three Phase – 0.33 to 0.75 hp

Motor Specifications – 3-phase 56C Frame Stainless Steel Motors – 1800 & 3600 RPM

Part Number	Price	HP	Base RPM	Phase	Voltage	Housing	NEMA Frame	Service Factor	F.L. Amps @ 208-230V/460V	Approx Weight (lb)
MTSS-P33-3BD18R	$337.00	1/3	1800	3	208-230/460	TEFC stainless steel frame with round body F1 conduit box location	56C flange mount	1.15	1.5-1.4 / 0.7	27
MTSS-P50-3BD18R	$343.00	1/2							1.55-1.5 / 0.75	27
MTSS-P75-3BD18R	$353.00	3/4							2.6-2.4 / 1.2	29
MTSS-P33-3BD18	$351.00	1/3	1800			TEFC stainless steel frame with rigid base F1 conduit box location			1.5-1.4 / 0.7	28
MTSS-P50-3BD18	$357.00	1/2	1800						1.55-1.5 / 0.75	28
MTSS-P50-3BD36	$348.00		3600						1.99-1.8 / 0.9	29
MTSS-P75-3BD18	$368.00	3/4	1800						2.6-2.4 / 1.2	30
MTSS-P75-3BD36	$353.00		3600						2.4-2.3 / 1.15	31

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

Motor Accessory (Optional) – 3-phase 56C Frame Stainless Steel Motors – 1800 & 3600 RPM

Part Number	Price	Description	Approx Weight (lb)
MTAS-CG-M22	$29.00	Cable gland; M22 x 1.5 mm thread; (1) silicone rubber gasket accommodates a cable diameter range of 0.393 to 0.512 in (10 to 13 mm); IP66 protection level; nickel-plated brass housing. ***This is a SPARE part for IronHorse MTSS motors - one cable gland is pre-installed on each MTSS motor.***	0.2

Performance Data – 3-phase 56C Frame Stainless Steel Motors (460V data except as indicated) – 1800 & 3600 RPM

Part Number	HP	NEMA Design	FL RPM	Minimum Speed (rpm)		Current @ 460V (Amps)		Torque (lb·ft)			Maximum Speed (rpm)		FL Efficiency (%)	FL Power Factor	Rotor Inertia ($lb \cdot ft^2$)
				CT (2:1)	VT (5:1)	No Load	Locked Rotor	Full Load	Locked Rotor	Break -down	CHP*	Safe			
MTSS-P33-3BD18(R)	1/3	B	1725	900	360	0.29	4.2	1.0	2.9	3.9	2250	4500	82.5	0.71	0.078
MTSS-P50-3BD18(R)	1/2		1725	900	360	0.30	4.6	1.5	3.8	5.2	2250		82.5	0.76	0.078
MTSS-P50-3BD36			3460	1800	720	0.36	6.0	0.7	1.9	2.5	4500		77.0	0.88	0.077
MTSS-P75-3BD18(R)	3/4		1725	900	360	0.44	7.3	2.2	5.0	7.0	2250		82.5	0.78	0.081
MTSS-P75-3BD36			3470	1800	720	0.43	7.6	1.1	2.7	3.3	4500		73.0	0.84	0.100

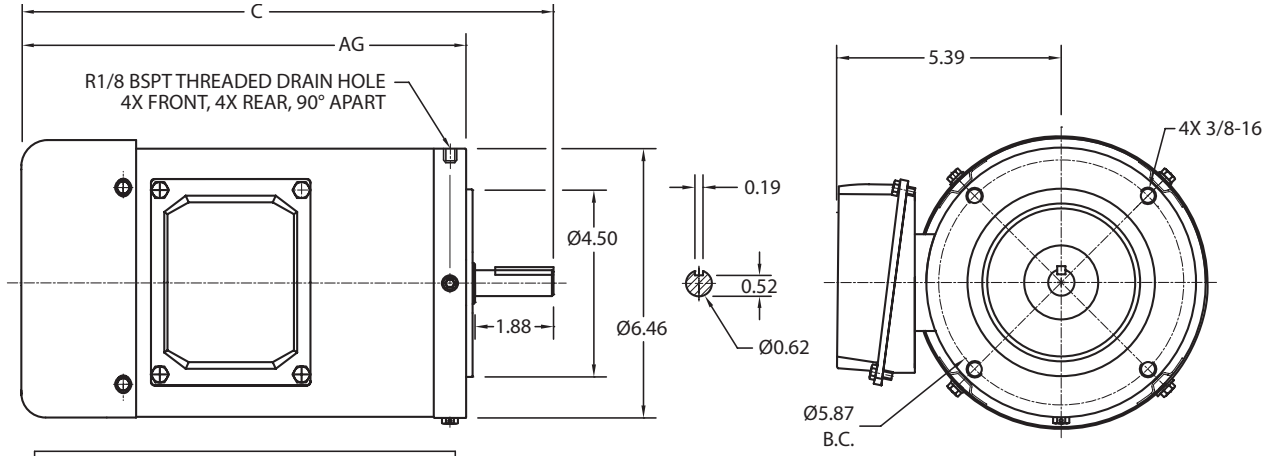
** Maximum Coupled HP speed is for direct-coupled loads.*

IronHorse® MTSS Stainless-Steel Three-Phase General-Purpose AC Motors

56C Frame Stainless Steel TEFC Motors – Three-Phase – Dimensions

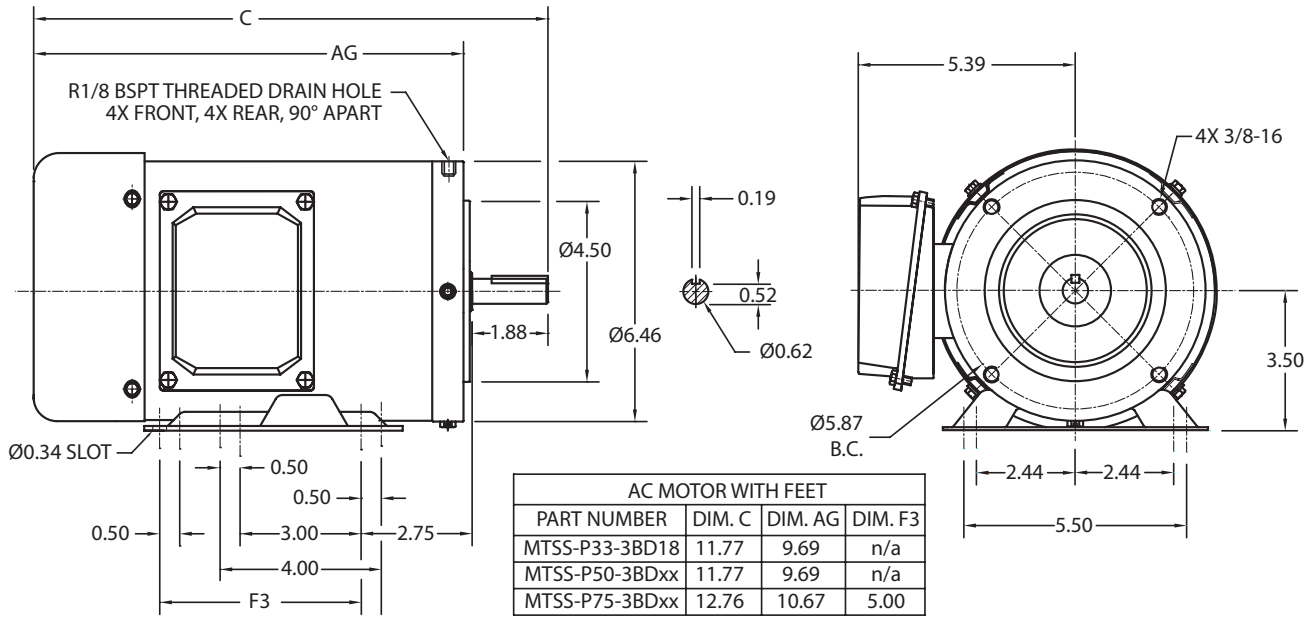
Dimensions = inches

MTSS-xxx-xxxxxR 3-Phase Stainless Steel 56C Frame Round-body Motors



AC MOTOR WITHOUT FEET		
PART NUMBER	DIM. C	DIM. AG
MTSS-P33-3BD18R	11.59	9.50
MTSS-P50-3BD18R	11.59	9.50
MTSS-P75-3BD18R	12.76	10.67

MTSS-xxx-xxxxx 3-Phase Stainless Steel 56C Frame Rigid-base Motors



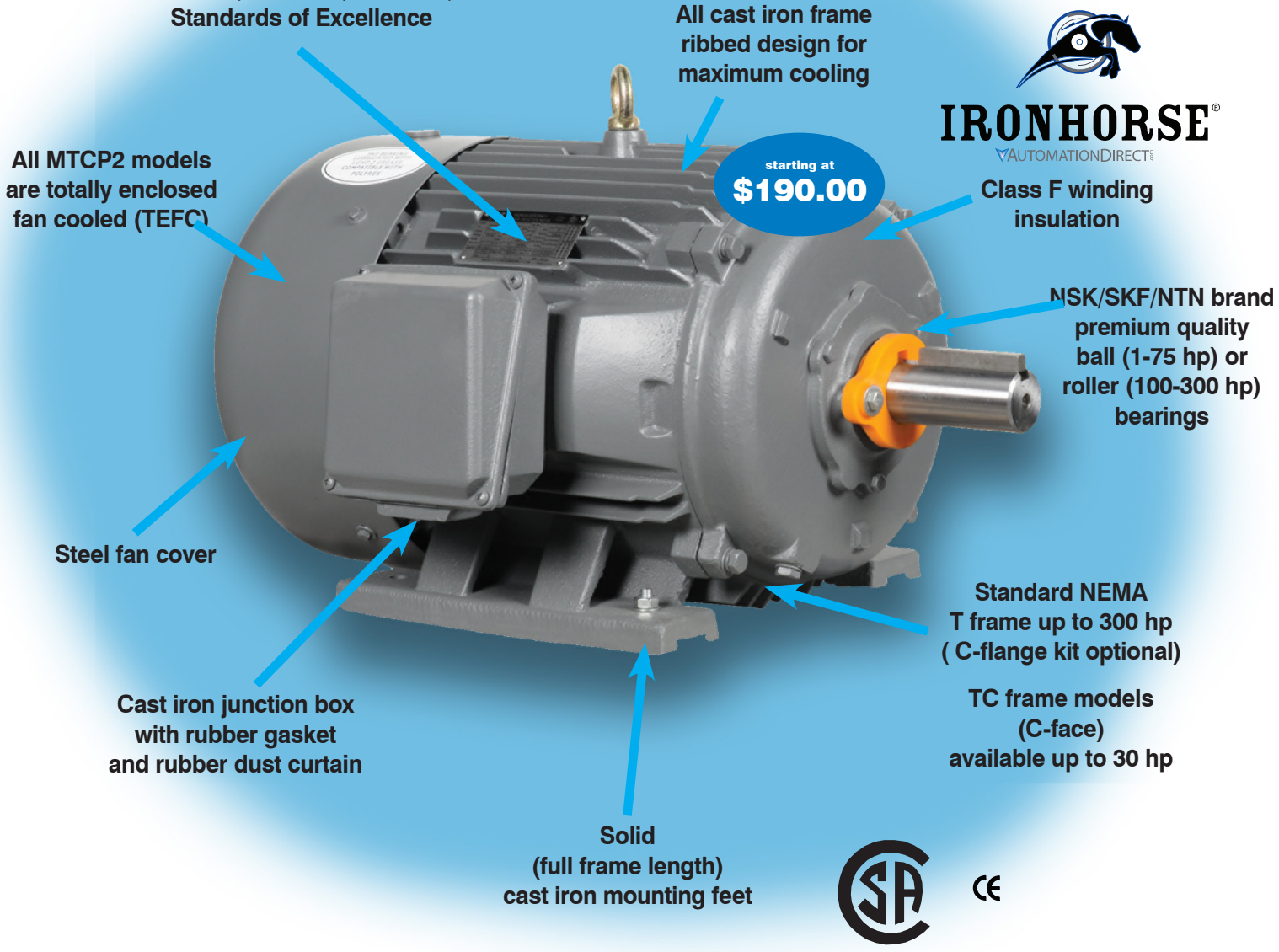
AC MOTOR WITH FEET			
PART NUMBER	DIM. C	DIM. AG	DIM. F3
MTSS-P33-3BD18	11.77	9.69	n/a
MTSS-P50-3BDxx	11.77	9.69	n/a
MTSS-P75-3BDxx	12.76	10.67	5.00

Premium efficiency motors for energy conservation

IronHorse© Premium Efficiency AC electric motors meet the requirements of the Energy Independence and Security Act of 2007. The MTCP2 Series gives you a low cost of entry so you get a quicker payback on your investment. All our Ironhorse motors are in stock and ready for **same-day** shipment; if your order is over $49, you get **free shipping** too!

Cast Iron T Frame Motors 1 to 300 hp

TC Frame up to 30 hp



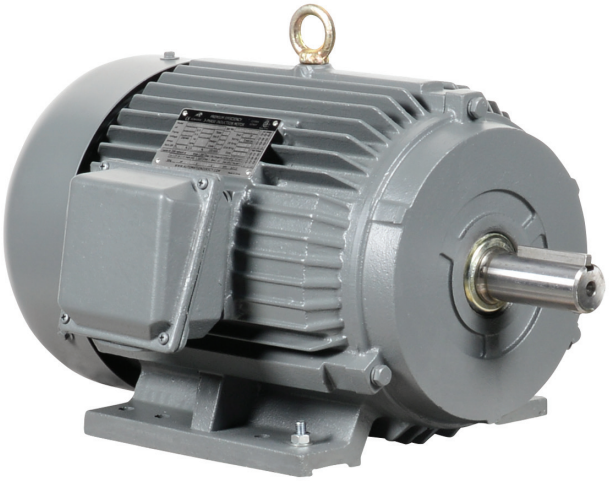
Three-phase - 208-230/460 Volt, T Frame - TEFC Enclosure, 1200,1800, 3600 RPM

- Premium Efficiency
- Premium grade quality
- All cast iron frames
- Drive-end ball bearings (1-75 hp) or roller bearings (100-300 hp) are installed in all MTCP2 motors
- Electrically reversible
- C-flange kits for C-face mounting are available
- C-face models available up to 30 hp

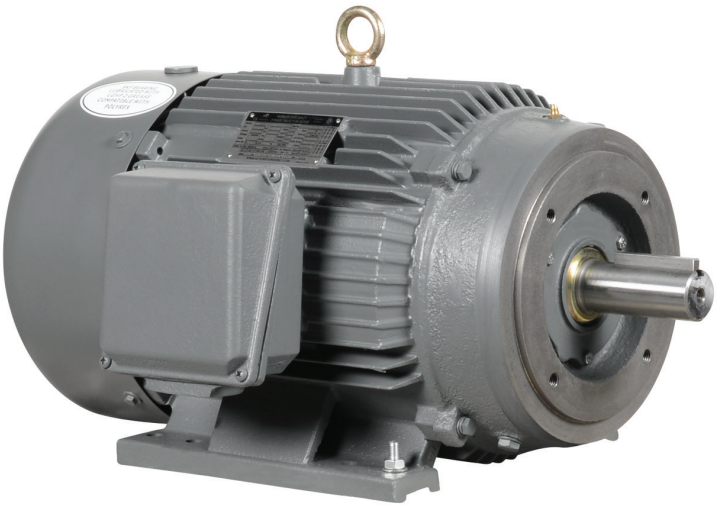
IronHorse® MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

T-Frame TEFC Motors – Three-Phase Industrial Duty – 1 to 300 hp

TC-Frame (C-Face) TEFC Motors – Three-Phase Industrial Duty – 1 to 30 hp



Premium Efficiency
Three-Phase Cast Iron T-Frame



Premium Efficiency
Three-Phase Cast Iron TC-Frame

Features

- Available in 1200, 1800, & 3600 rpm
- Totally Enclosed Fan Cooled (TEFC) enclosure
- NEMA TC-frame (C-face) and T-frame motors
- Cast iron frame with ribbed design for maximum cooling
- Solid full frame length cast iron mounting feet
- Steel fan cover
- Cast iron junction box with rubber gasket and rubber dust cover
- NSK/NTN/SKF brand premium quality ball (1-75 hp) or roller bearings (100-300 hp)
- Maintenance free bearings (10 hp and below)
- V-ring shaft seals on drive end and on opposite drive end
- Electrically reversible
- Class F winding insulation
- Service Factor: 1.25 (1-200 hp), 1.15 (250-300 hp), 1.0 with AC drive (ALL)
- Meets or exceeds Premium Efficiency standards
- Class I, Div 2 hazardous locations
- Inverter ratings: 20:1 (variable torque); 10:1 (constant torque)
- Two year warranty
- $_{c}$CSA$_{us}$ certified, ISO9001, CE

Accessories & Spare Parts Available

- STABLE motor slide bases for adjustable mounting
- C-flange kits (for converting T-frame motors to TC-frame)
- Replacement junction boxes
- Replacement fans
- Replacement fan shrouds

Applications

- Fans
- Conveyors
- Pumps
- Material Handling
- Metal Processing
- Textile Processing
- Test Stands

IronHorse® MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

T-Frame TEFC Motors – 3-Phase Industrial Duty – 1–300 hp – 1800 rpm

TC-Frame (C-Face) TEFC Motors – 3-Phase Industrial Duty – 1–30 hp – 1800 rpm

Motor Specifications – Premium-Efficiency T & TC Frame Three-Phase Motors – 1800 rpm

Part Number [1]	Price	HP [2]	Base RPM @60Hz (50Hz)	Phase	Voltage	Housing	NEMA Frame	Mounting [3]	Holes / Foot	Service Factor[6] (@50Hz)	F.L. Amps @208-230V/460V	Approx Product Weight (lb) [4]
MTCP2-001-3BD18	$190.00	1	1800 (1500)	3	208-230/460V	TEFC cast iron	143T	F1(F2)	2	1.25 (1.0)	3.61-3.27 / 1.63	41
MTCP2-001-3BD18C	$213.00						143TC					
MTCP2-1P5-3BD18	$225.00	1.5					145T		4		4.92-4.45 / 2.22	56
MTCP2-1P5-3BD18C	$229.00						145TC					
MTCP2-002-3BD18	$256.00	2					145T		4		6.56-5.93 / 2.97	58.5
MTCP2-002-3BD18C	$281.00						145TC					
MTCP2-003-3BD18	$462.00	3					182T		2		9.01-8.16 / 4.08	86
MTCP2-003-3BD18C	$490.00						182TC					
MTCP2-005-3BD18	$441.00	5					184T	F1	4		13.9-12.6 / 6.3	104
MTCP2-005-3BD18C	$508.00						184TC					
MTCP2-7P5-3BD18	$677.00	7.5					213T	F1(F2)	2		20.4-18.5 / 9.23	172
MTCP2-7P5-3BD18C	$706.00						213TC					
MTCP2-010-3BD18	$760.00	10					215T		4		26.9-24.3 / 12.2	193
MTCP2-010-3BD18C	$867.00						215TC					
MTCP2-015-3BD18	$1,038.00	15					254T		2		40.0-36.2 / 18.1	265
MTCP2-015-3BD18C	$1,152.00						254TC					
MTCP2-020-3BD18	$1,238.00	20					256T		4		52.4-47.4 / 23.7	304
MTCP2-020-3BD18C	$1,377.00						256TC					
MTCP2-025-3BD18	$1,705.00	25					284T		2		65.1-58.8 / 29.4	385
MTCP2-025-3BD18C	$1,652.00						284TC					
MTCP2-030-3BD18	$1,757.00	30					286T		4		78.1-70.6 / 35.3	430
MTCP2-030-3BD18C	$1,763.00						286TC					
MTCP2-040-3BD18	$2,178.00	40					324T		2		104-93.7 / 46.8	531
MTCP2-050-3BD18	$2,265.00	50					326T		4		127-115 / 57.6	578
MTCP2-060-3BD18	$3,242.00	60					364T	F1	2		158-142 / 71.2	769
MTCP2-075-3BD18	$3,446.00	75					365T		4		196-177 / 88.7	858
MTCP2-100-3BD18	$4,179.00	100					405T		4		252-228 / 114	1131
MTCP2-125-3BD18	$4,827.00	125					444T	F1(F2)	2		323-292 / 146	1429
MTCP2-150-3BD18	$6,157.00	150					445T		4		386-349 / 175	1625
MTCP2-200-3BD18	$7,203.00	200					445/7T		4		506-458 / 229	2033
MTCP2-250-3D18	$10,551.00	250			460V		449T	F1	2	1.15	280[5]	2508
MTCP2-300-3D18	$13,688.00	300					449T		2		336[5]	2728

1) *Please review the AutomationDirect Terms & Conditions for warranty and service on this product.*
2) *For warranty on motors 50 hp and above, motors must be inspected by an EASA motor repair or service center.*
3) *F1(F2) indicates F1 conduit box mounting location, field convertible to F2 (as shown on dimensional diagram).*
4) *Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.*
5) *F.L. Amps @ 460V only.*
6) *The service factor changes from 1.25 to 1.0 under the following conditions:*
   - *When running the motor at 208VAC @ 60Hz*
   - *When running the motor at 200/400VAC @ 50Hz*
   - *When used with a VFD*

IronHorse® MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

T-Frame TEFC Motors – Three-Phase Industrial Duty – 1–20 hp – 1200 & 3600 rpm

Motor Specifications – Premium-Efficiency T-Frame Three-Phase Motors – 1200 rpm

Part Number (1)	Price	HP	Base RPM @60Hz (50Hz)	Phase	Voltage	Housing	NEMA Frame	Mounting (2)	Holes / Foot	Service Factor (4) (@50Hz)	F.L. Amps @208-230V/460V	Approx Product Weight (lb) (3)
MTCP2-001-3BD12	$254.00	1	1200 (1000)	3	208-230/460V	TEFC cast iron	145T	F1(F2)	4	1.25 (1.0)	3.86-3.49 / 1.75	53
MTCP2-1P5-3BD12	$357.00	1.5					182T		2		5.22-4.72 / 2.36	91.5
MTCP2-002-3BD12	$404.00	2					184T		4		6.59-5.96 / 2.98	100
MTCP2-003-3BD12	$531.00	3					213T		2		9.92-8.97 / 4.48	166
MTCP2-005-3BD12	$596.00	5					215T		4		16.1-14.5 / 7.27	179
MTCP2-7P5-3BD12	$939.00	7.5					254T		2		20.8-18.8 / 9.41	247
MTCP2-010-3BD12	$1,120.00	10					256T		4		27.8-25.1 / 12.5	258
MTCP2-015-3BD12	$1,357.00	15					284T		2		42.9-38.8 / 19.4	366
MTCP2-020-3BD12	$1,497.00	20					286T		4		56.5-51.1 / 25.5	419

1) Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

2) F1(F2) indicates F1 conduit box mounting location, field convertible to F2 (as shown on dimensional diagram).

3) Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.

4) The service factor changes from 1.25 to 1.0 under the following conditions:

- *When running the motor at 208VAC @ 60Hz*
- *When running the motor at 200/400VAC @ 50Hz*
- *When used with a VFD*

Motor Specifications – Premium-Efficiency T-Frame Three-Phase Motors – 3600 rpm

Part Number (1)	Price	HP	Base RPM @60Hz (50Hz)	Phase	Voltage	Housing	NEMA Frame	Mounting (2)	Holes / Foot	Service Factor (4) (@50Hz)	F.L. Amps @208-230V/460V	Approx Product Weight (lb) (3)
MTCP2-1P5-3BD36	$199.00	1.5	3600 (3000)	3	208-230/460V	TEFC cast iron	143T	F1(F2)	2	1.25 (1.0)	4.62-4.18 / 2.09	45.2
MTCP2-002-3BD36	$229.00	2					145T		4		6.05-5.48 / 2.74	50.7
MTCP2-003-3BD36	$324.00	3					182T	F1	2		6.45-7.64 / 3.82	80.5
MTCP2-005-3BD36	$375.00	5					184T		4		13.3-12.0 / 6.01	96
MTCP2-7P5-3BD36	$552.00	7.5					213T	F1(F2)	2		20.9-18.9 / 9.45	160
MTCP2-010-3BD36	$588.00	10					215T		4		27.0-24.4 / 12.2	180
MTCP2-015-3BD36	$1,063.00	15					254T		2		38.8-35.1 / 17.5	261
MTCP2-020-3BD36	$1,243.00	20					256T		4		51.1-46.2 / 23.1	297

1) Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

2) F1(F2) indicates F1 conduit box mounting location, field convertible to F2 (as shown on dimensional diagram).

3) Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.

4) The service factor changes from 1.25 to 1.0 under the following conditions:

- *When running the motor at 208VAC @ 60Hz*
- *When running the motor at 200/400VAC @ 50Hz*
- *When used with a VFD*

IronHorse® MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

T-Frame TEFC Motors – Three-Phase Industrial Duty – 1–300 hp

TC-Frame (C-Face) TEFC Motors – Three-Phase Industrial Duty – 1–30 hp

Performance Data – T & TC Frame Three-Phase MTCP2 Motors (460 Volt except as indicated) – 1200, 1800, 3600 rpm

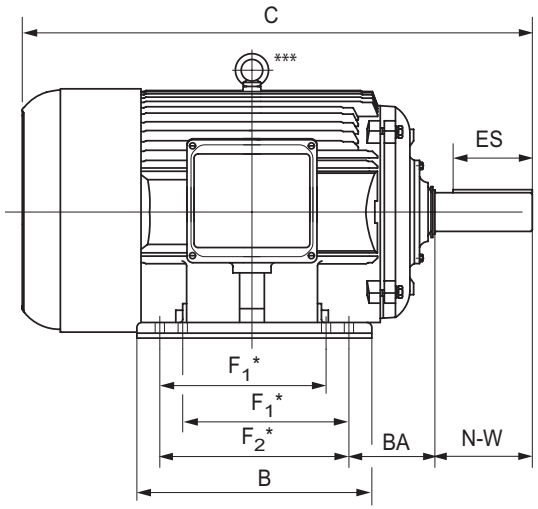
Part Number	HP	NEMA Design	FL RPM	Minimum Speed (rpm)		Current @ 230V/460V (Amps)			Torque (lb·ft)			Maximum Speed (rpm)		FL Efficiency (%)	F.L. Power Factor	Rotor Inertia (lb·ft²)
				CT 10:1	VT 20:1	No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break-down	CHP[1]	Safe			
MTCP2-001-3BD12	1	B	1160	116	58	2.3/1.5	3.49/1.75	30/15	4.53	8.15	12.00	1800	2400	82.5	0.65	0.118
MTCP2-001-3BD18(C)			1755	175.5	87.75	2.2/1.1	3.27/1.63	30/15	2.99	8.37	11.96	2700	3600	85.5	0.67	0.089
MTCP2-1P5-3BD12	1.5		1180	118	59	3.1/1.55	4.72/2.36	40/20	6.67	16.68	24.01	1800	2400	87.5	0.68	0.401
MTCP2-1P5-3BD18(C)			1755	175.5	87.75	2.9/1.45	4.45/2.22	40/20	4.49	12.57	17.51	2700	3600	86.5	0.73	0.105
MTCP2-1P5-3BD36			3490	348.5	174.25	2.1/1.05	4.18/2.09	40/20	2.26	4.97	7.01	5400	7200	84	0.80	0.043
MTCP2-002-3BD12	2		1175	118	59	3.7/1.85	5.96/2.98	50/25	8.9	20.47	29.37	1800	2400	88.5	0.71	0.462
MTCP2-002-3BD18(C)			1755	175.5	87.75	3.9/1.95	5.93/2.97	50/25	5.98	16.15	20.93	2700	3600	86.5	0.73	0.116
MTCP2-002-3BD36			3490	349	174.5	2.5/1.25	5.48/2.74	50/25	3.01	6.92	9.63	5400	7200	85.5	0.80	0.05
MTCP2-003-3BD12	3		1175	117.5	58.75	5/2.5	8.97/4.48	64/32	13.3	20.62	31.92	1800	2400	89.5	0.7	0.646
MTCP2-003-3BD18(C)			1755	175.5	87.75	4.6/2.3	8.16/4.08	64/32	9	19.80	28.80	2700	3600	89.5	0.77	0.23
MTCP2-003-3BD36			3490	350.5	175.25	3.52/1.7	7.64/3.82	64/32	4.49	9.43	15.72	5400	7200	86.5	0.85	0.133
MTCP2-005-3BD12	5		1175	117.5	58.75	7.1/3.55	14.5/7.27	92/46	22.2	35.52	53.28	1800	2400	89.5	0.72	0.946
MTCP2-005-3BD18(C)			1755	175.5	87.75	5.4/2.7	12.6/6.3	92/46	15	30.00	42.00	2700	3600	89.5	0.83	0.326
MTCP2-005-3BD36			3490	350.5	175.25	3.1/1.55	12.0/6.01	92/46	7.49	16.48	26.22	5400	7200	88.5	0.88	0.178
MTCP2-7P5-3BD12	7.5		1175	117.5	58.75	8.4/4.2	18.8/9.41	127/63.5	33.5	60.30	93.80	1800	2400	91	0.82	2.03
MTCP2-7P5-3BD18(C)			1760	176	88	8.0/4.0	18.5/9.23	127/63.5	22.3	41.26	60.21	2700	3600	91.7	0.83	0.689
MTCP2-7P5-3BD36			3505	350.5	175.25	6.4/3.2	18.9/9.45	127/63.5	11.2	17.92	33.60	5400	5400	89.5	0.83	11.2
MTCP2-010-3BD12	10		1175	117.5	58.75	11.6/5.8	25.1/12.5	162/81	44.7	80.46	125.16	1800	2400	91	0.82	2.27
MTCP2-010-3BD18(C)			1760	176	88	9.8/4.9	24.3/12.2	162/81	29.7	51.98	77.22	2700	3600	91.7	0.84	0.814
MTCP2-010-3BD36			3500	350	175	7.3/3.7	24.4/12.2	162/81	14.9	22.35	41.72	5400	5400	90.2	0.85	0.369
MTCP2-015-3BD12	15		1185	118.5	59.25	17/8.5	38.8/19.4	232/116	66.5	96.43	152.95	1800	2400	91.7	0.79	4.09
MTCP2-015-3BD18(C)			1765	176.5	88.25	15/7.5	36.2/18.1	232/116	44.6	84.74	120.42	2700	3600	92.4	0.84	1.89
MTCP2-015-3BD36			3540	354.5	177.25	9.8/4.9	35.1/17.5	232/116	22.2	37.74	55.50	5400	5400	91	0.88	1.06
MTCP2-020-3BD12	20		1185	118.5	59.25	49.2/24.6	51.1/25.5	290/145	88.6	124.04	194.92	1800	2400	91.7	0.80	5
MTCP2-020-3BD18(C)			1765	176.5	88.25	18/9	47.4/23.7	290/145	59.5	107.10	148.75	2700	3600	93	0.85	2.33
MTCP2-020-3BD36			3540	354	177	46.2/23.1	46.2/23.1	290/145	29.7	47.52	68.31	5400	5400	91	0.89	1.26
MTCP2-025-3BD18(C)	25		1770	177	88.5	21.2/10.6	58.8/29.4	365/182.5	74.2	111.30	178.08	2700	2700	93.6	0.85	3.36
MTCP2-030-3BD18(C)	30		1770	177	88.5	24/12	70.6/35.3	435/217.5	89	133.50	213.60	2700	2700	93.6	0.85	3.83
MTCP2-040-3BD18	40		1775	177.5	88.75	34/17	93.7/46.8	580/290	118	188.80	306.80	2700	2700	94.1	0.85	6.11
MTCP2-050-3BD18	50		1775	177.5	88.75	41/20.5	115/57.6	725/362.5	148	236.80	384.80	2700	2700	94.5	0.86	6.89
MTCP2-060-3BD18	60		1780	178	89	56/28	142/71.2	870/435	177	362.85	442.50	2700	2700	95	0.83	14.7
MTCP2-075-3BD18	75		1780	178	89	74/37	177/88.7	1085/542.5	221	397.80	508.30	2700	2700	95.4	0.83	17.5
MTCP2-100-3BD18	100		1785	178.5	89.25	70/35	228/114	1450/725	294	470.40	735.00	2700	2700	95.4	0.86	31.2
MTCP2-125-3BD18	125		1790	179	89.5	104/52	292/146	1815/907	367	587.20	880.80	2700	2700	95.4	0.84	40.1
MTCP2-150-3BD18	150		1790	179	89.5	113/56.5	349/175	2170/1085	440	704.00	1056.00	2700	2700	95.8	0.84	48.5
MTCP2-200-3BD18	200		1790	179	89.5	144/72	458/229	2900/1450	587	997.90	1467.50	2700	2250	96.2	0.85	64.3
MTCP2-250-3D18	250		1790	179	89.5	91.9[2]	280[2]	1825[2]	773	1546.00	2009.80	2700	2250	96.2	0.87	78.8
MTCP2-300-3D18	300		1790	179	89.5	103[2]	336[2]	2200[2]	880	1760.00	2200.00	2700	2250	96.2	0.87	94.1

1) Maximum Constant HP RPM is for direct coupled loads.

2) Current @460V (Amps)

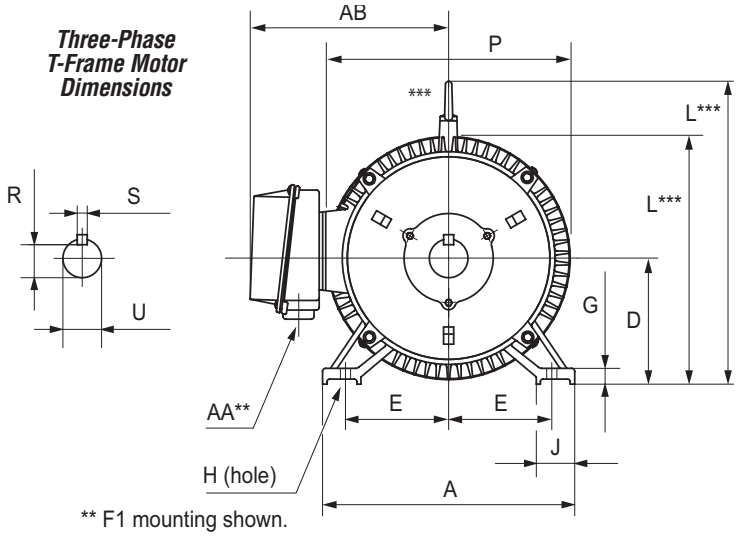
IronHorse® MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

T-Frame TEFC Motors – Three-Phase Industrial Duty – 1 to 300 hp



* Various frame sizes have 2 or 4 mounting holes per mounting foot (one mounting foot per side).

Three-Phase T-Frame Motor Dimensions



** F1 mounting shown.
** Some frame sizes are F1/F2 convertible.
*** Frames 143T & 145T have no lifting eyelet.

Dimensions [inches, except as noted] – Premium-Efficiency T-Frame Three-Phase Motors – 1800 rpm

Part Number	HP	NEMA Frame	A	AA**	AB	B	BA	C	D	E	ES	F_1*	F_2*	G	H	J	N-W	L	P	R	S	U
1800 rpm Motors																						
MTCP2-001-3BD18	1	143T	7	3/4" NPT	6.7	5.6	2.25	12.47	3.5	2.75	1.41	n/a	4	0.47	0.34	1.45	2.25	7.6	7.8	0.771	0.188	0.8759
MTCP2-1P5-3BD18	1.5	145T	7	3/4" NPT	6.7	6.6	2.25	13.47	3.5	2.75	1.41	4	5	0.47	0.34	1.45	2.25	7.8	8	0.771	0.188	0.8759
MTCP2-002-3BD18	2		7	3/4" NPT	6.7	6.6	2.25	13.47	3.5	2.75	1.41	4	5	0.43	0.34	1	2.25	7.8	8	0.771	0.188	0.8759
MTCP2-003-3BD18	3	182T	9	1" NPT	7.2	6	2.75	15	4.5	3.75	1.78	n/a	4.5	0.6	0.41	2	2.75	9.5	9.7	0.986	0.25	1.125
MTCP2-005-3BD18	5	184T	9	1" NPT	8.2	7	2.75	16	4.5	3.75	1.78	4.5	5.5	0.6	0.41	2	2.75	9.5	9.7	0.986	0.25	1.125
MTCP2-7P5-3BD18	7.5	213T	10.5	1" NPT	8.5	7.5	3.5	19.5	5.25	4.25	2.41	n/a	5.5	0.71	0.41	2.4	3.38	10.6	10.6	1.201	0.312	1.375
MTCP2-010-3BD18	10	215T	10.5	1" NPT	8.5	9	3.5	21	5.25	4.25	2.41	5.5	7	0.71	0.41	2.4	3.38	10.6	10.4	1.201	0.312	1.375
MTCP2-015-3BD18	15	254T	12.5	1.5" NPT	10.5	10.3	4.25	23.3	6.25	5	2.91	n/a	8.25	0.79	0.53	2.40	4	12.9	12.6	1.416	0.375	1.625
MTCP2-020-3BD18	20	256T	12.5	1.5" NPT	10.5	12	4.25	25.3	6.25	5	2.91	8.25	10	0.79	0.53	2.40	4	12.9	12.6	1.416	0.375	1.625
MTCP2-025-3BD18	25	284T	14	1.5" NPT	11.5	12.4	4.75	26.63	7	5.5	3.28	n/a	9.5	0.87	0.53	2.8	4.62	14.3	14	1.591	0.5	1.875
MTCP2-030-3BD18	30	286T	14	1.5" NPT	11.5	13.9	4.75	28.1	7	5.5	3.28	9.5	11	0.87	0.53	2.8	4.62	14.3	14	1.591	0.5	1.875
MTCP2-040-3BD18	40	324T	16	2" NPT	14.5	13.5	5.25	29.6	8	6.25	3.91	n/a	10.5	0.99	0.66	2.8	5.25	16	15.7	1.845	0.5	2.125
MTCP2-050-3BD18	50	326T	16	2" NPT	14.5	15	5.25	31.2	8	6.25	3.91	10.5	12	0.99	0.66	2.8	5.25	16	15.7	1.845	0.5	2.125
MTCP2-060-3BD18	60	364T	17	3" NPT	16.5	15	5.88	32.58	9	7	4.28	n/a	11.25	1.18	0.66	3	5.88	18.8	19.1	2.021	0.625	2.375
MTCP2-075-3BD18	75	365T	17	3" NPT	16.5	16	5.88	33.6	9	7	4.28	11.25	12.25	1.18	0.66	3	5.88	18.8	19.1	2.021	0.625	2.375
MTCP2-100-3BD18	100	405T	20	3" NPT	19	17	6.62	38.1	10	8	5.65	12.25	13.75	1.18	0.81	3.2	7.25	21.1	21.6	2.45	0.75	2.875
MTCP2-125-3BD18	125	444T	22	2x3" NPT	20	18.5	7.5	41.9	11	9	6.91	n/a	14.5	1.38	0.81	3.35	8.5	23	23.5	2.88	0.875	3.375
MTCP2-150-3BD18	150	445T	22	2x3" NPT	20	20.5	7.5	44	11	9	6.91	14.5	16.5	1.38	0.81	3.35	8.5	23	23.5	2.88	0.875	3.375
MTCP2-200-3BD18	200	445/7T	22	2x3" NPT	20	24	7.5	47.4	11	9	6.91	16.5	20	1.38	0.81	3.35	8.5	23	23.5	2.88	0.875	3.375
MTCP2-250-3D18	250	449T	22	2x3" NPT	19.5	31	7.5	58	11	9	6.91	n/a	25	1.58	0.81	3.4	8.500	23	24	2.88	0.875	3.375
MTCP2-300-3D18	300		22	2x3" NPT	19.5	31	7.5	58	11	9	6.91	n/a	25	1.58	0.81	3.4	8.500	23	24	2.88	0.875	3.375

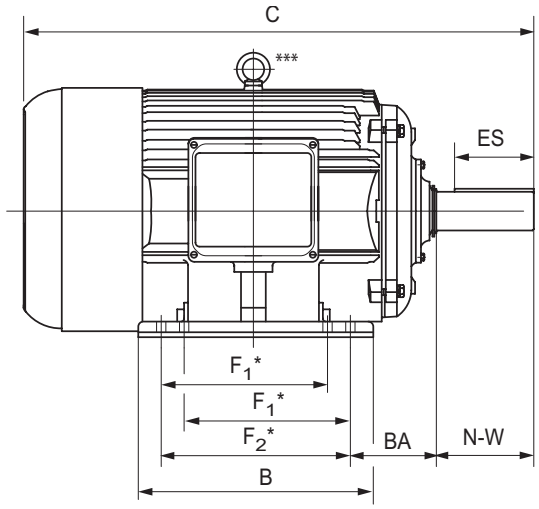
** Various frame sizes have 2 or 4 mounting holes per mounting foot.*

*** AA dimension is conduit fitting size.*
F1 mounting shown; some frame sizes are F1/F2 convertible; refer to T Frame "Motor Specifications" table.
(F2 mounting = conduit entrance on right side facing shaft.)

**** Frame sizes 143T(C) and 145T(C) have no lifting eyelet.*

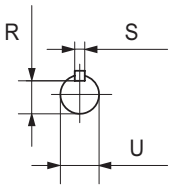
IronHorse® MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

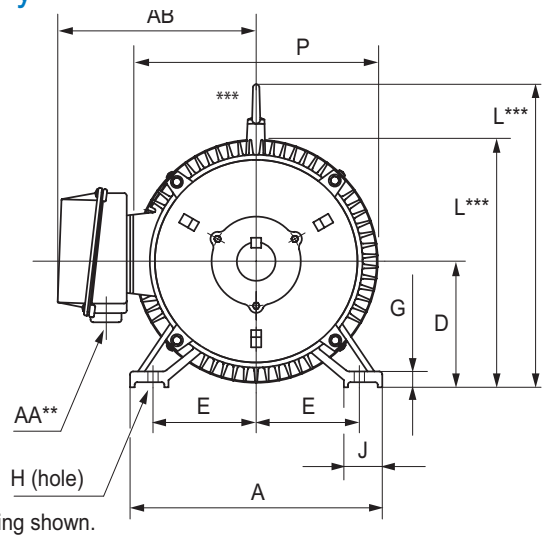
T-Frame TEFC Motors – Three-Phase Industrial Duty – Dimensions



* Various frame sizes have 2 or 4 mounting holes per mounting foot (one mounting foot per side).

Three-Phase T-Frame Motor Dimensions





** F1 mounting shown.
** Some frame sizes are F1/F2 convertible.
*** Frames 143T & 145T have no lifting eyelet.

Dimensions [inches, except as noted] – Premium-Efficiency T-Frame Three-Phase Motors – 1200 & 3600 rpm

Part Number	HP	NEMA Frame	A	AA**	AB	B	BA	C	D	E	ES	F_1*	F_2*	G	H	J	N-W	L	P	R	S	U
1200 rpm Motors																						
MTCP2-001-3BD12	1	145T	7	3/4" NPT	6.7	6.6	2.25	13.47	3.5	2.75	1.41	4	5	0.43	0.34	1	2.25	7.8	8	0.771	0.188	0.8759
MTCP2-1P5-3BD12	1.5	182T	9	1" NPT	7.2	6	2.75	15	4.5	3.75	1.78	n/a	4.5	0.6	0.41	2	2.75	9.5	9.7	0.986	0.25	1.125
MTCP2-002-3BD12	2	184T	9	1" NPT	8.2	7	2.75	16	4.5	3.75	1.78	4.5	5.5	0.6	0.41	2	2.75	9.5	9.7	0.986	0.25	1.125
MTCP2-003-3BD12	3	213T	10.5	1" NPT	8.5	7.5	3.5	19.5	5.25	4.25	2.41	n/a	5.5	0.71	0.41	2.4	3.38	10.6	10.6	1.201	0.312	1.375
MTCP2-005-3BD12	5	215T	10.5	1" NPT	8.5	9	3.5	21	5.25	4.25	2.41	5.5	7	0.71	0.41	2.4	3.38	10.6	10.4	1.201	0.312	1.375
MTCP2-7P5-3BD12	7.5	254T	12.5	1.5" NPT	10.5	10.3	4.25	23.3	6.25	5	2.91	n/a	8.25	0.79	0.53	2.40	4	12.9	12.6	1.416	0.375	1.625
MTCP2-010-3BD12	10	256T	12.5	1.5" NPT	10.5	12	4.25	25.3	6.25	5	2.91	8.25	10	0.79	0.53	2.40	4	12.9	12.6	1.416	0.375	1.625
MTCP2-015-3BD12	15	284T	14	1.5" NPT	11.5	12.4	4.75	26.63	7	5.5	3.28	n/a	9.5	0.87	0.53	2.8	4.62	14.3	14	1.591	0.5	1.875
MTCP2-020-3BD12	20	286T	14	1.5" NPT	11.5	13.9	4.75	28.1	7	5.5	3.28	9.5	11	0.87	0.53	2.8	4.62	14.3	14	1.591	0.5	1.875
3600 rpm Motors																						
MTCP2-1P5-3BD36	1.5	143T	7	3/4" NPT	6.7	5.6	2.25	12.47	3.5	2.75	1.41	n/a	4	0.47	0.34	1	2.25	7.6	7.8	0.771	0.188	0.8759
MTCP2-002-3BD36	2	145T	7	3/4" NPT	6.7	6.6	2.25	13.47	3.5	2.75	1.41	4	5	0.43	0.34	1	2.25	7.8	8	0.771	0.188	0.8759
MTCP2-003-3BD36	3	182T	9	1" NPT	7.2	6	2.75	15	4.5	3.75	1.78	n/a	4.5	0.6	0.41	2	2.75	9.5	9.7	0.986	0.25	1.125
MTCP2-005-3BD36	5	184T	9	1" NPT	8.2	7	2.75	16	4.5	3.75	1.78	4.5	5.5	0.6	0.41	2	2.75	9.5	9.7	0.986	0.25	1.125
MTCP2-7P5-3BD36	7.5	213T	10.5	1" NPT	8.5	7.5	3.5	19.5	5.25	4.25	2.41	n/a	5.5	0.71	0.41	2.4	3.38	10.6	10.6	1.201	0.312	1.375
MTCP2-010-3BD36	10	215T	10.5	1" NPT	8.5	9	3.5	21	5.25	4.25	2.41	5.5	7	0.71	0.41	2.4	3.38	10.6	10.4	1.201	0.312	1.375
MTCP2-015-3BD36	15	254T	12.5	1.5" NPT	10.5	10.3	4.25	23.3	6.25	5	2.91	n/a	8.25	0.79	0.53	2.40	4	12.9	12.6	1.416	0.375	1.625
MTCP2-020-3BD36	20	256T	12.5	1.5" NPT	10.5	12	4.25	25.3	6.25	5	2.91	8.25	10	0.79	0.53	2.40	4	12.9	12.6	1.416	0.375	1.625

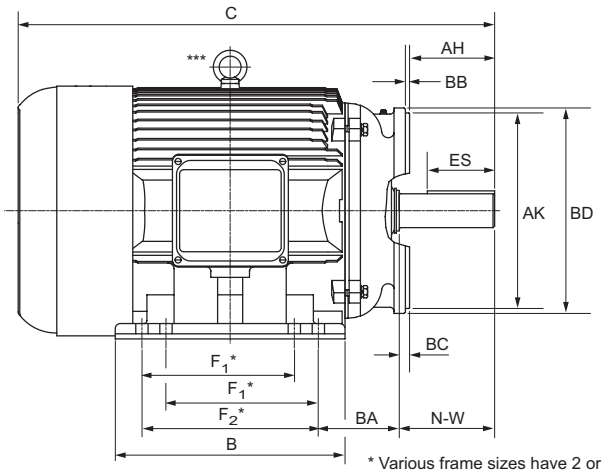
** Various frame sizes have 2 or 4 mounting holes per mounting foot.*

*** AA dimension is conduit fitting size.*
F1 mounting shown; some frame sizes are F1/F2 convertible; refer to T Frame "Motor Specifications" table.
(F2 mounting = conduit entrance on right side facing shaft.)

**** Frame sizes 143T(C) and 145T(C) have no lifting eyelet.*

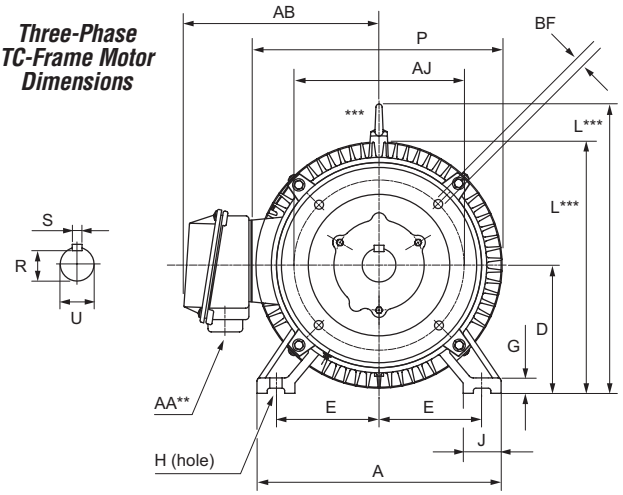
IronHorse® MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

TC-Frame TEFC Motors – Three-Phase Industrial Duty – Dimensions



* Various frame sizes have 2 or 4 mounting holes per mounting foot (one mounting foot per side).

Three-Phase TC-Frame Motor Dimensions



** F1 mounting shown. Some frame sizes are F1/F2 convertible.

*** Frames 143TC and 145TC have no lifting eyelet.

Dimensions [inches, except as noted] – Premium-Efficiency TC-Frame Three-Phase Motors – 1800 rpm

Part # MTCP2-xxx 3BD18C	HP	NEMA Frame	A	AA**	AB	AH	AJ	AK	B	BA	BB	BC	BD	BF	C	D	E	ES	F_1*	F_2*	G	H	J	N-W	L	P	R	S	U
-001-	1	143TC	7	3/4" NPT	6.7	1.96	5.875	4.5	5.6	2.25	0.16	0.29	6.5	3/8-16	12.5	3.5	2.75	1.41	n/a	4	0.47	0.34	1	2.25	7.6	7.8	0.771	0.188	0.8759
-1P5-	1.5	145TC	7	3/4" NPT	6.7	1.96	5.875	4.5	6.6	2.25	0.16	0.29	6.5	3/8-16	13.5	3.5	2.75	1.41	4	5	0.43	0.34	1.2	2.25	7.8	8	0.771	0.188	0.8759
-002-	2		7		6.7				6.6									1.41			0.43		1.2		7.8	8	0.771	0.188	0.8759
-003-	3	182TC	9	1" NPT	7.2	2.37	7.25	8.5	6	2.75	0.25	0.38	9	1/2-13	15	4.5	3.75	1.78	n/a	4.5	0.6	0.41	2	2.75	9.5	9.7	0.986	0.25	1.125
-005-	5	184TC	9	1" NPT	8.2	2.37	7.25	8.5	7	2.75	0.25	0.38	9	1/2-13	16	4.5	3.75	1.78	4.5	5.5	0.6	0.41	2	2.75	9.5	9.7	0.986	0.25	1.125
-7P5-	7.5	213TC	10.5	1" NPT	8.5	2.87	7.25	8.5	7.5	3.5	0.25	0.51	9	1/2-13	20.3	5.25	4.25	2.41	n/a	5.5	0.71	0.41	2.4	3.38	10.6	10.4	1.201	0.312	1.375
-010-	10	215TC	10.5	1" NPT	8.5	2.87	7.25	8.5	9	3.5	0.25	0.51	9	1/2-13	21.8	5.25	4.25	2.41	5.5	7	0.71	0.41	2.4	3.38	10.6	10.4	1.201	0.312	1.375
-015-	15	254TC	12.5	1.5" NPT	10.5	3.75	7.25	8.5	10.3	4.25	0.25	0.25	10	1/2-13	23.3	6.25	5	2.91	n/a	8.25	0.79	0.53	2.40	4	12.9	12.6	1.416	0.375	1.625
-020-	20	256TC	12.5	1.5" NPT	10.5	3.75	7.25	8.5	12	4.25	0.25	0.25	10	1/2-13	25.3	6.25	5	2.91	8.25	10	0.79	0.53	2.40	4	12.9	12.6	1.416	0.375	1.625
-025-	25	284TC	14	1.5" NPT	11.5	4.38	9	10.5	12.4	4.75	0.25	0.25	11.25	1/2-13	26.6	7	5.5	3.28	n/a	9.5	0.87	0.53	2.8	4.62	14.3	14	1.591	0.5	1.875
-030-	30	286TC	14	1.5" NPT	11.5	4.38	9	10.5	13.9	4.75	0.25	0.24	11.25	1/2-13	28.1	7	5.5	3.28	9.5	11	0.87	0.53	2.8	4.62	14.3	14	1.591	0.5	1.875

** Various frame sizes have 2 or 4 mounting holes per mounting foot.*

*** AA dimension is conduit fitting size.*
F1 mounting shown; some frame sizes are F1/F2 convertible; refer to T Frame "Motor Specifications" table.
(F2 mounting = conduit entrance on right side facing shaft.)

**** Frame sizes 143T(C) and 145T(C) have no lifting eyelet.*

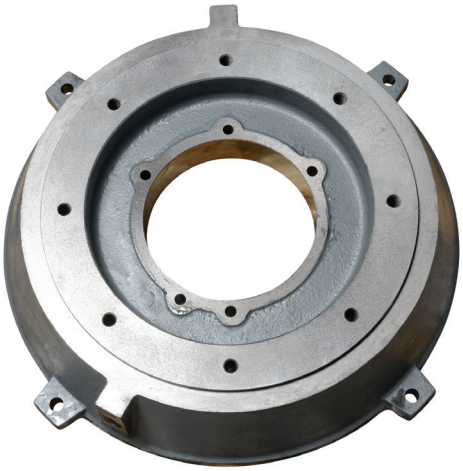
IronHorse® MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

Premium Efficiency TEFC T-Frame Three-Phase Motor C-Flange Kits – 1 to 300 hp

We stock Premium Efficiency NEMA cast iron T-frame motors from 1–300 hp, and TC-frame motors from 1–30 hp.

We also offer IronHorse cast iron C-flange kits which can be used for C-face mounting of our 1–300 hp IronHorse MTCP2 Premium Efficiency cast iron T-frame motors.

C-faces must be installed by an EASA motor shop in order to maintain the motor warranty.



MTCP2 Premium-Efficiency T-frame Three-Phase Motor C-Flange Kits

Part Number (1)	Price	Fits Frame	Fits Motor Number	Motor HP	Product Weight (lb) (2)
MTAP2-CFACE-140TC	$18.00	143T & 145T	MTCP2-001-3BD12 MTCP2-001-3BD18 MTCP2-1P5-3BD18 MTCP2-1P5-3BD36 MTCP2-002-3BD18 MTCP2-002-3BD36	1 1 1-1/2 1-1/2 2 2	5.62
MTAP2-CFACE-180TC	$25.00	182T & 184T	MTCP2-1P5-3BD12 MTCP2-002-3BD12 MTCP2-003-3BD18 MTCP2-003-3BD36 MTCP2-005-3BD18 MTCP2-005-3BD36	1-1/2 2 3 3 5 5	10.36
MTAP2-CFACE-210TC	$35.00	213T & 215T	MTCP2-003-3BD12 MTCP2-005-3BD12 MTCP2-7P5-3BD18 MTCP2-7P5-3BD36 MTCP2-010-3BD18 MTCP2-010-3BD36	3 5 7-1/2 7-1/2 10 10	12.68
MTAP2-CFACE-250TC	$59.00	254T & 256T	MTCP2-7P5-3BD12 MTCP2-010-3BD12 MTCP2-015-3BD18 MTCP2-015-3BD36 MTCP2-020-3BD18 MTCP2-020-3BD36	7-1/2 10 15 15 20 20	31.20
MTAP2-CFACE-280TC	$75.00	284T & 286T	MTCP2-015-3BD12 MTCP2-020-3BD12 MTCP2-025-3BD18 MTCP2-030-3BD18	15 20 25 30	31.20
MTAP2-CFACE-320TC	$104.00	324T & 326T	MTCP2-040-3BD18 MTCP2-050-3BD18	40 50	47.40
MTAP2-CFACE-360TC	$148.00	364T & 365T	MTCP2-060-3BD18 MTCP2-075-3BD18	60 75	48.70
MTAP2-CFACE-400TC	$227.00	405T	MTCP2-100-3BD18	100	132.17
MTAP2-CFACE-444TC	$241.00	444T & 445T	MTCP2-125-3BD18 MTCP2-150-3BD18	125 150	137.44
MTAP2-CFACE-447TC	$241.00	445/7T	MTCP2-200-3BD18	200	134.83
MTAP2-CFACE-449TC	$520.00	449T	MTCP2-250-3D18 MTCP2-300-3D18	250 300	162.50

1) Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

2) Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.

IronHorse® MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

Premium Efficiency TEFC Three-Phase Motor Replacement Parts – 1 to 300 hp

We stock MTCP2 Premium Efficiency NEMA cast iron T-frame motors from 1–300 hp, and TC-frame motors from 1–30 hp.

We also offer IronHorse junction boxes, TEFC fans, and TEFC fan shrouds as direct replacement parts for these MTCP2 motors.

These replacement parts are field installable. Instructions included.

MTCP2 Premium-Efficiency Three-Phase Motor Replacement Parts

Part Number (1)	Price	Description (2)(3)(4)	Fits Frame	Fits PE Motor Number (1)	Motor HP	Product Wt. (lb)
MTAP2-FAN-140	$25.00	Replacement Fan	143 & 145	MTCP2-001-3BD12 MTCP2-001-3BD18(C) MTCP2-1P5-3BD18(C) MTCP2-1P5-3BD36 MTCP2-002-3BD18(C) MTCP2-002-3BD36	1 1 1-1/2 1-1/2 2 2	0.029
MTAP2-SHROUD-140	$21.00	Replacement Fan Shroud				1.04
MTAP2-JBOX-140	$21.00	Replacement Junction Box				2.54
MTAP2-FAN-180	$25.00	Replacement Fan	182 & 184	MTCP2-1P5-3BD12 MTCP2-002-3BD12 MTCP2-003-3BD18(C) MTCP2-003-3BD36 MTCP2-005-3BD18(C) MTCP2-005-3BD36	1-1/2 2 3 3 5 5	0.053
MTAP2-SHROUD-180	$29.50	Replacement Fan Shroud				2.23
MTAP2-JBOX-180	$30.50	Replacement Junction Box				3.28
MTAP2-FAN-210-2	$27.50	Replacement Fan (for 2-pole motors)	213 & 215	MTCP2-7P5-3BD36 MTCP2-010-3BD36	7-1/2 10	0.075
MTAP2-FAN-210	$26.50	Replacement Fan (4&6-pole)		MTCP2-003-3BD12 MTCP2-005-3BD12 MTCP2-7P5-3BD18(C) MTCP2-010-3BD18(C)	3 5 7-1/2 10	0.075
MTAP2-SHROUD-210	$30.50	Replacement Fan Shroud				4.98
MTAP2-JBOX-210	$30.50	Replacement Junction Box				3.28
MTAP2-FAN-250-2	$44.50	Replacement Fan (for 2-pole motors)	254 & 256	MTCP2-015-3BD36 MTCP2-020-3BD36	15 20	0.090
MTAP2-FAN-250	$44.50	Replacement Fan (4&6-pole)		MTCP2-7P5-3BD12 MTCP2-010-3BD12 MTCP2-015-3BD18(C) MTCP2-020-3BD18(C)	7-1/2 10 15 20	0.104
MTAP2-SHROUD-250	$51.00	Replacement Fan Shroud				8.27
MTAP2-JBOX-250	$51.00	Replacement Junction Box				8.16
MTAP2-FAN-280	$61.00	Replacement Fan	284 & 286	MTCP2-015-3BD12 MTCP2-020-3BD12 MTCP2-025-3BD18(C) MTCP2-030-3BD18(C)	15 20 25 30	0.090
MTAP2-SHROUD-280	$76.00	Replacement Fan Shroud				10.03
MTAP2-JBOX-280	$92.00	Replacement Junction Box				8.16
MTAP2-FAN-320	$85.00	Replacement Fan	324 & 326	MTCP2-040-3BD18(C) MTCP2-050-3BD18(C)	40 50	0.126
MTAP2-SHROUD-320	$92.00	Replacement Fan Shroud				12.50
MTAP2-JBOX-320	$92.00	Replacement Junction Box				23.59
MTAP2-FAN-360	$138.00	Replacement Fan	364 & 365	MTCP2-060-3BD18(C) MTCP2-075-3BD18(C)	60 75	0.126
MTAP2-SHROUD-360	$142.00	Replacement Fan Shroud				13.76
MTAP2-JBOX-360	$173.00	Replacement Junction Box				21.05
MTAP2-FAN-400	$162.00	Replacement Fan	405	MTCP2-100-3BD18(C)	100	0.150
MTAP2-SHROUD-400	$173.00	Replacement Fan Shroud				16.67
MTAP2-JBOX-400	$173.00	Replacement Junction Box				32.74
MTAP2-FAN-440	$177.00	Replacement Fan	444 445 & 447	MTCP2-125-3BD18 MTCP2-150-3BD18 MTCP2-200-3BD18	125 150 200	0.150
MTAP2-SHROUD-440	$194.00	Replacement Fan Shroud				17.97
MTAP2-JBOX-440	$194.00	Replacement Junction Box				36.49
MTAP2-FAN-449	$260.00	Replacement Fan	449	MTCP2-250-3D18	250	0.205
MTAP2-FAN-449-1	$257.00	Replacement Fan		MTCP2-300-3D18	300	0.174
MTAP2-JBOX-449	$344.00	Replacement Junction Box		MTCP2-250-3D18 MTCP2-300-3D18	250 300	22.27
MTAP2-SHROUD-449	$360.00	Replacement Fan Shroud				36.49

1) These MTAP2 replacement components fit only MTCP2 Premium Efficiency motors.

2) Replacement Fans include fan and snap ring.

3) Replacement Fan Shrouds include shroud, bolts w/washers, and rubber plug.

4) Replacement Junction Boxes include gasketed base & cover assembly, base gasket, and base bolts.

AC Motor Selection – Marathon® Single-Phase Motors

marathon® Motors

Marathon® Single-Phase Motor Selection					
Single-Phase Characteristic	***Powerwash SXT***	***JetPump***	***General Purpose***	***Air Compressor***	***Fan & Blower***
Electrical Characteristics					
Horsepower range	1/3 – 5	1/3 – 2	1/4 – 10	1/2 – 5	1/4 – 2
Base speed (# poles)	1800 (4) / 3600 (2)	3600 (2)	1800 (4) / 3600 (2)	1800 (4) / 3600 (2)	1800 (4) / 3600 (2)
Standard voltage	115 / 230	115 / 230	115 / 230, 208 / 230, 115 / 208 – 230 100 –120 / 200 – 240, 120 / 140 & 100 – 120 / 200 – 240	230, 115 / 230, 115 / 208 – 230	115 / 230 (G1115), 115 / 208 – 230
Phase / Base frequency (Hz)	1 / 60				
Service factor	1.0	1.0 / 1.15	1.15 / 1.35	1.15 / 1.25 (C169)	1.15 / 1.2 / 1.25 / 1.35
Design code (NEMA)	B	N/A***	B, L. N, O	E, L	E, L, N
Insulation class	F	B	B, B3, F4	B, B3	B, B3
Insulation system	CR^{200} magnet wire	N/A***	N/A***	N/A***	N/A***
Duty cycle	Continuous				
Thermal protection	None	Automatic Reset	Automatic / Manual / None	Manual / None (Z502)	Automatic / Manual / None (C235)
Mechanical Characteristics					
Frame size (mounting)	56C – 145TC	56J	48 – 215T	56 – 56H – 184T	48 – 56 – 56H
Enclosure	TEFC, TENV	TEFC	DP	DP	DP
Frame material	300 Series Stainless Steel	Rolled Steel	Rolled Steel	Rolled Steel	Rolled Steel
End bracket material	Stainless Steel	Cast Aluminum, Steel	Cast Aluminum	Cast Aluminum	Cast Aluminum
Conduit box material	Stainless Steel	Steel	Steel	Steel	N/A***
Fan guard material	Stainless Steel	Steel	N/A***	N/A***	N/A***
Fan material	Polypropylene	Plastic	N/A***	N/A***	N/A***
Lead termination	Conduit box	Conduit box Flying Leads (Jxxx Models) .33HP to 3HP	Conduit box	Conduit box	NPS Hole
Standard mounting	C-Face with Rigid Base & C-Face Round Body	Footless	Rigid Base	Rigid Base	Resilient Base
Drive end shaft slinger	No	Yes	No	No	No
Paint	N/A	Gray powder-coat	Gray powder-coat Blue enamel	Black powder-coat	Black powder-coat
Bearings	Double Sealed		Ball Bearings	Ball Bearings	Ball Bearings
Grease	Exxon Polyrex EM				
Standard conduit box assembly position	F1	F1	F1	F1	F1 (NPS Hole)
Performance Characteristics					
Temperature rise	N/A***				
Encoder provisions	No				
Other Characteristics					
Warranty *	12 months from Installation. 18 months from Purchase.				
Agency listings **	UL Recognized, CSA Certified, and CE Mark				

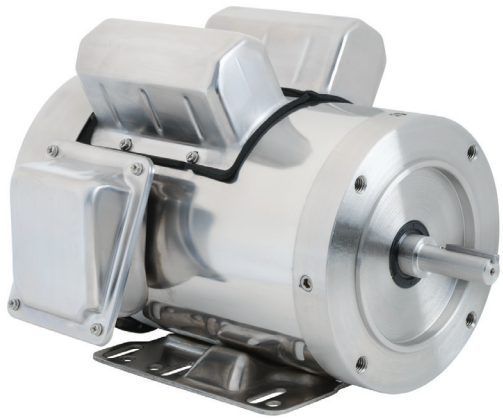
**** See Terms and Conditions for motor warranty explanation. Marathon warranty service can be arranged through Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.***

***** To obtain the most current agency approval information, see the Agency Approval Checklist on the specific part number's web page.***

****** Data not available from manufacturer.***

Powerwash SXT Washdown Duty, Single-Phase, All Stainless Steel, Totally Enclosed Motors

C-Face Footed (Rigid Base)



marathon® Motors

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Features

- Encapsulated electronic starting switch is impervious to moisture.
- Capacitor start induction run design for high starting torque unless otherwise noted.
- 1.15 Service Factor on sinewave.
- Double-sealed ball bearings.
- 303 stainless steel shaft with spring-loaded contact seals in each end.
- 300 Series stainless steel external construction: frame, end shields, conduit box, fan guard, mounting base and hardware for superior corrosion resistance.
- Internal corrosion-resistant coatings on rotor and heavy polyester varnish on the stator.
- 100% paint-free constructions.
- One-way condensation drains in each end shield and conduit box for all angle mounting.
- Nitrile Buna-N gaskets and seals on conduit box, through bolts and end shields.
- Nameplate information laser etched on frame.
- UL Recognized, CSA Certified and CE Mark.
- IP55 Rating
- Max Guard Insulation System

Applications

Typical uses include machine tools, conveyors, packaging machines, batching machines, food and beverage equipment, pumps, and fans

Motor Specifications – Powerwash SXT Washdown Duty, Single-Phase, Totally Enclosed, All Stainless Steel Motors

Part Number*	Price	HP	Base RPM	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*
N341	$501.00	1/2	1800	115 / 230	1.15	TEFC	B	56C	56C17WD5327 A	29
N343	$575.00	3/4							56C17WD5328 A	36
N345	$593.00	1							56C17WD5329 A	42
N347	$601.00	1-1/2							56C17WD5330 A	53
N349	$668.00	2						145TC	145TBWD5335 A	62
N348	$681.00	2	3600						145TBWD5305	49

** Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

Powerwash SXT Washdown Duty, Single-Phase, All Stainless Steel, Totally Enclosed Motors

marathon® Motors

C-Face Footed (Rigid Base)

Performance Data

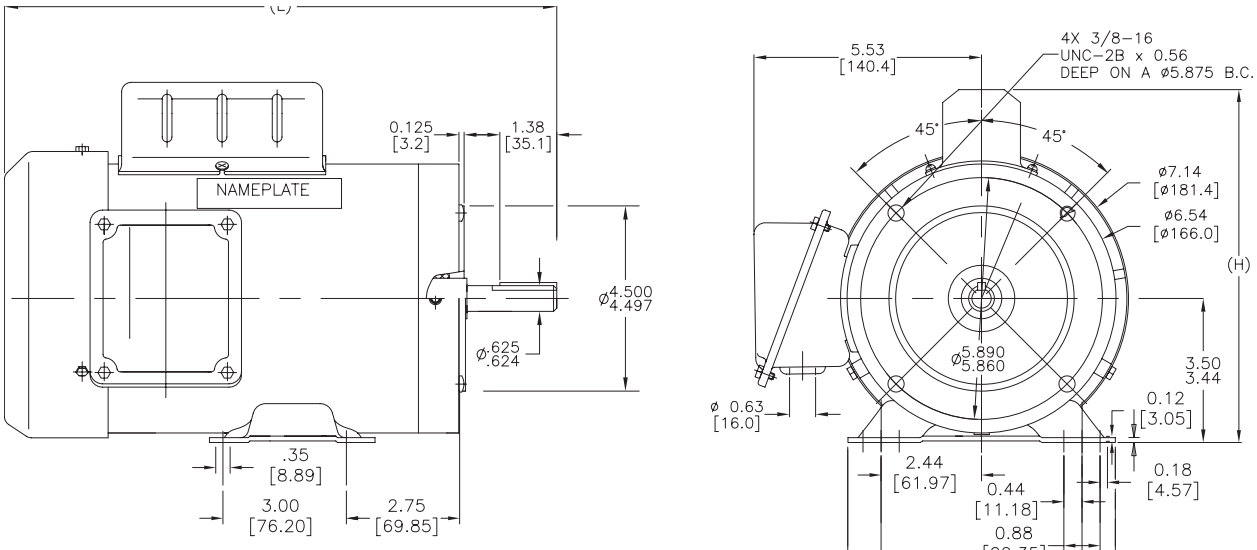
Performance Data - Single-Phase 56C (230V/60Hz data except as indicated) Powerwash SXT Washdown Duty All Stainless Steel, Totally Enclosed Motors											
Part Number	HP	F.L. RPM	Current @ 115V/230V (Amps)			Torque (lb·ft)			F.L. Efficiency (%)	F.L. Power Factor	Rotor Inertia (lb·ft²)
			230 Volt No Load Amps	Full Load Amps (115/230V)	Locked Rotor Amps (115/230V)	Full Load	Locked Rotor	Break-down			
N341	1/2	1725	3.5	8.2 / 4.1	NA* / 20	1.5	5	4.04	61	65	0.058
N343	3/4		4	9.8 / 4.9	NA* / 28.1	2.25	6.42	5.94	72	68	0.081
N345	1		4.9	13.6 / 6.8	NA* / 39	3	8.81	7.4	69	69	0.099
N347	1-1/2		5.1	15.8 / 7.9	116.8 / 58.4	4.5	15	12.7	75	75	N/A*
N349	2		4.3	16.4 / 8.2	115 / 57.5	6.0	14	14.1	74	98	N/A*
N348	2	3450	4.3	18.12 / 9.06	138 / 69	3.0	7.5	7.7	83	87	N/A*
* Data not available from manufacturer											

Dimensions

in [mm]

See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 1 – N341, N343, N345 Dimensions



Motor Dimensions (inches)		
Part Number	Length (L)	Height (H)
N341	11.1	8.5
N343	11.7	8.9
N345	12.2	9.1

Powerwash SXT Washdown Duty, Single-Phase, All Stainless Steel, Totally Enclosed Motors

marathon® Motors

Dimensions

in [mm]

Figure 2 – N347 Dimensions

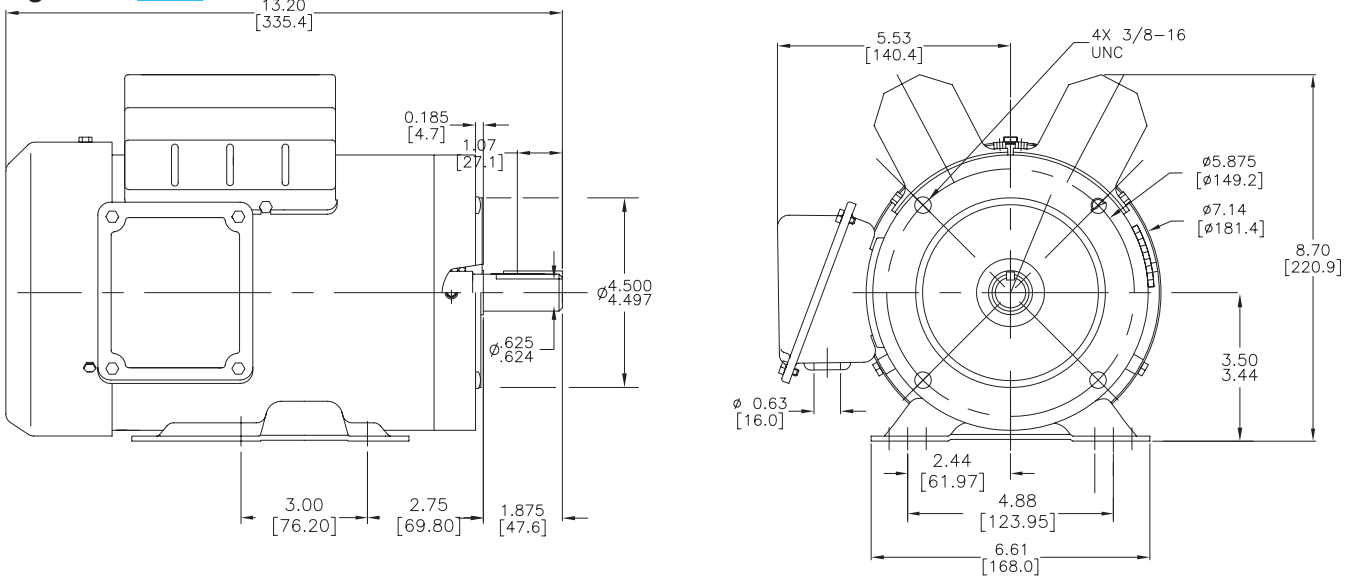
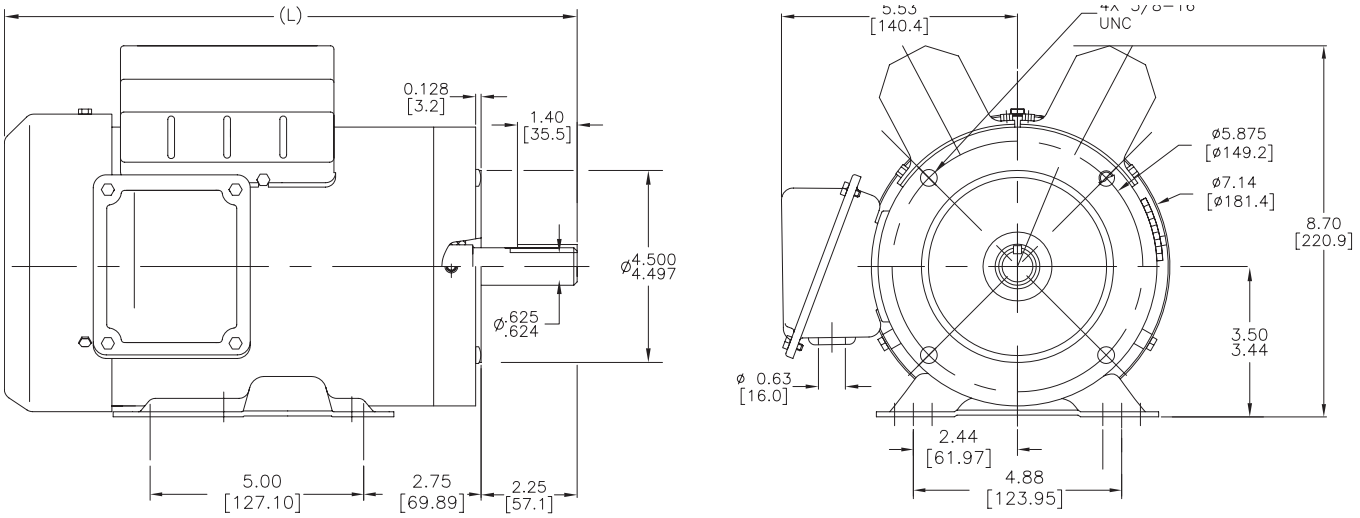


Figure 3 – N348, N349 Dimensions



Motor Dimensions (inches)	
Part Number	*Length (L)*
N348	13.6
N349	14.0

Jet Pump (Centrifugal), Single-Phase Totally Enclosed Motors

C-Face Footless, 56J

Features

- Service Factor is 1.0 or 1.5, depending on model
- Double-sealed ball bearings, mechanically locked on shaft end
- Capacitor start/capacitor run design for higher efficiency, as noted
- Automatic reset thermal protector
- 416 stainless steel threaded shaft with slinger (NEMA 56 frame)
- Drip cover not included
- UL Recognized and CSA Certified

Applications

- Typical uses include: jet pumps and jet pump motor replacements.

marathon® Motors

Motor Shipping Schedule *		
*Same or one day **	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Motor Specifications – Jet Pump (Centrifugal) Single-Phase Totally Enclosed Motors

Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*	Footnotes
C1336	$259.00	1/3	3600	115/230	TEFC	N/A**	56J	5KC33FN4180X	13.5	None
C465	$321.00	1/2				N/A**		5KC39QN3218X	24.5	15 Model on nameplate may be 5KC39QN3218GX
C352	$368.00	1				N/A**		5KC49NN2135X	29	15
C878	$554.00	2				N/A**		5KCR49TN2164T	38	ES,1,15

** Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

*** Data not available from manufacturer.*

Footnotes: 1 = Capacitor Start/Capacitor Run design for reduced amperage
15 = Fixed CW Rotation, viewing opposite shaft (or lead end) of motor
ES = Energy Saver Design

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Website at www.automationdirect.com.

Jet Pump (Centrifugal), Single-Phase Totally Enclosed Motors

C-Face Footless, 56J

Performance Data

Performance Data Single-Phase 56J Frame Motors (230V/60Hz except as indicated) Jet Pump (Centrifugal) Totally Enclosed Motors											
Part Number	HP	F.L. RPM	Current @ 115V/230V (Amps)			Torque (lb·ft)			F.L. Effic. %	F.L. Power Factor	Rotor Inertia (lb·ft²)
			No Load 230V	Full Load 115/230V	Locked Rotor	Full Load	Locked Rotor	Break-down			
C1336	1/3	3450	2.3	5.6 / 2.8	14	0.51	1.33	1.51	N/A**	N/A**	0.012
C465	1/2	3450	2.8	7.4 / 3.7	20.5	0.76	1.18	2.29	N/A**	N/A**	0.017
C352	1	3450	3.6	13.0 / 6.5	40.5	1.52	3.07	4.14	N/A**	N/A**	0.036
C878	2	3450	1.27	17.8 / 8.9	52.8	3.04	4.60	6.12	N/A**	N/A**	0.055

** Maximum Constant HP RPM is for direct-coupled loads.*

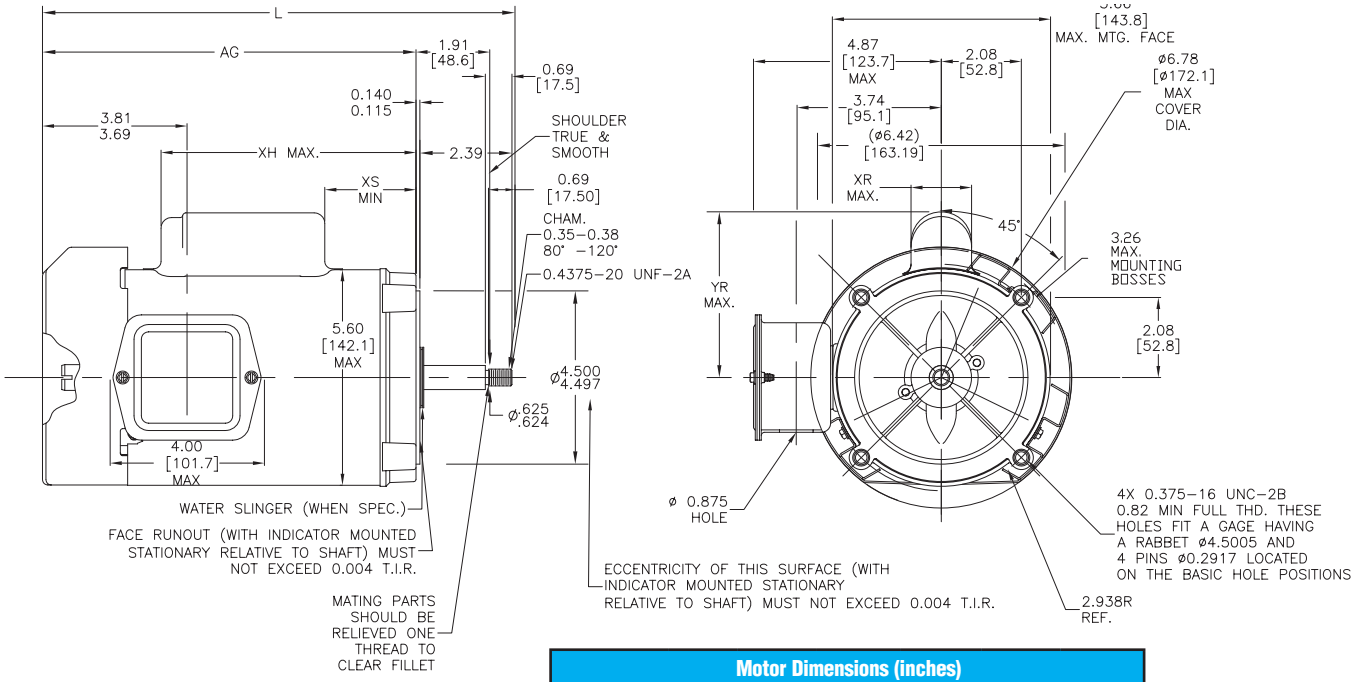
*** Data not available from manufacturer*

See our website: www.AutomationDirect.com for complete engineering drawings.

Dimensions

in [mm]

Figure 1 – C1336, C465, C352 Dimensions



Motor Dimensions (inches)						
Part Number	L	AG	XH	XR	XS	YR
C1336	11.87	9.28	6.61	1.60	1.43	4.34
C465	11.87	9.28	6.61	1.60	1.43	4.34
C352	12.87	10.28	7.61	1.60	2.03	4.34

Jet Pump (Centrifugal), Single-Phase Totally Enclosed Motors

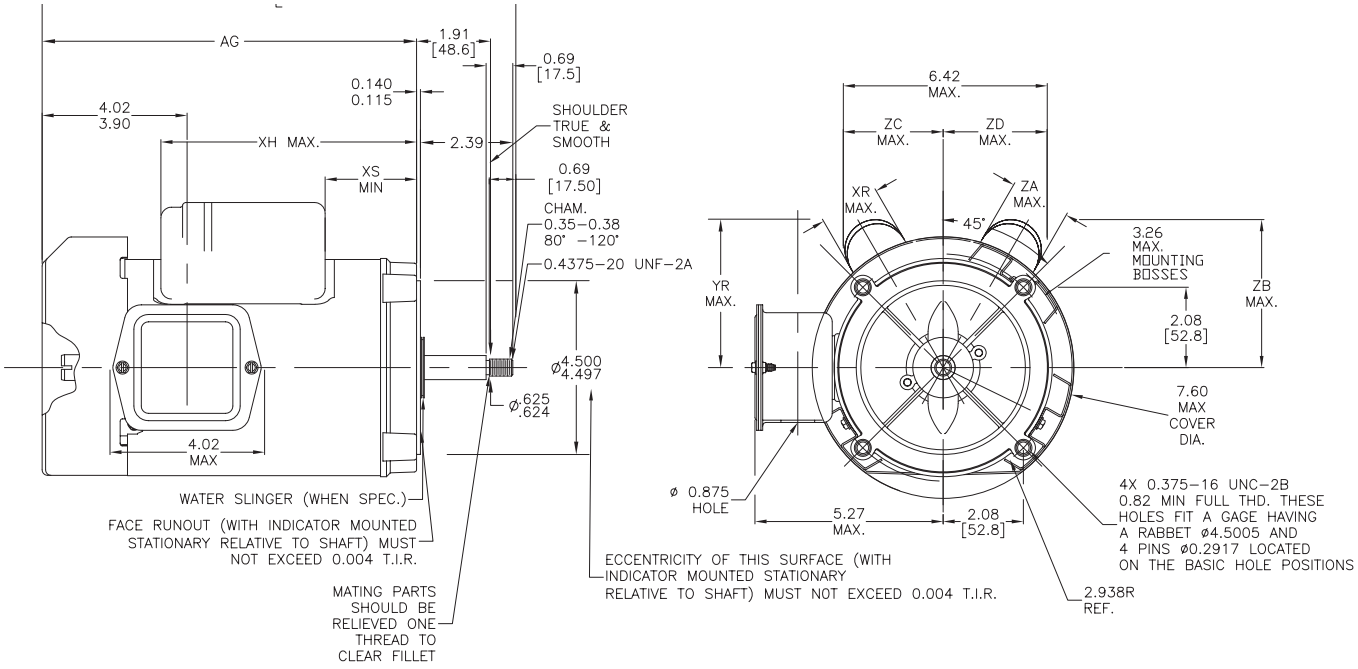
marathon® Motors

C-Face Footless, 56J

Dimensions

in [mm]

Figure 2 – C878 Dimensions



Motor Dimensions (inches)										
Part Number	*L*	*AG*	*XH*	*XR*	*XS*	*YR*	*ZA*	*ZB*	*ZC*	*ZD*
C878	14.56	12.16	8.63	2.15	2.88	4.68	2.40	4.90	3.20	3.38

General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

Rigid Base

C-Face Footed (Rigid Base)

marathon® Motors

Motor Shipping Schedule *		
*Same or one day **	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Rigid Base and C-Face Footed (Rigid Base)

Rigid Base Features

- Heavy gauge steel frame and base
- Ball bearings (except as noted)
- Economical capacitor start designs
- Service factor, as noted
- UL recognized and CSA certified

C-Face Footed (Rigid Base) Features

- Ball bearings, mechanically locked on shaft end
- NEMA service factors
- Heavy gauge steel frame and base
- Capacitor start, capacitor run design for higher efficiency
- UL recognized and CSA certified

Applications

Typical uses include machine tools, conveyors, packaging machines, batching machines, food and beverage equipment, pumps, and fans

General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

Rigid Base

Motor Specifications – General Purpose, Single Phase (NEMA Service Factor), Rigid Base, Drip-proof Motors											
Part Number*	Price	HP	Base RPM	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*	Notes
4354	$117.00	1/4	1800	115	1.35	DP	N/A**	48	5KH39QN9538	13	–
4362	$121.00		1800	115			N/A**	48	5KH39QN9686X	13	Auto Overload
C147A	$196.00		1800	115 / 230			N	48	048B17D11005	17	Suitable for 208VAC @ 60Hz
C158A	$237.00	1/3	1800	115 / 230	1.35 @ 60Hz 1.0 @ 50Hz		N	56	056B17D11019	21	
G1098A	$165.00	1/2	3600	115 / 230	1.25		N	48	048B34D11003	20	
C167A	$267.00		1800	115 / 230			N	56	056B17D11018	23	
G915A	$213.00	3/4	3600	115 / 230			N	56	056B34D11019	25	
C175A	$331.00		1800	115 / 230			B	56	056B17D15545	42	
C179A	$318.00	1	3600	115 / 230			B	56	056B34D11014	30	
C188A	$276.00	1	1800	115 / 208-230	1.15		B	143T	143C17DRR40001A1	31	–
G937A	$368.00	1-1/2	3600	115 / 230			N	56	056B34D11012	35	Suitable for 208VAC @ 60Hz
C191	$333.00	1-1/2	1800	115 / 208-230			N/A**	145T	5KCR49SN0065	35	N/A**
C185A	$425.00	1-1/2	1800	115 / 230			B	56H	056B17D15548	45	Suitable for 208VAC @ 60Hz
C187A	$441.00	2	3600	115 / 230			N/A**	56	056B34D11011	38	Suitable for 208VAC @ 60Hz
C193A	$452.00	2	1800	115 / 230			N/A**	56HZ***	056B17D15555	50	Suitable for 208VAC @ 60Hz
I127	$402.00	2	1800	115 / 208-230			L	145T	145TBDR5337	48	Manual Overload
C194	$489.00	3	3600	115 / 230			N/A**	145T	5KCR48TN8062	38	N/A**
I113A	$455.00	3	1800	115 / 208-230			N	184T	184TCDW7026	78	

** Refer to the Motor Shipping Schedule table for shipping information.*
Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.

*** Data not available from manufacturer.*

**** Base of 56HZ frame motors has holes and slots to match NEMA 56, 56H, 143T, and 145T mounting dimensions.*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service for this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com

General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

C-Face Footed (Rigid Base)

Motor Specifications – General Purpose, Single Phase (NEMA Service Factor), C-Face Footed (Rigid Base), Drip-proof Motors

Part Number*	Price	HP	Base RPM	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*	Notes
E261A	$254.00	1/2	1800	100 - 120 / 200 - 240	1.25	DP	N/A**	56C	056B17D11029	25	Auto Overload
E268A	$361.00	3/4		100 - 120 / 200 - 240			N		056B17DRR70008A1	35	Manual Overload
EG277A	$494.00	1		100 / 240 & 100 - 120 / 200 - 240	1.15				056B17DRR70019A1	35	Manual Overload

** Refer to the Motor Shipping Schedule table for shipping information.*
Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.

***Data not available from manufacturer.*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service for this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com

General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

Rigid Base

Performance Data - General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

Part Number	HP	F.L. RPM	Current @ 115V/230V (Amps)			Torque (lb·ft)			F.L. Effic. %	F.L. Power Factor	Rotor Inertia ($lb \cdot ft^2$)
			No Load 230V	Full Load 115/230V	Locked Rotor	Full Load	Locked Rotor	Break-down			
4354	1/4	1725	4.54	5.1	30.2 / 15.1	0.75	1.20	2.02	57.5	59.5	0.0546
4362	1/4	1725	4.54	5.1	30.2 / 15.1	0.75	1.20	2.02	52.5	59.5	0.0546
C147A	1/4	1745	0.5	2.4 / 1.2	21.4 / 10.7	0.75	2.54	1.94	68.5	92.7	0.0413
C158A	1/3	1725	1.2	3.8 / 1.9	28.4 / 14.2	1.00	3.63	2.72	72.4	79	0.0497
G1098A	1/2	3450	0.6	4.4 / 2.2	42.3 / 21.2	0.76	2.08	2.13	72.4	98	0.0218
C167A	1/2	1725	0.9	4.6 / 2.3	35.4 / 17.7	1.53	4.73	3.78	76.2	91.6	0.0609
E261A	1/2	1725	0.9	4.4 / 2.2	33.9 / 17	24.4	75.6	60.4	76.2	91.6	0.0609
G915A	3/4	3450	1.4	7.2 / 3.6	57.5 / 28.8	1.14	3.38	3.19	76.2	89.2	0.0255
C175A	3/4	1725	1.0	6.0 / 3.3	61.2 / 30.6	3.00	9.50	8.27	81.8	97.2	0.0748
E268A	3/4	1725	1.3	8.8 / 4.4	60.4 / 30.2	2.28	8.61	7.24	81.8	88	0.0309
C179A	1	3450	0.9	8.8 / 4.4	50 / 25	1.50	3.6	4.5	80.4	99	0.0321
C188A	1	1725	4.7	13.4 / 6.7	77.1 / 38.6	3.01	9.14	7.58	72	67.8	0.0884
EG277A	1	1725	1.1	8.8 / 4.4	68.4 / 34.2	3.00	8.94	7.99	82.6	96	0.0309
G937A	1-1/2	3450	2.7	13.6 / 6.8	112 / 56	2.25	4.56	8.25	81.5	93.4	0.0369
C191	1-1/2	1725	6.0	18.2 / 9.1	50.6	4.53	11.99	11.60	72	76.5	0.1015
C185A	1-1/2	1725	1.7	12.6 / 6.3	97.4 / 48.7	4.50	13.13	11.88	82.5	94.3	0.1491
C187A	2	3450	3.2	17.8 / 8.9	84.6 / 42.3	2.22	4.67	4.94	82.9	91.9	0.0394
C193A	2	1725	3.7	17.6 / 8.8	130 / 65	6.00	17.63	17.94	84.5	90.2	0.1696
I127	2	1740	3.9	18.8 / 9.4	127 / 63.5	6.02	15.90	14.90	81.5	86.1	0.1546
C194	3	3450	8.4	29.4 / 14.7	181.2 / 90.6	4.50	8.2	10.9	77	82	0.0530
I113A	3	1745	19.4/9.7	34 /16.8	181.2 / 90.6	9.00	24.60	18.40	75.5	76	0.3625

** Maximum Constant HP RPM is for direct-coupled loads.*

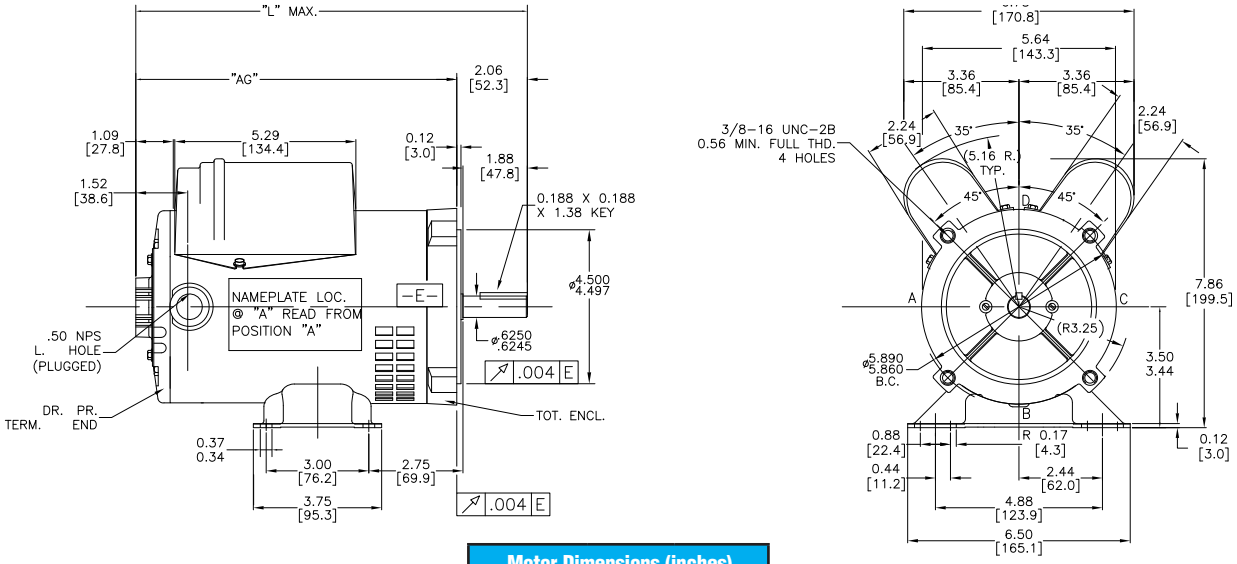
General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

C-Face Footed (Rigid Base)

Dimensions

in [mm]

Figure 1 – E261A



Motor Dimensions (inches)		
Part Number	*L*	*AG*
E261A	11.44	9.38

See our website: www.AutomationDirect.com for complete engineering drawings.

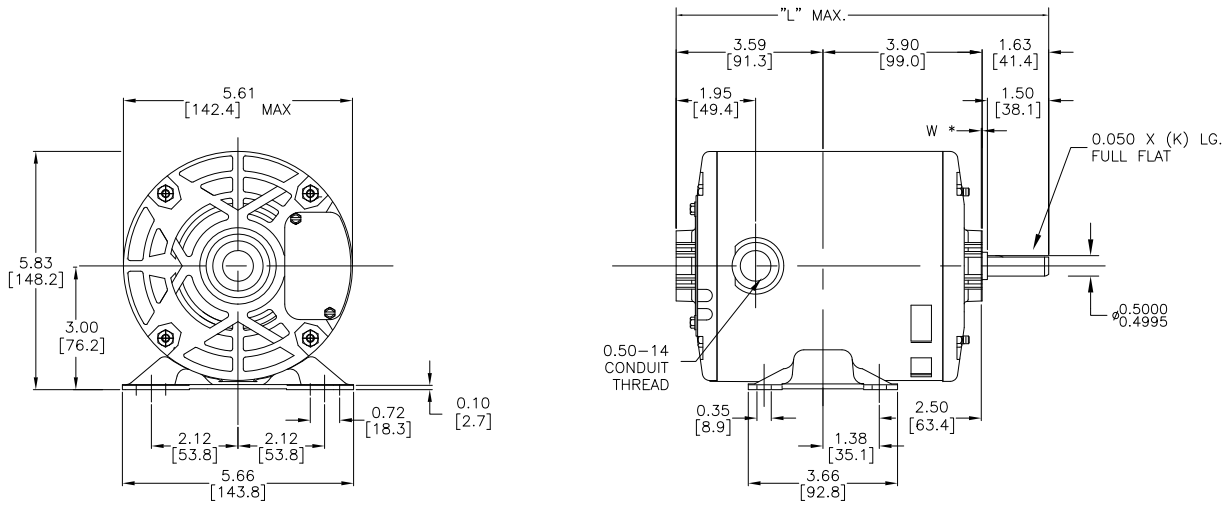
General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

Rigid Base

Dimensions

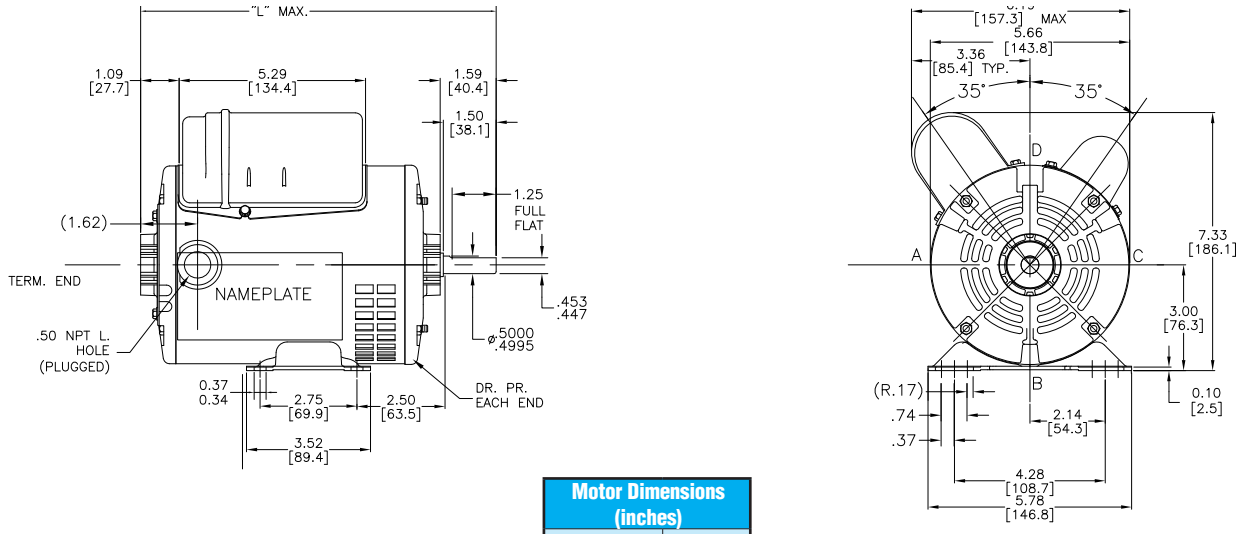
in [mm]

Figure 2 – 4354, 4362



Motor Dimensions (inches)	
Part Number	*L*
4354	8.94
4362	8.94

Figure 3 – C147A, G1098A



Motor Dimensions (inches)	
Part Number	*L*
C147A	10.34
G1098	10.59

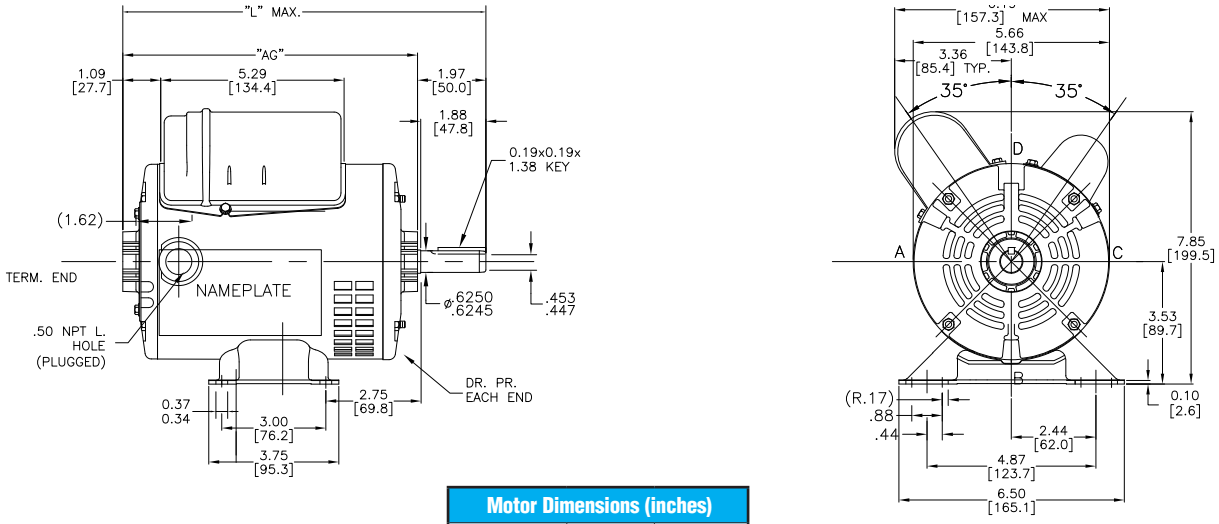
General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

Rigid Base

Dimensions

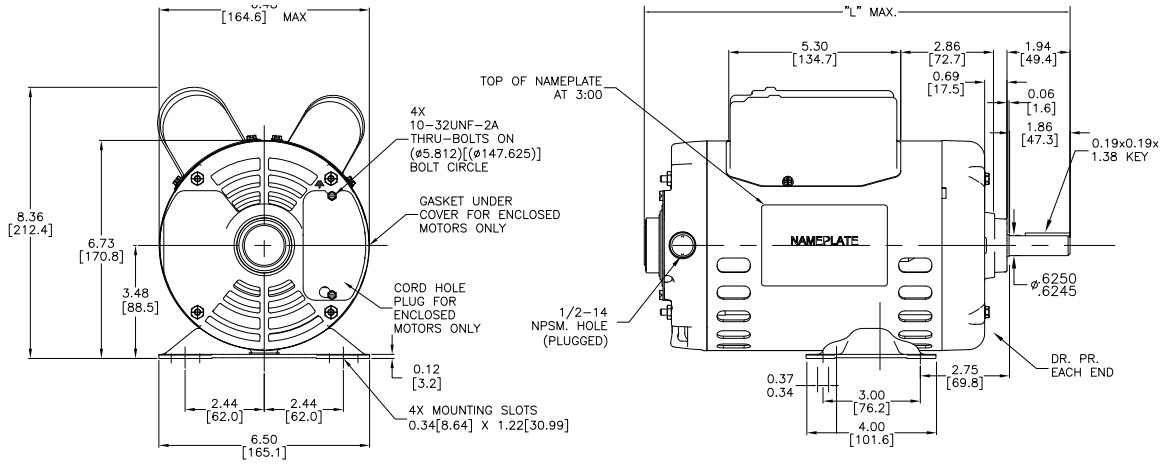
in [mm]

Figure 4 – C158A, C167A, G915A



Motor Dimensions (inches)		
Part Number	*L*	*AG*
C158A	10.72	8.75
C167A	11.47	9.50
C915A	11.47	9.50

Figure 5 – C175A, C179A, C185A, C187A, G937A



Motor Dimensions (inches)	
Part Number	*L*
C175A	13.13
C179A	12.33
C185A	13.65
C187A	12.94
C937A	12.75

See our website: www.AutomationDirect.com for complete engineering drawings.

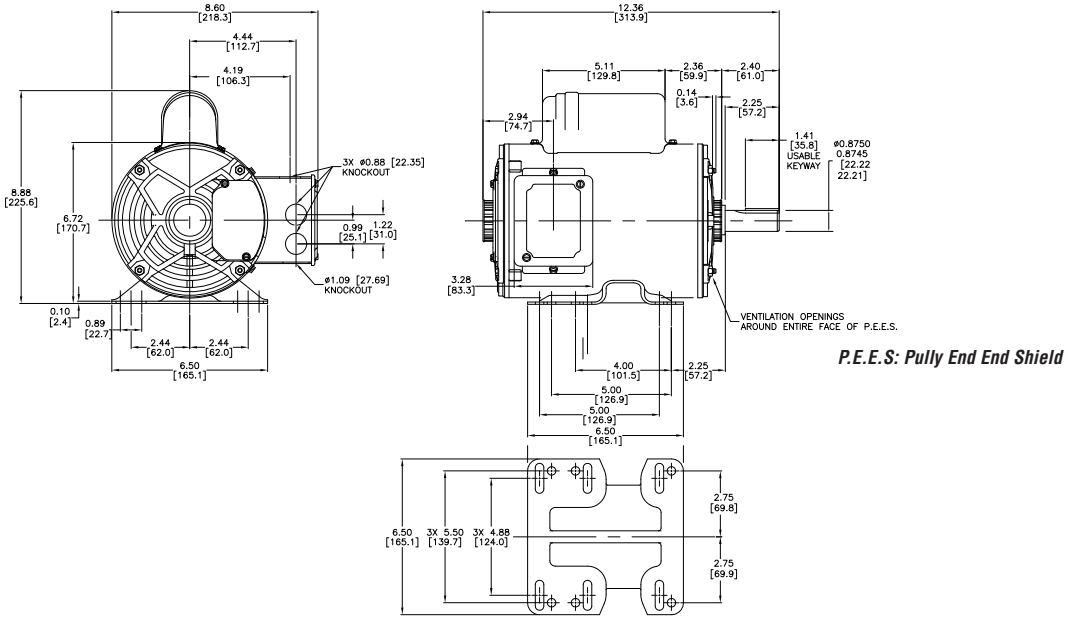
General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

Rigid Base

Dimensions

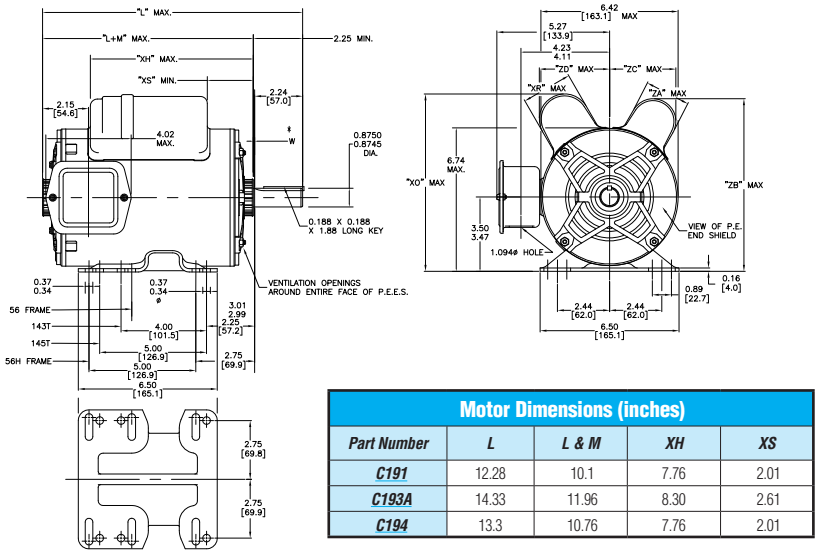
in [mm]

Figure 6 – C188A



P.E.E.S: Pully End End Shield

Figure 7 – C191, C193A, C194



Motor Dimensions (inches)				
Part Number	*L*	*L & M*	*XH*	*XS*
C191	12.28	10.1	7.76	2.01
C193A	14.33	11.96	8.30	2.61
C194	13.3	10.76	7.76	2.01

See our website: www.AutomationDirect.com for complete engineering drawings.

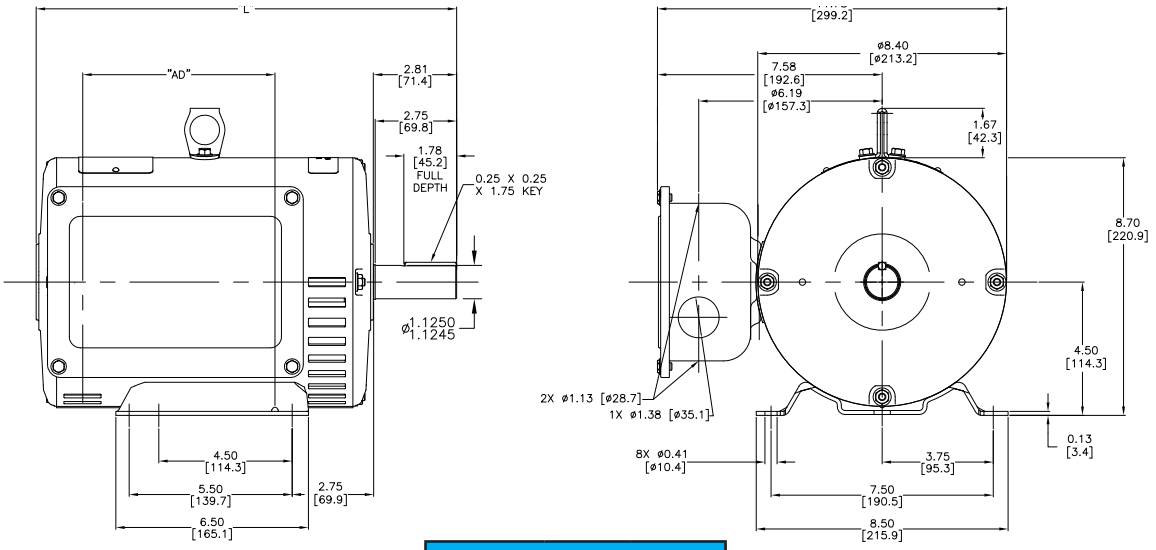
General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

Rigid Base

Dimensions

in [mm]

Figure 8 – I113A



Motor Dimensions (inches)		
Part Number	*L*	*AD*
I113A	14.21	5.88

See our website: www.AutomationDirect.com for complete engineering drawings.

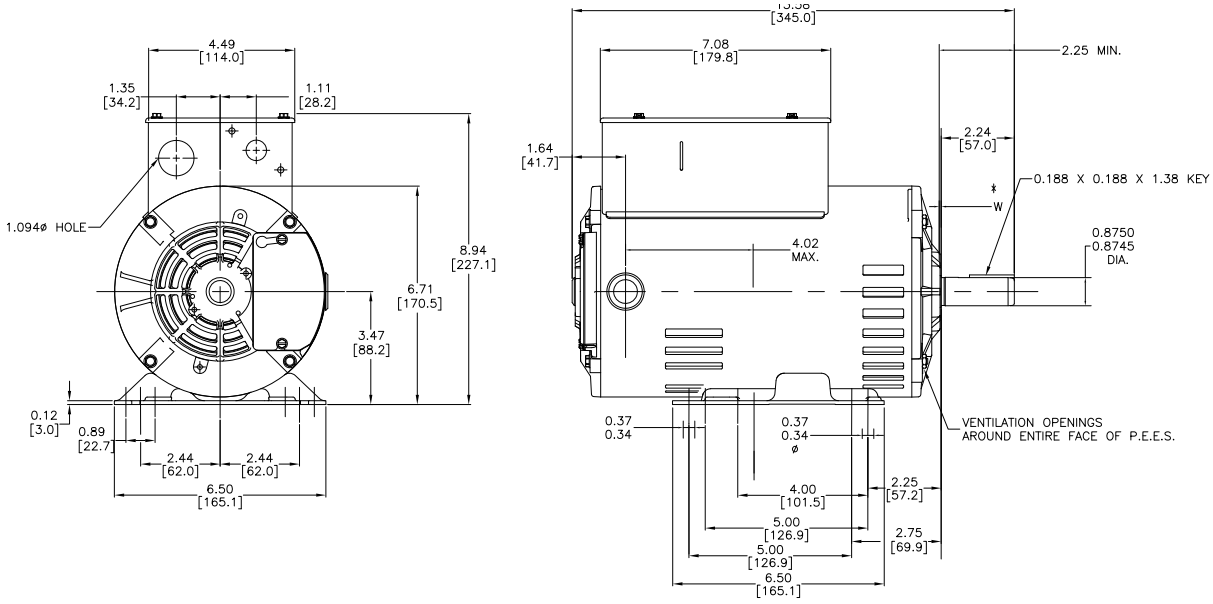
General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

Rigid Base

Dimensions

in [mm]

Figure 9 – I127 Dimensions



See our website: www.AutomationDirect.com for complete engineering drawings.

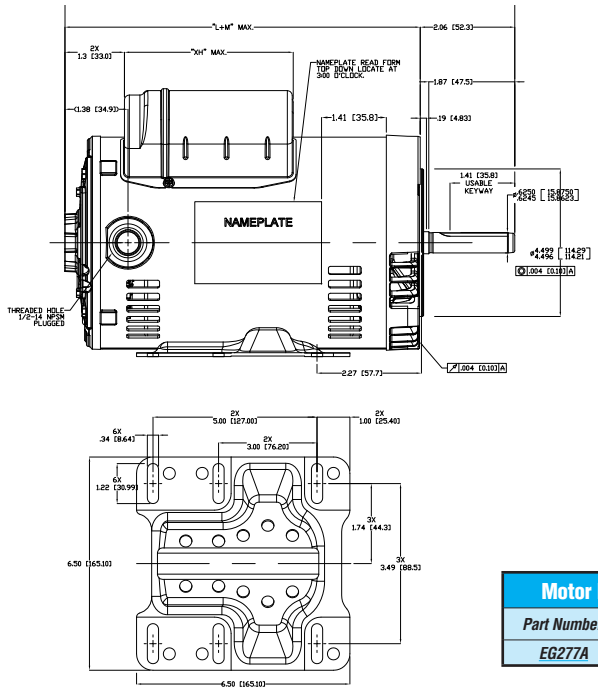
General Purpose, Single-Phase (NEMA Service Factor) Drip-proof Motors

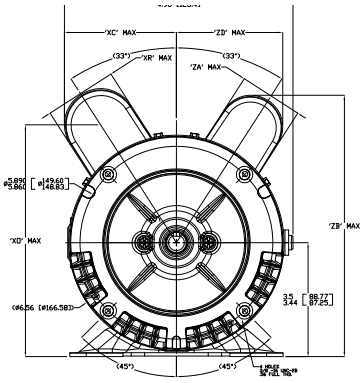
C-Face Footed (Rigid Base)

Dimensions

in [mm]

Figure 10 – EG277A





Motor Dimensions (inches)		
Part Number	*L*	*AG*
EG277A	12.31	10.25

See our website: www.AutomationDirect.com for complete engineering drawings.

General Purpose, Single-Phase, Totally Enclosed, 4-in-1® Motors

marathon® Motors

C-Face Footed (Removable Base)

Features

- Double-sealed ball bearings, mechanically locked on shaft ends
- Heavy gauge steel construction
- Bolt-on, removable rigid base
- Suitable for horizontal or vertical mounting
- Capacitor start/capacitor run design for higher efficiency
- 1.15 Service Factor (except as noted)
- Will accept brake kits (available from Marathon)
- Will accept drip cover kits (available from Marathon)
- UL recognized and CSA certified

Applications

- Typical uses include machine tools, conveyors, packaging machines, batching machines, food and beverage equipment, pumps, and fans.

Motor Shipping Schedule *		
*Same or one day **	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Motor Specifications – General Purpose, Single Phase, Totally Enclosed, 4-in-1 Motors

Part Number*	Price	HP	Base RPM	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*
G570	$222.00	1/3	1800	115 / 208-230 // 110 / 220	1.15	TEFC	N	56C	056C17F5320	17
D311	$183.00	1/2	3600	115 / 208-203					056C34F5301	22
G571	$254.00		1800						056C17F5321	24
D312	$223.00	3/4	3600	115 / 208-230					056C34F5302	27
G572	$306.00		1800	115 / 208-230 // 110 / 220					056C17F5322	30
D313	$255.00	1	3600	115 / 208-230					056C34F5303	30
G573	$314.00		1800	115 / 208-230 // 110 / 220				56HC	056C17F5323	31
D314	$325.00	1-1/2	3600	115 / 208-230				56C	056B34F5326	32
G574	$361.00		1800	115 / 208-230 // 110 / 220				56HC	056B17F5305	40
D315	$394.00	2	3600	115 / 208-230					056B34F5327	37
G575	$463.00		1800	115 / 208-230 // 110 / 220	1.0				056B17F5306	51
D316	$521.00	3	3600	208-230	1.15				056B34F5328	50

** Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

General Purpose, Single-Phase, Totally Enclosed, 4-in-1® Motors

C-Face Footed (Removable Base)

General Purpose, Single-Phase, Totally Enclosed, 4-in-1 Motors											
Part Number	HP	F.L. RPM	Current @ 115V/230V (Amps)			Torque (lb·ft)			F.L. Effic. %	F.L. Power Factor	Rotor Inertia ($lb·ft^2$)
			No Load 230V	Full Load 115/230V	Locked Rotor	Full Load	Locked Rotor	Break-down			
G570	1/3	1725	2.8	6.6 / 3.3	32.4 / 16.2	1.00	3.48	2.79	68.5	60	N/A*
D311	1/2	3450	3.2	8.4 / 4.2	49 / 24.5	0.75	2.81	2.22	59.5	70	
G571	1/2	1725	3.5	8.8 / 4.4	42.6 / 21.3	1.51	5.24	4.52	66	58	
D312	3/4	3450	3.7	10.6 / 5.3	69.4 / 34.7	1.13	3.73	3.38	66	71.9	
G572	3/4	1725	3.8	11 / 5.5	61 / 30.5	2.25	8.31	6.12	70.5	71	
D313	1	3450	3.1	11.2 / 5.6	81.8 / 40.9	1.49	4.95	4.22	78.5	76	
G573	1	1725	4.4	13.4 / 6.7	69.4 / 34.7	3.02	9.06	7.63	72	69.5	
D314	1-1/2	3450	2.6	14.2 / 7.1	96 / 48	2.24	5.2	6.0	78.5	87.5	
G574	1-1/2	1725	4.1	15.2 / 7.6	107.6 / 53.8	4.51	14.8	12.4	80	80	
D315	2	3450	2.1	19.2 / 9.6	122.6 / 61.3	2.98	7.37	7.73	79	98.3	
G575	2	1725	4.9	20 / 10	136 / 68	6.02	19.4	15.7	80	81	
D316	3	3450	2.6	13.1 -11.8**	91	4.46	8.46	13.2	84	99.2	

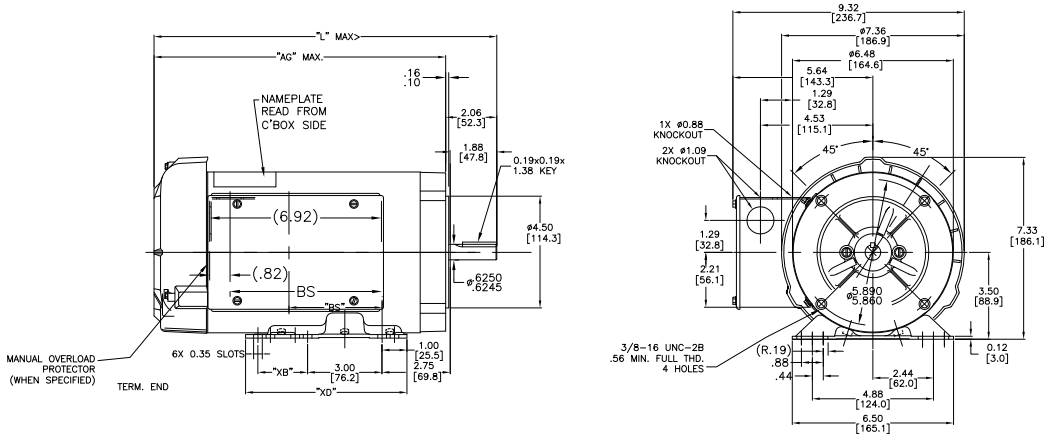
** Data not available from manufacturer*

*** 208-230V (Amps)*

Dimensions

in [mm]

Figure 1 – D314, G574, D315, G575, D316



Motor Dimensions (inches)			
Part Number	L	AG	BS
D314	12.82	10.75	5.14
G574	13.81	11.75	6.13
D315	14.81	12.75	7.15
G575	14.81	12.75	7.15
D316	14.81	12.75	7.13

See our website: www.AutomationDirect.com for complete engineering drawings.

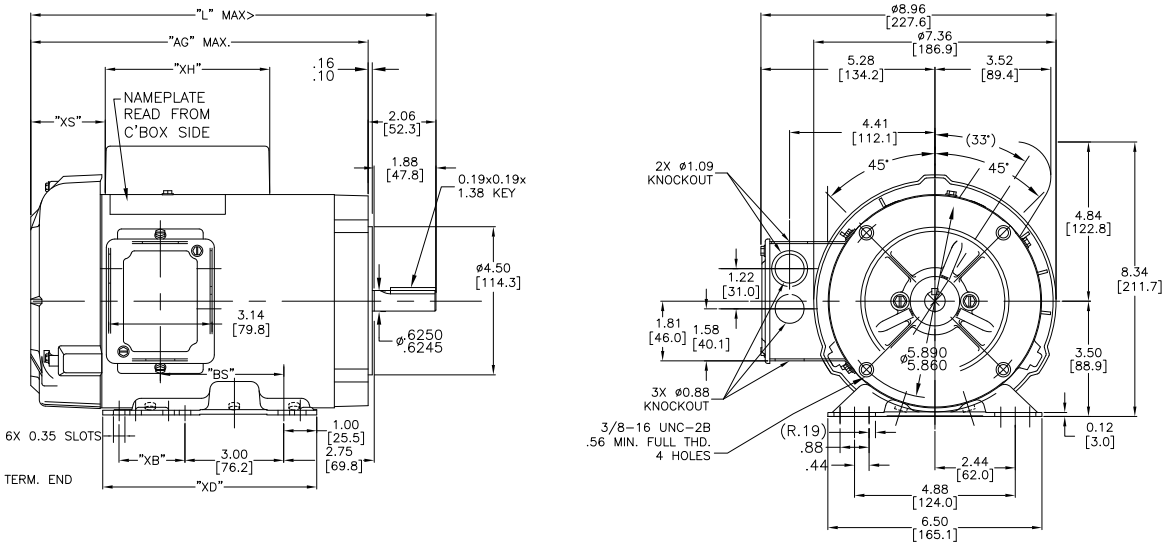
General Purpose, Single-Phase, Totally Enclosed, 4-in-1® Motors

C-Face Footed (Removable Base)

Dimensions

in [mm]

Figure 2 – D311, G570, G571, D312, G572, D313, G573



Motor Dimensions (inches)							
Part Number	***L***	***AG***	***XB***	***XD***	***XH***	***XS***	***BS***
D311	11.86	9.80 [248.92]	N/A*	4.0 [101.60]	5.04 [128.02]	2.42 [61.59]	3.25
G570							
G571							
D312	12.36	10.30					3.75
G572							
D313							
G573	12.81	10.75	2.00 [50.8]	6.50 [165.10]	5.00 [127]	2.26 [57.4]	4.25
**** Data not available from manufacturer.***							

See our website: www.AutomationDirect.com for complete engineering drawings.

Air Compressor, Single-Phase, Drip-proof Motors

marathon® Motors

Rigid Base

Features

- Capacitor start/capacitor run design for low amps and high efficiency
- High starting and breakdown torque
- Heavy gauge steel frame and base
- Continuous duty at nameplate ratings
- Thermal protection, as noted
- UL recognized and CSA certified

Applications

- Typical uses include machine tools, conveyors, packaging machines, batching machines, food and beverage equipment, pumps, and fans

Motor Shipping Schedule *		
*Same or one day **	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Motor Specifications – Air Compressor, Single-Phase, Drip-proof Motors

Part Number*	Price	HP	Base RPM	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*	Notes
C169	$243.00	1/2	1800	115 / 230	1.25	DP	N/A**	56	5KC49GN0010Y	21	Manual Overload
D010	$268.00	1	3600	115 / 208-230	1.15		E	56	056B34D2029	23	Manual Overload
C704	$260.00	1-1/2	3600	115 / 230			N/A**	56	5KC49PN2521Y	31	Manual Overload
Z502	$543.00	3	1800	230			L	184T	184TBDR5326	51	No Overload
D017	$643.00	5	3600	230			N/A**	56H	56B34D5302	55	Manual Overload

** Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

*** Data not available from manufacturer.*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

Air Compressor, Single-Phase, Drip-proof Motors

Rigid Base

Performance Data - Air Compressor, Single-Phase, Drip-proof Motors											
Part Number	HP	F.L. RPM	Current @ 115V/230V (Amps)			Torque (oz·ft)			F.L. Effic. %	F.L. Power Factor	Rotor Inertia ($lb·ft^2$)
			No Load 230V	Full Load 115/230V	Locked Rotor	Full Load	Locked Rotor	Break-down			
C169	1/2	1725	N/A*	8.8 / 4.4	46 / 23	24.4	89.8	68.2	60.9		
D010	1	3450	3.2	10.6 / 5.3	74.6 / 37.3	23.9	56	65.7	72	N/A*	
C704	1-1/2	3450	N/A*	21.3 / 10.6	N/A*	36.5	N/A*	N/A*	70		N/A*
Z502	3	1740	2.9	N/A / 12.1	83.6	144.8	387.2	318.4	82.5	96.5	
D017	5	3450	3.2	N/A / 20	135	121.8	220.8	316.8	84	98.6	
*Data not available from manufacturer.											

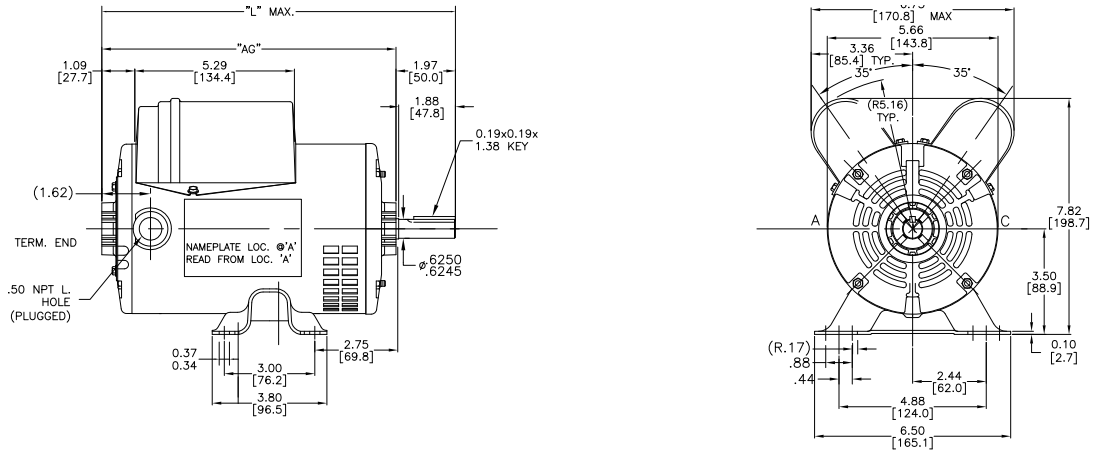
Air Compressor, Single-Phase, Drip-proof Motors

Dimensions

in [mm]

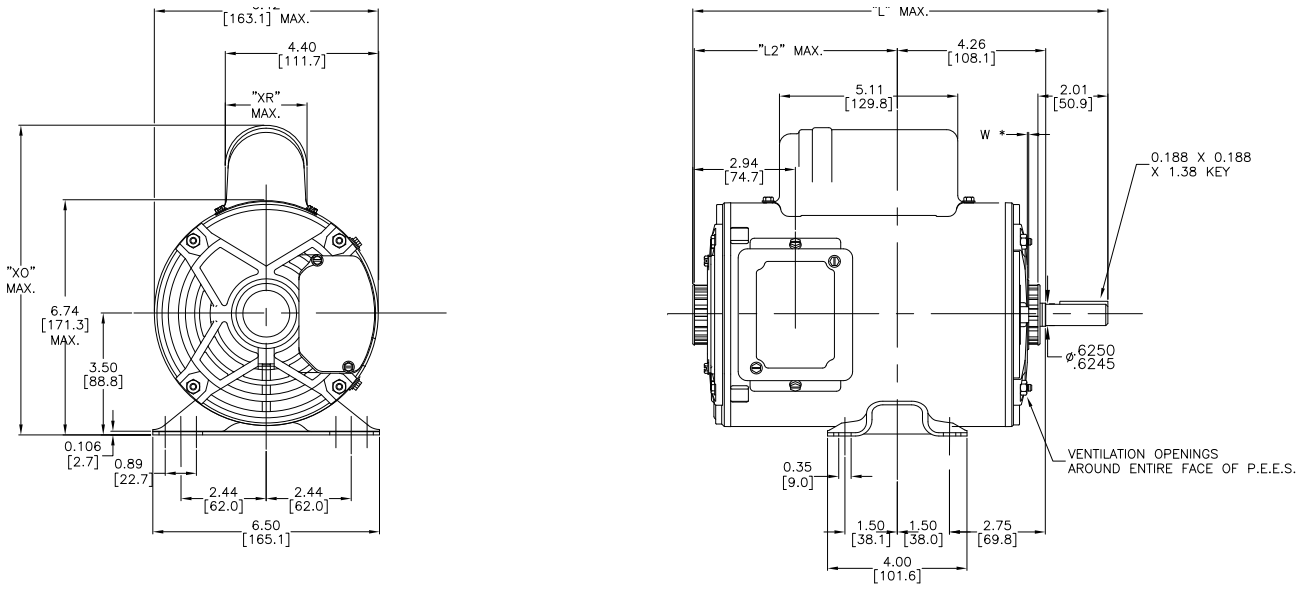
Rigid Base

Figure 1 – D010 Dimensions



Motor Dimensions (inches)		
Part Number	*L*	*AG*
D010	11.72	8.75

Figure 2 – C169, C704



Motor Dimensions (inches)				
Part Number	*L*	*L2*	*XO*	*XR*
C169	10.38	4.23 [107.44]	8.94	2.40
C704	11.91	5.75 [146.05]	8.63	2.10

See our website: www.AutomationDirect.com for complete engineering drawings.

Air Compressor, Single-Phase, Drip-proof Motors

Dimensions

in [mm]

Rigid Base

Figure 3 – Z502

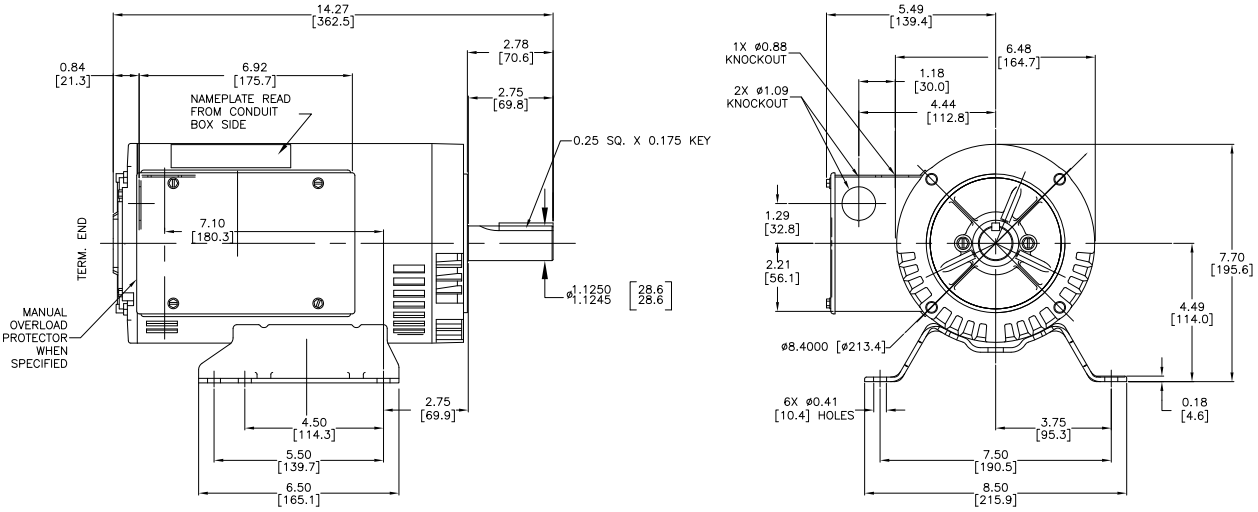
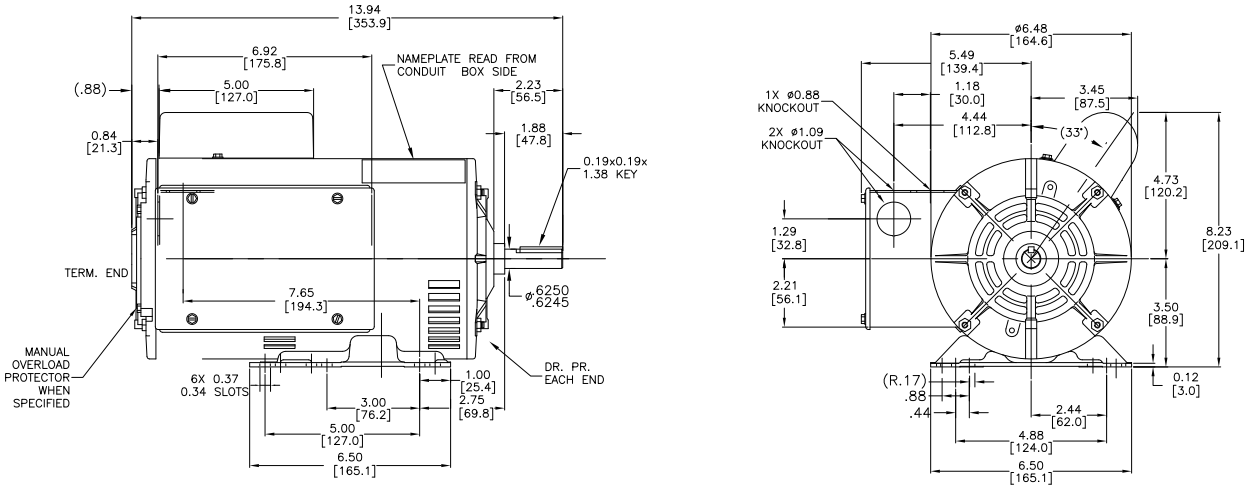


Figure 4 – D017



See our website: www.AutomationDirect.com for complete engineering drawings.

Fan & Blower - Capacitor Start, Drip-proof Motors

Resilient Base

marathon® Motors

Features

- Ball bearings
- Heavy gauge steel frame and base
- Service factor, as noted
- Capacitor start/capacitor run
- Thermal protection, as noted
- UL recognized and CSA certified

Applications

Typical uses include machine tools, conveyors, packaging machines, batching machines, food and beverage equipment, pumps, and fans.

Motor Shipping Schedule *		
*Same or one day **	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Motor Specifications – Fan & Blower - Capacitor Start, One- and Two-Speed, Dripproof Motors

Part Number*	Price	HP	Base RPM	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)**	Notes
G1115	$146.00	1/4	1800	115 / 230	1.35	DP	N	48	5KC35JN7JX	16	Auto Overload
C216	$165.00	1/3	1800	115 / 208-230	1.35	DP	N/A***	56	5KC36LN1X	18	Auto Overload
C1152	$147.00	1/2	3600	115 / 208-230	1.25	DP	N/A***	48	5KC39ON3220X	19	Auto Overload
C1153	$233.00	1/2	1800	115 / 208-230	1.25	DP	N/A***	56	5KC49GN0022X	21	Auto Overload
C1155	$182.00	3/4	3600	115 / 208-230	1.25	DP	N/A***	56	5KC38NN410X	17	Auto Overload
B319	$246.00	3/4	1800	115 / 208-230	1.25	DP	N	56	056C17D2074	23	Auto Overload
D118	$226.00	1	3600	115 / 208-230	1.15	DP	N	56	056C34D2106	25	Auto Overload
C1158	$315.00	1	1800	115 / 208-230	1.15	DP	N/A***	56	5KC49PN0164X	29	Auto Overload
C235	$260.00	1	1800	115 / 208-230	1.15	DP	N/A***	56	5KC49PN0155	31	No Overload
D115	$313.00	1-1/2	3600	115 / 208-230	1.15	DP	N	56	056B34D2027	28	Auto Overload
C1160	$325.00	1-1/2	1800	115 / 208-230	1.15	DP	N	56H	5KCR49SN0150X	35	Auto Overload
C1161	$357.00	2	3600	115 / 208-230	1.2	DP	N	56H	5KCR49RN2148T	33	Auto Overload
B352	$427.00	2	1800	115 / 208-230	1.15	DP	N	56H	056B17D5331	50	Auto Overload

** Refer to the Motor Shipping Schedule table for shipping information.*

*** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

**** Data not available from manufacturer.*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

Fan & Blower - Capacitor Start, Drip-proof Motors

Resilient Base

Performance Data - Fan & Blower - Capacitor Start, One and Two-Speed, Drip-proof Motors											
Part Number	HP	F.L. RPM	Current @ 115V/230V (Amps)			Torque (lb-ft)			F.L. Effic. %	F.L. Power Factor	Rotor Inertia (lb-ft²)
			No Load 230V	Full Load 115/230V	Locked Rotor	Full Load	Locked Rotor	Break-down			
G1115	1/4	1725	N/A*	5.2 / 2.6	24.8 / 12.4	0.76	2.91	2.13	52.5	58.0	N/A*
C216	1/3	1725	2.4	6.0 / 3.0	30.66 / 15.33	1.01	3.38	2.63	N/A*	N/A*	
C1152	1/2	3450	2.5	8.2 / 4.1	54.8 / 27.4	0.76	3.83	2.37		N/A*	
C1153	1/2	1725	3.6	8.6 / 4.3	34.8 / 17.4	1.53	3.19	4.89		N/A*	
C1155	3/4	3450	3.0	10.0 / 5.0	64 / 32	1.13	3.11	3.75		N/A*	
B319	3/4	1725	3.2	10.0 / 5.0	N/A*	2.28	3.09	4.94	70.1	69.6	
D118	1	3450	3.8	12.0 / 6.0	44.2 / 22.1	3.04	4.69	8.20	72	76	
C1158	1	1725	5.3	14.7 / 7.4	71.8 / 35.9	3.04	4.69	8.20	N/A*	N/A*	
C235	1	1725	5.1	13.6 / 6.8	75.8 / 37.9	3.04	10.32	7.40			
D115	1-1/2	3450	1.6	13.0 / 6.5	83.6 / 41.8	2.25	3.63	5.20	95.8	N/A*	
C1160	1-1/2	1725	N/A*	16.4 / 8.2	N/A*	4.57	N/A*	N/A*	N/A*		
C1161	2	3450	4.2	19.6 / 9.8	133 / 66.5	3.04	3.87	7.80			
B352	2	1725	5.4	21.0 / 10.5	131.8 / 65.9	6.03	19.50	15.70	78.6	78.3	

** Data not available from manufacturer*

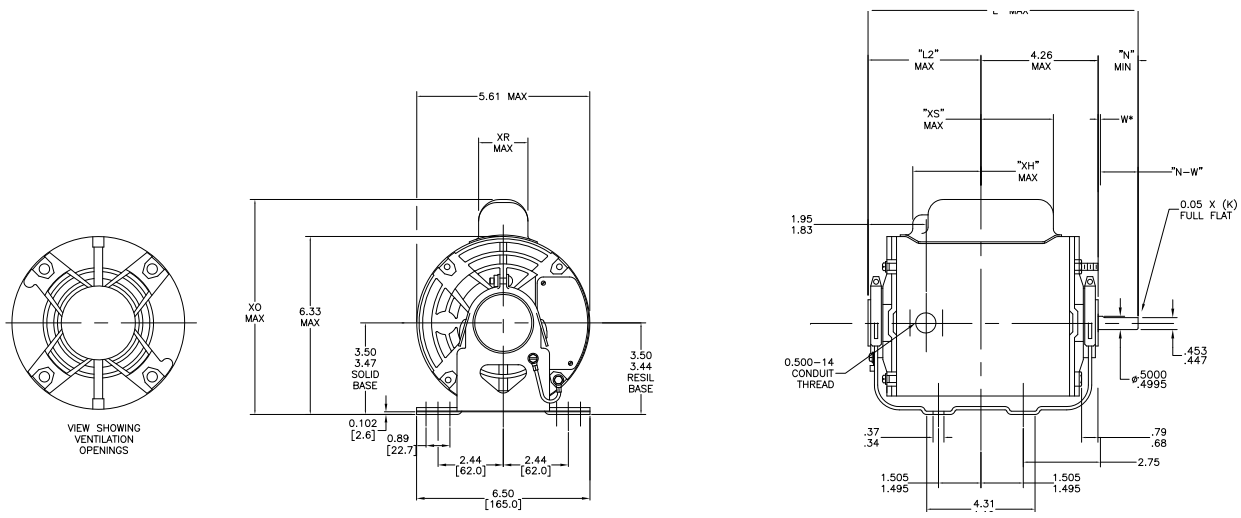
Dimensions

Resilient Base

in [mm]

Figure 1 – G1115

Motor Dimensions (inches)								
Part Number	L	L2	N	N-W	XH	XO	XR	XS
G1115	9.57	4.77	1.50	1.63 / 1.41	2.59	7.31	1.60	1.97



See our website: www.AutomationDirect.com for complete engineering drawings.

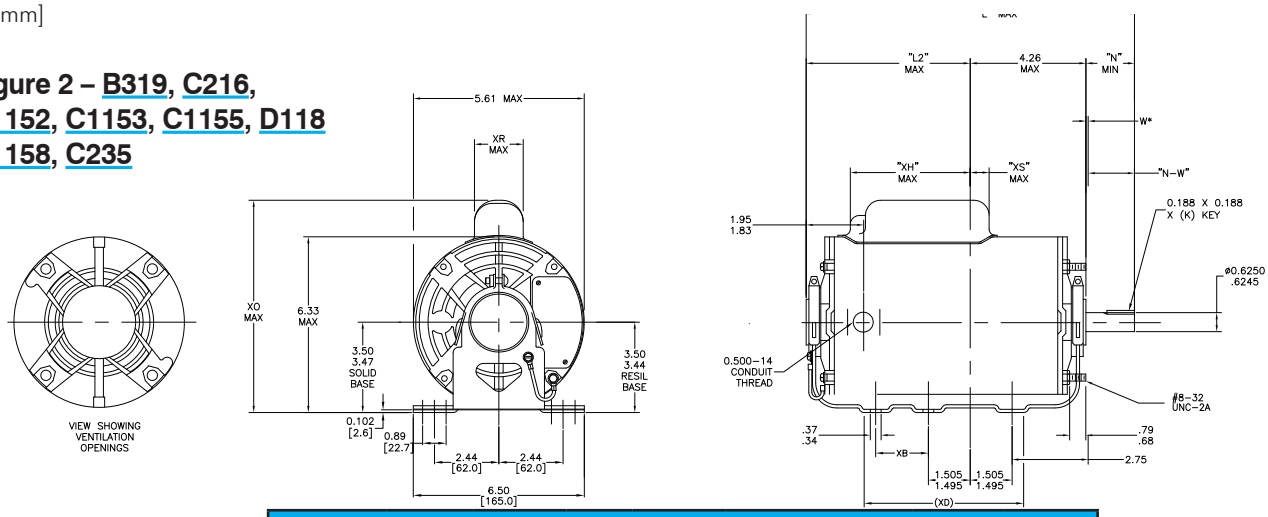
Fan & Blower - Capacitor Start, Drip-proof Motors

Dimensions

in [mm]

Resilient Base

Figure 2 – B319, C216, C1152, C1153, C1155, D118 C1158, C235

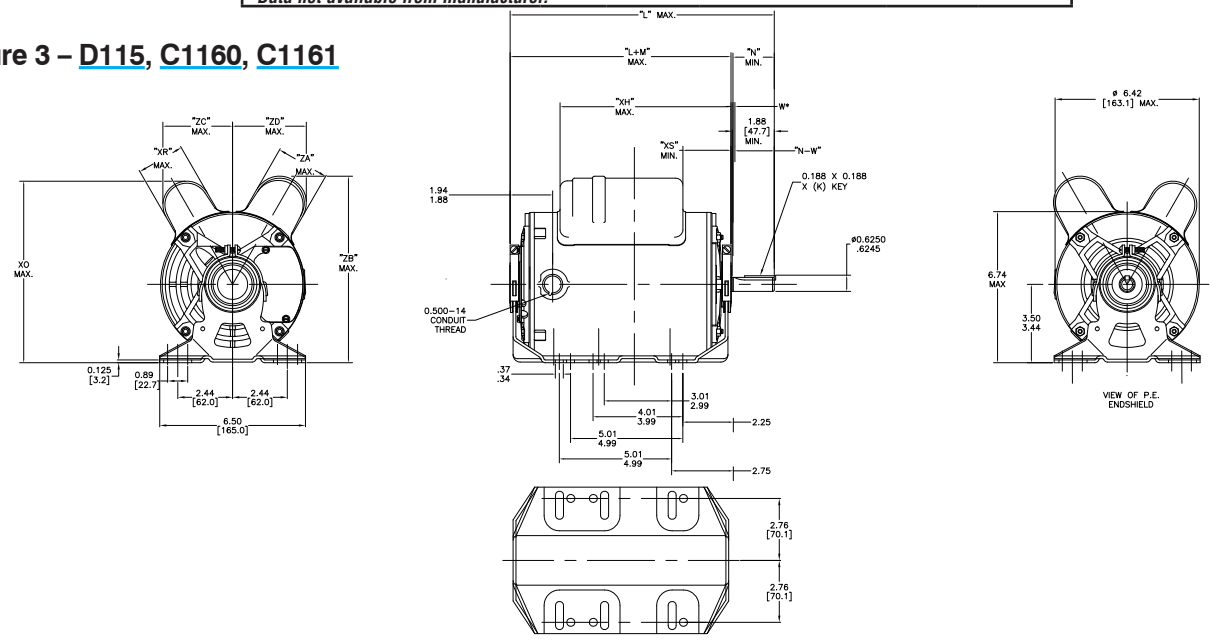


Motor Dimensions (inches)								
Part Number	L	N	XB	XH	XO	XR	XS	K
B319	4.63	1.88	N/A*	3.88	7.85	1.60	2.70	1.38
C216	4.23	1.88		2.65	7.81		2.72	
C1152	5.65	1.50		4.02	7.31		1.75	1.16
C1153	4.22	N/A*		2.63	8.22		1.91	1.38
C1155	5.23	1.88		3.65	7.88		2.12	
C1158	5.22	N/A*		2.63	8.22		2.12	
C235	5.22	N/A*		3.63	8.94	2.40	2.12	
D118	12.22	1.88	2.00	4.50	7.83	1.70	2.28	

Note: B319, C216, D1152, C1153, C1155, C1158 and C235 have a four-hole foot. XB dimension does not apply.

**Data not available from manufacturer.*

Figure 3 – D115, C1160, C1161



Motor Dimensions (inches)										
Part Number	L	L+M	N	XH	XR	XS	ZA	ZB	ZC	ZD
D115	11.72	9.75	1.97	8.66	2.24	3.37	2.24	7.86	2.83	2.83
C1160 & C1161	11.91	10.01	1.97	7.76	2.15	2.01	1.60	7.81	3.20	3.07

See our website: www.AutomationDirect.com for complete engineering drawings.

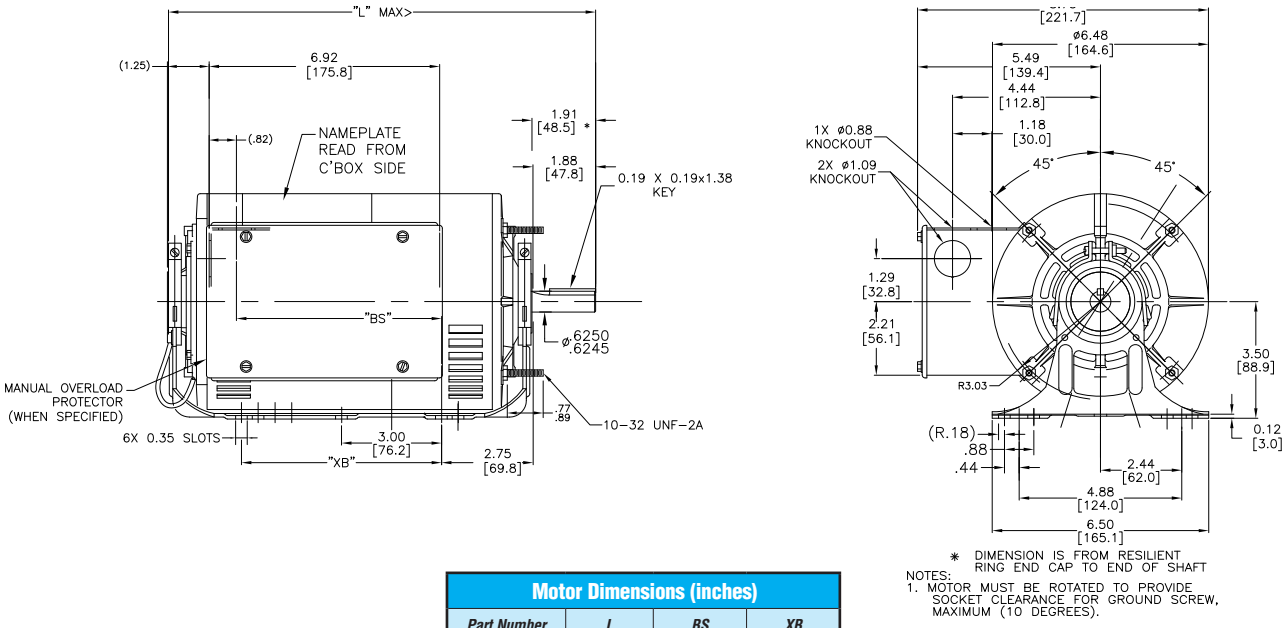
Fan & Blower - Capacitor Start, Drip-proof Motors

Dimensions

Resilient Base

in [mm]

Figure 4 – B352



Motor Dimensions (inches)			
Part Number	*L*	*BS*	*XB*
B352	13.85	7.18	5.00

See our website: www.AutomationDirect.com for complete engineering drawings.

AC Motor Selection – Marathon® Three-Phase Inverter-Duty Motors

Marathon® 3-Phase Inverter-Duty Motor Selection									
3-Phase Characteristic	***Powerwash SXT***	***Jet Pump***	***Micro MAX™***	***MAX+***	***Black Max®***	***Blue Max®***	***NEMA Premium® XRI®***	***Blue Chip XRI®***	***XRI 4N1 General Purpose***
Electrical Characteristics									
Horsepower range	1/3 - 2	1/3 - 2	1/4 - 10	1/2 - 5	1/4 - 30	40 - 100	1 - 10	15 - 100	1/3 - 3/4
Base speed (# poles)	1800 (4) and 3600 (2)	3600 (2)	1800 (4)	1800 (4)	1800 (4) and 1200 (6)	1800 (4)	1200(6), 1800(4), 3600(2)	1800 (4)	1800 (4) and 3600 (2)
Standard voltage	208-230/460 & 190/380	208-230/460 (J063A/65A is 230/460 only)	230/460 (<1/2 hp are 230V only)	230/460	230/460 and 575	230/460	208-230/460	230/460 and 575	208-230 / 460 and 575
Phase / Base frequency (Hz)	3 / 60								
Service factor	1.15	1.75-1.15 Line 1.0 Drive	1.0	1.0	1.0	1.0	1.15 (line) ; 1.0 (drive)		1.15
Design code (NEMA)	B	B	A or B (varies by model)	A (1/2 –1 hp) B (>1hp)	A	A	A (E2001A) B (all others)	B	B
Insulation class	F	B	H	F	F	H	F	F	F3
Insulation system	Max Guard	Max Guard	CR^{200} magnet wire	CR^{200} magnet wire	MAX GUARD®		CR^{200} magnet wire		
Duty cycle	Continuous	Continuous	Continuous						
Thermal protection	None	None	None	None	Class F thermostats		None		None
Mechanical Characteristics									
Frame size (mounting)	56C (HC) - 145TC	56J(HJ)	56C - 215TC	56C - 184TC	56C - 286TC	324T(C) - 405T(C)	56C - 215TC	254T - 405T	56C
Enclosure	TENV and TEFC	TEFC and DP	TENV and TEFC	TENV	TENV	TEFC and TEBC	TEFC	TEFC	TENV and TEFC
Frame material	Stainless Steel	Rolled Steel	Rolled Steel	Rolled Steel (<2hp) Cast Iron (2hp) Aluminum (>2hp)	Rolled Steel w Al face Cast Iron Aluminum	Cast Iron	Rolled Steel	Cast Iron	Rolled Steel
End bracket material	Stainless Steel	Cast Aluminum, Steel	Aluminum	Cast Iron	Aluminum, Cast Iron	Cast Iron	Aluminum	Cast Iron	Cast Aluminum
Conduit box material	Stainless Steel	Steel	Steel	Steel	Steel	Cast Iron	Steel	Steel (<326T) Cast Iron (>364T)	Steel
Fan guard material	Stainless Steel	Steel	Polypropylene	None (all ratings TENV)	None (all ratings TENV)	Cast Iron	Plastic	Polyprop. (<286T) Cast Iron (>324T)	Polypropylene
Fan material	Polypropylene	Plastic	Polypropylene	None (all ratings TENV)	None (all ratings TENV)	Polypropylene	Polypropylene	Polypropylene	Polypropylene
Lead termination	Conduit Box	Conduit Box	Conduit box except Terminal block (<1/2 hp)	Conduit box	Conduit box	Conduit box	Conduit box	Conduit box	Conduit box except Terminal block (<1/2 hp)
Standard mounting	C-Face with Rigid Base	C-Face with Rigid Base	C-Face with Rigid Base & C-Face Round Body	C-Face with Rigid Base	C-Face with Rigid Base	C-Face with Rigid Base	C-Face with Rigid Base	Rigid Base	C-Face with Removable Base
Drive end shaft slinger	No	No	No	No	No	Yes	Yes	Yes	No

**** See Terms and Conditions for motor warranty explanation.***
Marathon warranty service can be arranged through Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

***** To obtain the most current agency approval information, see the Agency Approval Checklist on the specific part number's web page.***

Continued on next page

AC Motor Selection – Marathon® Three-Phase Inverter-Duty Motors

Continued from previous page

Marathon® 3-Phase Inverter-Duty Motor Selection									
3-Phase Characteristic	***Powerwash SXT***	***Jet Pump***	***Micro MAX™***	***MAX+***	***Black Max®***	***Blue Max®***	***NEMA Premium® XRI®***	***Blue Chip XRI®***	***XRI 4N1 General Purpose***
Paint	N/A	N/A	Black powder-coat; Black enamel	Black powder; Black enamel	Black enamel	Blue enamel	Blue enamel	Blue alkyd enamel	Gray powder
Bearings	Ball	Ball	Ball (C3 fit)						Ball
Grease	Exxon Polyrex EM								
Standard conduit box assembly position	F1, reversible to F2	F1	F1 (1/4 & 1/3 hp) F3 (all others)	F1, reversible to F2 (2hp) F1 (all others)	F1, reversible to F2	F1, reversible to F2	F3	F1	F1 & NPO
Performance Characteristics									
Constant torque speed range	10:1	10:1	20:1 (TEFC) 1000:1 (TENV)	1000:1	1000:1 (TENV)	2000:1 (all enclosures)	10:1	20:1	10:1 (TEFC) 1000:1 (TENV)
Variable torque speed range	10:1 (TEFC) 1000:1 (TENV)	10:1	–	–	–	–	10:1	–	–
Constant horsepower speed range	2:1	2:1	2:1	2:1	2:1 (90–120Hz intermittent @50% duty cycle)	2:1	2:1	2:1	2:1
Temperature rise	F	B	B	varies by model #	varies by model #	F (TEFC) B (TEBC)	F	B	F
Encoder provisions	No	No	No	Yes	Yes	Yes	No	No	No
Other Characteristics									
Warranty *	12 months from installation, 18 months from purchase. (through Marathon Electric)		3 years (through Marathon Electric for MAX, XRI and 4N1 Motors)						
Agency listings **	UL Recognized, CSA Certified, CE Mark								

**** See Terms and Conditions for motor warranty explanation.***
Marathon warranty service can be arranged through Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

***** To obtain the most current agency approval information, see the Agency Approval Checklist on the specific part number's web page.***

Powerwash SXT Washdown Duty, 3-Phase, All Stainless Steel, Totally Enclosed Motors

C-Face Footless

marathon® Motors

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Features

- Suitable for use on VFD 10:1 Variable torque, 10:1 (TEFC) or 1000:1 (TENV) Constant Torque
- MAX GUARD® Class F insulation system
- 1.15 Service Factor on sinewave, 1.0 Service Factor on IGBT power
- Double-sealed ball bearings
- 303 stainless steel shaft with spring-loaded contact seals in each end (drive end only on TENV)
- 300 Series Stainless steel external construction: frame, end shields, conduit box, mounting base and hardware for superior corrosion resistance
- Internal corrosion resistant coatings on the rotor and heavy polyester varnish on the stator
- 100% paint-free construction
- One-way condensation drains in each end shield and conduit box for all-angle mounting
- Nitrile Buna-N gaskets and seals on conduit box, through bolts and end shields
- Rated 60/50 Hz, 190/380 volt at next lower horsepower
- Nameplate information laser etched on frame
- UL Recognized, CSA Certified and CE Mark
- IP55 Rating

Applications

- Replaces 90 volt and 180 volt PMDC motors (when used with AC variable frequency drives)
- Typical uses include machine tools, conveyors, packaging machines, batching machines, food and beverage equipment, pumps and fans.

Motor Specifications – Powerwash SXT Washdown Duty 3-Phase All Stainless Steel Totally Enclosed Motors

Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*
N430	$527.00	1/3	1800	208-230 / 460 - 190 / 380	TENV	B	56C	56T17VD5329 AA	1.2-1.3 / 0.65 - 1.2 / 0.60	21.2
N431	$544.00	1/2						56T17VD5330 A	1.5-1.6 / 0.80 - 1.6 / 0.80	23
N432	$598.00	3/4						56T17VD5331 A	2.4-2.3 / 1.15 - 2.0 / 1.0	30.2
N433A	$537.00	1			TEFC			56T17WD15330 A	3.4-3.0 / 1.5 - 3.0 / 1.5	43.5
N436A	$585.00	1-1/2					145TC	145TTWD6031 A	4.8-4.4 / 2.2 - 3.8 / 1.9	47
N437A	$656.00	2		230 / 460 - 190 / 380			56C	56T17WD15332 A	5.4 / 2.7 - 5. 0 /2.5	52
N438B	$707.00	2		208-230 / 460 - 190 / 380			145TC	145TTWD6528 A	5.8-5.4 / 2.7 - 5.0 / 2.5	52.6

** Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

Powerwash SXT Washdown Duty, 3-Phase, All Stainless Steel, Totally Enclosed Motors

C-Face Footless

Performance Data

Performance Data – Powerwash SXT Washdown Duty 3-Phase All Stainless Steel Totally Enclosed Motors													
Part Number	**HP**	**F.L. RPM**	**Min. RPM**	**F.L. AMPS @460V**	**N.L. AMPS @460V**	**F.L. Torque (lb·ft)**	**B.D. Torque (lb·ft)**	**Max. CHP RPM***	**Max. Safe RPM**	**F.L. Effic.**	**F.L. Power Factor**	**Rotor Inertia ($lb·ft^2$)**	**Footnotes**
N430	1/3	1740	N/A**	0.65	0.5	16	72	N/A**	N/A**	78.5	63	N/A**	Line Start ONLY Recommended!
N431	1/2		1.74	0.8	0.6	24	89	2700	7000	81.5	68		1000:1 Constant Torque Nameplate footnote: Suitable at 208V at 1.0 S.F.
N432	3/4		N/A**	1.15	0.7	36	163	N/A**	N/A**	82.5	73		Line Start ONLY Recommended!
N433A	1	1750	175	1.5	1.0	2.99	15.83	2700	4000	85.5	71.5		10:1 Variable Torque Nameplate footnote: NEMA Nom. Efficiency, suitable for use at 230/460V only
N436A	1-1/2		175	2.2	1.3	4.513	21.05	2700	4000	86.5	73.5		10:1 Variable Torque
N437A	2	3450	175	2.7	1.4	5.981	25.44	5400	4000	86.5	80		10:1 Variable Torque Nameplate footnote: Suitable at 208V at 1.0 S.F.
N438B	2	1750	N/A**	2.7	1.4	5.981	25.44	N/A**	N/A**	86.5	80		Line Start ONLY Recommended! Nameplate footnote: NEMA Nom. Efficiency, suitable for use at 230/460V only

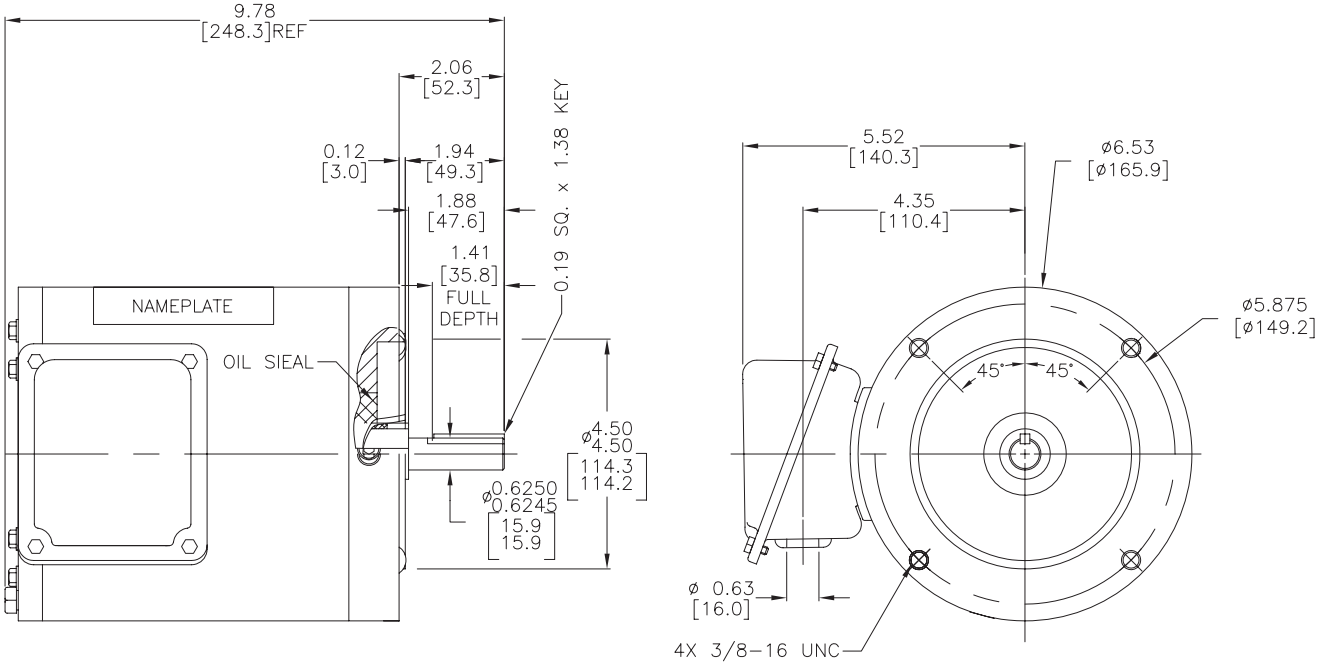
Notes: ****Maximum Constant HP RPM is for direct-coupled loads.***
*****Data not available from manufacturer.***

Dimensions

in [mm]

See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 1 – N430-N432 Dimensions



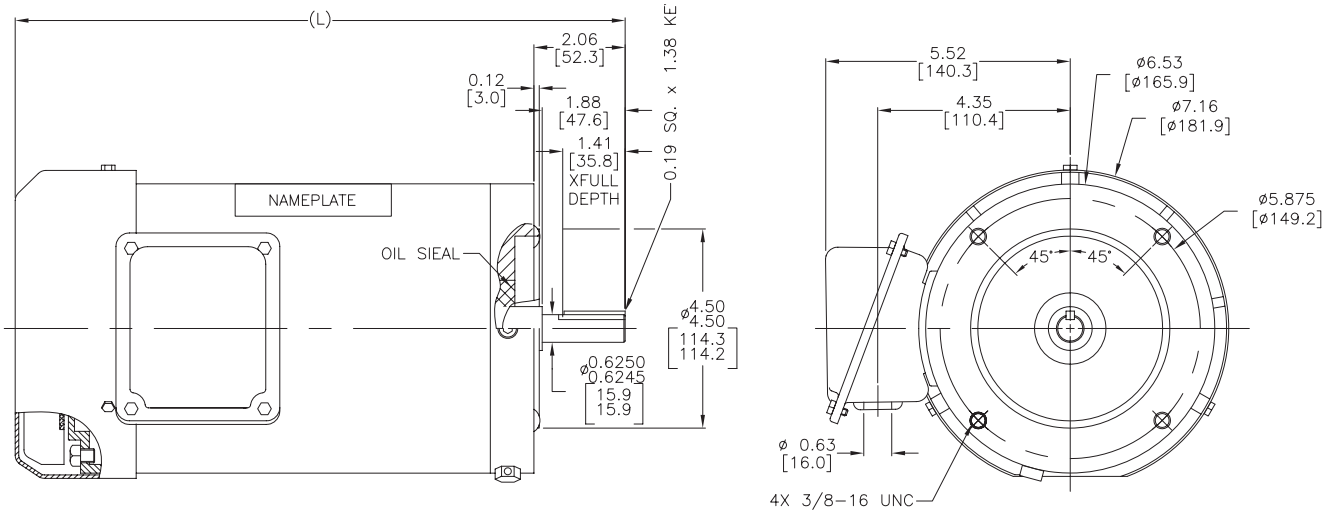
Powerwash SXT Washdown Duty, 3-Phase, All Stainless Steel, Totally Enclosed Motors

Dimensions

C-Face Footless

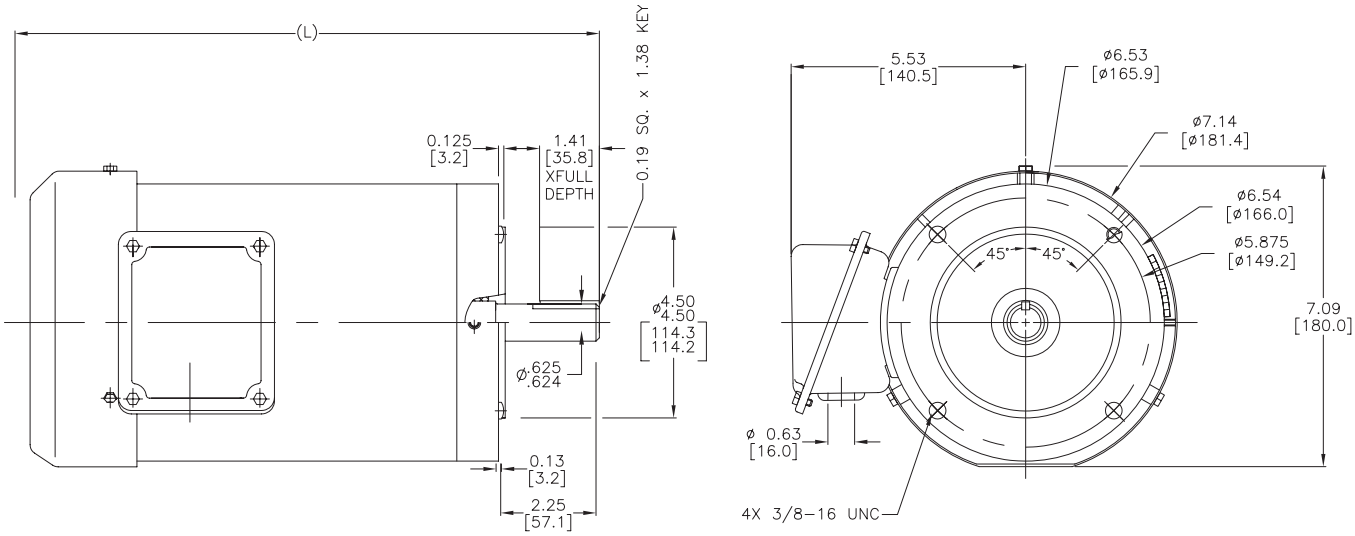
in [mm]

Figure 2 – N433A, N437A Dimensions



Motor Dimensions (inches)	
Part Number	*Length (L)*
N433A	13.2
N437A	14.0

Figure 3 – N436A, N438B Dimensions



Motor Dimensions (inches)	
Part Number	*Length (L)*
N436A	13.7
N438B	14.1

Powerwash SXT Washdown Duty, 3-Phase, All Stainless Steel, Totally Enclosed Motors

3-Phase, C-Face, Footed (Rigid Base)

marathon® Motors

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Features

- Suitable for use on VFD 10:1 Variable torque, 10:1 (TEFC) or 1000:1 (TENV) Constant Torque
- MAX GUARD® Class F insulation system
- 1.15 Service Factor on sinewave, 1.0 Service Factor on VFD power
- Double-sealed ball bearings
- 303 stainless steel shaft with spring-loaded contact seals in each end (drive end only on TENV)
- 300 Series Stainless steel external construction: frame, end shields, conduit box, mounting base and hardware for superior corrosion resistance
- Internal corrosion resistant coatings on rotor and heavy polyester varnish on the stator
- 100% paint-free construction
- One-way condensation drains in each end shield and conduit box for all angle mounting
- Nitrile Buna-N gaskets and seals on conduit box, through bolts and end shields
- Rated 60/50 Hz, 190/380 volt at next lower horsepower
- Nameplate information laser etched on frame
- UL Recognized, CSA Certified and CE Mark
- IP55 Rating

Applications

- Replaces 90 volt and 180 volt PMDC motors (when used with AC variable frequency drives)
- Typical uses include: machine tools, conveyors, packaging machines, batching machines, food and beverage equipment, pumps and fans.

Motor Specifications – Powerwash SXT Washdown Duty 3-Phase All Stainless Steel Totally Enclosed Motors

Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*	Footnotes
N499	$573.00	1	1200	208-230 / 460 - 190 / 380	TEFC	B	145TC	145TTWD6077	3.8-3.8 / 1.9 - 3.4 / 1.7	40	
N410	$646.00	1/3	1800	208-230 / 460	TENV		56C	056T17VD5326	1.2-1.3 / .65 & 1.2 / .60	30	
N411	$557.00	1/2		208-230 / 460 - 190 / 380	TENV		56C	56T17VD5328 A	1.5-1.6 / 0.8 - 1.6 / 0.8	23.8	
N412	$615.00	3/4		208-230 / 460 - 190 / 380			56C	56T17VD5327 A	2.4-2.3 / 1.15 - 2.0 / 1.0	31	
N414A	$644.00	1		230 / 460 - 190 / 380	TEFC		143TC	143TTWD6026 AA	3.0 / 1.5 - 3.0 / 1.5	44.5	
N415A	$624.00	1-1/2					56HC	56T17WD15329 A	4.4 / 2.2 - 3.8 / 1.9	46	5
N417A	$597.00	2					56HC	56T17WD15328 A	5.4 / 2.7 - 5.0 / 2.5	52.6	5
N418A	$801.00	2					145TC	145TTWD6029 AA	5.4 / 2.7 - 5.0 / 2.5	53.1	
N450	$536.00	1/3	3600	208-230 / 460 - 190 / 380	TENV		56C	56T34VD5301 A	1.1-1.0 / 0.5 - 0.9 / 0.45	27	
N456A	$676.00	1-1/2		208-230 / 460 - 190 / 380	TEFC		143TC	143TTWD6002 AA	4.2-4.4 / 2.2 - 3.0 / 1.5	42.5	
N457A	$737.00	2					56HC	56T34WD15303 A	5.6-5.0 / 2.5 - 4.6 / 2.3	44.5	5
N458A	$812.00	2					145TC	145TTWD6001 AA	5.6-5.0 / 2.5 - 5.2 / 2.6	45	

** Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Footnotes: 5 = 56H, 143T, and 145T Combination Base with 12 mounting holes

Powerwash SXT Washdown Duty, 3-Phase, All Stainless Steel, Totally Enclosed Motors

3-Phase, Footed (Rigid Base)

Performance Data

Performance Data – Powerwash SXT Washdown Duty 3-Phase All Stainless Steel Totally Enclosed Motors													
Part Number	HP	F.L. RPM	Min. RPM	F.L. AMPS @460V	N.L. AMPS @460V	F.L. Torque (lb-ft)	B.D. Torque (lb-ft)	Max. CHP RPM*	Max. Safe RPM	F.L. Effic.	F.L. Power Factor	Rotor Inertia (lb-ft^2)	Footnotes
N410	1/3	1740	N/A**	.65	N/A**	16	72	N/A**	N/A**	78.5	63	N/A**	
N499	1	1150	115	1.9	1.3	4.5	17.4	3600	4000	82.5	60	N/A**	10:1 Variable Torque
N411	1/2	1740	174	0.8	0.6	1.15	5.56	3600	5400	81.5	68	N/A**	
N412	3/4	1740	174	1.15	0.7	2.25	10.18	3600	5400	82.5	73	N/A**	
N414A	1	1750	175	1.5	1	2.99	15.83	3600	4000	85.5	71.5	N/A**	10:1 Variable Torque Nameplate footnote: Suitable at 208V at 1.0 S.F.
N415A	1-1/2	1750	175	2.2	1.3	4.513	21.05	3600	4000	86.5	73.5	N/A**	
N417A	2	1750	175	2.7	1.4	5.981	25.44	3600	4000	86.5	80	N/A**	
N418A	2	1750	175	2.7	1.4	5.981	25.44	3600	4000	86.5	80	N/A**	
N450	1/3	3450	345	0.5	0.3	8.2	24	5400	7200	74	84.7	0.028	10:1 Variable Torque
N456A	1-1/2	3510	351	1.9	0.8	2.238	9.81	5400	7200	84	88	N/A**	10:1 Variable Torque
N457A	2	3490	349	2.5	0.9	3.001	11.84	2700	4000	85.5	87.5	N/A**	10:1 Variable Torque
N458A	2	3450	345	2.5	0.9	3.001	11.84	2700	4000	85.5	87.5	N/A**	10:1 Variable Torque Nameplate footnote: NEMA Nom. Efficiency suitable for use at 230/460V only.

** Maximum Constant HP RPM is for direct-coupled loads.*

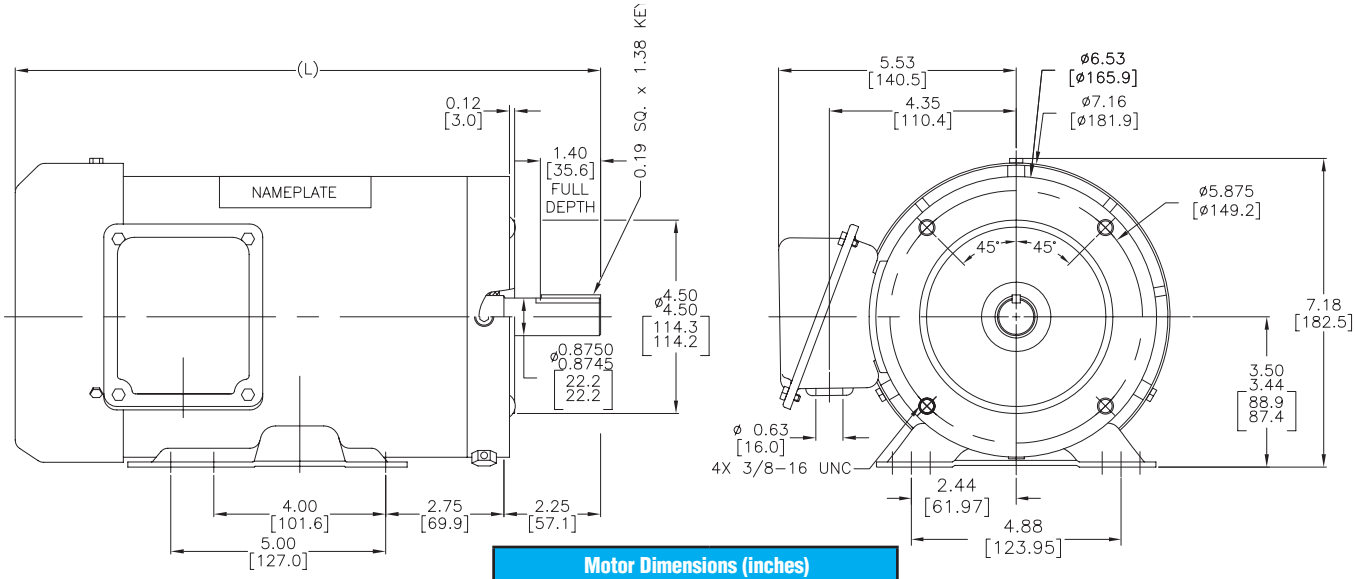
*** Data not available from manufacturer*

See our website: www.AutomationDirect.com for complete engineering drawings.

Dimensions

in [mm]

Figure 1 – N414A, N418A, N456A, N458A, N499 Dimensions



Motor Dimensions (inches)	
Part Number	Length (L)
N414A	13.9
N418A	14.3
N456A	13.7
N458A	13.7
N499	13.9

Powerwash SXT Washdown Duty, 3-Phase, All Stainless Steel, Totally Enclosed Motors

Dimensions

3-Phase, Footed (Rigid Base)

in [mm]

Figure 2 – N411, N412, N450 Dimensions

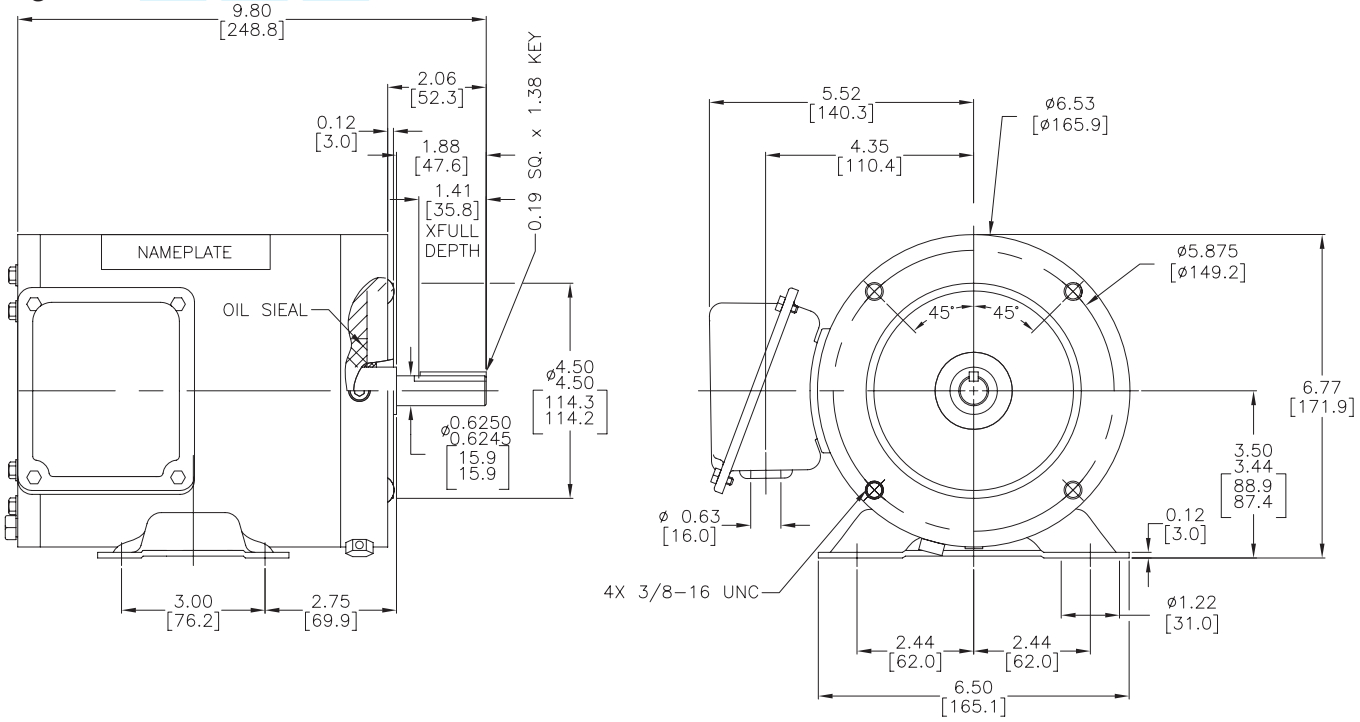
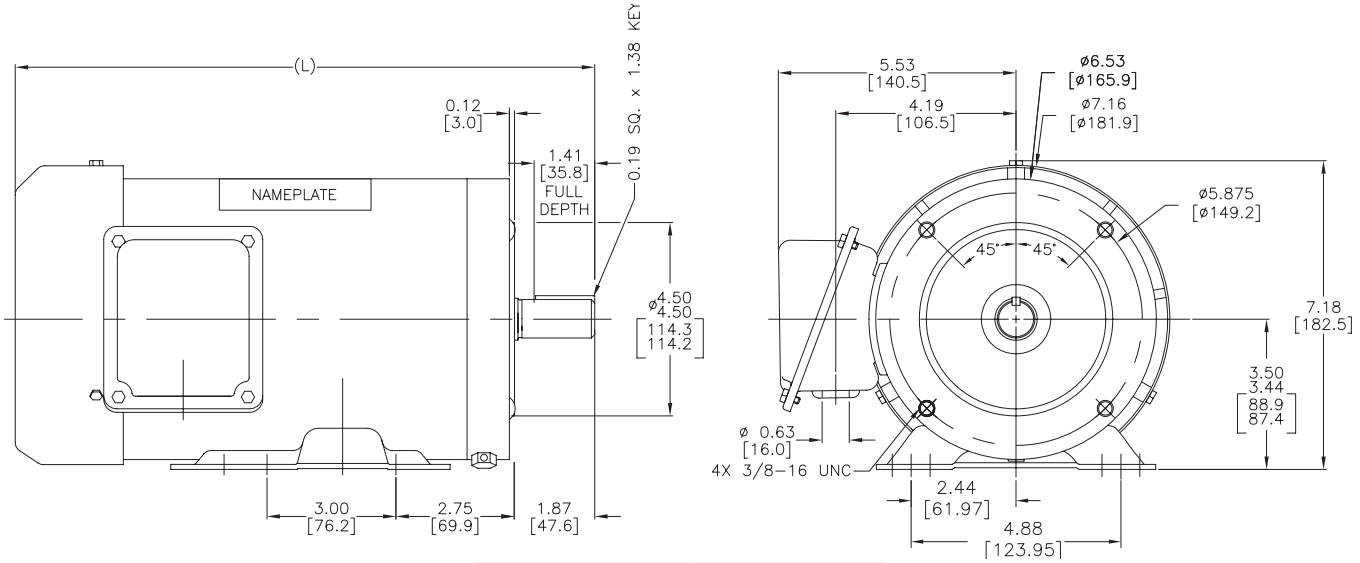


Figure 3 – N415A, N417A, N457A Dimensions



Motor Dimensions (inches)	
Part Number	*Length (L)*
N415A	13.6
N417A	14.0
N457A	13.6

Jet Pump (Centrifugal), 3-Phase Totally Enclosed Motors

C-Face Footed (Removable Base) 56J

marathon® Motors

Features

- Service Factor is 1.15
- Double-sealed ball bearings, mechanically locked on shaft end
- Continuous Duty
- Nameplate 60/50 Hz, 190/380 volts at next lower HP, as noted
- 56J = 416 stainless steel threaded shaft with slinger
- UL Recognized, CSA Certified and CE Mark
- Drip cover kit included
- IP43 Rating

Applications

- Replaces 90 volt and 180 volt PMDC motors (when used with AC variable frequency drives)
- Typical uses include: jet pumps and jet pump motor replacements, well pumps, and liquid pumping applications.

Motor Shipping Schedule *		
*Same or one day **	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Motor Specifications – Jet Pump (Centrifugal) 3-Phase Totally Enclosed Motors

Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*	Footnotes
J061	$226.00	1/2	3600	208-230 / 460 - 190 / 380	TEFC	B	56J	56T34F5342 D	2.0 - 2.2 / 1.1 - 1.85 / 0.92	23	68
J062	$266.00	3/4		208-230 / 460 - 190 / 380				56T34F5343 D	3.0 - 3.2 / 1.6 - 3.0 / 1.5	23	
J063A	$322.00	1		230 / 460 - 190 / 380				56T34F99029 A	3 / 0 /1.5 - 2.6 / 1.3	25	68 Nameplate footnote: Suitable for 208V at 60Hz
J064A	$399.00	1-1/2		208-230 / 460 - 190 / 380				56T34F99018 A	4.2 - 4.0 / 2.0 - 3.4 / 1.7	26	68
J065A	$459.00	2		230 / 460 - 190 / 380				56T34F15592 A	5.0 / 2.5 - 4.6 / 2.3	30	68 Nameplate footnote: Suitable for 208V at 60Hz
J066A	$467.00	3						056T34F15601	7.6 / 3.8 - 6.4 / 3.2	48	

** Refer to the Motor Shipping Schedule table for shipping information.*
Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.

Footnotes: 68 = Rated 60/50 hertz, 190/380 or 380 volt at next lower horsepower

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

Jet Pump (Centrifugal), 3-Phase Totally Enclosed Motors

C-Face Footed (Removable Base) 56J

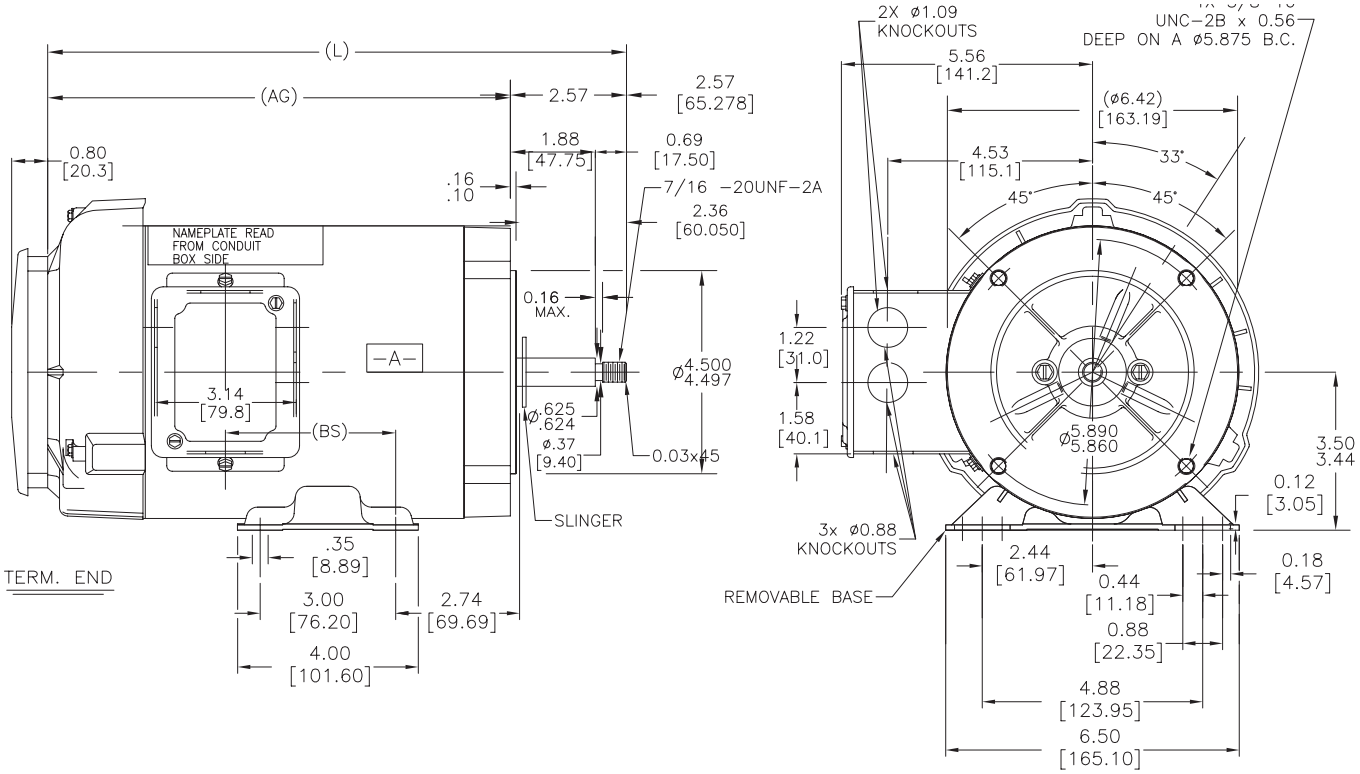
Performance Data – Jet Pump (Centrifugal) 3-Phase Totally Enclosed Motors												
Part Number	HP	F.L. RPM	Min. RPM	F.L. AMPS @460V	N.L. AMPS @460V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	Max. CHP RPM*	Max. Safe RPM	F.L. Effic.	F.L. Power Factor	Rotor Inertia (lb·ft²)
J061	1/2	3450	345	1.1	0.7	0.76	3.8	2700	4000	66	69.7	0.02
J062	3/4			1.6	1.0	1.14	5.6			74	69.1	0.023
J063A	1			1.5	0.75	1.5	4.8			78.5	79.1	0.023
J064A	1-1/2			2.0	0.9	2.2	9.6			84	83.5	0.045
J065A	2			2.5	1	3.0	12.2			85.5	86	0.065
J066A	3			3.8	1.7	4.5	22.7			87.5	84	0.045
* Maximum Constant HP RPM is for direct-coupled loads.												

See our website: www.AutomationDirect.com for complete engineering drawings.

Dimensions

in [mm]

Figure 1 – J061, J062, J063, J064, J066 Dimensions



Motor Dimensions (inches)			
Part Number	L	AG	BS
J061	12.32	9.75	3.28
J062	12.32	9.75	3.28
J063	12.32	9.75	3.28
J064	13.82	11.25	4.78
J066	14.82	12.25	5.78

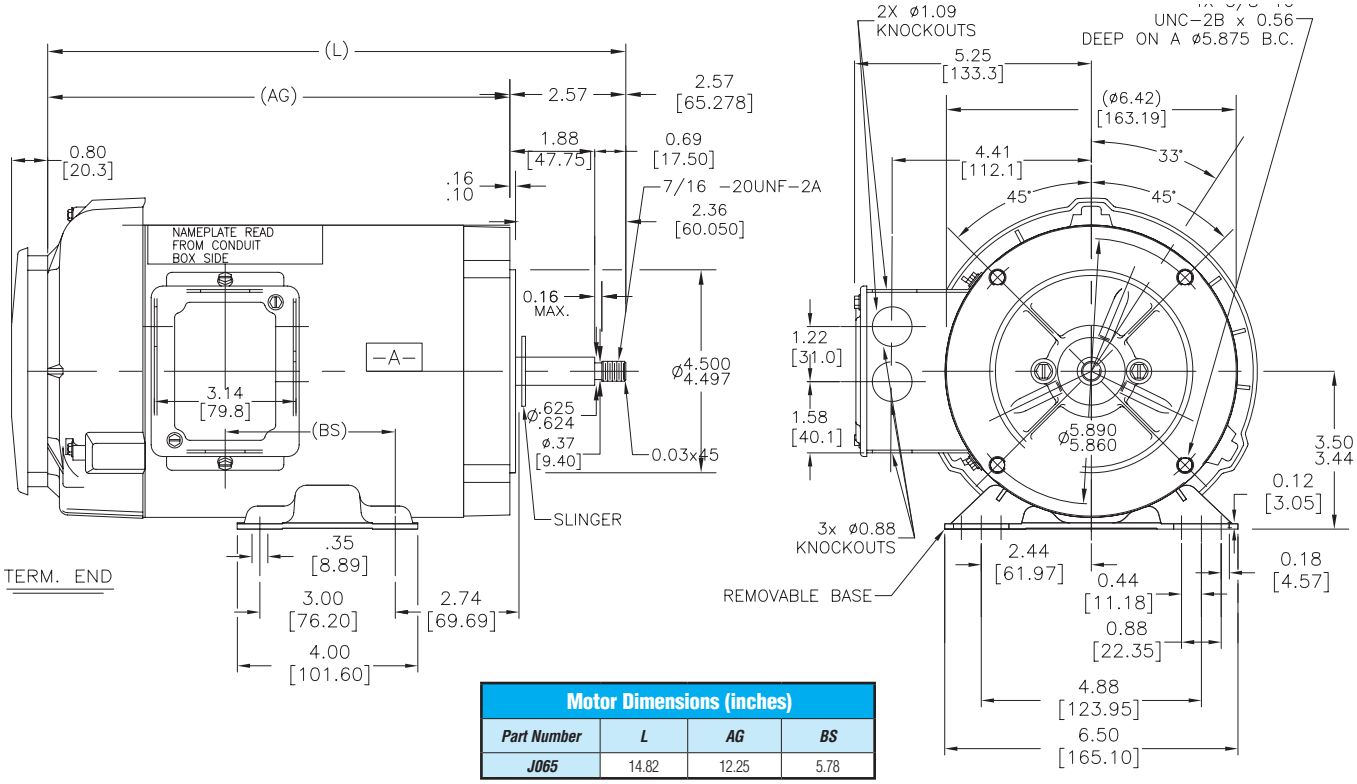
Jet Pump (Centrifugal), 3-Phase Totally Enclosed Motors

C-Face Footed (Removable Base) 56J

Dimensions

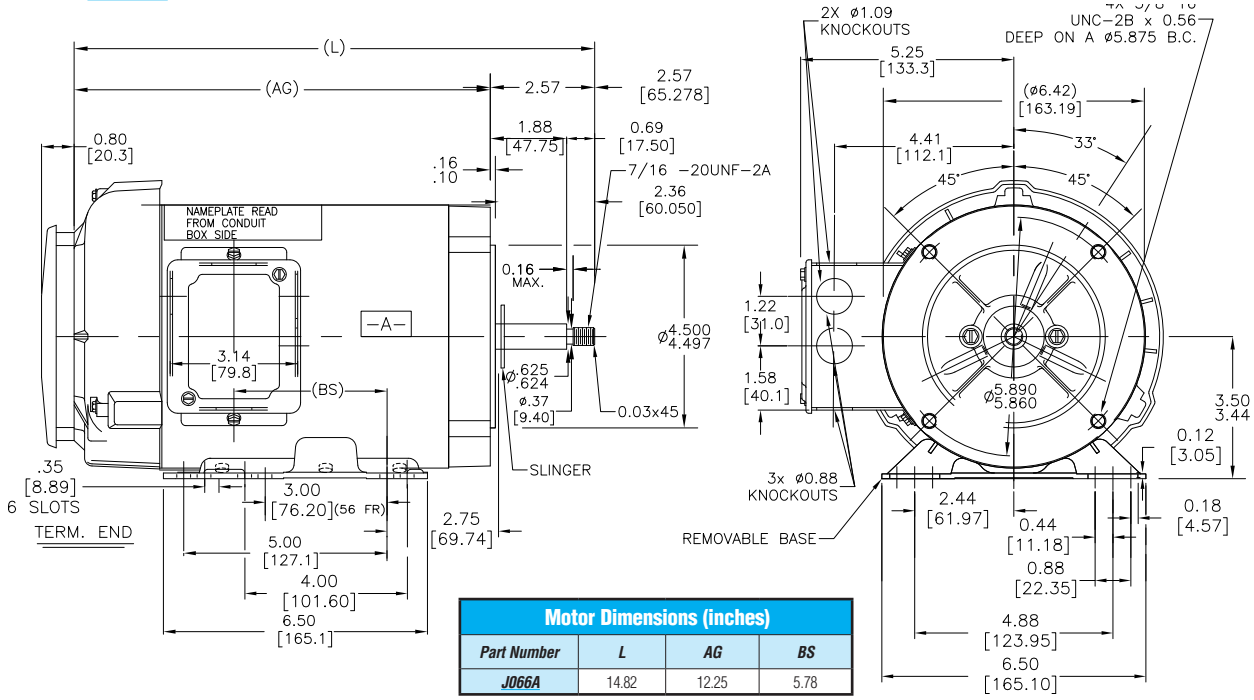
in [mm]

Figure 2 – J065 Dimensions



Motor Dimensions (inches)			
Part Number	L	AG	BS
J065	14.82	12.25	5.78

Figure 3 – J066A



Motor Dimensions (inches)			
Part Number	L	AG	BS
J066A	14.82	12.25	5.78

See our website: www.AutomationDirect.com for complete engineering drawings.

Jet Pump (Centrifugal), 3-Phase Drip-proof Motors

C-Face Footed (Rigid Base) 56J/56HJ

Features

- Service Factor, as noted
- Double-sealed ball bearings, mechanically locked on shaft end
- Continuous Duty
- Nameplate 60/50 Hz, 190/380 volts at next lower HP, as noted
- 56J = 416 stainless steel threaded shaft with slinger
- UL Recognized, CSA Certified and CE Mark
- Drip cover kit included
- IP22 Rating

Applications

- Typical uses include: jet pumps and jet pump motor replacements, well pumps, and liquid pumping applications

marathon® Motors

Motor Shipping Schedule *		
*Same or one day **	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Motor Specifications – Jet Pump (Centrifugal) 3-Phase Drip-proof Motors

Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*	Footnotes
J047	$168.00	1/3	3600	208-230/460 - 190/380	DP	B	56J	56T34D5368 D	1.2-1.1/0.55 - 1.1/0.55	21	68
J048	$189.00	1/2						56T34D5367 D	1.9-2.2/1.1 - 2.0/1.0	21	
J050	$258.00	1						56T34D5366 D	3.7-3.7/1.85 - 3.4/1.7	23	
J051	$313.00	1-1/2						56T34D5369 D	5.2-5.0/2.5 - 4.3/2.15	23	
J052	$366.00	2					56HJ	56T34D5370 D	6.4-6.2/3.1 - 6.0/3.0	30	
J053	$411.00	3						56T34D5371 D	8.9-8.4/4.2 - 7.0/3.5	32	

** Refer to the Motor Shipping Schedule table for shipping information.*
Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.

Footnotes: 68 = Rated 60/50 hertz, 190/380 or 380 volt at next lower horsepower

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

Jet Pump (Centrifugal), 3-Phase Drip-proof Motors

C-Face Footed (Rigid Base) 56J

Performance Data (460 Volt except as indicated) – Jet Pump (Centrifugal) 3-Phase Drip-proof Motors												
Part Number	HP	F.L. RPM	Min. RPM	F.L. AMPS @460V	N.L. AMPS @460V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	Max. CHP RPM*	Max. Safe RPM	F.L. Effic.	F.L. Power Factor	Rotor Inertia ($lb·ft^2$)
J047	1/3	3450	345	0.55	0.4	0.5	2.1	2700	4000	67.7	84.4	0.02
J048	1/2		345	1.1	0.7	0.76	3.8			66	69.7	0.022
J050	1		345	1.85	1.1	1.5	7			74	71.3	0.03
J051	1-1/2		345	2.5	1.5	2.3	7.7			80	74.4	0.023
J052	2		345	3.1	1.7	3.0	10			80	78.2	0.026
J053	3		345	4.2	2.0	4.5	15			84	82	0.04

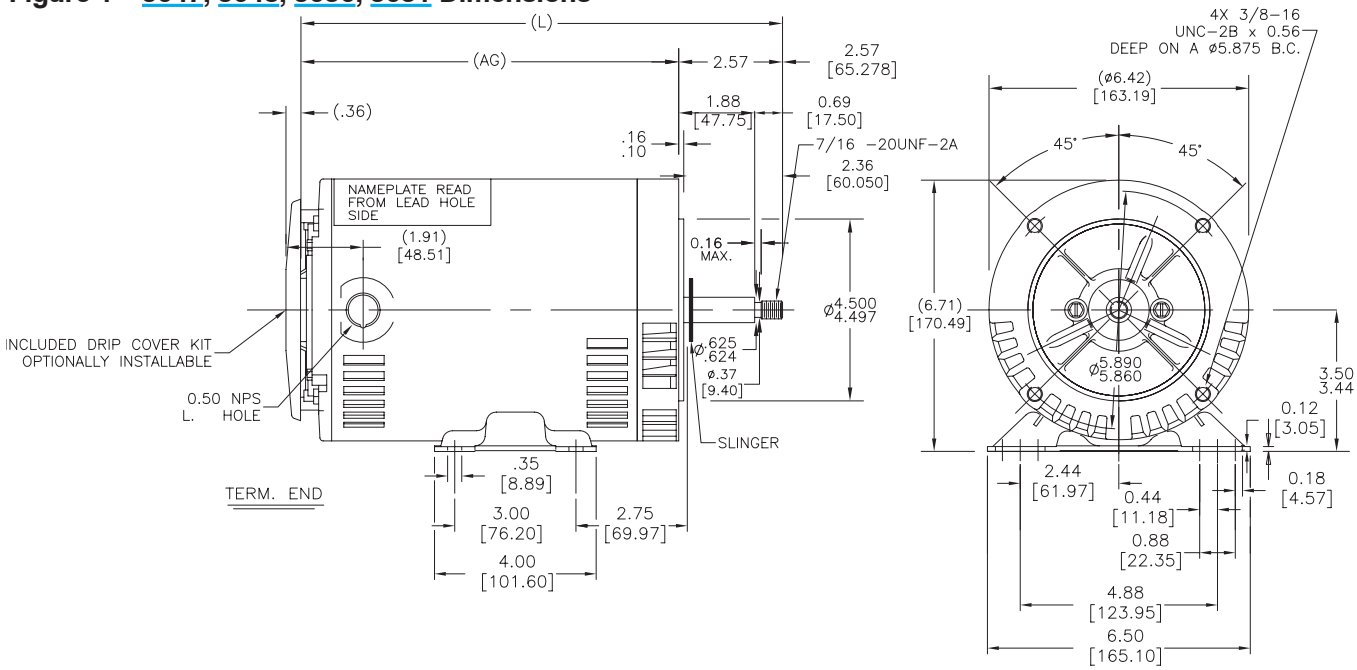
* Maximum Constant HP RPM is for direct-coupled loads.

See our website: www.AutomationDirect.com for complete engineering drawings.

Dimensions

in [mm]

Figure 1 – J047, J048, J050, J051 Dimensions



Motor Dimensions (inches)		
Part Number	L	AG
J047	10.43	7.86
J048	10.93	8.36
J050	10.93	8.36
J051	10.93	8.36

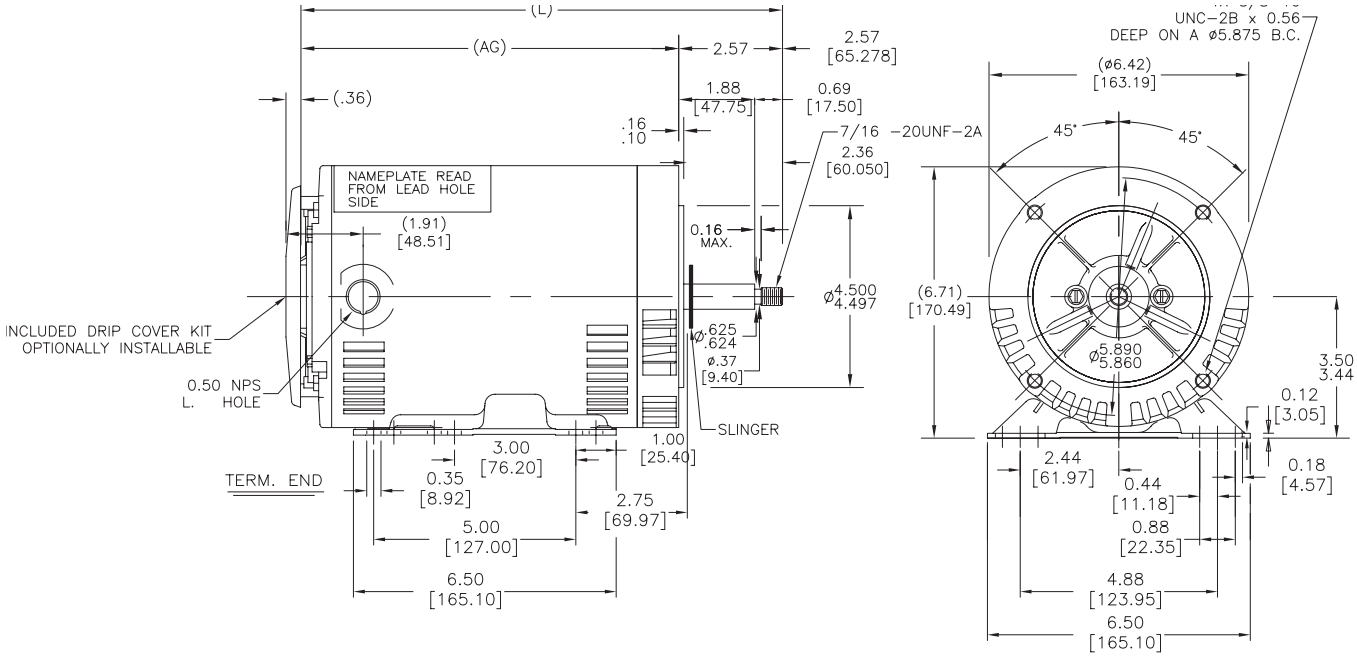
Jet Pump (Centrifugal), 3-Phase Drip-proof Motors

Dimensions

C-Face Footed (Rigid Base) 56J

in [mm]

Figure 2 – J052, J053 Dimensions



Motor Dimensions (inches)		
Part Number	*L*	*AG*
J052	10.93	8.36
J053	11.93	9.36

microMAX™ AC Inverter-Duty Motors

1000:1 Constant Torque (TENV), 20:1 Constant Torque (TEFC)

Features

- Constant torque operation from 0 to base speed (TENV ratings)
- Constant torque operation from 1/20 speed to base speed (TEFC ratings)
- Constant horsepower to twice base speed (RPM)
- Class H insulation with CR200 (corona-resistant) magnet wire
- Continuous duty at 40°C ambient
- C-Face with rigid base, except C-Face with removable rigid base as noted
- Service Factor: 1.0
- Utilizes double shielded ball bearings
- Exxon Polyrex® EM bearing grease
- Eliminates brush and commutator maintenance
- Electrically reversible
- UL Recognized, CSA Certified, and CE Mark
- Three year warranty (through Marathon Electric)

Applications

- Replaces 90 volt and 180 volt PMDC motors (when used with AC variable frequency drives)
- Typical uses include: machine tools, conveyors, packaging machines, batching machines, printing equipment, pumps and fans.

Motor Shipping Schedule *		
*Same or one day **	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Prices & Specifications

Motor Specifications – microMAX										
*Part Number **	*Price*	*HP*	*Base RPM*	*Volts*	*Encl.*	*NEMA Frame*	*Model No.*	*F.L. Amps*	*Weight (lb) **	*Footnotes*
Y500	$203.00	1/4	1800	230	TENV	56C	56H17T2011	1.0	17	Q
Y502	$232.00	1/3					56H17T2013A	1.2	17	Q
Y360	$267.00	1/2		230/460			56H17T2017	1.8 / 0.9	25	–
Y362	$344.00	3/4			TEFC		56H17F2017A	2.8 / 1.4	25	–
Y364	$355.00	1					56H17F2021	3.2 / 1.6	28	–
Y366	$479.00	1-1/2			TENV	145TC	145THTR5329AA	4.8 / 2.4	45	6
Y368	$591.00	2			TEFC		145THFR5329	5.8 / 2.9	45	6
Y1999 †	$721.00	3				182TC	182THFW7729AA	8.4 / 4.2	64	6
Y1372 †	$820.00	5				184TC	184THFW7726AA	13.0 / 6.5	92	6
Y994	$1,048.00	7-1/2				213TC	213THFW7726	21.4 / 10.7	125	6
Y996	$1,305.00	10				215TC	215THFW7726	27.6 / 13.8	135	6

** Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.*

† Detailed information on the previous versions of these motors (Y999 & Y372) can be found at www.AutomationDirect.com/Retired-Products.

Footnotes: Q = "Quick Connect" terminal board (1/4-in female spade lug) 6 = Bolt-on, removable base for footless mounting option

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at www.automationdirect.com.

microMAX™ AC Inverter-Duty Motors

Performance Data

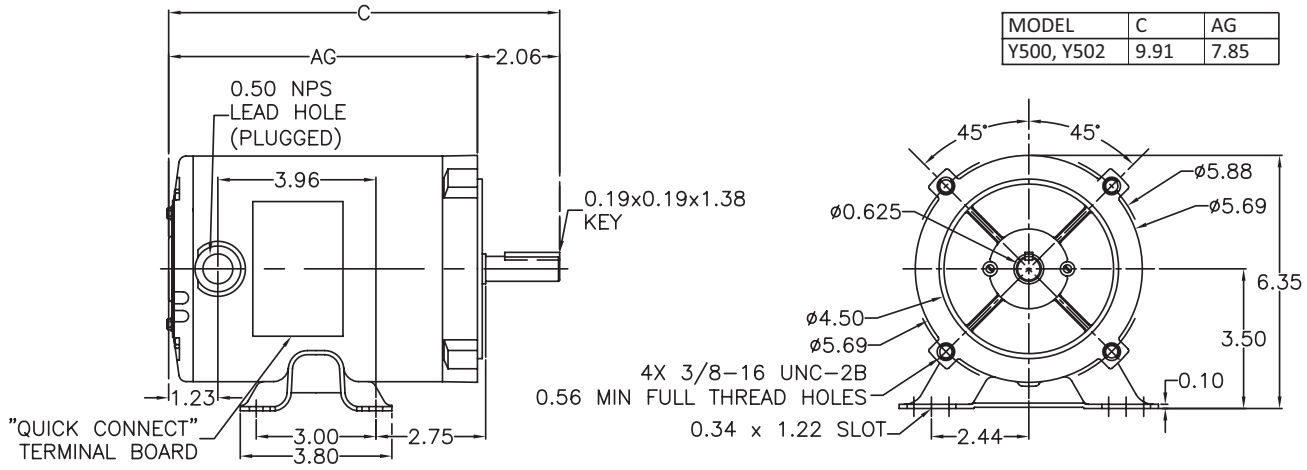
Performance Data (460 Volt except as indicated) – microMAX													
Part Number	HP	NEMA Design	F.L. RPM	Min. RPM	F.L. AMPS @460V	N.L. AMPS @460V	F.L. Torque (lb-ft)	B.D. Torque (lb-ft)	Max. CHP RPM*	Max. Safe RPM	F.L. Effic.	F.L. Power Factor	Rotor Inertia ($lb\text{-}ft^2$)
Y500	1/4 (230V)	B	1725	1.8	1.0 (230V)	0.7 (230V)	0.75	3.7	3520	5400	72.0	65.0	0.040
Y502	1/3 (230V)	A	1725	0	1.2 (230V)	0.9 (230V)	1.0	4.5	3450	5400	74.0	67.0	0.045
Y360	1/2	B	1725	1.8	0.9	0.5	1.5	6.8	3520	5400	80.0	72.0	0.075
Y362	3/4	A	1725	90	1.4	1.0	2.3	9.5	3520	4000	75.5	70.5	0.055
Y364	1	B	1725	90	1.6	0.9	3.0	12.0	3520	4000	78.5	77.5	0.090
Y366	1-1/2	A	1755	0	2.4	1.6	4.5	29.0	3500	5400	85.5	69.0	0.140
Y368	2	B	1740	90	2.9	1.6	6.0	29.0	3530	4000	82.5	77.0	0.140
Y1999	3		1765	90	4.2	2.2	8.9	33.8	3530	4000	87.5	76.4	0.38
Y1372	5	A	1760	90	6.5	2.8	15	48.6	3520	4000	87.5	81.6	0.357
Y994	7-1/2		1770	90	10.7	6.2	22.3	80.0	3565	4000	89.5	72.5	0.75
Y996	10	B	1770	90	13.8	7.8	30.0	110	3570	4000	91.0	74.0	1.00

* Maximum Constant HP RPM is for direct-coupled loads.

Dimensions (units = inches)

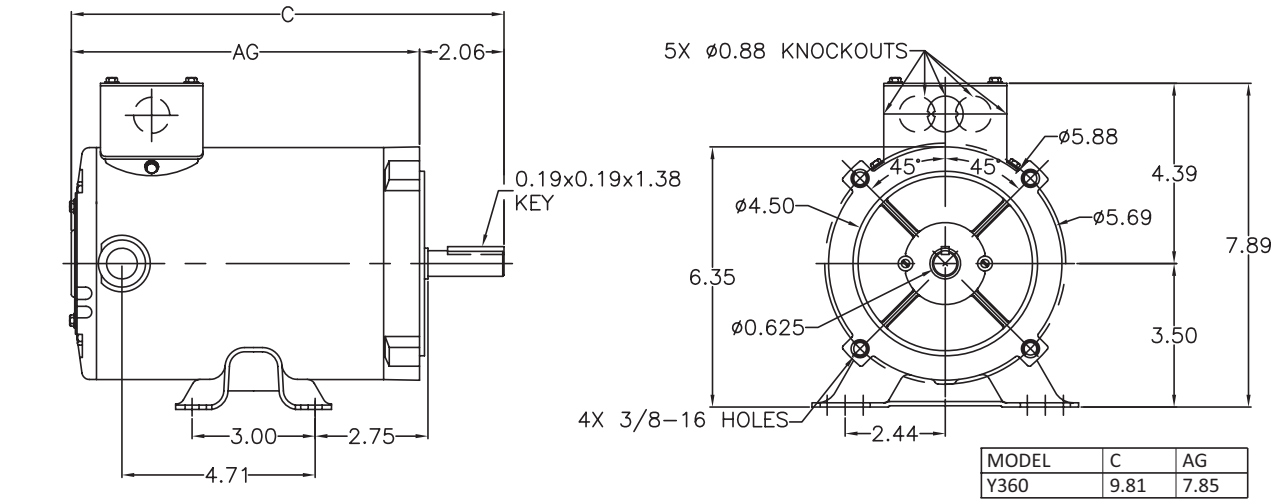
See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 1 – Y500, Y502



MODEL	C	AG
Y500, Y502	9.91	7.85

Figure 2 – Y360



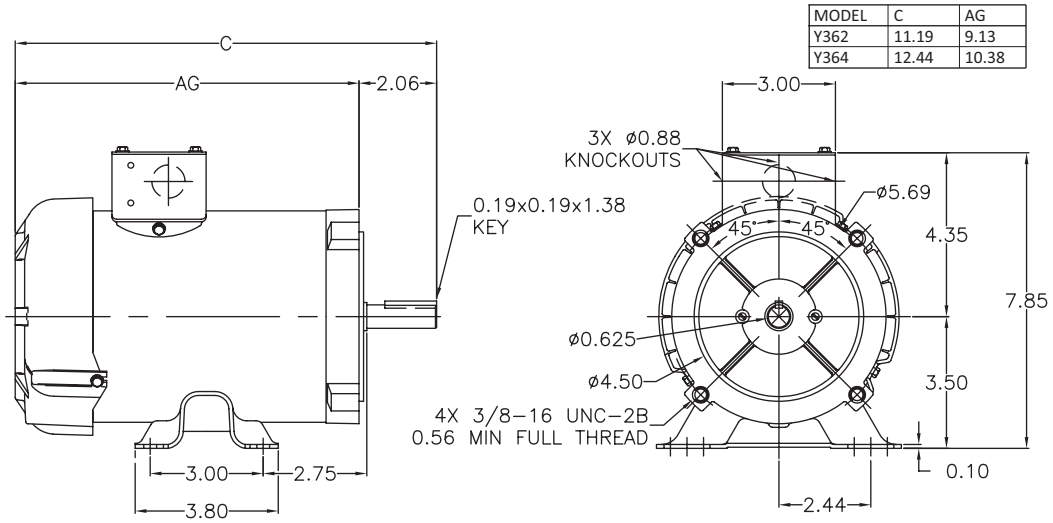
MODEL	C	AG
Y360	9.81	7.85

microMAX™ AC Inverter-Duty Motors

Dimensions (units = inches)

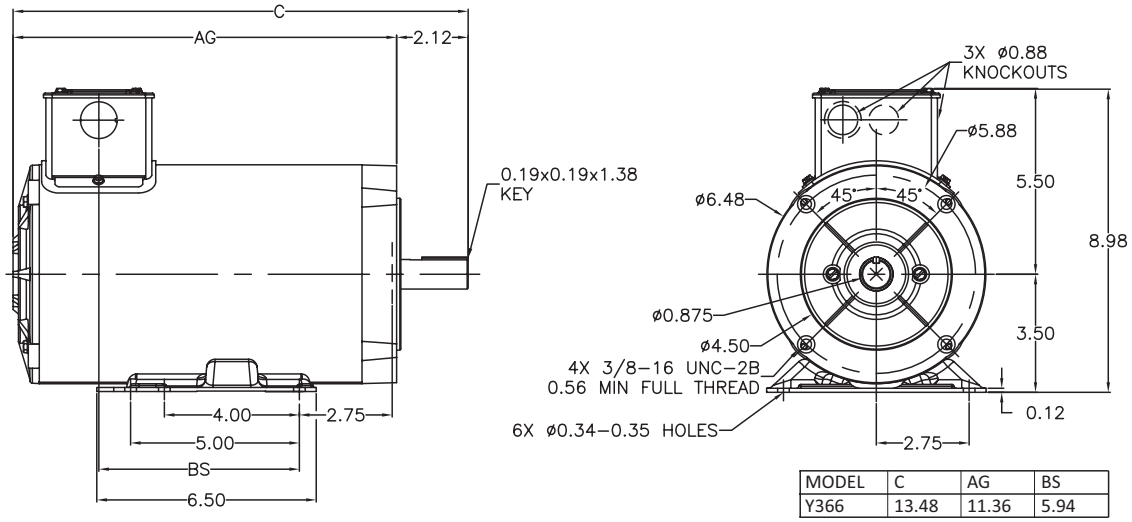
See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 3 – Y362, Y364



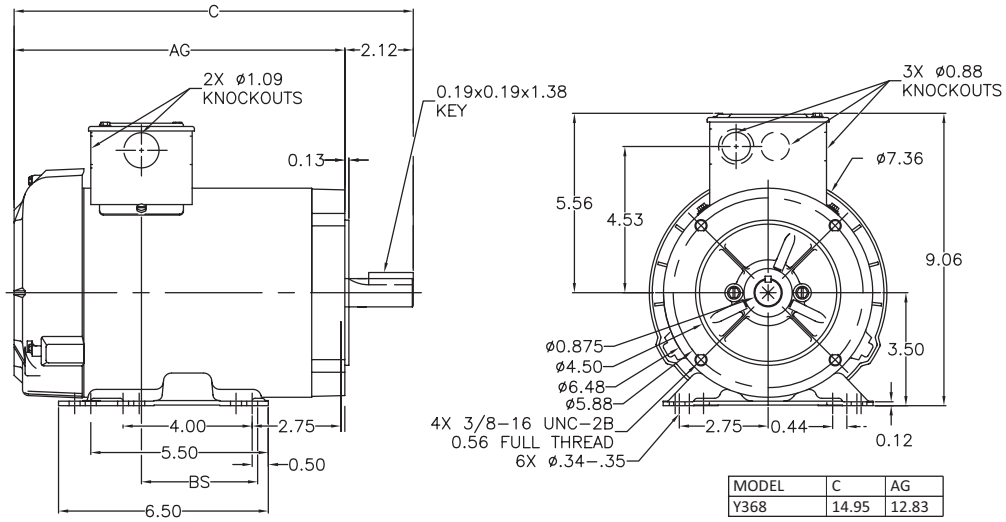
MODEL	C	AG
Y362	11.19	9.13
Y364	12.44	10.38

Figure 4 – Y366



MODEL	C	AG	BS
Y366	13.48	11.36	5.94

Figure 5 – Y368



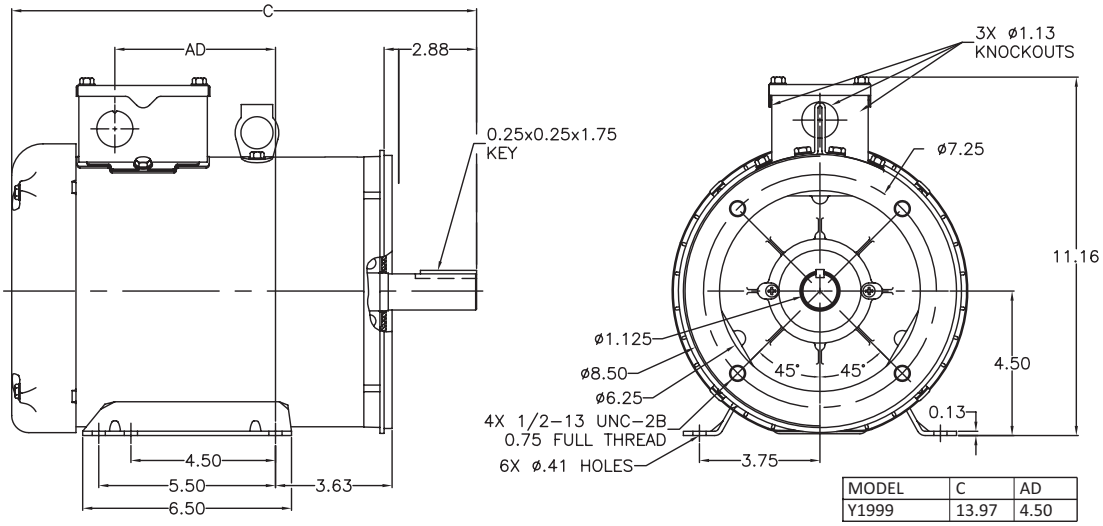
MODEL	C	AG
Y368	14.95	12.83

microMAX™ AC Inverter-Duty Motors

Dimensions (units = inches)

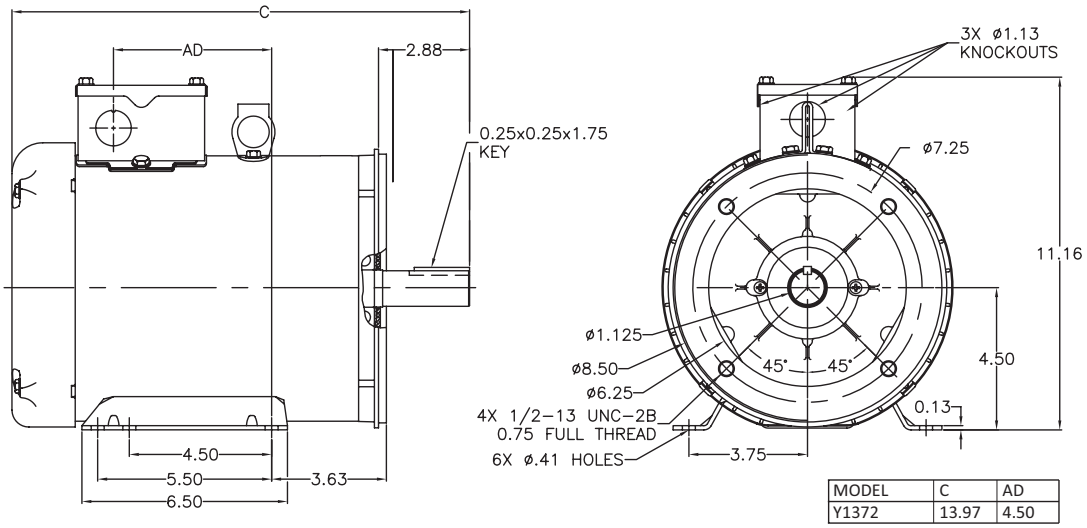
See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 6 – Y1999



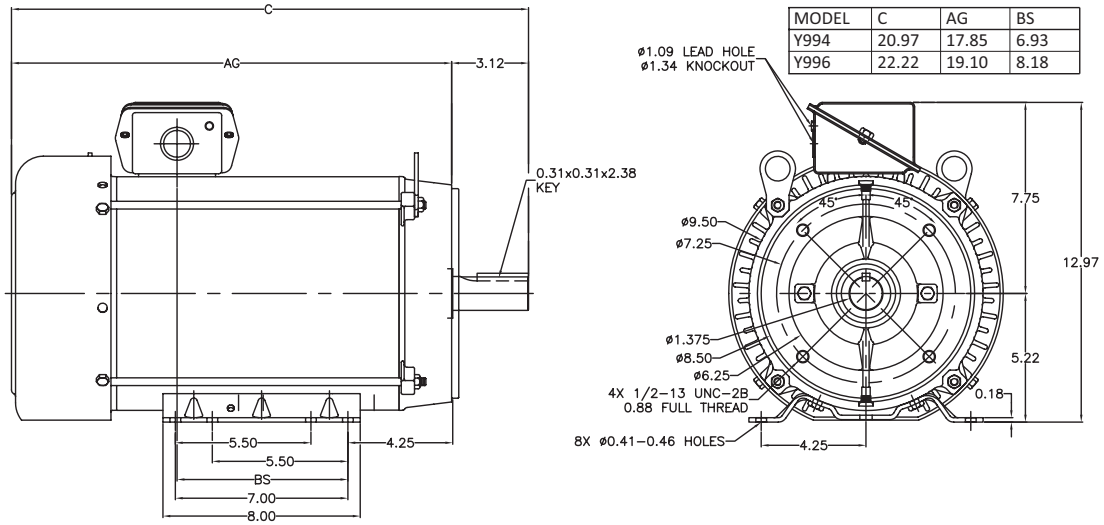
MODEL	C	AD
Y1999	13.97	4.50

Figure 7 – Y1372



MODEL	C	AD
Y1372	13.97	4.50

Figure 8 – Y996, Y994



MODEL	C	AG	BS
Y994	20.97	17.85	6.93
Y996	22.22	19.10	8.18

MAX+ AC Inverter-Duty Motors with Encoder

1000:1 Constant Torque (TENV)

marathon® Motors

Features

- Integrated Dynapar HS20 1024 ppr encoder
- Optimized for operation with IGBT inverter
- Constant Torque operation from 0 to base speed on Vector Drive
- Constant Horsepower operation up to twice base RPM
- Class F insulation with CR200 corona resistant magnet wire
- Continuous duty at 40˚C ambient
- C-Face with rigid base, except C-Face with removable rigid base as noted
- Service Factor: 1.0
- Ball bearings
- F1 mounting (except as noted)
- UL Recognized, CSA Certified, and CE Mark
- Three year warranty (through Marathon Electric)

Applications

- Replaces 90 volt and 180 volt PMDC motors (when used with AC variable frequency drives)
- Typical uses include: machine tools, conveyors, packaging machines, batching machines, printing equipment, pumps and fans.

Motor Shipping Schedule *		
*Same or one day ****	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Prices & Specifications

Motor Specifications – MAX+ (with encoder)

Part Number *	Price	HP	Base RPM	Volts	Encl.	NEMA Frame	Model No.	F.L. Amps	Weight (lb) *	Footnotes
Y280	$864.00	1/2	1800	230/460	TENV	56C	56H17T15526A	1.6 / 0.8	25	6
Y281	$903.00	3/4					56H17T15528A	2.4 / 1.2	35	6
Y282	$958.00	1					56H17T15527A	3.0 / 1.5	42	6
Y284	$1,115.00	1-1/2				145TC	145THTR15540AA	4.8 / 2.4	45	6
Y285	$1,517.00	2					145THTN17034AA	6.0 / 3.0	68	13b
Y286A	$1,702.00	3				182TC	182THTY17041AA	8.2 / 4.1	110	13b
Y287A	$1,841.00	5				184TC	184THTY17038AA	13.4 / 6.7	125	13b

** Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.*

Footnotes: 6 = Bolt-on, removable base for footless mounting option 13b = Field reversible from F1 to F2 mounting

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at www.automationdirect.com.

MAX+ Motors Shaft-Mounted Encoder*

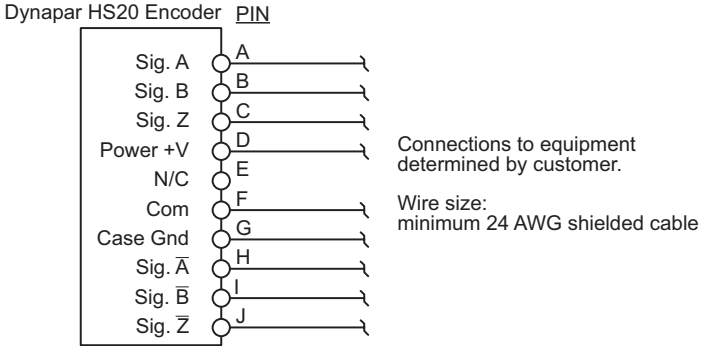
A Dynapar Model HS20 shaft-mounted encoder is supplied with the MAX+ motor. The 5/8-in hollow-shaft encoder requires a 5–26 VDC power source, provides a count of 1024 pulses per revolution (PPR), differential line driver output, and includes 10 screw-terminal wiring connections.

** The encoder cable gland accepts cable diameters from 0.187–0.30 in.*

** There is no manufacturer's published tightening torque for the encoder screw terminals.*

** If connecting the motor to a GS3 DURApulse AC drive, a GS3-FB Feedback Card is required for the drive.*

Encoder Wiring Connections



Connections to equipment determined by customer.

Wire size:
minimum 24 AWG shielded cable

MAX+ AC Inverter-Duty Motors with Encoder

Performance Data

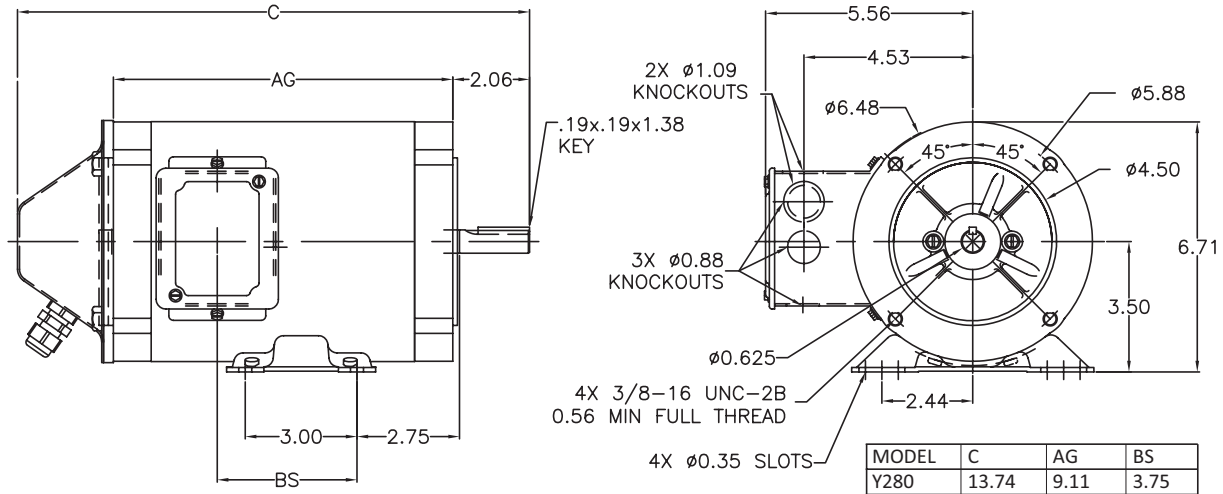
Performance Data (460 Volt) – MAX+													
Part Number	HP	NEMA Design	F.L. RPM	Min. RPM	F.L. AMPS @460V	N.L. AMPS @460V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	Max. CHP RPM*	Max. Safe RPM	F.L. Effic.	F.L. Power Factor	Rotor Inertia ($lb·ft^2$)
Y280	1/2	A	1725		0.8	0.5	1.5	5.8	3510		80.0	72.0	0.06
Y281	3/4	A	1725		1.2	0.8	2.3	10.2	3450		82.5	73.5	0.09
Y282	1	A	1725		1.5	1.0	3.0	15.0	3505		84.0	75.0	0.11
Y284	1-1/2	B	1755	0	2.4	1.6	4.5	29.0	3500	5400	85.5	69.0	0.14
Y285	2	B	1750		3.0	1.7	6.0	28.5	3525		85.5	78.0	0.13
Y286A	3	B	1755		4.1	2.3	9.0	49.3	3510		87.5	78.5	0.42
Y287A	5	B	1760		6.7	3.2	14.9	61.5	3520		89.5	79.0	0.52

** Maximum Constant HP RPM is for direct coupled loads.*

Dimensions (units = inches)

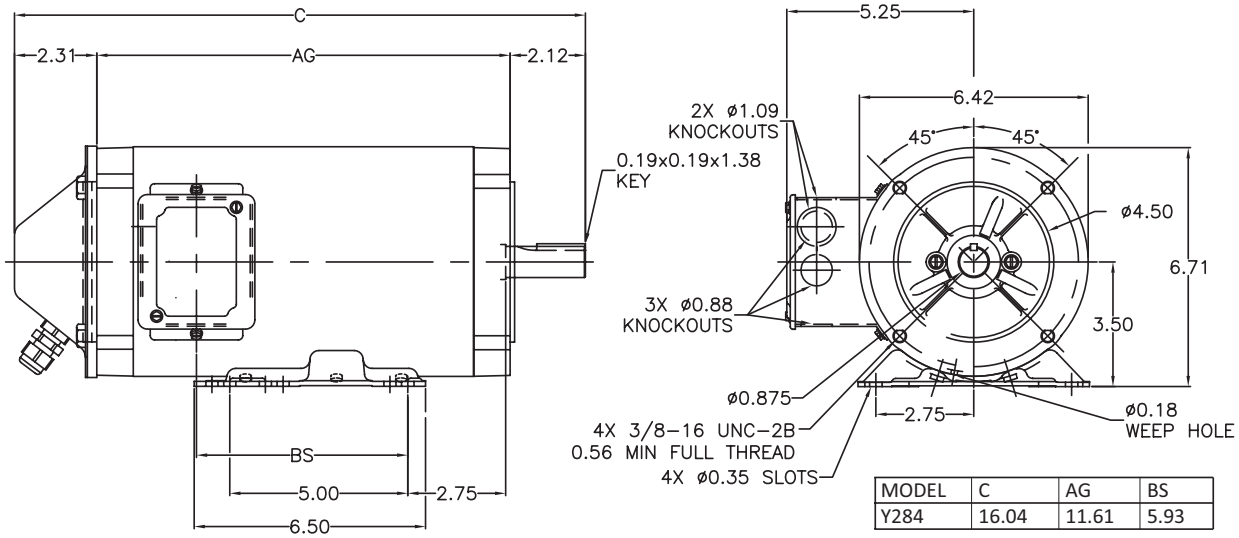
See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 1 – Y280, Y281, Y282



MODEL	C	AG	BS
Y280	13.74	9.11	3.75
Y281	14.24	9.61	4.25
Y282	15.24	10.61	5.25

Figure 2 – Y284



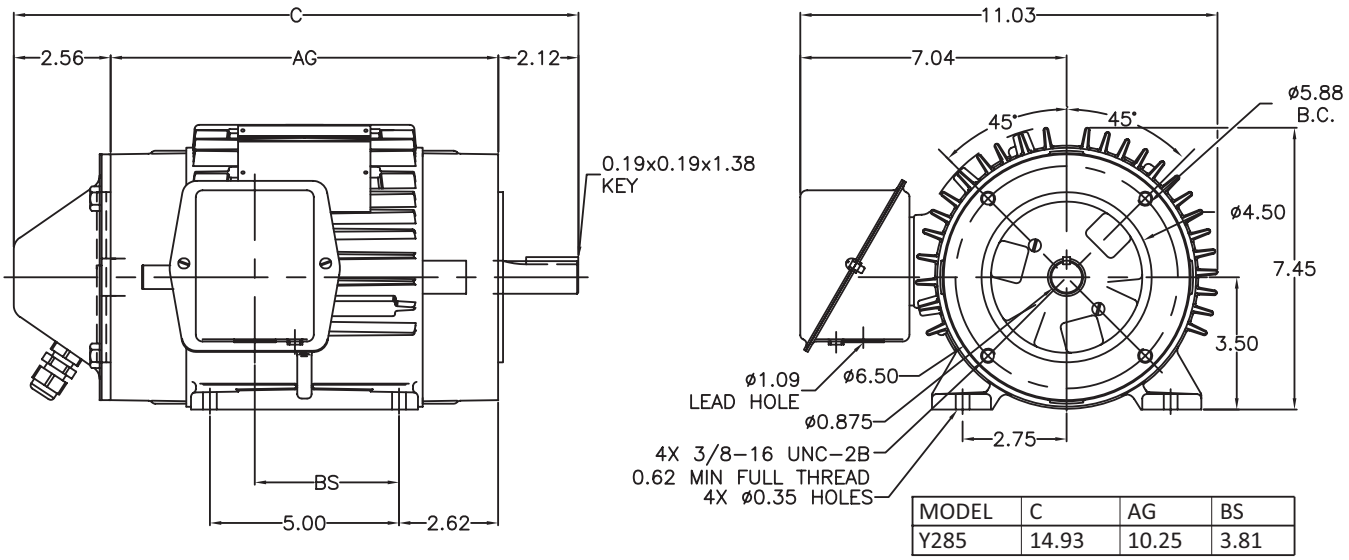
MODEL	C	AG	BS
Y284	16.04	11.61	5.93

MAX+ AC Inverter-Duty Motors with Encoder

Motors – Dimensions (units = inches)

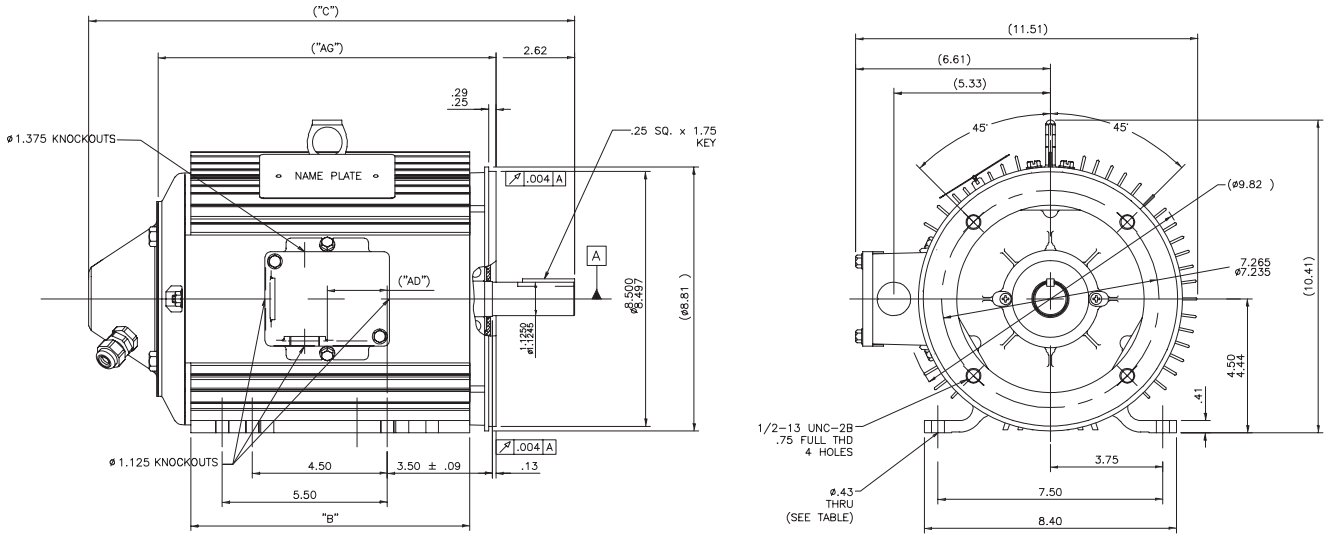
See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 3 – Y285



MODEL	C	AG	BS
Y285	14.93	10.25	3.81

Figure 4 – Y286A, Y287A



MOTOR	C	AD	B	AG	FOOT HOLES
Y286A	16.44	2.19	9.31	11.56	12
Y287A	18.00	2.19	10.81	13.06	8

Black Max® Vector Duty Motors

*** 230/460V and 575V Motors Available ***

marathon® Motors

Features

- Class F MAX GUARD® insulation system
- Constant torque operation from 0 to base speed on vector drive
- Constant horsepower operation to twice base RPM
- Continuous duty at 40° C ambient
- Optimized for operation with IGBT inverter (NEMA Design A)
- Class F N/C thermostats (one per phase)
- Utilizes double shielded ball bearings
- Exxon Polyrex® EM bearing grease
- C-Face with rigid base, except C-Face with removable rigid base as noted
- F1 standard conduit box location, field reversible to F2 (except as noted)
- Available with optional encoder installed on opposite drive end
- Electrically reversible
- UL Recognized, CSA Certified, and CE Mark
- Three year warranty (through Marathon Electric)

Applications

- Designed for inverter or vector applications where up to a 1000:1 constant torque speed range is required.
- Typical uses include: material handling, machine tools, conveyors, crane and hoist, metal processing, test stands, pumps, compressors, textile processing, and other industrial machinery installed in dusty or dirty environments.

Black Max® Vector Duty Motors

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

230/460V Motor Specifications

Part Number *	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	F.L. Amps	Weight (lb) *	Footnotes
Y592	$300.00	1/4	1800	230/460	TENV	56C	56H17T2001	1.2 / 0.6	19	T, S, 13
Y534	$375.00	1/2	1800	230/460	TENV	56C	56H17T5301	1.6 / 0.8	28	T, S, 6, 13
Y535	$447.00	1	1800	230/460	TENV	56C	56H17T5302	3.0 / 1.5	41	T, S, 6, 13
Y536	$458.00	1	1800	230/460	TENV	143TC	143THTR5326	3.0 / 1.5	43	T, S, 6, 13
Y537	$530.00	1	1200	230/460	TENV	145TC	145THTR5376	3.8 / 1.9	49	T, S, 6, 13
Y538	$556.00	1-1/2	1800	230/460	TENV	145TC	145THTR5326	4.8 / 2.4	50	T, S, 6, 13
Y551	$769.00	2	1800	230/460	TENV	145TC	145THTN6046	6.0 / 3.0	72	T, CI
Y540	$1,098.00	2	1200	230/460	TENV	184TC	184THTL7776	6.6 / 3.3	88	T, AL
Y541A	$969.00	3	1800	230/460	TENV	182TC	182THTY7726	8.2 / 4.1	110	T, AL
Y542	$1,353.00	3	1200	230/460	TENV	213TC	213THTL7776	9.4 / 4.7	118	T, AL
Y543A	$1,159.00	5	1800	230/460	TENV	184TC	184THTY7726	13.4 / 6.7	125	T, AL
Y544	$1,647.00	5	1200	230/460	TENV	215TC	215THTL7776	15.4 / 7.7	138	T, AL
Y545	$1,493.00	7-1/2	1800	230/460	TENV	213TC	213THTL7726	21.0 / 10.5	146	T, AL
Y546	$2,213.00	7-1/2	1200	230/460	TENV	254TC	254THTL5776	22.0 / 11.0	209	T, AL
Y547	$1,785.00	10	1800	230/460	TENV	215TC	215THTL7726	27.0 / 13.5	159	T, AL
Y548	$2,506.00	10	1200	230/460	TENV	256TC	256THTL5776	28 / 14	203	T, AL
Y549	$2,124.00	15	1800	230/460	TENV	254TC	254THTL5726	40 / 20	250	T, AL, I
Y552	$3,101.00	20	1800	230/460	TENV	256TC	256THTNA7026	52 / 26	300	T, I, CI
Y553	$3,373.00	25	1800	230/460	TENV	284TC	284THTNA7026	62 / 31	495	T, I, CI
Y393	$3,803.00	30	1800	230/460	TENV	286TC	286THTNA7026	74 / 37	575	T, I, CI

** Refer to the Motor Shipping Schedule table for shipping information.*

Footnotes:
- 6 Bolt-on, removable base for footless mounting option
- 13 F1 Mounting Only, cannot modify to F2
- AL Aluminum Frame Construction

Footnotes (continued):
- CI Cast Iron Frame Construction
- I Intermittent duty from 90-120 Hz operation
- S Steel Frame Construction

Footnotes (continued):
- T Thermostat overload

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on his product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at www.AutomationDirect.com.

Black Max® Vector Duty Motors

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

575V Motor Specifications

Part Number	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	F.L. Amps	Weight (lb)	Footnotes
Y555	$375.00	1/2	1800	575	TENV	56C	56H17T5311	0.64	28	T, S, 6, 13
Y556	$447.00	1	1800	575	TENV	56C	56H17T5312	1.2	41	T, S, 6, 13
Y557	$769.00	2	1800	575	TENV	145TC	145THTN6060	2.4	72	T, CI
Y558A	$951.00	3	1800	575	TENV	182TC	182THTY7736	3.3	110	T, AL
Y559A	$1,137.00	5	1800	575	TENV	184TC	184THTY7736	5.4	125	T, AL
Y560	$1,493.00	7-1/2	1800	575	TENV	213TC	213THTL7736	8.4	146	T, AL
Y561	$1,785.00	10	1800	575	TENV	215TC	215THTL7736	10.8	159	T, AL
Y562	$2,124.00	15	1800	575	TENV	254TC	254THTL5736	16.0	250	T, AL, I
Y563	$3,101.00	20	1800	575	TENV	256TC	256THTNA7036	20.8	300	T, CI, I

Footnotes:
6 Bolt-on, removable base for footless mounting option
13 F1 Mounting Only, cannot modify to F2
AL Aluminum Frame Construction

Footnotes (continued):
CI Cast Iron Frame Construction
I Intermittent duty from 90-120 Hz operation
S Steel Frame Construction

Footnotes (continued):
T Thermostat overload

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at www.AutomationDirect.com.

Motor with Shaft-Mounted Encoder*

A Dynapar Model HS35 shaft-mounted encoder can be supplied pre-installed on the motors as shown in the price table below. The encoder requires a 5–26 VDC power source, provides a count of 1024 pulses per revolution (PPR) differential line driver output, and includes a 10-pin mating connector.

**** If connecting the motor to a GS3 DURApulse AC drive, a GS3-FB Feedback Card is required for the drive.***

Motor Accessories

Part Number	Price	Description *
A772	$903.00	Encoder kit, replacement, for Black Max encoder motors. Dynapar HS35 encoder, 5–26 VDC input, Line Driver output, 1024 pulses per revolution, 5/8-in bore.

**** Replacement/spare encoder kit for Black Max Yxxx-A772 motors; can also be field installed on Black Max Yxxx motors without encoders.***

Motor with Pre-installed Shaft-Mounted Encoder

230/460V Motors						575V Motors		
Part Number	Price	HP	Part Number	Price	HP	Part Number	Price	HP
Y592-A772	$1,326.00	1/4	Y592-A772	$1,326.00	5	Y592-A772	$1,326.00	2
Y534-A772	$1,402.00	1/2	Y534-A772	$1,402.00	7-1/2	Y534-A772	$1,402.00	3
Y535-A772	$1,476.00	1	Y535-A772	$1,476.00	7-1/2	Y535-A772	$1,476.00	5
Y536-A772	$1,487.00	1	Y536-A772	$1,487.00	10	Y536-A772	$1,487.00	7-1/2
Y537-A772	$1,562.00	1	Y537-A772	$1,562.00	10	Y537-A772	$1,562.00	10
Y538-A772	$1,587.00	1-1/2	Y538-A772	$1,587.00	15	Y538-A772	$1,587.00	15
Y551-A772	$1,802.00	2	Y551-A772	$1,802.00	20	Y551-A772	$1,802.00	20
Y540-A772	$2,137.00	2	Y540-A772	$2,137.00	25	Y540-A772		
Y541A-A772	$1,989.00	3	Y541A-A772	$1,989.00	30			
Y542-A772	$2,396.00	3	Y542-A772	$2,396.00	1/2			
Y543A-A772	$2,177.00	5	Y543A-A772	$2,177.00	1			

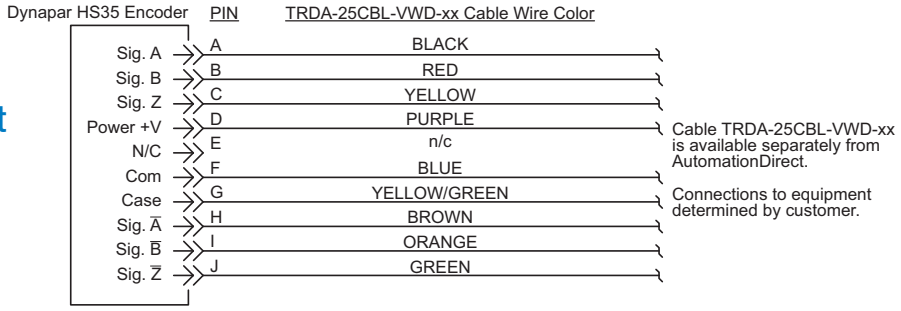
Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at www.AutomationDirect.com.

Black Max® Vector Duty Motors

Encoder Connector Pinout

Note: A mating connector is supplied with the encoder.

Prewired cables TRDA-25CBL-VWD-xx (10, 20, & 30 ft) and replacement MS connectors TRDA-25CON-VWD are available from AutomationDirect.



Motor Performance Data (460 Volt) *																
Part Number	HP	F.L. rpm	F.L. Amps @460V	N.L. Amps @460V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	Max. C hp rpm *	Max. Safe rpm	F.L. Effic. (%)	F.L. Power Factor	Rotor Inertia ($lb·ft^2$)	Ohms/Ph - Equiv. Wye Circuit (460 VAC) (at rated operating temp. in 40° C ambient)				
												R1	R2	X1	X2	XM
Y592	1/4	1755	0.6	0.45	0.75	4.5	3540	5400	70.0	58.0	0.045	26.300	23.000	30.240	14.700	572.000
Y534	1/2	1735	0.8	0.52	1.5	5.8	3510	5400	80.0	72.0	0.056	22.307	17.028	24.123	18.163	532.976
Y535	1	1750	1.5	1.0	3.0	15.0	3505	5400	84.0	75.0	0.110	8.378	5.623	10.707	9.912	278.036
Y536	1	1750	1.5	1.0	3.0	15.0	3505	5400	84.0	75.0	0.110	8.378	5.623	10.707	9.912	278.036
Y537	1	1145	1.9	1.3	4.5	16.0	2260	5400	80.0	62.5	0.140	10.302	8.372	13.793	15.325	193.835
Y538	1-1/2	1755	2.4	1.6	4.5	29.0	3518	5400	85.5	69.0	0.140	4.257	3.538	5.998	5.884	161.009
Y551	2	1750	3.0	1.7	6.0	28.5	3525	5400	85.5	78.0	0.130	3.834	2.897	5.950	5.637	154.800
Y540	2	1160	3.3	2.1	9.0	34.0	2315	5400	82.5	67.5	0.380	3.948	3.436	7.725	12.113	116.900
Y541A	3	1755	4.1	2.3	9.0	49.3	3515	5400	87.5	78.5	0.420	1.578	1.802	2.838	2.091	94.13
Y542	3	1158	4.7	3.0	13.6	49.0	2300	4200	82.5	72.5	0.600	2.469	2.318	6.508	4.125	83.910
Y543A	5	1760	6.7	3.2	14.9	61.5	3520	5400	89.5	79	0.520	1.428	1.05	2.09	3.379	63.334
Y544	5	1165	7.7	4.8	22.5	87.0	2320	4200	84.0	71.0	0.900	1.130	1.250	3.709	2.573	51.972
Y545	7-1/2	1765	10.5	5.5	22.3	95.5	3525	4200	90.2	76.0	0.850	0.699	0.567	1.765	2.260	38.178
Y546	7-1/2	1170	11.0	6.0	34.0	118.0	2325	4200	87.5	73.0	1.200	0.510	0.680	2.846	3.247	42.714
Y547	10	1774	13.5	7.4	29.5	125.0	3540	4200	90.2	76.0	1.300	0.369	0.334	1.423	2.281	34.932
Y548	10	1160	14	7.0	45.5	135.0	2320	4200	89.5	75.5	1.500	0.534	0.693	2.258	2.323	30.530
Y549	15	1765	20	11.0	45.0	170.0	3550	4200	92.4	76.0	1.600	0.134	0.316	1.047	1.569	22.151
Y552	20	1768	26	13.5	59.5	290.0	3560	5400	93.6	80.0	3.100	0.234	0.213	0.746	0.689	18.204
Y553	25	1770	31	14.0	74.2	330.0	3530	3600	93.6	75.0	4.400	0.143	0.160	0.724	0.678	13.965
Y393	30	1772	37	23.5	89.0	375.0	3560	3600	94.5	74.0	5.500	0.113	0.123	0.543	0.557	11.200

**** Maximum Constant hp rpm is for direct coupled loads.***

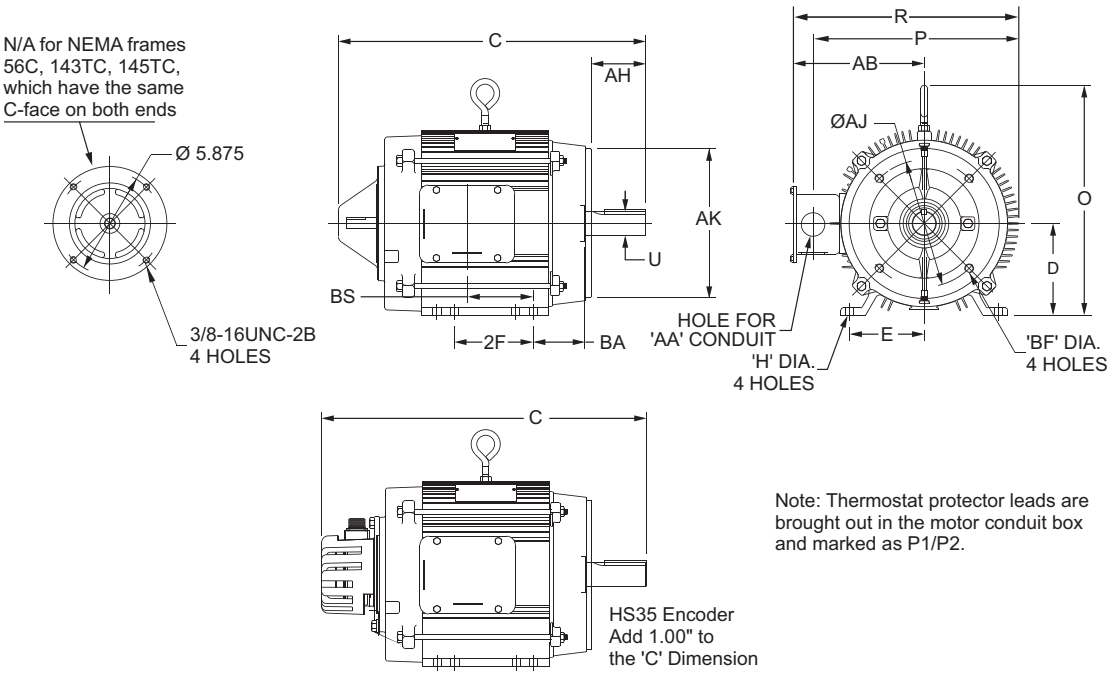
Black Max® Vector Duty Motors

Motor Performance Data (575 Volt) *																
Part Number	HP	F.L. rpm	F.L. Amps @575V	N.L. Amps @575V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	Max. C hp rpm*	Max. Safe rpm	F.L. Effic. (%)	F.L. Power Factor	Rotor Inertia ($lb·ft^2$)	Ohms/Ph - Equiv. Wye Circuit (575 VAC) (at rated operating temp. in 40° C ambient)				
												R1	R2	X1	X2	XM
Y555	1/2	1735	0.8	0.8	1.52	5.8	3510	5400	80.0	72	0.056	22.307	17.028	24.123	18.163	532.976
Y556	1	1750	1.6	0.8	3.0	15.0	3505	5400	84.0	75	0.11	8.378	5.623	10.707	9.912	278.036
Y557	2	1750	2.4	1.6	6.0	28.5	3525	5400	85.5	78	0.13	3.834	2.897	5.950	5.637	154.780
Y558A	3	1755	3.3	1.8	9.0	49.3	3515	5400	87.5	78.5	0.42	1.578	1.802	2.838	2.091	94.13
Y559A	5	1760	5.4	2.6	14.9	61.5	3520	5400	89.5	79	0.52	1.4288	1.0489	2.092	3.379	63.3339
Y560	7-1/2	1765	8.0	4.8	22.3	95.5	3525	4200	90.2	76	0.9	0.699	0.567	1.765	2.260	38.178
Y561	10	1774	11.2	5.6	29.6	125.0	3540	4200	90.2	76	1.3	0.284	0.284	1.420	2.272	34.932
Y562	15	1765	16.0	8.8	44.6	170.0	3550	4200	92.4	76	1.6	0.314	0.316	1.047	1.569	22.151
Y563	20	1770	20.8	11.2	59.5	290.0	3560	3600	93.6	77	3.5	0.220	0.192	0.675	0.684	18.204

** Maximum Constant hp rpm is for direct coupled loads.*

Black Max® Vector Duty Motors

Motor Dimensions



Note: Thermostat protector leads are brought out in the motor conduit box and marked as P1/P2.

Black Max Vector Duty Motors Dimensions [Inches]

Part # 230/460V	Part # 575V	NEMA Frame	Frame Construct	C	D	E	2F	H	O	P	R	U	AA	AB	AH	AJ	AK Max	BA	BF	BS	Key
Y592	-	56C	Rolled Steel	11.88	3.50	2.44	3.00	0.34	6.35	5.69	7.21	.625	None	4.37	2.06	5.875	4.500	2.75	3/8-16	2.84	.19x.19x1.38
Y534	Y555	56C	Rolled Steel	13.48	3.50	2.44	3.00	0.35	6.71	6.42	8.77	.625	None	5.56	2.06	5.875	4.500	2.75	3/8-16	3.75	.19x.19x1.38
Y535	Y556	56C	Rolled Steel	14.98	3.50	2.44	3.00	0.35	6.71	6.42	8.77	.625	None	5.56	2.06	5.875	4.500	2.75	3/8-16	5.25	.19x.19x1.38
Y536	-	143TC	Rolled Steel	15.04	3.50	2.75	4.00	0.35	6.71	6.42	8.46	.875	None	5.25	2.12	5.875	4.500	2.75	3/8-16	4.93	.19x.19x1.38
Y537	-	145TC	Rolled Steel	16.04	3.50	2.75	5.00	0.35	6.71	6.42	8.46	.875	None	5.25	2.12	5.875	4.500	2.75	3/8-16	5.93	.19x.19x1.38
Y538	-	145TC	Rolled Steel	16.04	3.50	2.75	5.00	0.35	6.71	6.42	8.46	.875	None	5.25	2.12	5.875	4.500	2.75	3/8-16	5.93	.19x.19x1.38
Y551	Y557	145TC	Cast Iron	14.68	3.50	2.75	5.00	0.37	7.45	7.98	11.03	.875	None	7.04	2.12	5.875	4.500	2.62	3/8-16	3.81	.19x.19x1.38
Y541A	-	182TC	Aluminum	16.19	4.50	3.75	4.50	0.43	10.44	10.13	11.40	1.1250	1.13	6.49	2.62	7.25	8.500	3.50	1/2-13	3.0	.25x.25x1.75
-	Y558A	182TC	Aluminum	16.19	4.50	3.75	4.50	0.43	10.44	10.13	11.40	1.1250	1.13	6.49	2.62	7.25	8.500	3.50	1/2-13	3.00	.25x.25x1.75
Y540	-	184TC	Aluminum	16.94	4.50	3.75	5.50	0.44	11.22	9.74	12.07	1.125	1.09	7.19	2.62	7.25	8.500	3.50	1/2-13	2.75	.25x.25x1.75
Y543A	-	184TC	Aluminum	17.69	4.50	3.75	5.50	0.43	10.44	10.13	11.40	1.1250	1.13	6.49	2.62	7.25	8.500	3.50	1/2-13	3.75	.25x.25x1.75
-	Y559A	184TC	Aluminum	17.69	4.50	3.75	5.50	0.43	10.44	10.13	11.40	1.1250	1.13	6.49	2.62	7.25	8.500	3.50	1/2-13	3.75	.25x.25x1.75
Y542	-	213TC	Aluminum	19.04	5.22	4.25	5.50	0.47	12.47	10.75	12.78	1.375	1.34	7.39	3.12	7.25	8.500	4.25	1/2-13	4.05	.31x.31x2.38
Y545	Y560	213TC	Aluminum	20.54	5.22	4.25	5.50	0.47	12.47	10.75	12.78	1.375	1.34	7.39	3.12	7.25	8.500	4.23	1/2-13	5.55	.31x.31x2.38
Y544	-	215TC	Aluminum	20.54	5.22	4.25	7.00	0.47	12.47	10.75	12.78	1.375	1.34	7.39	3.12	7.25	8.500	4.23	1/2-13	5.55	.31x.31x2.38
Y547	Y561	215TC	Aluminum	23.04	5.22	4.25	7.00	0.47	12.47	10.75	12.78	1.375	1.34	7.39	3.12	7.25	8.500	4.25	1/2-13	8.05	.31x.31x2.38
Y546	-	254TC	Aluminum	25.37	6.22	5.00	8.25	0.56	13.46	10.75	13.75	1.625	1.75 &2.0	8.38	3.75	7.25	8.500	4.25	1/2-13	8.85	.38x.38x2.88
Y549	Y562	254TC	Aluminum	26.87	6.22	5.00	8.25	0.56	13.46	N/A	13.54	1.625	1.75 &2.0	8.17	3.75	7.25	8.500	4.75	1/2-13	10.40	.38x.38x2.88
Y548	-	256TC	Aluminum	26.87	6.22	5.00	10.00	0.56	13.46	N/A	13.54	1.625	1.75 &2.0	8.17	3.75	7.25	8.500	4.75	1/2-13	10.40	.38x.38x2.88
Y552	Y563	256TC	Cast Iron	27.13	6.22	5.00	10.00	0.56	16.49	14.32	17.84	1.625	1.25	10.68	3.79	7.25	8.500	4.75	1/2-13	4.75	.38x.38x2.88
Y553	-	284TC	Cast Iron	27.08	7.00	5.50	9.50	0.56	15.57	15.89	21.26	1.875	2.00	13.31	4.38	9.0	10.500	4.75	1/2-13	4.75	.50x.50x3.25
Y393	-	286TC	Cast Iron	28.58	7.00	5.50	11.00	0.56	15.57	15.89	21.26	1.875	2.00	13.31	4.38	9.0	10.500	4.75	1/2-13	5.50	.50x.50x3.25

Note: Dimensions are for reference only. For complete dimensional information, refer to Marathon Electric at www.marathonelectric.com.

Blue Max® 2000 Vector Duty Motors

marathon® Motors

Features

- Class H MAX GUARD® insulation system
- Constant torque operation from 0 to base speed on vector drive, including TEFC (on V/Hz drives, TEFC motors are limited to 20:1 constant torque)
- Constant horsepower operation to 1.5 times base RPM
- Continuous duty at 40°C ambient
- Optimized for operation with IGBT inverter (NEMA Design A)
- C-Face foot mount through 100 HP (NEMA frame type TC motors)
- Class F N/C thermostats (one per phase)
- Cast iron frame and brackets
- Utilizes double shielded ball bearings with Exxon Polyrex® EM grease
- "Class B" temperature rise on blower-cooled motors
- F1 standard conduit box location, field reversible to F2
- Available with optional encoder installed on opposite drive end
- Electrically reversible
- UL Recognized, CSA Certified, and CE Mark
- Three year warranty (through Marathon Electric)

Applications

Designed for inverter or vector applications. Typical uses include: material handling, machine tools, conveyors, crane and hoist, metal processing, test stands, pumps, compressors, textile processing, and other industrial machinery installed in dusty or dirty environments where cast iron construction is required.

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Motor Specifications

Part Number *	Price	HP	Base RPM	Volts	Encl.	NEMA Frame	Model No.	F.L. Amps	Weight (lb) *
Y571	$4,413.00	40	1800	230/460	TEFC	324T	324THFPA8028	100 / 50.0	540
Y513	$5,503.00	40	1800	230/460	TEBC	324TC	324THFPA8038	100 / 50.0	620
Y572	$5,460.00	50	1800	230/460	TEFC	326T	326THFS8028	121 / 60.5	540
Y514	$6,308.00	50	1800	230/460	TEBC	326TC	326THFPA8038	120 / 60.0	640
Y573	$7,038.00	60	1800	230/460	TEFC	364T	364THFS8036	147 / 73.5	965
Y515	$7,723.00	60	1800	230/460	TEBC	364TC	364THFS8046	147 / 73.5	1062
Y574	$7,976.00	75	1800	230/460	TEFC	365T	365THFS8036	184 / 92.0	1006
Y516	$9,233.00	75	1800	230/460	TEBC	365TC	365THFS8046	180 / 90.0	1106
Y575	$10,787.00	100	1800	230/460	TEFC	405T	405THFS8036	230 / 115	1308
Y517	$12,887.00	100	1800	230/460	TEBC	405TC	405THFS8046	230 / 115	1429

** Refer to the Motor Shipping Schedule table for shipping information*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through Marathon Electric service centers. See list of service centers on our Web site at www.AutomationDirect.com.

Performance Data (460 Volt)

Part Number	HP	F.L. RPM	F.L. Amps @460V	N.L. Amps @460V	F.L. Torque (lb-ft)	B.D. Torque (lb-ft)	Max. CHP RPM*	Max. Safe RPM	F.L. Effic.	F.L. Power Factor	Rotor Inertia ($lb\text{-}ft^2$)	Ohms/Ph - Equiv. Wye Circuit (460 VAC) (at rated operating temp. in 40° C ambient)				
												R1	R2	X1	X2	XM
Y571	40	1770	50.0	20.0	118.0	320.0	2642	3600	91.7	81.5	5.000	0.082	0.077	0.435	0.592	10.280
Y513	40	1770	50.0	20.0	118.0	320.0	2642	3600	91.7	81.5	5.000	0.082	0.077	0.435	0.592	10.280
Y572	50	1780	60.5	26.5	148.0	400.0	2675	3600	92.4	81.0	10.000	0.063	0.046	0.424	0.596	10.000
Y514	50	1765	60.0	25.0	149.0	525.0	3525	3600	93.0	83.5	5.500	0.088	0.092	0.437	0.358	9.662
Y573	60	1782	73.5	28.0	177.0	525.0	2665	2700	91.7	83.0	14.500	0.063	0.042	0.338	0.455	8.850
Y515	60	1782	74.0	28.0	177.0	525.0	2665	2700	91.7	83.0	14.500	0.063	0.042	0.338	0.455	8.850
Y574	75	1780	92.0	40.0	221.0	740.0	2665	2700	94.1	82.0	16.500	0.047	0.031	0.267	0.313	6.275
Y516	75	1780	90.0	33.0	222.0	645.0	2685	2700	93.0	84.0	16.000	0.054	0.038	0.299	0.420	8.203
Y575	100	1785	115.0	38.0	295.0	900.0	2675	2700	94.5	86.5	27.500	0.034	0.021	0.236	0.219	6.820
Y517	100	1785	115.0	38.0	295.0	900.0	2675	2700	94.5	86.5	27.500	0.034	0.021	0.236	0.219	6.816

** Maximum Constant HP RPM is for direct coupled loads.*

Blue Max® 2000 Vector Duty Motors

Blower Motor Performance Data (for TEBC Blower Cooled Motors)										
Blower Fits Motor Type				Blower Motor Characteristics						
Part Number	Model No.	NEMA Frame	Encl.	HP (60/50Hz)	RPM (60/50Hz)	Volts	Hz	F.L. Amps	Sound Pressure	Watts
Y513	324THFPA8038	324TC	TEBC	1 / 0.75	1735 / 1460	230/460 – 190/380	60 / 50	3.0 / 1.5	40	850
Y513-A775										850
Y514	326THFPA8038	326TC								851
Y514-A775										852
Y515	364THFS8046	364TC						3.7 / 1.85	68	853
Y515-A775										854
Y516	365THFS8046	365TC								855
Y516-A775										856
Y517	405THFS8046	405TC								857
Y517-A775										858

Encoder shaft-mounted to motor*

A Dynapar Model HS35/HSD38 shaft-mounted encoder can be supplied pre-installed on the selected motor, either TEFC or TEBC type, as shown in the table below. The encoder requires a 5–26 VDC power source**, provides a count of 1024 pulses per revolution (PPR) differential line driver output, and includes a 10-pin connector. A mating connector is supplied with TEFC (totally enclosed fan cooled) motor encoders; the customer is responsible for supplying the wiring cable and determining the connections to the equipment being used in the application. The encoder adds 1 inch to the TEFC motor's "C" dimension as shown in the dimensional diagram.

The TEBC (totally enclosed blower cooled) motor encoders have the mating connector pre-wired, installed and ending in a pigtail located inside a conduit box mounted on the motor. (See Figure 2 under the motor dimensional information on the next page.) The customer is responsible for determining the connections to the equipment being used in their application.

** If connecting the motor to a DURApulse AC drive, a GS3-FB Feedback Card is required for the drive.*

*** When used with a GS3-FB equipped DURApulse AC drive, the GS3-FB will supply power to the encoder.*

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Motor Accessories		
Part Number	Price	Description *
A774	$883.00	Encoder kit, replacement, for Blue Max TEFC encoder motors. Dynapar HS35 encoder, 5–26 VDC input, Line Driver output, 1024 pulses per revolution, 1-in bore.
A775	$883.00	Encoder kit, replacement, for Blue Max TEBC encoder motors. Dynapar HSD38 encoder, 5–26 VDC input, Line Driver output, 1024 pulses per revolution. 1-in bore.

** Replacement/spare encoder kit for Blue Max Y5xx-A774 and Y5xx-A775 motors; can also be field installed on Blue Max Y5xx motors; select appropriate encoder kit per motor fan type (TEFC or TEBC).*

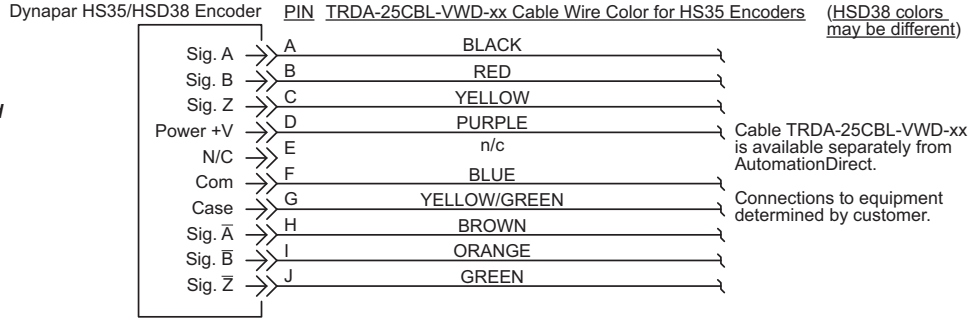
Motor with Pre-installed Shaft-Mounted Encoder					
Part Number	Price	HP	Part Number	Price	HP
Y571-A774	$5,475.00	40 (TEFC)	Y574-A774	$8,963.00	75 (TEFC)
Y513-A775	$6,654.00	40 (TEBC)	Y516-A775	$10,383.00	75 (TEBC)
Y572-A774	$6,446.00	50 (TEFC)	Y575-A774	$11,939.00	100 (TEFC)
Y514-A775	$7,460.00	50 (TEBC)	Y517-A775	$14,038.00	100 (TEBC)
Y573-A774	$8,024.00	60 (TEFC)			
Y515-A775	$8,874.00	60 (TEBC)			

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at www.AutomationDirect.com.

Encoder Connector Pinout

Note: A mating connector is supplied loose for the customer's wiring on encoder equipped TEFC motors and a mating connector pre-wired to a cable and pigtailed in a conduit box on encoder equipped TEBC motors.

Prewired cables TRDA-25CBL-VWD-xx (10, 20, & 30 ft) and replacement MS connectors TRDA-25CON-VWD are available from AutomationDirect.



Blue Max® 2000 Vector Duty Motors

Motor Dimensions

Figure 1 (TEFC)

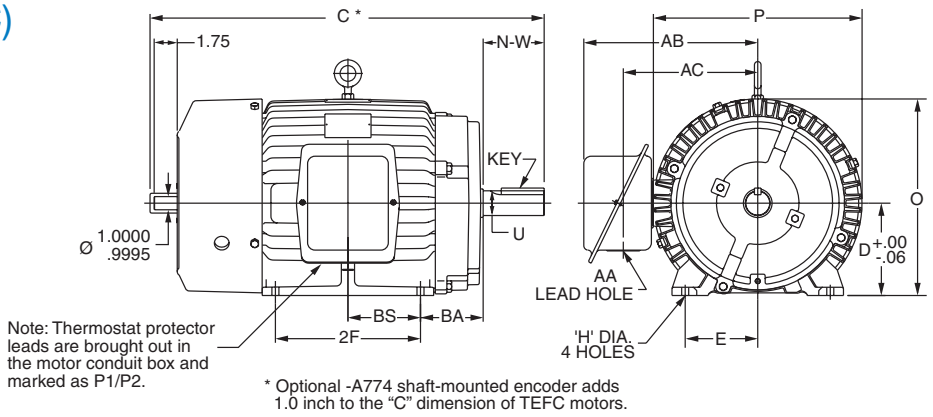
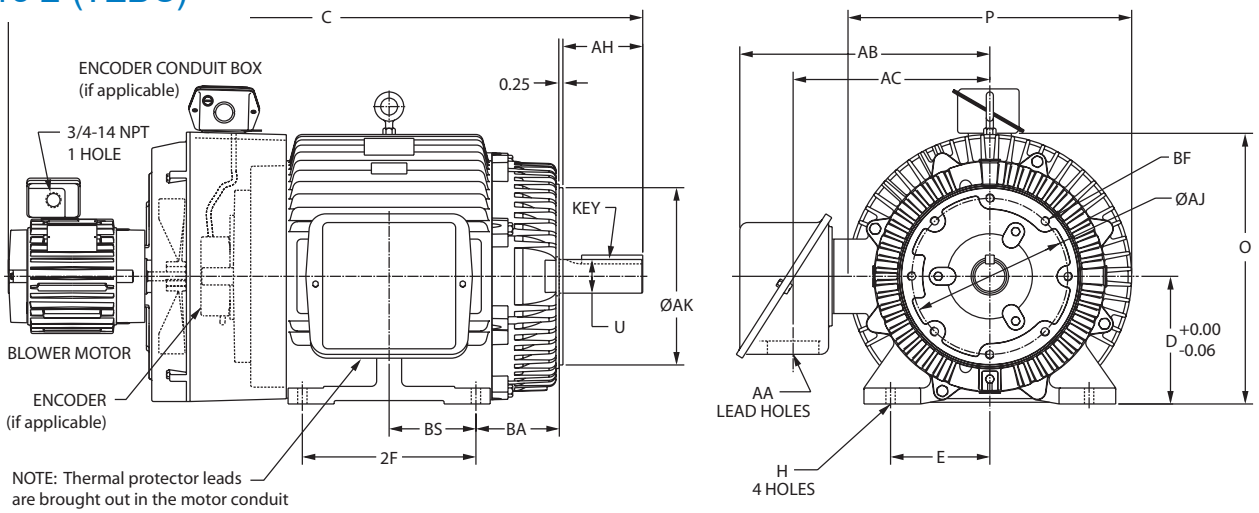


Figure 2 (TEBC)



Motor Dimensions [Inches]																					
Part No.	HP	Fig.	NEMA Frame	C*	D	E	2F	H Min.	O Max.	P Max.	U	AA	AB Max.	AC Max.	AH	AJ	AK	BA	BF	BS	N-W	Key
Y571	40	1*	324T	30.7	8.00	6.25	10.50	0.66	16.6	15.9	2.125	2.0	13.7	10.5	-	-	-	5.25	-	5.3	5.25	.50x.50x3.88
Y513	40	2	324TC	40.4									13.5	10.4	5.00	11.00	12.50		5/8-11		-	
Y572	50	1*	326T	32.4			12.00		17.1	18.3			14.8	11.8	-	-	-		-	6.0	5.25	
Y514	50	2	326TC	41.9					16.6	15.9			13.5	10.4	5.00	11.00	12.50		5/8-11		-	
Y573	60	1*	364T	33.7	9.00	7.00	11.25		19.0	20.0	2.375	3.6	17.9	14.6	-	-	-	5.88	-	5.6	5.88	.62x.62x4.25
Y515	60	2	364TC	42.7					22.6					13.9	5.62	11.00	12.50		5/8-11		-	
Y574	75	1*	365T	34.7			12.25		19.0					14.6	-	-	-		-	6.1	5.88	
Y516	75	2	365TC	43.7					22.6						5.62	11.00	12.50		5/8-11		-	
Y575	100	1*	405T	39.3	10.00	8.00	13.75	0.81	20.9	21.8	2.875		19.8	16.3	-	-	-	6.62	-	6.9	7.25	.75x.75x5.62
Y517	100	2	405TC	49.7					24.1				18.8	14.8	7.00	11.00	12.50		5/8-11		-	

** Optional shaft-mounted encoder adds 1.0 inch to the "C" dimension of TEFC motors # Y57x-A774.*

Note: Dimensions are for reference only. For complete dimensional information, refer to Marathon Electric at www.marathonelectric.com.

NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

marathon® Motors

Features

- Meets or exceeds NEMA Premium efficiencies
- Inverter duty
- Suitable for use with ALS (across-the-line starting) or IGBT (AC drive)
- 10:1 variable torque and constant torque on VFD with 1.0 service factor
- 1.15 service factor on sinewave; 1.0 service factor on IGBT power
- Class F insulation
- Continuous duty at 40° C ambient
- Rolled steel construction with C-face rigid base mounting
- F3 conduit box location
- Utilizes ball bearings
- Electrically reversible
- UL Recognized, CSA Certified, and CE Mark
- Three-year warranty (through Marathon Electric)

Applications

Typical uses include gear reducers, pumps, machine tools, and other direct-coupled equipment installed in damp, dusty, or dirty environments where long life and ultra-high efficiency is desired.

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

208–230/460V Motor Specifications

Part Number*	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*
E2000	$578.00	1	3600	208–230 / 460	TEFC	56C	056T34F5940	3.0–2.8 / 1.4	28
E2001A	$499.00		1800			143TC	143TTFR16053	3.3–3.3 / 1.65	48
E2002	$558.00		1200			145TC	145TTFR6078	3.8–3.8 / 1.9	42
E2003	$537.00	1-1/2	3600			143TC	143TTFR5582	4.4–4.0 / 2.0	39
E2004A	$542.00		1800			145TC	145TTFR16331	4.7–4.6 / 2.3	50
E2005 †	$742.00		1200			182TC	182TTFW6076	5.6–5.2 / 2.6	77
E2007A	$594.00	2	1800			145TC	145TTFR16329	6.2–6.0 / 3.0	65
E2008 †	$851.00		1200			184TC	184TTFW6076	7.35–6.4 / 3.2	94
E2009 †	$783.00	3	3600			182TC	182TTFW6001	8.4–7.8 / 3.9	63
E2010 †	$693.00		1800				182TTFW6026	8.4–7.8 / 3.9	87
E2011A	$910.00		1200			213TC	213TTFWD6076	9.2–8.8 / 4.4	117

** Refer to the Motor Shipping Schedule table for shipping information.*
Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.

† These specifications are for the Marathon motor currently being sold. Marathon manufactured a previous version of this Part Number (that had a different model #), and that version had some different specifications. For detailed information on the previous motor, please refer to the "Previous Marathon Model Numbers" table on the next page, or click on the previous motor's specification at www.AutomationDirect.com/Retired-Products.

Notes: Please review the AutomationDirect Terms & Conditions for warranty and service on this product.
Warranty service can be arranged through numerous Marathon Electric service centers.
See list of service centers on our Web site at www.automationdirect.com.

(table continued next page)

NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

Continued from previous page

208–230/460V Motor Specifications

Part Number*	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*
E2012 †	$909.00	5	3600	208-230 / 460	TEFC	184TC	184TTFW6001	12 / 6	86
E2013 †	$821.00		1800				184TTFW6026	12.6 / 6.3	87
E2014A	$1,171.00		1200			215TC	215TTFWD6076	14.8-17 / 7	150
E2015A	$980.00	7-1/2	3600	208-230 / 460		213TC	213TTFWD6001	19.7-18.6 / 9.3	103
E2016B	$995.00		1800				213TTFWD16039	20.8-19.6 / 9.8	124
E2018A	$1,042.00	10	3600	230 / 460		215TC	215TTFWD6001	23.6 / 11.8	133
E2019B	$1,134.00		1800	208-230 / 460			215TTFWD16047	14-26.4 / 13.2	170

** Refer to the Motor Shipping Schedule table for shipping information.*
Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.

† These specifications are for the Marathon motor currently being sold. Marathon manufactured a previous version of this Part Number (that had a different model #), and that version had some different specifications. For detailed information on the previous motor, please refer to the "Previous Marathon Model Numbers" table on the next page, or click on the previous motor's specification at www.AutomationDirect.com/Retired-Products.

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See list of service centers on our Web site at www.automationdirect.com.

NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

Performance Data

Performance Data (460 Volt)															
Part Number	HP	NEMA Design	F.L. RPM	Min RPM	Current (Amps)			Torque (lb·ft)			Max CHP RPM*	Max Safe RPM	F.L. Effic. (%)	F.L. Power Factor	Rotor Inertia ($lb{\cdot}ft^2$)
					No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break-down					
E2000	1	B	3490	349	0.7	1.4	10	1.5	3.6	5.1	5235	7200	80	84	0.04
E2001A		A	1765	177	1.2	1.7	17	3.0	13.7	16.8	1765	4000	85.5	68	0.12
E2002		B	1170	117	1.3	1.9	10	4.5	13.5	15.8	1755	5400	82.5	60	0.14
E2003	1-1/2		3490	349	1.0	2.0	21	2.3	8.5	11.2	5235	7200	84.0	82	0.06
E2004A			1755	176	1.5	2.3	24	4.5	21.2	26	1755	4000	86.5	71	0.14
E2005 †			1175	118	1.3	2.6	17	6.8	13.4	24.4	1762.5	5400	87.5	71.5	0.38
E2007A	2		1760	176	1.9	3.0	30.5	6.0	24.5	33.2	1760	4000	86.5	71	0.14
E2008 †			1170	117	1.9	3.2	20.5	9.0	16.8	30.2	1755	4000	88.5	67	0.162
E2009 †	3		3510	351	1.8	3.9	33	4.5	11.0	18.2	5265	7200	86.5	83	0.23
E2010 †			1760	176	1.9	3.9	33.5	8.9	22.5	36	2640	4000	89.5	80.5	0.38
E2011			1170	117	2.5	4.4	32	13.5	34	47.5	1755	4200	89.5	70	0.80
E2012 †	5		3495	350	1.7	6.0	46	7.5	16	26	5243	5400	88.5	89.5	0.30
E2013 †			1760	176	2.4	6.3	49	15.0	30.1	50.2	2640	4000	89.5	83	0.49
E2014A			1170	117	3.7	7.0	46	22.5	45.6	68.2	1755	4000	89.5	75	1.00
E2015	7-1/2		3540	354	3.0	8.9	64	11.1	24	38	5310	5400	90.2	87	0.55
E2016A			1765	177	4.7	9.7	63.5	22.0	52	72	1765	4000	91.7	80	0.85
E2016B			1765	177	4.9	9.8	67.5	22.3	52.9	75	1765	4000	91.7	78.3	0.85
E2018	10		3535	354	3.5	11.8	80	14.9	30	46	5302.5	5400	91.7	87	0.65
R2018A			3525	353	4.4	11.8	79.5	14.9	27.7	47.1	4000	4000	90.2	87.9	0.55
E2019B			1760	176	7.2	13.2	81	29.9	76	90	1760	4000	91.7	77.5	1.1

** Maximum Constant HP RPM is for direct coupled loads.*

† These specifications are for the Marathon motor currently being sold. Marathon manufactured a previous version of this Part Number (that had a different model #), and that version had some different specifications. For detailed information on the previous motor, please refer to the "Previous Marathon Model Numbers" table below, or click on the previous motor's specification at www.AutomationDirect.com/Retired-Products.

NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

Previous Marathon Model Numbers

Previous Marathon Model Numbers				
Part Number	***HP***	***Previous Model #***	***Current Model #***	***Date of Change-over***
E2001	1	143TTFR5642	n/a	09/2014
E2004	1-1/2	145TTFR6033	n/a	09/2014
E2005	1-1/2	182TTFR6076	182TTFW6076	09/2011
E2007	2	145TTFR6035	n/a	09/2014
E2008	2	184TTFR6076	184TTFW6076AA	09/2011
E2009	3	182TTFR6001	182TTFW6001AA	09/2011
E2010	3	182TTFW6026	182TTFW6026AA	09/2011
E2012	5	184TTFW6001	184TTFW6001AA	09/2011
E2013	5	184TTFW6026	184TTFW6026AA	09/2011
E2016	7-1/2	213TTFW6026	n/a	09/2014
E2019	10	215TTFW6026	n/a	09/2014

Visit www.AutomationDirect.com/Retired-Products for detailed specifications of previous models. (The model # appears on the motor nameplate.)

NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

Dimensions (units = inches)

See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 1 - Frame 56C – Part #: E2000

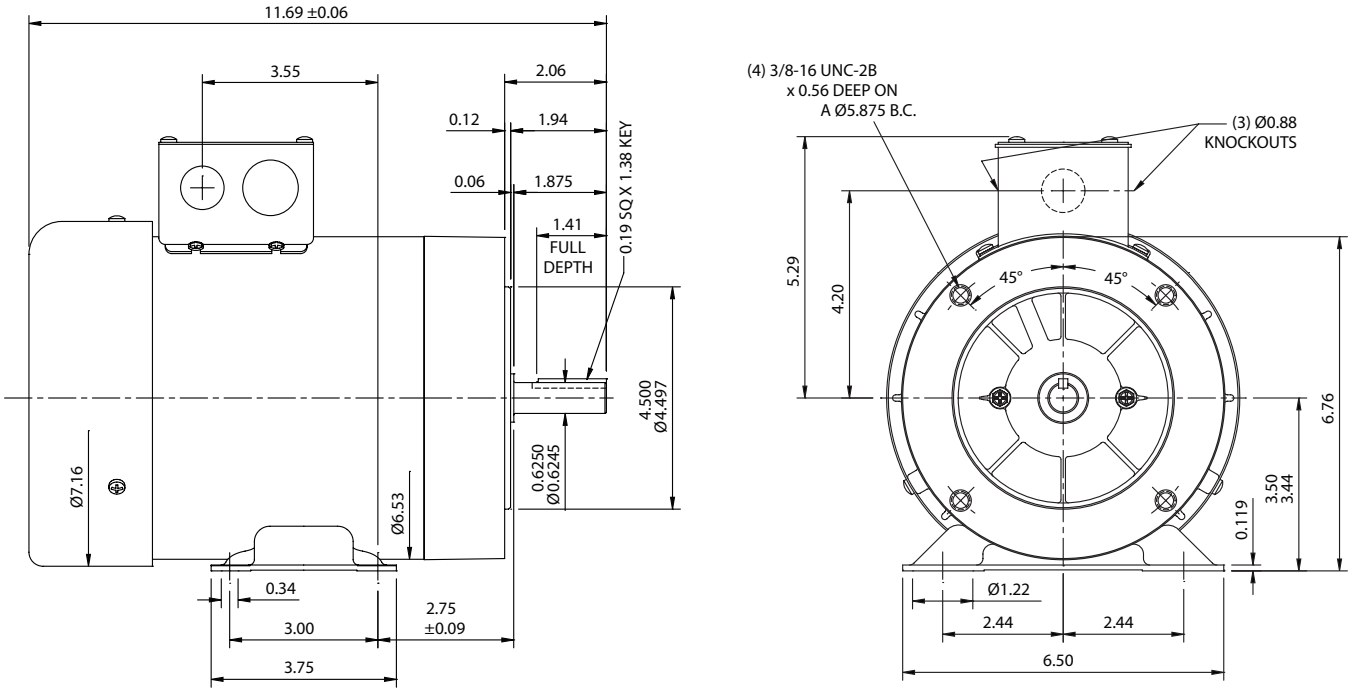
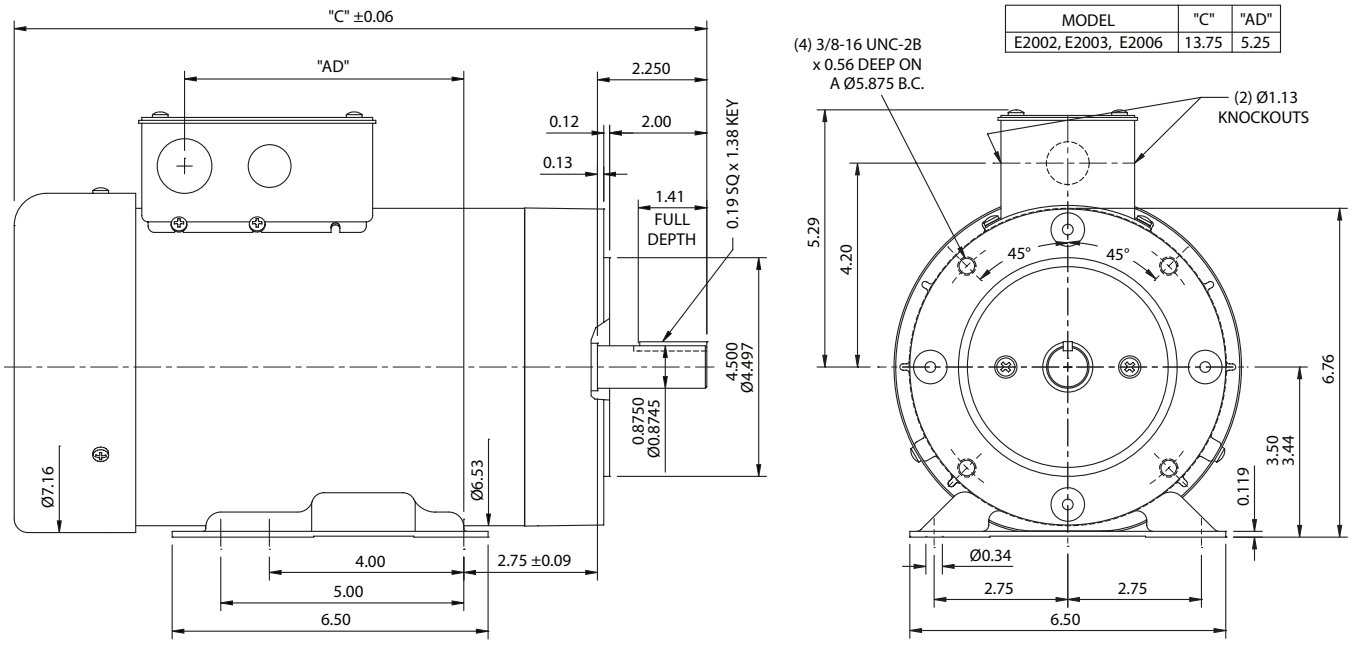


Figure 2 - Frame 143/5TC – Part #: E2002, E2003

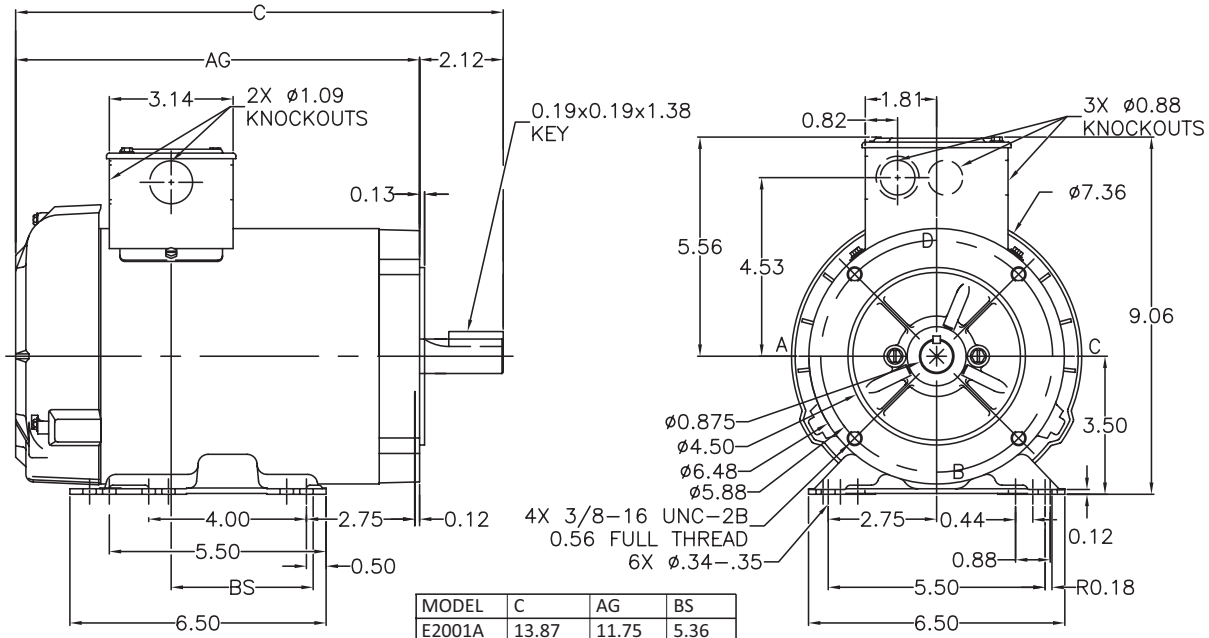


NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

Dimensions (units = inches)

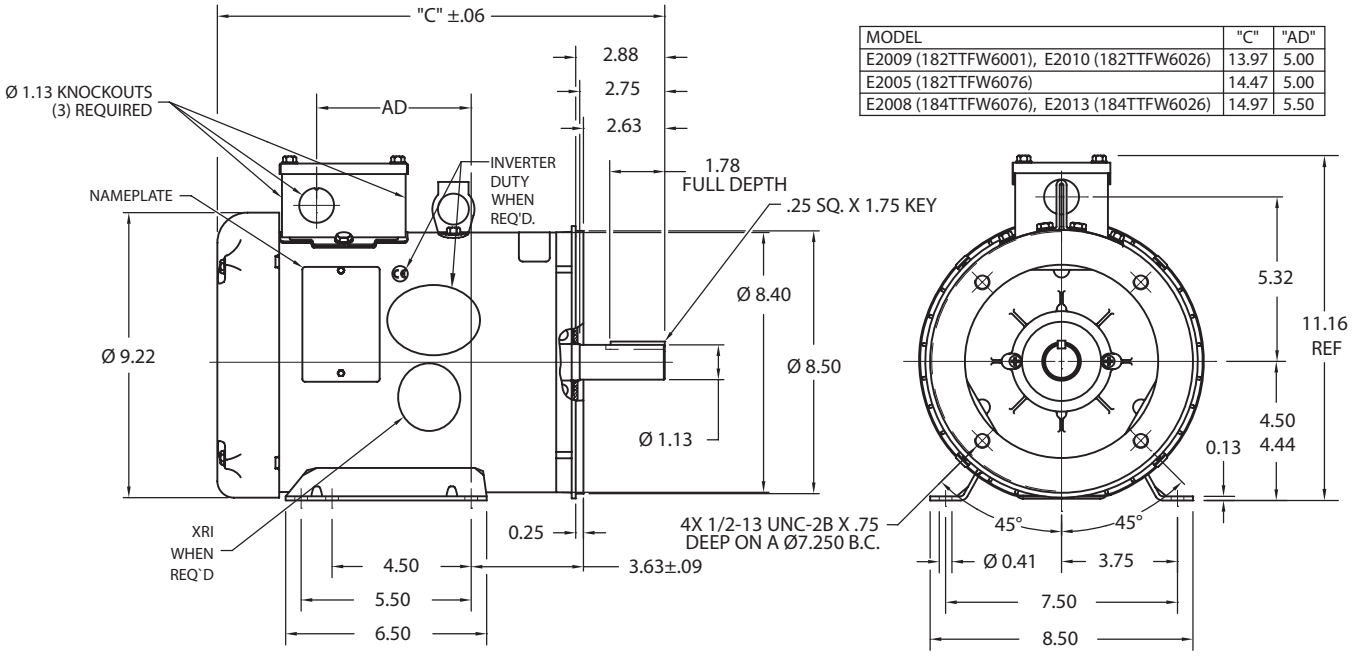
See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 3 - Frame 143/5TC – Part #: E2001A, E2004A, E2007A



MODEL	C	AG	BS
E2001A	13.87	11.75	5.36
E2004A	14.37	12.25	5.86
E2007A	14.87	12.75	6.36

Figure 4 - Frame 182/4TC – Part #: E2005, E2008, E2009, E2010, E2013



MODEL	"C"	"AD"
E2009 (182TTFW6001), E2010 (182TTFW6026)	13.97	5.00
E2005 (182TTFW6076)	14.47	5.00
E2008 (184TTFW6076), E2013 (184TTFW6026)	14.97	5.50

NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

Dimensions (units = inches)

See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 5 - Frame 184TC – Part #: E2012

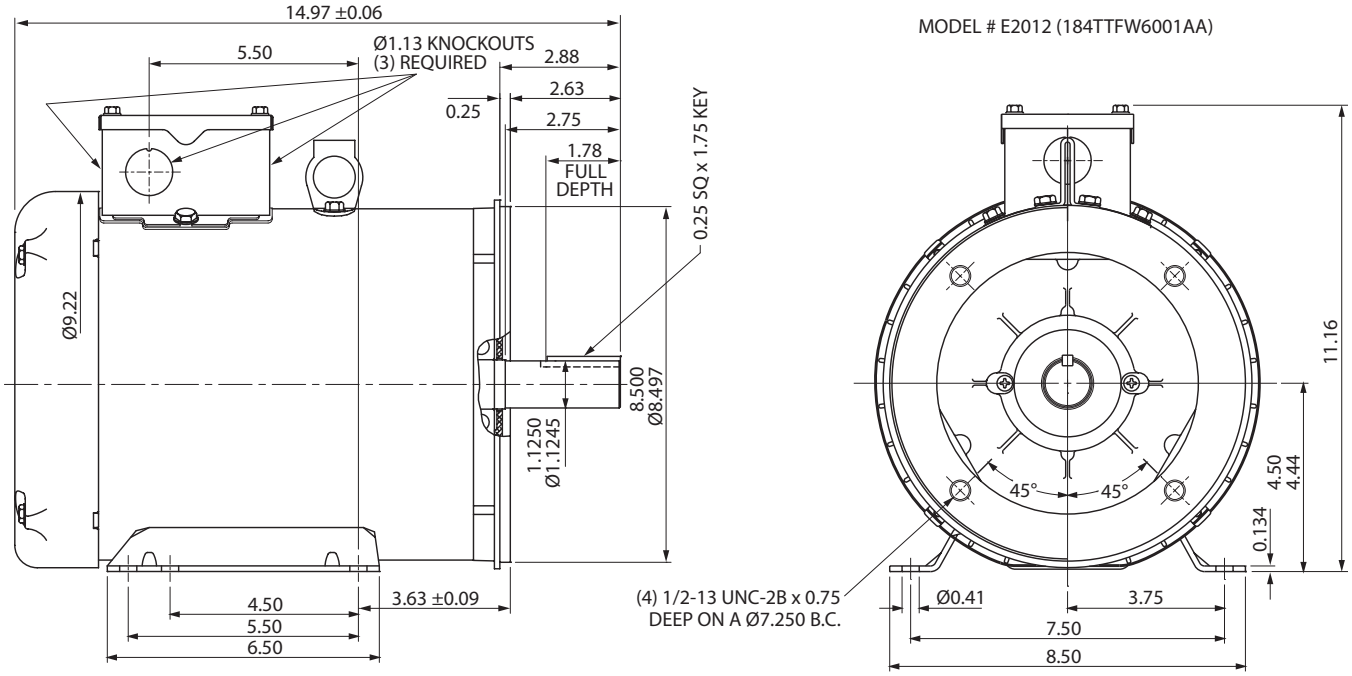
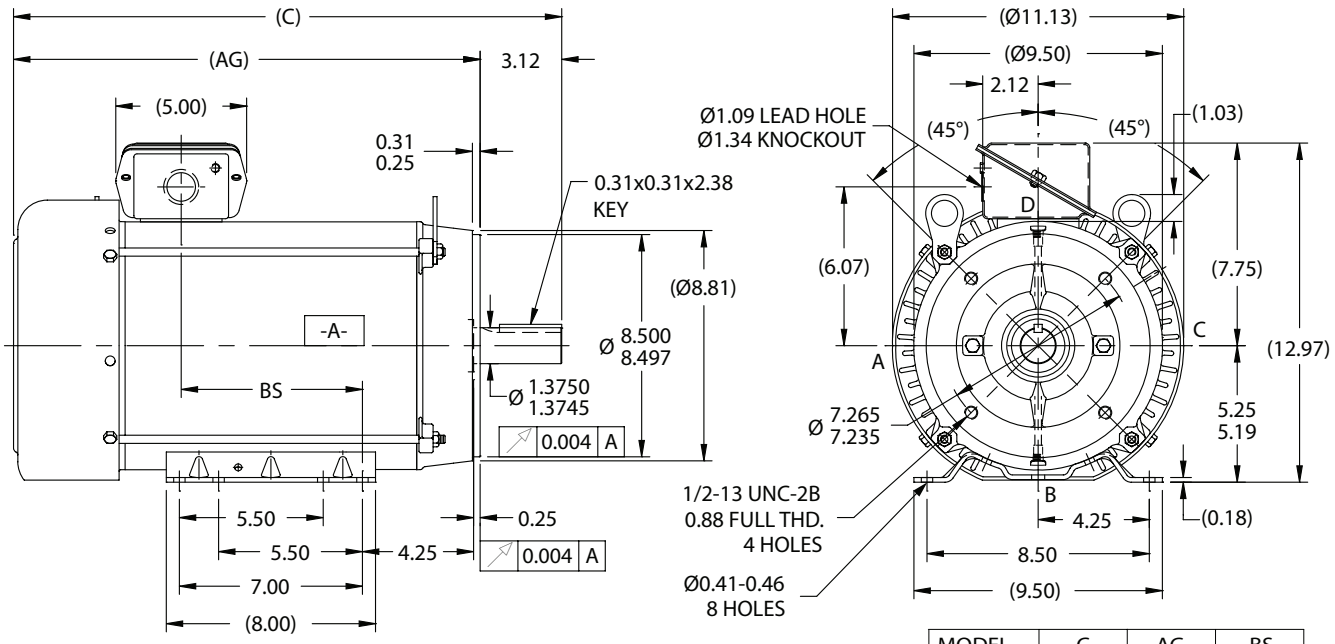


Figure 6 - Frame 213/5TC – Part #: E2011, E2015, E2016A, E2018



MODEL	C	AG	BS
E2014	20.97	17.85	6.93
E2019A	22.22	19.10	8.18

Blue Chip XRI® – Ultra High Efficiency Motors

**** 230/460V and 575V Motors Available ****

marathon® Motors

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Features

- Meets NEMA premium efficiencies
- Inverter duty
- 10:1 variable torque, 20:1 constant torque on VFD with 1.0 service factor
- Class F insulation
- Continuous duty at 40° C ambient
- Cast iron frame construction with rigid base mounting
- F1 standard conduit box location, non-reversible
- 1.15 service factor
- Shaft slinger
- Utilizes double shielded ball bearings
- Exxon Polyrex® EM bearing grease
- Electrically reversible
- UL Recognized, CSA Certified, and CE Mark
- Three year warranty (through Marathon Electric)

Applications

Typical uses include material handling, machine tools, fans, conveyors, cranes and hoists, metal processing, test stands, pumps, compressors, textile processing, and other industrial machinery installed in dusty or dirty environments.

230/460V Motor Specifications

Part Number *	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	N.P. F.L. Amps	Weight (lb) *
E207	$2,324.00	25	1800	230/460	TEFC	284T	284TTFNA6026	62 / 31	495
E208	$2,701.00	30	1800	230/460	TEFC	286T	286TTFNA6026	73 / 36.5	423
E209	$3,587.00	40	1800	230/460	TEFC	324T	324TTFS6026	95 / 47.5	675
E210	$4,405.00	50	1800	230/460	TEFC	326T	326TTFS6026	120 / 60	745
E212	$8,010.00	75	1800	230/460	TEFC	365T	365TTFS6036	172 / 86	1125

** Refer to the Motor Shipping Schedule table for shipping information.*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at www.automationdirect.com.

575V Motor Specifications

Part Number *	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	N.P. F.L. Amps	Weight (lb) *
E307	$1,566.00	15	1800	575	TEFC	254T	254TTFNA6030	15.0	326
E308	$1,950.00	20	1800	575	TEFC	256T	256TTFNA6030	19.3	368
E309	$2,324.00	25	1800	575	TEFC	284T	284TTFNA6030	24.8	565
E310	$2,701.00	30	1800	575	TEFC	286T	286TTFNA6030	29.2	514
E311	$3,587.00	40	1800	575	TEFC	324T	324TTFS6030	38.8	675
E313	$6,319.00	60	1800	575	TEFC	364T	364TTFS6040	55.2	1025
E315	$8,010.00	75	1800	575	TEFC	365T	365TTFS6040	68.8	1125
E314	$9,898.00	100	1800	575	TEFC	405T	405TTFS6040	90.4	1400

** Refer to the Motor Shipping Schedule table for shipping information.*

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at www.automationdirect.com.

Blue Chip XRI® – Ultra High Efficiency Motors

Performance Data

Motor Performance Data (460 Volt)														
Part Number	HP	F.L. rpm	F.L. Amps @460V	N.L. Amps @460V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	F.L. Effic. (%)	F.L. Power Factor	Rotor Inertia (lb·ft²)	Ohms/Ph - Equiv. Wye Circuit (460 VAC) (at rated operating temp. in 40° C ambient)				
										R1	R2	X1	X2	XM
E207	25	1775	31	14	74	215	93.6	81	4.2	0.150	0.154	0.852	1.066	20.064
E208	30	1773	36	15	89	245	94.1	82	4.5	0.125	0.136	0.724	0.937	17.785
E209	40	1780	48	18	118	304	94.1	83	8.5	0.082	0.066	0.597	0.798	13.514
E210	50	1775	60	24	148	340	94.5	82	9.2	0.068	0.062	0.483	0.648	11.068
E212	75	1780	86	28	221	574	95.4	86	18	0.048	0.037	0.319	0.386	9.238

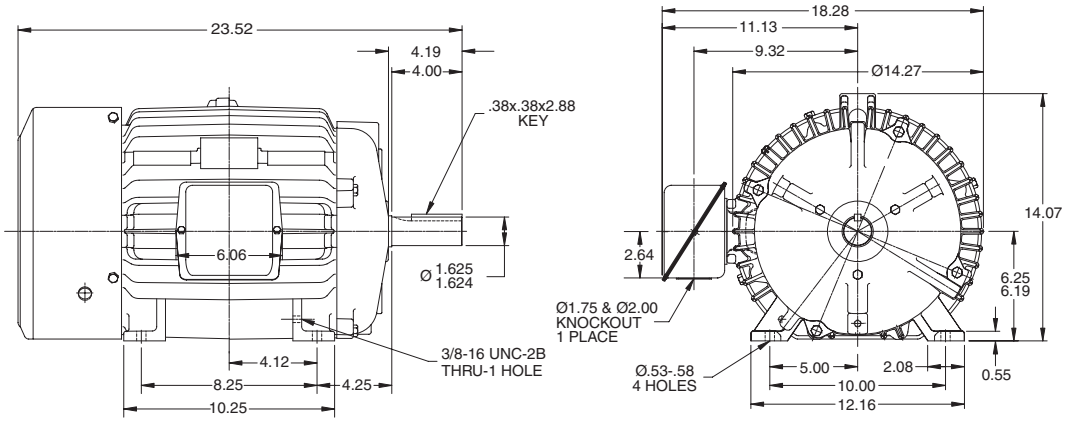
Motor Performance Data (575 Volt)														
Part Number	HP	F.L. rpm	F.L. Amps @460V	N.L. Amps @460V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	F.L. Effic. (%)	F.L. Power Factor	Rotor Inertia (lb·ft²)	Ohms/Ph - Equiv. Wye Circuit (460 VAC) (at rated operating temp. in 40° C ambient)				
										R1	R2	X1	X2	XM
E307	15	1775	15.2	6.4	44.4	126.4	92.4	81	2.1	0.376	0.238	1.351	1.777	32.508
E308	20	1775	19.2	6.4	59.2	144.6	93.0	84	3.0	0.267	0.207	0.990	1.491	28.400
E309	25	1775	24.8	11.2	74	215	93.6	81	4.2	0.150	0.154	0.852	1.066	20.064
E310	30	1773	28.8	12.0	89	245	94.1	82	4.6	0.125	0.136	0.724	0.937	17.785
E311	40	1775	38.4	13.6	118	304	94.1	82	8.2	0.091	0.072	0.627	0.830	14.747
E313	60	1780	55.2	17.6	177	449	95.0	86	16.0	0.065	0.047	0.412	0.473	11.447
E315	75	1780	68.8	22.4	221	574	95.4	86	18.5	0.058	0.037	0.320	0.386	9.242
E314	100	1780	90.4	22.4	295	773	95.4	87	27.5	0.034	0.028	0.307	0.287	8.920

Blue Chip XRI®– Ultra High Efficiency Motors

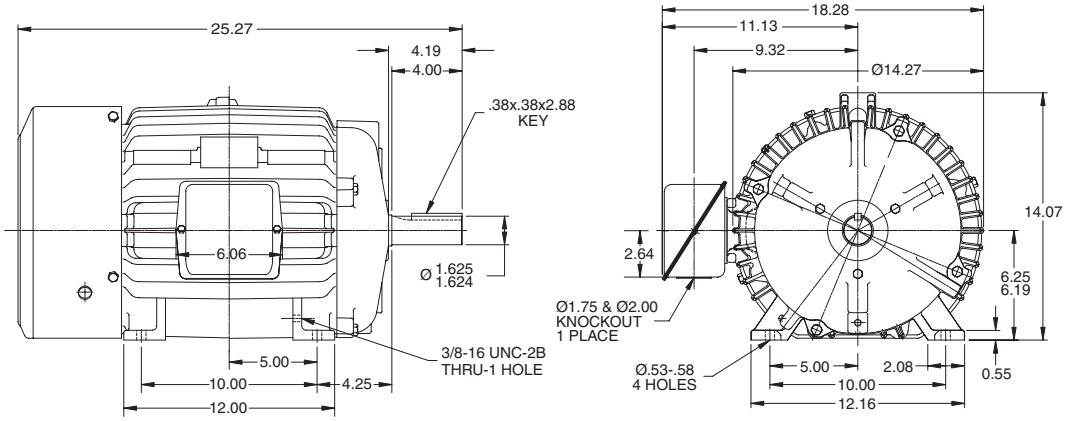
Dimensions (units = inches)

See our website: www.AutomationDirect.com for complete engineering drawings.

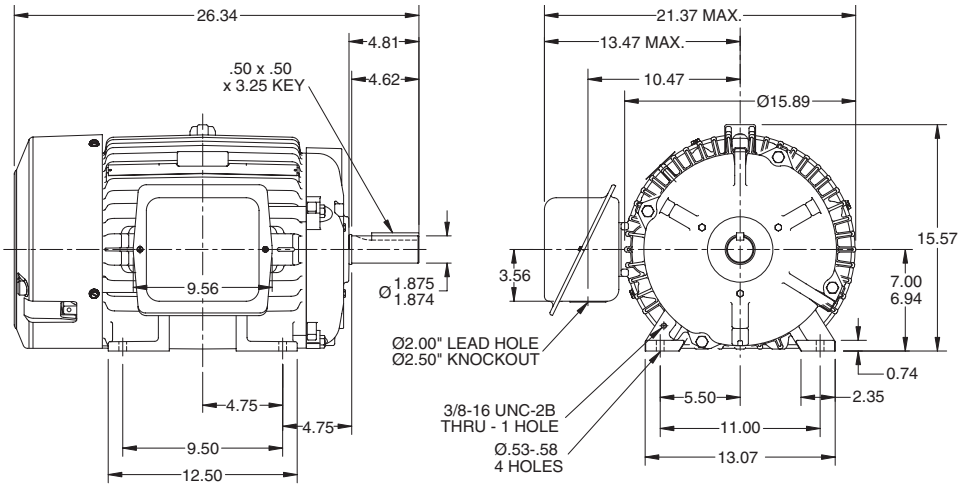
254T frame - part number E307



256T frame - part number E308



284T frame - part number E207 & E309

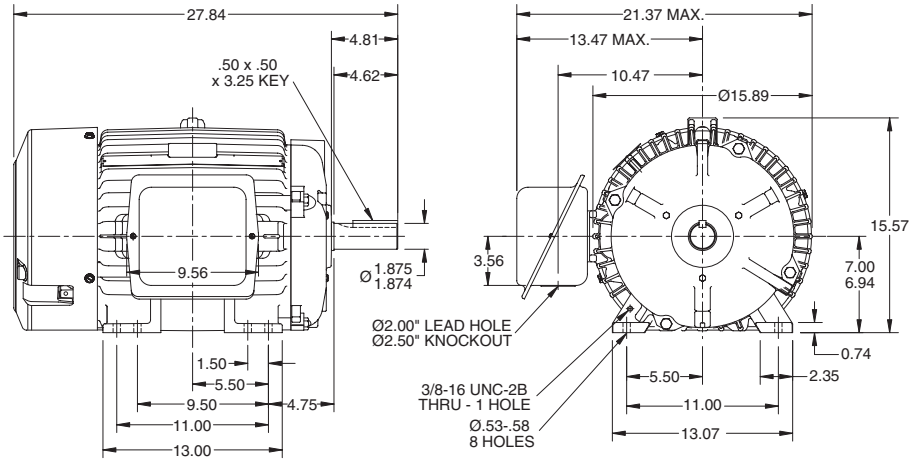


Blue Chip XRI® – Ultra High Efficiency Motors

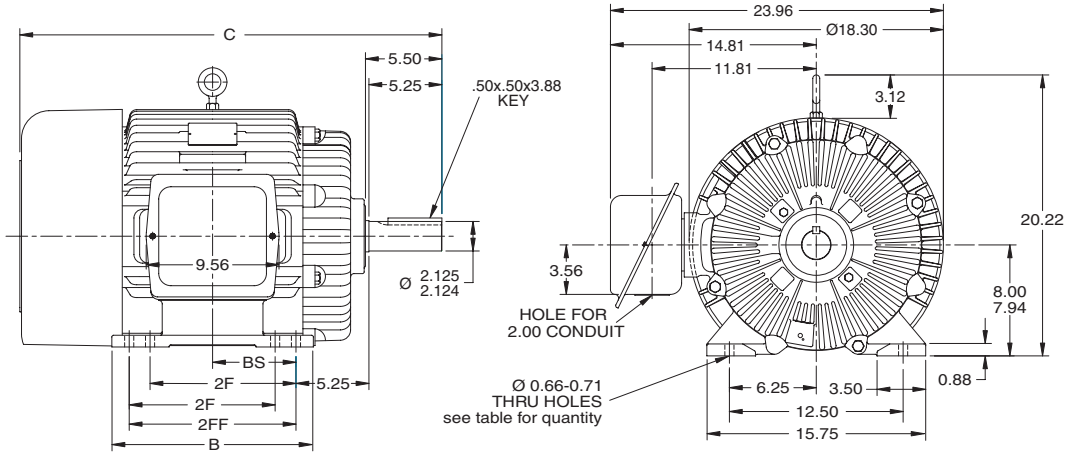
Dimensions (units = inches)

See our website: www.AutomationDirect.com for complete engineering drawings.

286T frame - part number E208 & E310

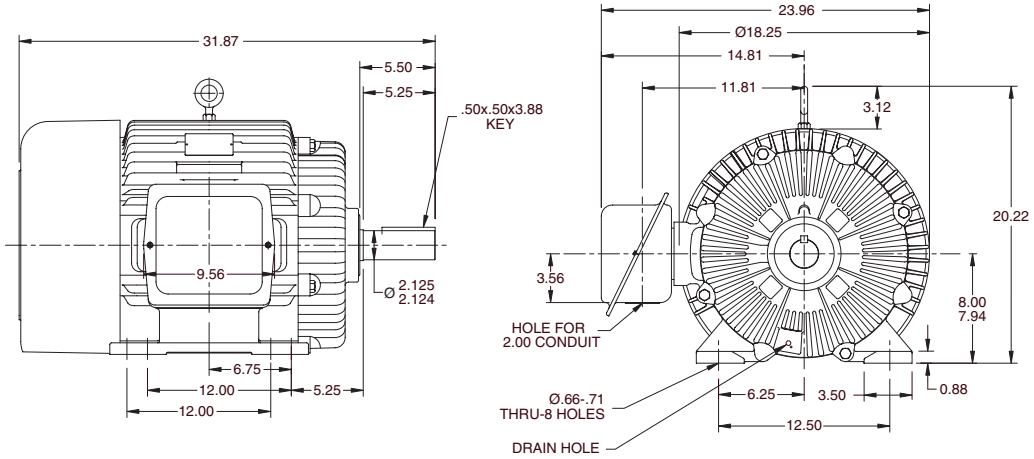


324T frame - part number E209 & E311



MOTOR	B	C	2F	2FF	BS	FOOT HOLE QTY
E209	14.50	30.37	10.50	12.00	6.00	8
E311	13.00	28.87	N/A	10.50	5.25	4

326T frame - part number E210

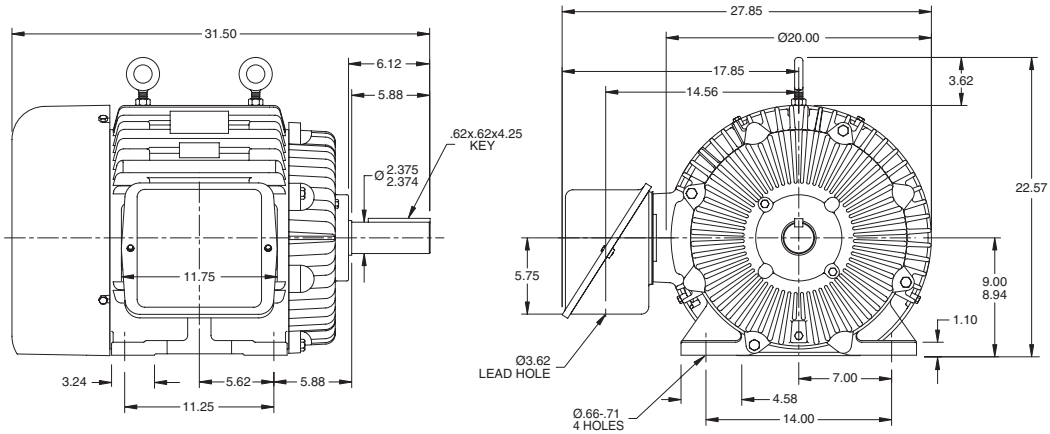


Blue Chip XRI®– Ultra High Efficiency Motors

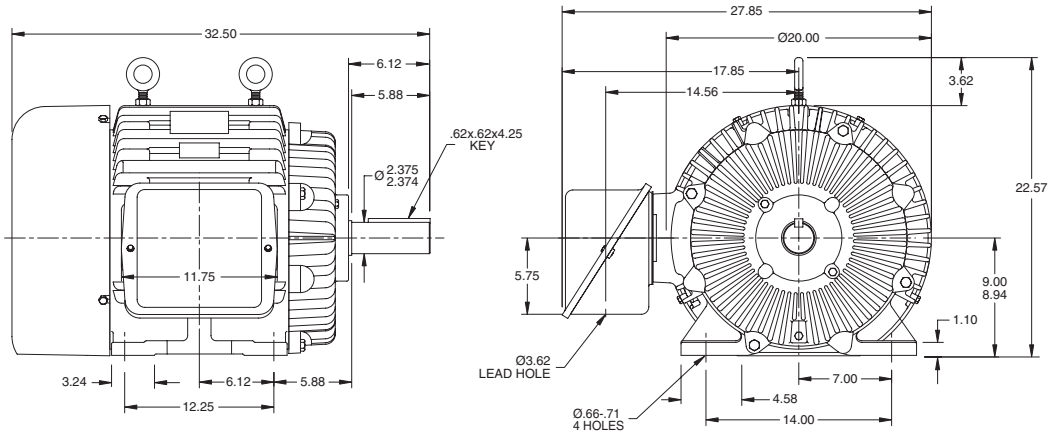
Dimensions (units = inches)

See our website: www.AutomationDirect.com for complete engineering drawings.

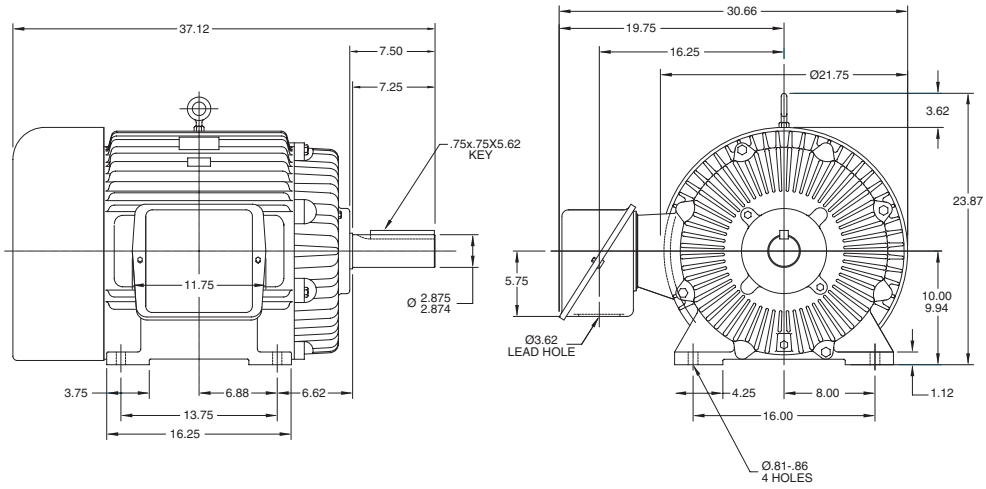
364T frame - part number E313



365T frame - part number E212 & E315



405T frame - part number E314



XRI® 4N1 General Purpose, 3-Phase, Totally Enclosed Motors

C-Face Footed (Rigid and Removable Base)

marathon® Motors

Features

- Meets or exceeds all NEMA Premium efficiencies, except as noted
- Ball bearings, mechanically locked on shaft end
- 1.15 Service factor, except as noted
- Class F insulation, except as noted
- Rated 60/50 hertz, 190/380 or 380 volt, at next lower horsepower, as noted
- Rolled steel 56-145T frame motors except brake kits. See Accessories section.
- UL recognized, CSA certified and CE mark

4N1 Motor features include:

- CR200 corona-resistant magnet wire
- Bolt-on, removable rigid base
- Suitable for horizontal and vertical mounting
- Will accept drip cover kits (available from Marathon)

Applications

Typical uses include machine tools, conveyors, packaging machines, batching machines, food and beverage equipment, pumps and fans.

Motor Shipping Schedule *		
*Same or one day **	*Up to 7 days*	*Up to 10 days*

Color indicates shipping lead time in business days. Check stock status online.

** Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.*

Motor Specifications – XRI 4N1 General Purpose, 3-Phase, Totally Enclosed Motors

Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*	Footnotes
D390	$172.00	1/3	3600	208-230 / 460	TENV	B	56C	056T34T5303	1.6-1.8 / 0.9	20	4N1 Motor NOT NEMA Premium
G580	$214.00	1/3	1800	208-230 / 460				056T17T5305	1.8-1.6 / 0.8	20	
K703	$232.00	1/3	1800	575				056T17T5316	0.64	20	
D391	$195.00	1/2	3600	208-230 / 460	TEFC			056T34F5301	2-2.2/1.1	22	
G581	$257.00	1/2	1800	208-230 / 460				056T17F5321	2.3-2.4/1.2	24	
K705	$257.00	1/2	1800	575				056T17F5336	0.95	23	
D392	$209.00	3/4	3600	208-230 / 460				056T34F5302	3-3.2 / 1.6	23	
G582	$281.00	3/4	1800	208-230 / 460				056T17F5322	2.9-3 / 1.5	40	
K707	$287.00	3/4	1800	575				056T17F5337	1.2	24	

** Refer to the Motor Shipping Schedule table for shipping information.*
Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.

Footnotes: The following part numbers are 4N1 motors; they are NOT NEMA Premium: D390, G580, K703, D391, G581, K705, D392, G582, and K707.

Notes: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

(table continued next page)

XRI® 4N1 General Purpose, 3-Phase, Totally Enclosed Motors

C-Face Footed (Rigid and Removable Base)

(table continued from previous page)

Motor Specifications – XRI 4N1 General Purpose, 3-Phase, Totally Enclosed Motors

Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*	Footnotes
D393A	$322.00	1	3600	230 / 460**	TEFC	B	56C	056T34F99008	3.0-1.5	26	**Motors rated 230/460 are suitable for 208V @ 60Hz 4N1 Motor
K708A	$312.00	1	3600	575		B	56C	056T34F99010	1.2	24	
G583A	$322.00	1	1800	230 / 460**			56HC	056T17F15639	3.3 / 1.65	42	
K709A	$355.00	1	1800	575			56HC	056T17F15642	1.3	42	
D394A	$416.00	1-1/2	3600	230 / 460			56C	056T34F99017	3.15	48	
K721A	$373.00	1-1/2	3600	575			56C	056T34F99020	1.6	37	
G584A	$419.00	1-1/2	1800	230 / 460**			56HC	056T17F15641	4.6 / 2.3	45	
K722A	$358.00	1-1/2	1800	575			56HC	056T17F15645	1.85	45	
D395A	$472.00	2	3600	230 / 460**			56HC	056T34F99012	5 / 2.5	45	
G585A	$418.00	2	1800	230 / 460**			56HC	056T17F15640	6.0/3.0	48	
K724A	$393.00	2	1800	575			56HC	056T17F15644	2.4	48	
D396A	$279.00	3	3600	230 / 460**			56HC	056T34F99014	7.6 / 3.8	52	
K725A	$455.00	3	3600	575		A	56HC	056T34F15593	3.05	46	
G590A	$623.00	3	1800	230 / 460		B	182TC	182TTFW16045	7.8 / 3.9	83	
C382B	$630.00	3	1800	230 / 460**			182TC	182TTFW16030	7.8 / 3.9	75	
C383B	$679.00	3	1800	575			182TC	182TTFW16027	3.2	75	
C387B	$737.00	5	1800	575			184TC	184TTFW16029	5.1	87	
C389B	$808.00	7-1/2	3600	208-230 / 460			213TCV	213TTFW16008	19.7-18.6/9.3	100	
C390B	$829.00	7-1/2	1800	208-230 / 460			213TC	213TTFW16035	20.8-19.6/9.8	146	
C391B	$829.00	7-1/2	1800	575			213TCV	213TTFW16036	7.9	157	
C392B	$861.00	10	3600	208-230 / 460			215TC	215TTFW16005	25.9-23.6 / 11.8	139	

** Refer to the Motor Shipping Schedule table for shipping information.*
Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.

Footnotes: The following part numbers are 4N1 motors; they are NOT NEMA Premium: D390, G580, K703, D391, G581, K705, D392, G582, and K707.

Notes: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at www.automationdirect.com.

XRI® 4N1 General Purpose, 3-Phase, Totally Enclosed Motors

C-Face Footed (Rigid and Removable Base)

Performance Data - XRI 4N1 General Purpose, 3-Phase, Totally Enclosed Motors											
Part Number	HP	F.L. RPM	Current (Amps)			Torque (lb·ft)			F.L. Effic. %	F.L. Power Factor	Rotor Inertia (lb·ft²)
			No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break-down			
D390	1/3	3450	0.7	0.9	8.0	0.5	2.5	3.8	65	56	0.022
G580	1/3	1725	0.5	0.8	5.0	1.0	4.3	5.3	68	61.9	0.04
K703	1/3	1725	0.4	0.64	4.0	1.0	4.3	5.3	68	61.9	0.04
D391	1/2	3450	0.7	1.1	8.0	0.76	3.0	3.8	66	69.7	0.02
G581	1/2	1725	0.9	1.2	7.0	1.5	6.2	7.2	72	53	0.05
K705	1/2	1725	0.7	0.95	5.6	1.5	6.2	7.2	72.1	53.3	0.05
D392	3/4	3450	1	1.6	11.5	1.14	4.0	5.6	74	69.1	0.023
G582	3/4	1725	1	1.5	9.8	2.28	8.2	10	75.5	66.3	0.07
K707	3/4	1725	0.8	1.2	7.8	2.28	8.2	10	75.5	66.3	0.07
D393A	1	3485	0.75	1.5	1.50	1.50	3.2	4.8	78.5	79.1	0.02
K708A	1	3450	0.6	1.2	8.0	1.50	3.2	4.8	78.5	79.1	0.023
G583A	1	1725	1.15	1.65	17	3.0	13.7	16.8	85.5	68	0.12
K709A	1	1725	0.9	1.3	13.6	3.0	13.7	16.8	85.5	68	0.12
D394A	1-1/2	3515	0.9	1.5	19.4	2.20	7.3	9.6	84	83.5	0.05
K721A	1-1/2	3450	0.7	1.6	15.5	2.2	7.3	9.6	84	83.5	0.045
G548A	1-1/2	1725	1.5	2.3	24	4.5	21.2	26	86.5	71	0.14
K722A	1-1/2	1725	1.2	1.85	19.2	4.5	21.2	26	86.5	71	0.14
D395A	2	3500	1.0	2.5	21.7	3.0	9.5	12.2	85.5	86	0.07
G585A	2	1725	1.9	3.0	30.5	6.0	24.5	33.2	86.5	71	0.14
K724A	2	1725	1.5	2.4	24.4	6.0	24.5	33.2	86.5	71	0.14
D396A	3	3450	1.7	3.8	36.9	4.5	17.29	22.7	87.5	84	0.045
K725A	3	3450	1.4	3.05	29.5	4.5	17.29	22.7	87.5	84	0.045
G590A	3	1770	1.9	3.9	33.5	8.9	22.5	36	89.5	80.5	0.38
C382B	3	1770	1.9	3.9	33.5	8.9	22.5	36	89.5	80.5	0.38
C383B	3	1760	1.5	3.2	27	8.9	22	35.2	89.5	80.5	0.38
C387B	5	1760	1.92	5.1	39.2	14.9	30.1	50.2	89.5	83.1	0.485
C389B	7-1/2	3525	4.1	9.3	63	11.2	19.3	33	89.5	84.6	0.55
C390B	7-1/2	1765	4.9	9.8	67.5	22.3	52.9	75	91.7	78.3	0.85
C391B	7-1/2	1765	3.9	7.9	54.0	22.3	52.9	75	91.7	78.3	0.85
C392B	10	3525	4.4	11.8	79.5	14.9	27.7	47.1	90.2	87.9	0.55

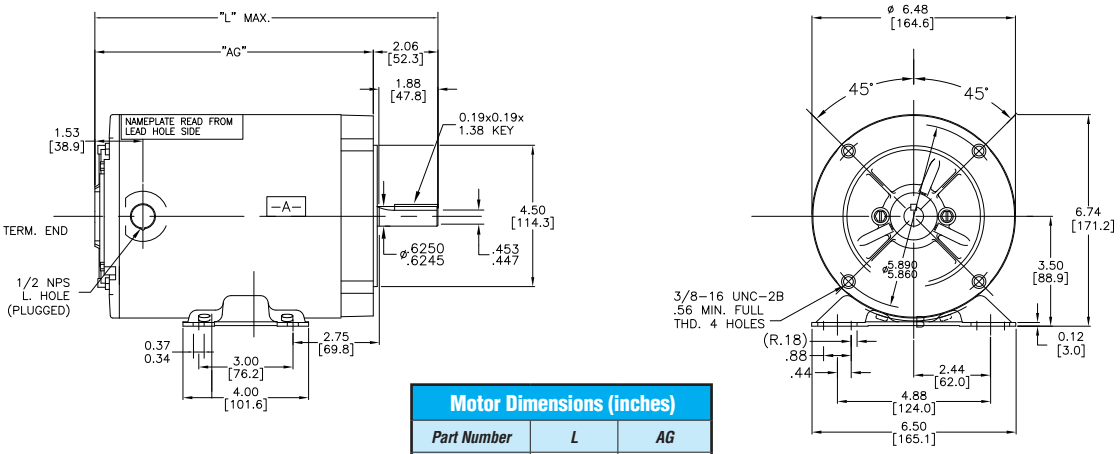
XRI® 4N1 General Purpose, 3-Phase, Totally Enclosed Motors

C-Face Footed (Rigid and Removable Base)

Dimensions

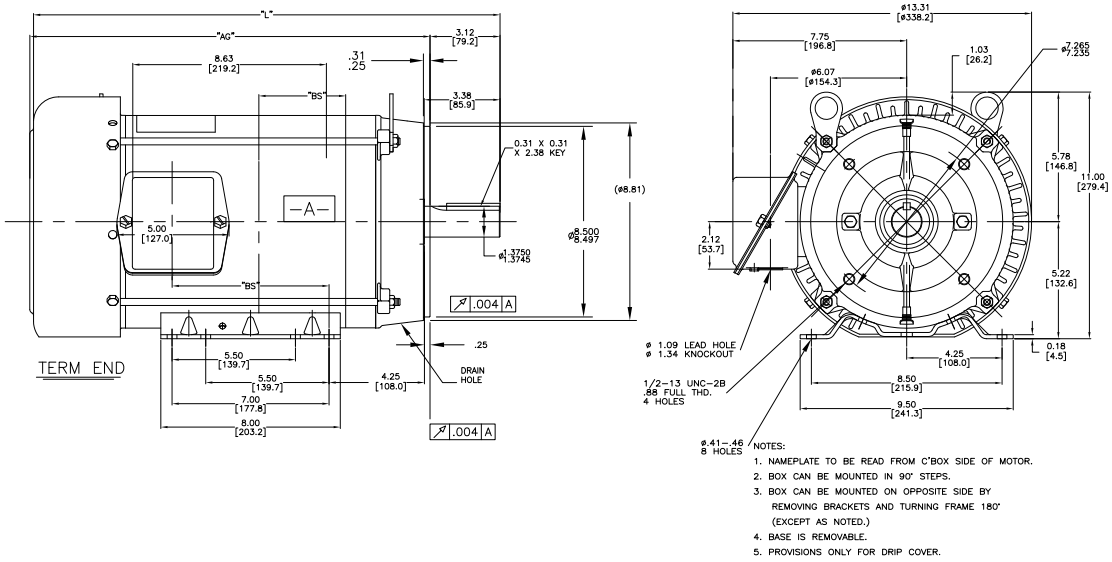
in [mm]

Figure 1 - Part #: D390, G580, K703



Motor Dimensions (inches)		
Part Number	L	AG
D390	10.43	8.37
G580	10.43	8.37
K703	10.43	8.37

Figure 2 - Part #: C389B, C390B, C391B, C392B



Motor Dimensions (inches)			
Part Number	L	AG	BS
C389B	19.47	16.36	5.43
C390B	19.47	18.35	5.43
C391B	19.47	18.35	5.43
C392B	20.97	17.85	6.93

See our website: www.AutomationDirect.com for complete engineering drawings.

XRI® 4N1 General Purpose, 3-Phase, Totally Enclosed Motors

C-Face Footed (Rigid and Removable Base)

Dimensions

in [mm]

See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 3 – G590A, C382B, C383B, C387B

Motor Dimensions (inches)		
Part Number	*L*	*AD*
G590A	14.47	4.87
C382B	14.47	4.87
C383B	14.97	5.37
C387B	14.97	5.37

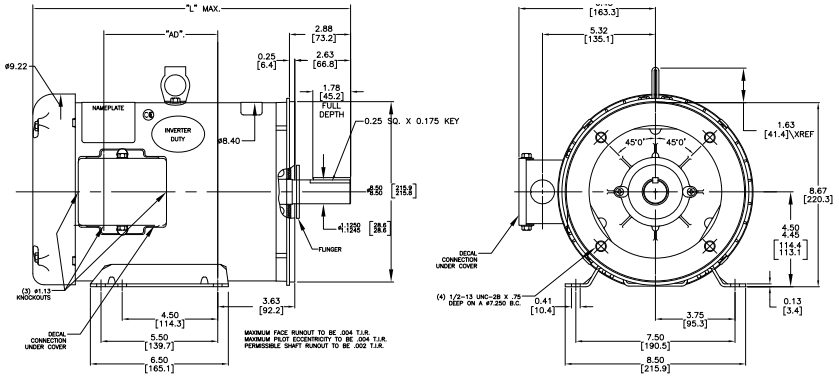
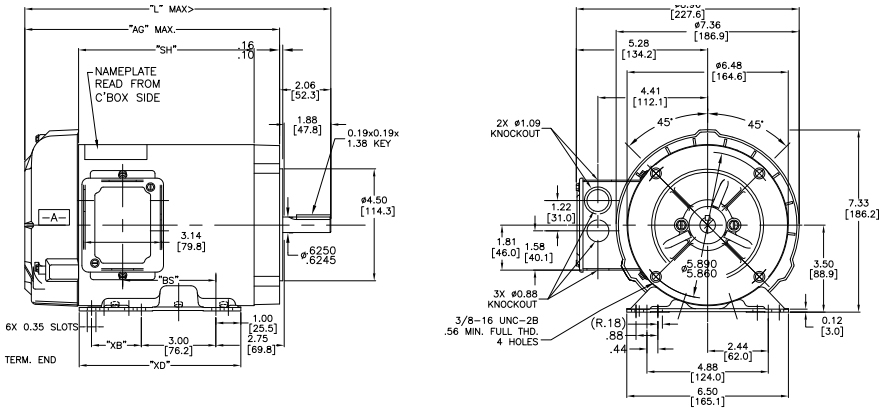


Figure 4 -

D391, G581, K705, D392, G582, K707, D393A, K708A, G583A, K709A, D394A, K721A, G584A, K722A, D395A, G585A, K724A, D396A, K725A

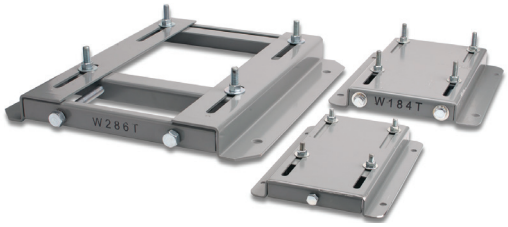


Motor Dimensions (inches)						
Part Number	*L*	*AG*	*SH*	*BS*	*XB*	*XD*
D391	11.81	9.75	N/A	3.25	N/A*	4.0
G581	11.81	9.75	N/A	3.25	N/A*	4.0
K705	11.81	9.75	N/A	3.25	N/A*	4.0
D392	11.81	9.75	N/A	3.25	N/A*	4.0
G582	11.81	9.75	N/A	3.25	N/A*	4.0
K707	11.81	9.75	N/A	3.25	N/A*	4.0
D393A	11.81	9.75	N/A	3.25	N/A*	4.0
K708A	11.81	9.75	N/A	3.25	N/A*	4.0
G583A	14.15	12.09	8.65	4.95	2.00	6.50
K709A	14.15	12.09	8.65	5.25	2.00	6.50
D394A	13.31	11.25	N/A	4.75	N/A*	4.0
K721A	13.31	11.25	N/A*	4.75	N/A*	4.0
G584A	14.65	12.59	9.15	5.75	2.00	6.50
K722A	14.65	12.59	9.15	5.75	2.00	6.50
D395A	14.81	12.75	N/A	5.75	2.00	6.50
G585A	15.15	13.09	9.65	6.25	2.00	6.50
K724A	15.15	13.09	9.65	6.25	2.00	6.50
D396A	14.81	12.75	N/A	5.75	2.00	6.50
K725A	14.81	12.75	N/A	5.75	2.00	6.50
**4-Hole Foot, "XB" Does Not Apply*						

STABLE™ Motor Slide Bases

Mounting Slide Bases for 56 to 449T NEMA Motors Features

- Allows adjustment of motor mounting position
- Slide direction is perpendicular to motor shaft
- Double adjusting screws for frames 182T–449T
- Manufactured to precise dimensional standards
- Dimensionally interchangeable with existing major makes
- Heavy-duty steel construction
- Painted with oven-baked primer for better adhesion of customer's paint
- All "D" bolts (motor mounting bolts) are fixed to the exact motor foot pattern
- All "D" bolts are welded into position to prevent spinning and dropping from slots
- Nuts and washers are provided for securing the motor to the slide base



STABLE Motor Slide Bases for 3-Phase Motors

Part Number	Price	Fits Frame Type	Product Wt. (lb)	Fits Motor						
					Marathon					
				IronHorse	micro-MAX ---- Max+	Black Max 230/460V ---- Black Max 575V	Blue Max	XRI GP & NEMA Premium	Powerwash SXT & Jet Pump	Blue Chip XRI 230/460V ---- Blue Chip XRI 575V
MTA-BASE-W56 *	$10.00	56*	2.8	MTPM-P3x-1x18 MTPM-P5x-1x18 MTPM-P7x-1x18 MTPM-0xx-1x18 MTPM-1xx-1x18 MTR(2)(P)-xxx-xxxxx*	Y500 Y502 Y360 Y362 Y364 Y280 Y281 Y282	Y592(-A772) Y534(-A772) Y535(-A772) Y555(-A772) Y556(-A772)	–	E2000 D390 G580 K703 D391 G581 K705 D392 G582 K707 D393A K708A G583A K709A D394A K721A G584A K722A D395A G585A K724A D396A K725A	N410 J066A	–
MTA-BASE-W143T	$19.50	143T/TC	4.6	MTCP2-001-3BD18(C) MTCP2-1P5-3BD36	–	Y536(-A772)	–	E2001A E2003		–
MTA-BASE-W145T	$19.50	145T/TC	5.1	MTCP2-001-3BD12 MTCP2-1P5-3BD18(C) MTCP2-002-3BD18(C) MTCP2-002-3BD36	Y366 Y368 Y284 Y285	Y537(-A772) Y538(-A772) Y551(-A772) Y557(-A772)	–	E2002 E2004A E2007A		–
MTA-BASE-W182T	$25.50	182T/TC	9.2	MTCP2-1P5-3BD12 MTCP2-003-3BD18(C) MTCP2-003-3BD36 MTF-002-1C18-182	Y1999 Y286A	Y541A(-A772) Y558A(-A772)	–	E2005 E2009 E2010	G590A C382B C383B	–

** IronHorse MTR2 56HC motors have double-punched bases to fit on slide base MTA-BASE-W56.*

*** Motors MTC-250-3D18 and MTC-300-3D18 are obsolete, and no longer available.*

table continued on next page

STABLE™ Motor Slide Bases

table continued from previous page

STABLE Motor Slide Bases for 3-Phase Motors

Part Number	Price	Fits Frame Type	Product Wt. (lb)	Fits Motor						
					Marathon					
				IronHorse	micro -MAX ---- Max+	Black Max 230/460V ---- Black Max 575V	Blue Max	XRI GP & NEMA Premium	Powerwash SXT & Jet Pump	Blue Chip XRI 230/460V ---- Blue Chip XRI 575V
MTA-BASE-W184T	$25.50	184T/TC	10	MTCP2-002-3BD12 MTCP2-005-3BD18(C) MTCP2-005-3BD36 MTF-00x-1C18	Y1372 Y287A	Y540(-A772) Y543A(-A772) Y559A(-A772)	–	E2008 E2012 E2013	C387B	–
MTA-BASE-W213T	$38.00	213T/TC	13	MTCP2-003-3BD12 MTCP2-7P5-3BD18(C) MTCP2-7P5-3BD36	Y994	Y542(-A772) Y545(-A772) Y560(-A772)	–	E2011 E2015 E2016A	C389B C390B C391B E2011A E2015A E2016B	–
MTA-BASE-W215T	$38.00	215T/TC	15	MTCP2-005-3BD12 MTCP2-010-3BD18(C) MTCP2-010-3BD36	Y996	Y544(-A772) Y547(-A772) Y561(-A772	–	E2018	C392B E2014A E2018A E2019B	–
MTA-BASE-W254T	$53.00	254T/TC	18	MTCP2-7P5-3BD12 MTCP2-015-3BD18(C) MTCP2-015-3BD36	–	Y546(-A772) Y549(-A772) Y562(-A772)	–	–	–	E307
MTA-BASE-W256T	$53.00	256T/TC	19	MTCP2-010-3BD12 MTCP2-020-3BD18(C) MTCP2-20-3BD36	–	Y548(-A772) Y552(-A772) Y563(-A772)	–	–	–	E308
MTA-BASE-W284T	$58.00	284T/TC	20	MTCP2-015-3BD12 MTCP2-025-3BD18(C)	–	Y553(-A772)	–	–	–	E207 E309
MTA-BASE-W286T	$58.00	286T/TC	21	MTCP2-20-3BD12 MTCP2-030-3BD18(C)	–	Y393(-A772)	–	–	–	E208 E310
MTA-BASE-W324T	$88.00	324T/TC	30	MTCP2-040-3BD18(C)	–	–	Y571(-A774) Y513(-A775)	–	–	E209 E311
MTA-BASE-W326T	$88.00	326T/TC	31	MTCP2-050-3BD18(C)	–	–	Y572(-A774) Y514(-A775)	–	–	E210
MTA-BASE-W364T	$119.00	364T/TC	43	MTCP2-060-3BD18(C)	–	–	Y573(-A774) Y515(-A775)	–	–	E313
MTA-BASE-W365T	$119.00	365T/TC	43	MTCP2-075-3BD18(C)	–	–	Y574(-A774) Y516(-A775)	–	–	E212 E315
MTA-BASE-W404T	$146.00	404T/TC	58	–	–	–	–	–	–	–
MTA-BASE-W405T	$146.00	405T/TC	60	MTCP2-100-3BD18(C)	–	–	Y575(-A774) Y517(-A775)	–	–	E314
MTA-BASE-W444T	$170.00	444T	63	MTCP2-125-3BD18	–	–	–	–	–	–
MTA-BASE-W445T	$170.00	445T	65	MTCP2-150-3BD18	–	–	–	–	–	–
MTA-BASE-W447T	$223.00	447T	89	MTCP2-200-3BD18	–	–	–	–	–	–
MTA-BASE-W449T	$223.00	449T	94	MTCP2-250-3D18 MTCP2-300-3D18	–	–	–	–	–	–

** IronHorse MTR2 56HC motors have double-punched bases to fit on slide base MTA-BASE-W56.*

STABLE™ Motor Slide Bases

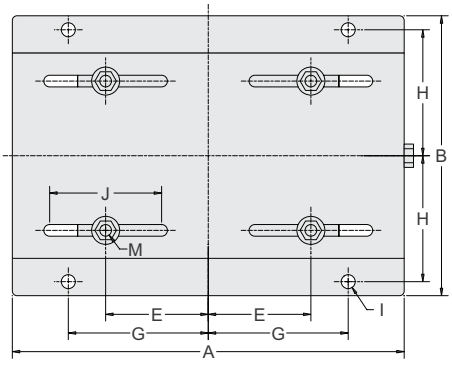
Mounting Slide Bases for 56 to 449T NEMA Motors Features

STABLE Motor Slide Bases for Single-Phase Motors									
Part Number	Price	Fits Frame Type	Product Wt. (lb)	Fits Motor					
				IronHorse	Marathon				
					Marathon DP GP (NEMA Service Factor)	Marathon DP Air Compressor	Fan & Blower	Marathon TE GP 4-in-1	Powerwash SXT
MTA-BASE-W56	$10.00	56*	2.8	MTR2-xxx-1AB18 MTR2-xxx-1AB36 MTPM-xxx-1L18 MTPM-xxx-1M18	C158A G915A C175A C167A C179A G937A C185A C187A C193A E261A E268A EG277A C1270A	D010 C169 C704 D017	C216 C1153 C1155 B319 D118 C1158 C235 D115 C1160 C1161 B352	G570 D311 G571 D312 G572 D313 G573 D314 G574 D315 G575 D316	N341 N343 N345 N347 N348 N349
MTA-BASE-W143T	$19.50	143T / TC	4.6	–	C188A	–	–	–	–
MTA-BASE-W145T	$19.50	145TC / TC	5.1	–	C191 I127 C194	–	–	–	–
MTA-BASE-W182T	$25.50	182T / TC	9.2	MTF-002-1C18-182	I113A	–	–	–	–
MTA-BASE-W184T	$25.50	184 / TC	10	MTF-00x-1C18	-	Z502	–	–	–
MTA-BASE-W213T	$38.00	213T / TC	13	–	-	–	–	–	–
MTA-BASE-W215T	$38.00	215T T TC	15	–	-	–	–	–	–

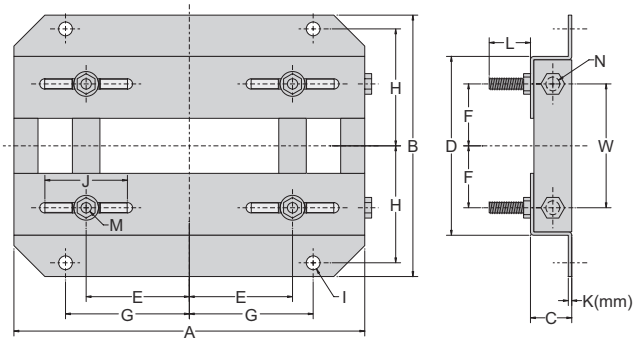
** IronHorse MTR2 56HC motors have double-punched bases to fit on slide base MTA-BASE-W56.*

STABLE Motor Slide Bases

Dimensions – Mounting Slide Bases for NEMA Motors



W56 - W145T Motor Slide Base Dimensions



W182T - W449T Motor Slide Base Dimensions
(W182T-W215T bases have one-piece top plates, similar to W56-W145T)

Dimensions [inches, except as noted] - STABLE Motor Slide Bases															
MTA-BASE-Wxxxx	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***I***	***J***	***K(mm)***	***L***	***M***	***N***	***W***
56	10-5/8	6-1/2	1-1/8	4-1/2	2-7/16	1-1/2	3-13/16	2-7/8	3/8	3	2 mm	7/8	5/16 x 1	3/8 x 4	n/a
143T	10-1/2	7-1/2	1-1/8	5-1/2	2-3/4	2	3-3/4	3-3/8	3/8	3	3 mm	13/16	5/16 x 1	3/8 x 4	n/a
145T	10-1/2	8-1/2	1-1/8	6-1/2	2-3/4	2-1/2	3-3/4	3-7/8	3/8	3	3 mm	13/16	5/16 x 1	3/8 x 4	n/a
182T	12-3/4	9-1/2	1-1/2	6-1/2	3-3/4	2-1/4	4-1/2	4-1/4	1/2	3	3.5 mm	1-1/2	3/8 x 1-3/4	1/2 x 6	4-1/2
184T	12-3/4	10-1/2	1-1/2	7-1/2	3-3/4	2-3/4	4-1/2	4-3/4	1/2	3	3.5 mm	1-1/2	3/8 x 1-3/4	1/2 x 6	5-1/2
213T	15	11	1-3/4	7-1/2	4-1/4	2-3/4	5-1/4	4-3/4	1/2	3-1/2	3.8 mm	1-1/2	3/8 x 1-3/4	1/2 x 6	5-1/2
215T	15	12-1/2	1-3/4	9	4-1/4	3-1/2	5-1/4	5-1/2	1/2	3-1/2	3.8 mm	1-1/2	3/8 x 1-3/4	1/2 x 6	7
254T	17-3/4	15-1/8	2	10-3/4	5	4-1/8	6-1/4	6-5/8	5/8	4	4.6 mm	1-7/16	1/2 x 1-3/4	5/8 x 6	5-5/16
256T	17-3/4	16-7/8	2	12-1/2	5	5	6-1/4	7-1/2	5/8	4	4.6 mm	1-7/16	1/2 x 1-3/4	5/8 x 6	7
284T	19-3/4	16-7/8	2	12-1/2	5-1/2	4-3/4	7	7-1/2	5/8	4-1/2	4.6 mm	1-11/16	1/2 x 2	5/8 x 6	7
286T	19-3/4	18-3/8	2	14	5-1/2	5-1/2	7	8-1/4	5/8	4-1/2	4.6 mm	1-11/16	1/2 x 2	5/8 x 6	8
324T	22-3/4	19-1/4	2-1/2	14	6-1/4	5-1/4	8	8-1/2	3/4	5-1/4	4.6 mm	2-3/16	5/8 x 2-1/2	3/4 x 9	7
326T	22-3/4	20-3/4	2-1/2	15-1/2	6-1/4	6	8	9-1/4	3/4	5-1/4	4.6 mm	2-3/16	5/8 x 2-1/2	3/4 x 9	8-1/2
364T	25-1/2	20-1/2	2-1/2	15-1/2	7	5-5/8	9	9-1/8	3/4	6	5.8 mm	2-1/16	5/8 x 2-1/2	3/4 x 9	7-3/4
365T	25-1/2	21-1/2	2-1/2	16-1/2	7	6-1/8	9	9-5/8	3/4	6	5.8 mm	2-1/16	5/8 x 2-1/2	3/4 x 9	8-3/4
404T	28-3/4	22-3/8	3	16-1/2	8	6-1/8	10	9-7/8	7/8	7	5.8 mm	2-1/2	3/4 x 3	3/4 x 11	8-3/4
405T	28-3/4	23-7/8	3	18	8	6-7/8	10	10-5/8	7/8	7	5.8 mm	2-1/2	3/4 x 3	3/4 x 11	10-1/4
444T	31-1/4	24-5/8	3	19-1/4	9	7-1/4	11	11	7/8	7-1/2	5.8 mm	2-1/2	3/4 x 3	3/4 x 11	11
445T	31-1/4	26-5/8	3	21-1/4	9	8-1/4	11	12	7/8	7-1/2	5.8 mm	2-1/2	3/4 x 3	3/4 x 11	13
447T	31-1/4	30-1/8	3	24-3/4	9	10	11	13-3/4	7/8	7-1/2	8 mm	3	3/4 x 3-1/2	3/4 x 11	16-1/2
449T	31-1/4	35-1/8	3	29-3/4	9	12-1/2	11	16-1/4	7/8	7-1/2	8 mm	3	3/4 x 3-1/2	3/4 x 11	21-1/2

AutomationDirect AC Motors Selection Overview

General-purpose or inverter-duty motor?

How to choose a general purpose motor vs. an inverter-duty motor

General purpose motors have been around for many years. They are the workhorse of almost every industry. An inverter-duty motor is a much newer concept that was necessary as general purpose motors began to be driven by VFDs (inverters or AC drives). An inverter duty motor can withstand the higher voltage spikes produced by all VFDs (amplified at longer cable lengths) and can run at very slow speeds without overheating. This performance comes at a cost: inverter-duty motors can be much more expensive than general purpose motors. Guidelines for choosing an IronHorse general purpose motor vs. an inverter-duty motor are given below. If your application falls within the guidelines below, there is no need to apply an inverter-duty motor.

NOTE: Marathon inverter-duty motors have limitations as well. Please see the Marathon section for more details.

Background: For many years, AC motors were driven by across-the-line contactors and starters. The electricity sent to the motor was a very clean sine wave at 60Hz. Noise and voltage peaks were relatively small. However, there were drawbacks: they only ran electrically at one speed (speed reduction was usually handled by gearboxes or some other, usually inefficient, mechanical means) and they had an inrush of electrical current (when the motor was first turned on) that was usually 5 to 6 times the normal current that the motor would consume. The speed reduction apparatus was expensive and bulky, and the inrush would wreak havoc with power systems and loading (imagine an air conditioning system in an old house - when the compressor would kick on, the lights would dim; now imagine the same circumstances with a motor the size of a small car).

Note: The following discussion applies only to 3-phase motors.

Enter the VFDs (variable frequency drives): Drives were introduced to allow the speed of these motors to be changed while running and to lessen the inrush current when the drive first starts up. To do this, the drive takes the incoming 60Hz AC power and rectifies it to a DC voltage (every drive has a DC bus that is around 1.414 (sqrt of 2) * incoming AC Line Voltage).

This DC voltage is then "chopped" by power transistors at very high frequencies to simulate a sine wave that is sent to the motor [see Figure 1]. By converting the incoming power to DC and then reconverting it to AC, the drive can vary its output voltage and output frequency, thus varying the speed of a motor. Everything sounds great, right? We get to control the frequency and voltage going out to the motor, thus controlling its speed.

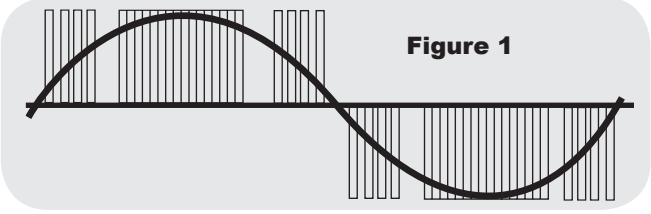


Figure 1

Some things to watch out for: A VFD-driven general purpose motor can overheat if it is run too slowly. *(Motors can get hot if they're run slower than their rated speed.)* Since most general purpose motors cool themselves with shaft-mounted fans, if the motor overheats, bearing and insulation life will be reduced. Therefore there are minimum speed requirements for all motors.

The voltage "chopping" that occurs in the drive actually sends high-voltage spikes (at the DC bus level) down the wire to the motor. If the system contains long cabling, there are actually instances where a reflected wave occurs at the motor. The reflected wave can effectively double the voltage on the wire. This can lead to premature failure of the motor insulation. Long cable lengths between the motor and drive increase the harmful effects of the reflected wave, as do high chopping frequencies (listed in drive manuals as carrier frequencies). Line reactors, 1:1 transformers placed at the output of the drive, can help reduce the voltage spikes going from the drive to the motor. Line reactors are used in many instances when the motor is located far from the drive [see Figure 2].

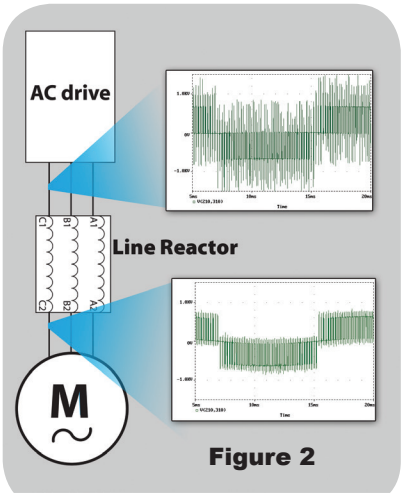


Figure 2

In summary, general purpose motors can be run with drives in many applications; however inverter-duty motors are designed to handle much lower speeds without overheating and they are capable of withstanding higher voltage spikes without their insulation failing. With the increased performance comes an increase in cost. This additional cost can be worth it if you need greater performance.

The considerations for applying IronHorse motors are given below.

Heat considerations

	IronHorse speed ratio	For an 1800 RPM motor, minimum IronHorse speed is:
Variable Torque applications (fans, centrifugal pumps, etc.)	5:1 (EPAct motors) 10:1 (PE motors)	1800/5 = 360RPM 1800/5 = 180RPM
Constant Torque Applications (conveyors, extruders, etc.)	2:1 (EPAct motors) 4:1 (PE motors)	1800/2 = 900RPM 1800/4 = 450RPM

Voltage Spike considerations

	Max cable distance from drive to IronHorse motor	Max cable distance with a 3% line reactor between drive and IronHorse motor
For use with 230V and 460V VFDs*	125 ft	250 ft

** Up to 6kHz carrier frequency*