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Motors

IRONHORSE®

MARATHON® ELECTRIC

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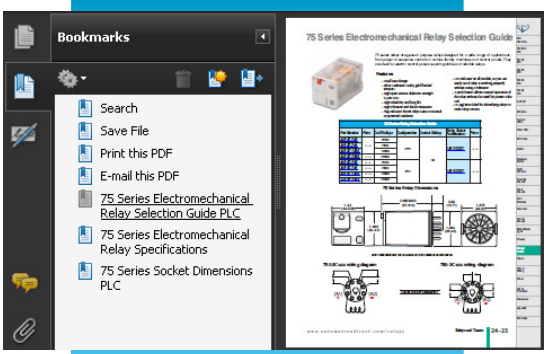

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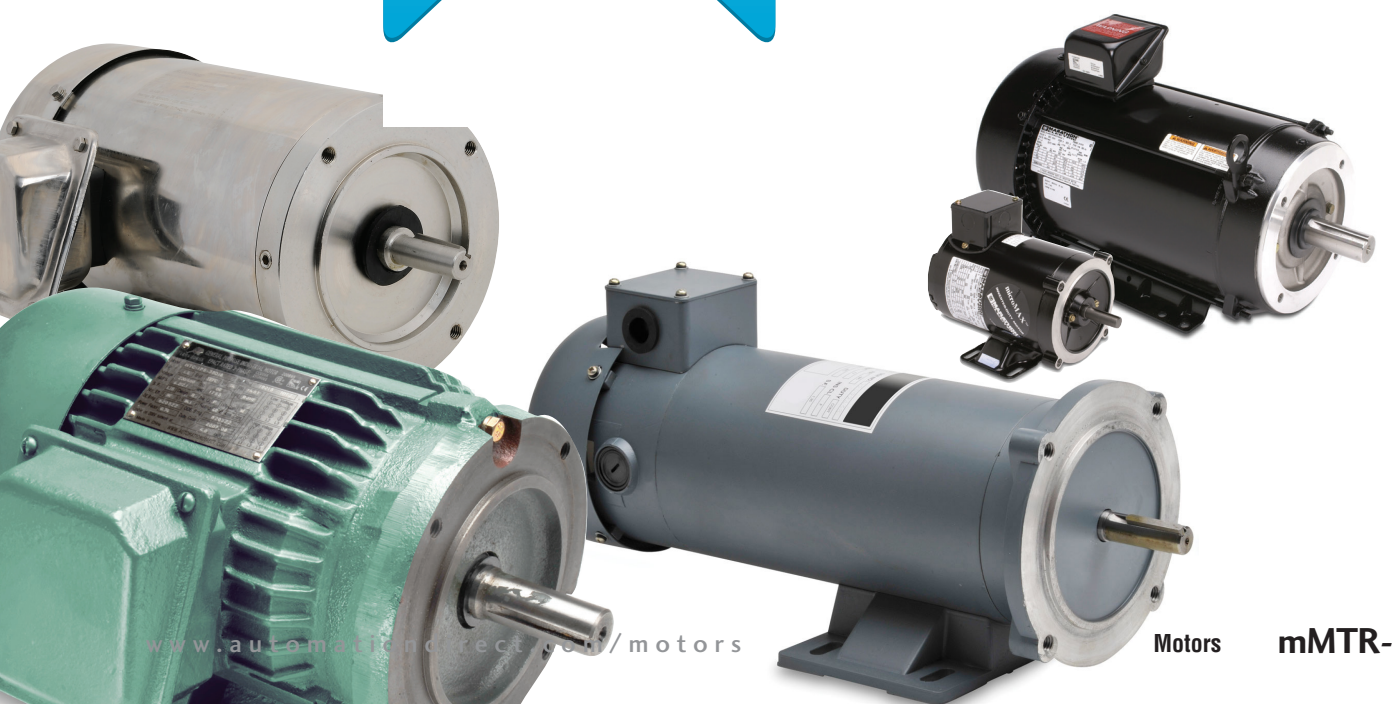
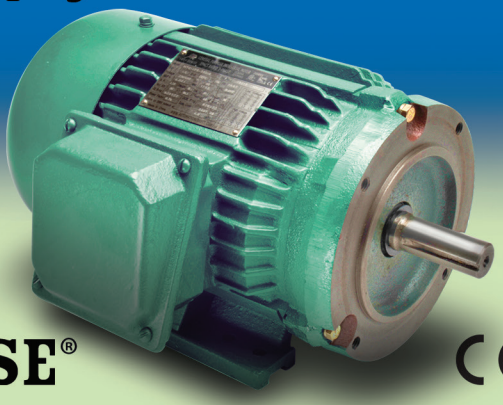


Order Today, Ships Today*

Premium Efficiency Motors that pay for themselves...

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

****250 and 300 hp models are high efficiency**

AC TC-Frame (C-Face), Premium Efficiency, Cast Iron, Industrial Duty, three-phase, 208-230/460 Volt up to 100 hp, TEFC enclosure

1200 RPM, 1800 RPM, and 3600 RPM Premium Efficiency motors, starting at $162.00

- **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: 10:1 (variable torque); 4:1 (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

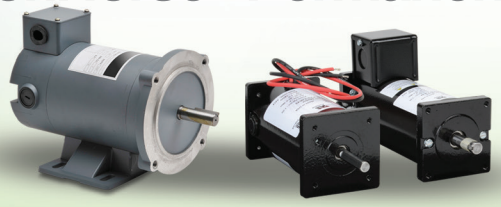
AC 56C/56HC Frame Rolled Steel, 0.33 to 3 hp 56C Stainless Steel, 0.33 to 2 hp Three-Phase 208-230/460 Volt, TEFC Enclosure

- 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.

AC T-Frame Industrial/ Compressor Duty single-phase 230 Volt 2 to 5 hp, 1800 RPM TEFC enclosure

- IP55 environmental rating
- Farm duty rated
- Steel fan cover
- NEMA design L
- Rigid mounting base
- Heavy-duty oversized ball bearings
- Class F insulation

IronHorse® Permanent Magnet DC Motors (SCR Rated)



DC Motors starting at
$71.00

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

starting at **$147.00**

Aluminum or cast iron

- 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 **$9.75**

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.

starting at **$164.00**

MARATHON ELECTRIC®

**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 DURApulse 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.

Marathon Electric's 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.

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
- Inverter duty
- 10:1 variable torque and constant torque
- 1.15 service factor on sinewave; 1.0 service factor on IGBT power

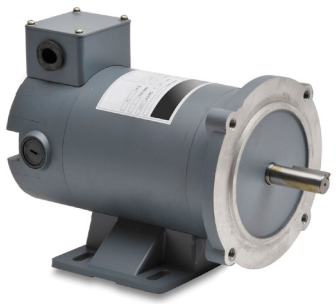
Marathon Replacement Encoder Kits

- 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

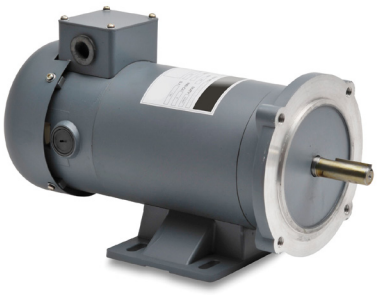
IronHorse® Permanent-Magnet DC Motors (SCR Rated) Model Overview

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
- 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	Wiring Type	Weight (lb)
MTPM-P10-1JK43	$71.00	12 24	1/20 1/10	1746 4252	28	4.83	0.3125	1.00	85	0 (not suitable for applications with axial/thrust loading)	flying leads	2.75
MTPM-P13-1JK42	$77.00	12 24	1/17 1/8	1825 4224	32	5.39	0.3125					3.25
MTPM-P17-1JK43	$104.00	12 24	1/13 1/6	1841 4290	42	7.54	0.50	2.02	130		junction box	5.3
MTPM-P25-1JK40	$127.00	12 24	1/6 1/4	1732 3996	96 80	14.3 12.2	0.50					7.8
MTPM-P25-1JK44	$127.00	12 24	1/5 1/4	1854 4375	113 70	18.1 11.9	0.50					9
MTPM-P03-1L18	$75.00	90	1/31	1797	18	0.39	0.3125	1.00	85		flying leads	2.75
MTPM-P04-1L17	$79.00		1/26	1749	22	0.46	0.3125					3.25
MTPM-P05-1L19	$104.00		1/19	1917	28	0.68	0.50	2.02	130		junction box	5.3
MTPM-P13-1L19	$121.00		1/8	1917	73	1.4	0.50					7.8
MTPM-P14-1L19	$133.00		1/7	1740	86	1.61	0.50					9
MTPM-P07-1M24	$109.00	180	1/15	2440	28	0.42	0.50					5.3
MTPM-P13-1M19	$133.00		1/8	1865	73	0.73	0.50					7.8
MTPM-P14-1M18	$133.00		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	$28.00	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	$21.00	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	$24.00	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	$19.00	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	$36.00	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

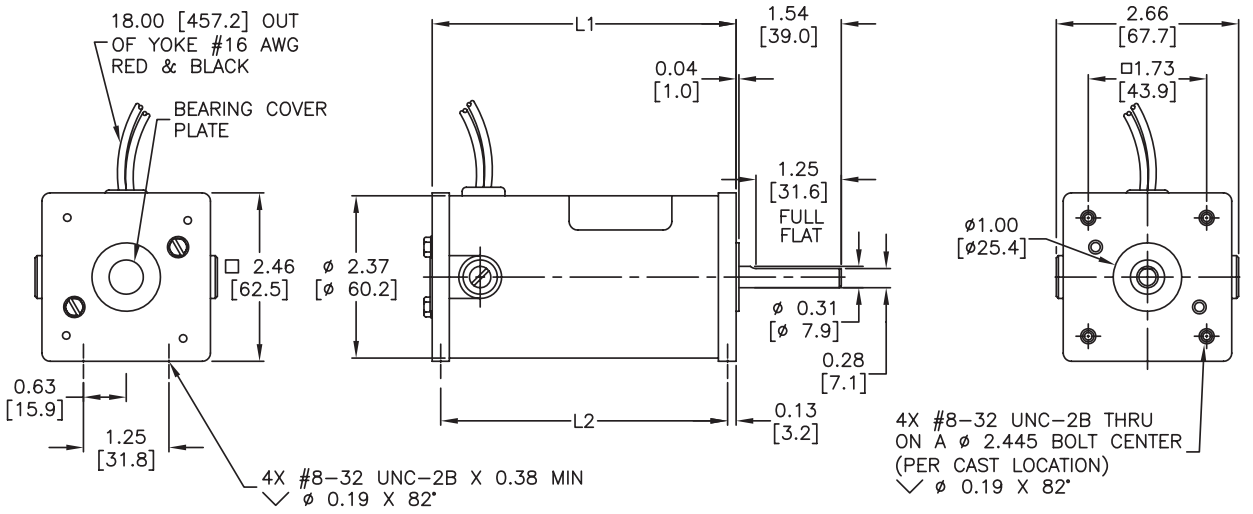
** These replacement parts also fit many AutomationDirect DC gearmotors. Refer to the Gearmotors section for gearmotor application information.*

IronHorse® DC Motors

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

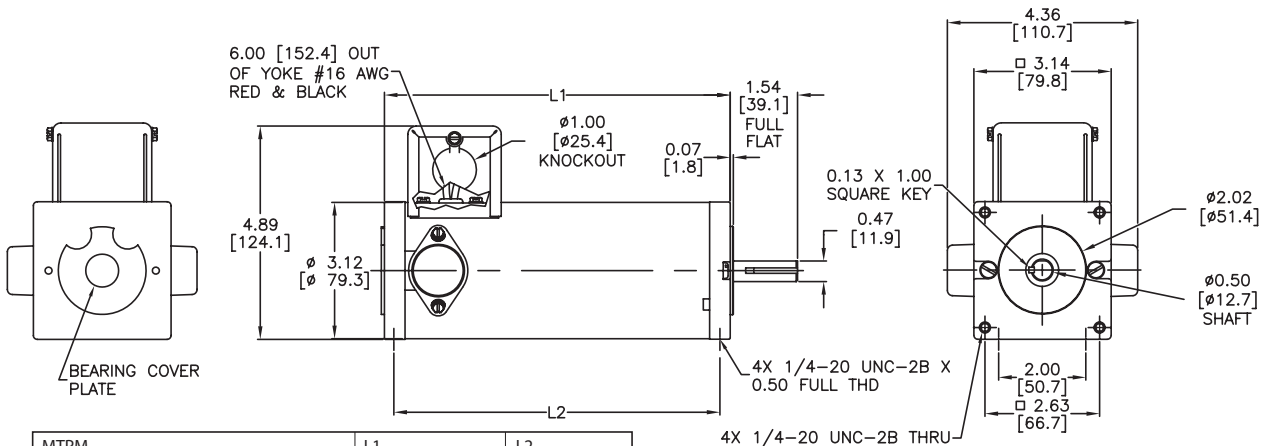
Dimensions (in [mm])

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	$134.00	1/3	1800	90 VDC	TENV	56C flange mount	1.0	3.5	17.70
MTPM-P50-1L18	$171.00	1/2						5.2	20.74
MTPM-P75-1L18	$194.00	3/4			TEFC			7.8	25.30
MTPM-001-1L18	$217.00	1						10.4	28.36
MTPM-1P5-1L18	$234.00	1-1/2						15.4	34.97
MTPM-P33-1M18	$133.00	1/3		180 VDC	TENV			1.75	17.60
MTPM-P50-1M18	$170.00	1/2						2.6	20.74
MTPM-P75-1M18	$194.00	3/4			TEFC			3.9	25.58
MTPM-001-1M18	$217.00	1						5.2	28.32
MTPM-1P5-1M18	$234.00	1-1/2						7.7	35.70
MTPM-002-1M18	$372.00	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	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	79
MTPM-P50-1L18	1/2		1.46													80
MTPM-P75-1L18	3/4		2.19													
MTPM-001-1L18	1		2.92													
MTPM-1P5-1L18	1-1/2		4.38													81
MTPM-P33-1M18	1/3	180 VDC	0.97													79
MTPM-P50-1M18	1/2		1.46													80
MTPM-P75-1M18	3/4		2.19													
MTPM-001-1M18	1		2.92													
MTPM-1P5-1M18	1-1/2		4.38													81
MTPM-002-1M18	2		5.84													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) **

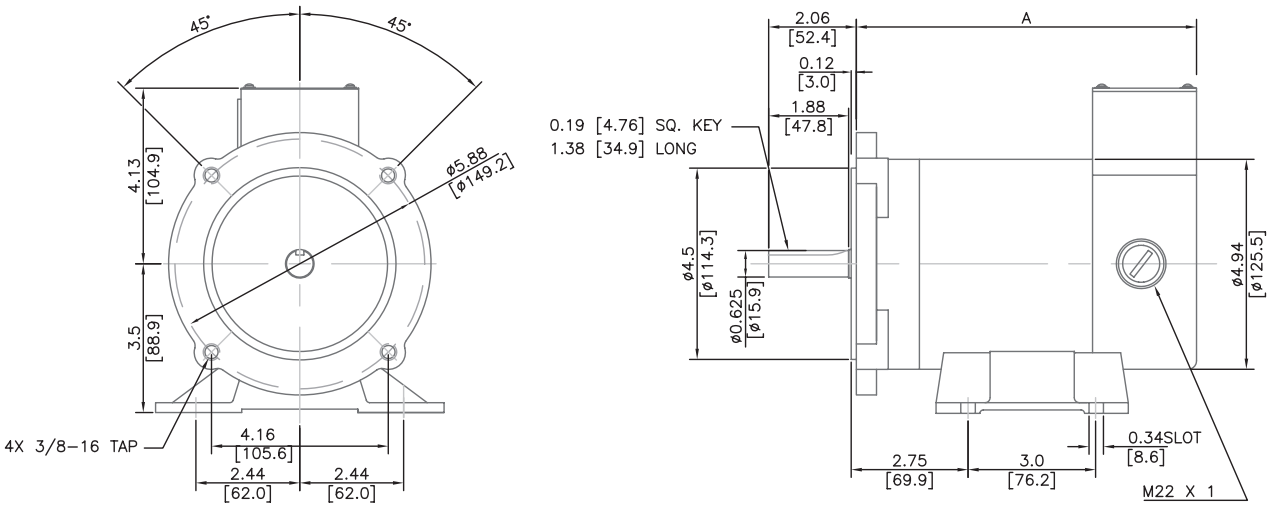
**** All DC-input IronHorse GSD series DC drives are 1.05. IronHorse AC-input GSD5 DC drive is 1.05.***

***** 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

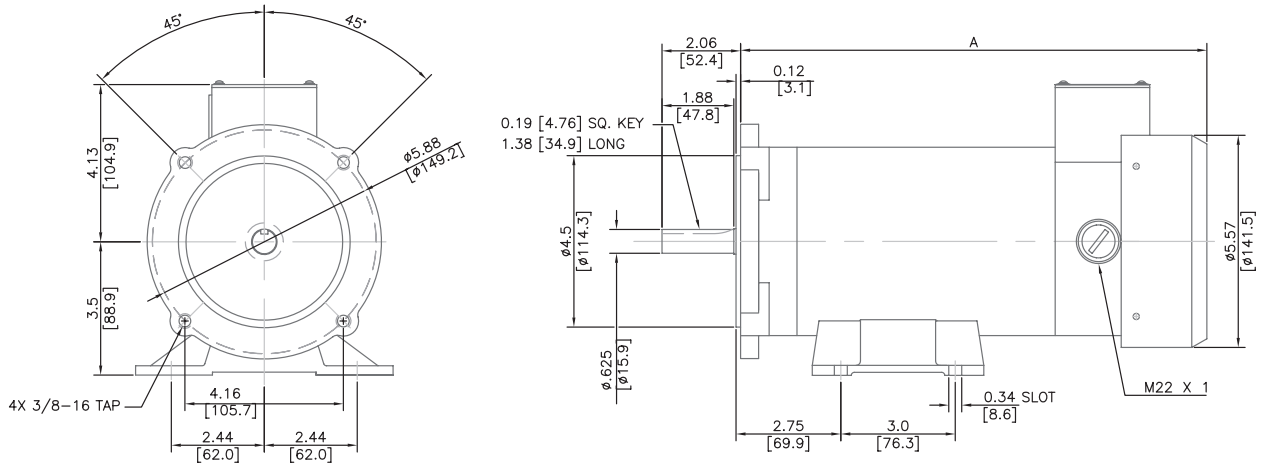
56C Frame TENV DC Motors – 0.33 to 0.5 hp – Dimensions



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



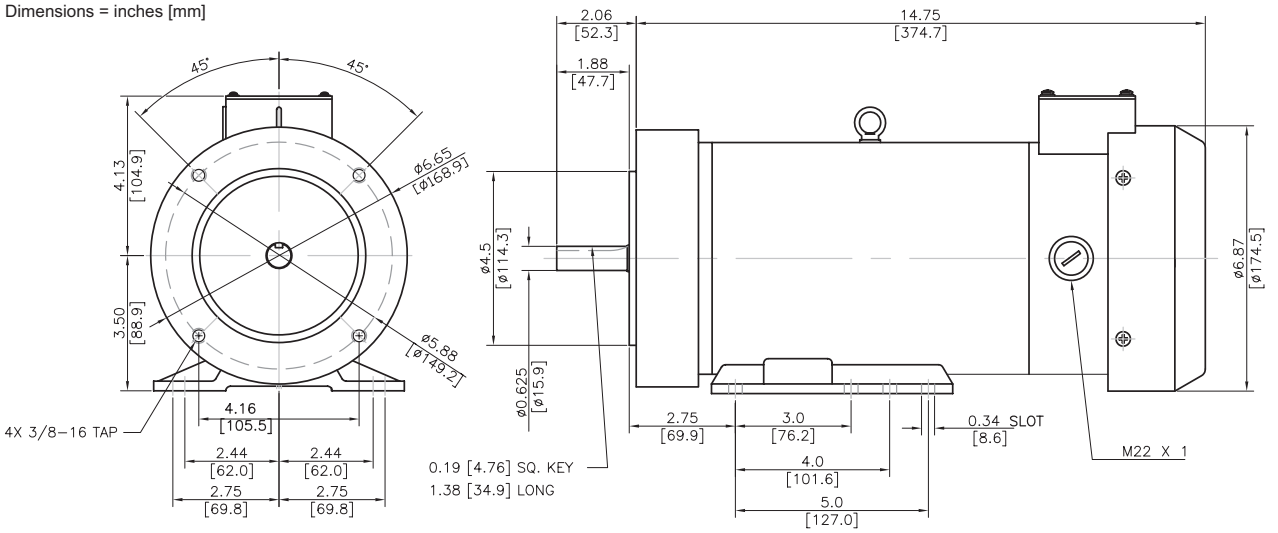
A = 11.45" [290.8] – .75 HP, 90VDC, 1800RPM
A = 11.45" [290.8] – .75 HP, 180VDC, 1800RPM
A = 12.24" [311.0] – 1 HP, 90VDC, 1800RPM
A = 12.24" [311.0] – 1 HP, 180VDC, 1800RPM
A = 14.39" [365.5] – 1.5 HP, 90VDC, 1800RPM
A = 14.39" [365.5] – 1.5 HP, 180VDC, 1800RPM

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	$8.75	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	$11.00	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	$10.00	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.

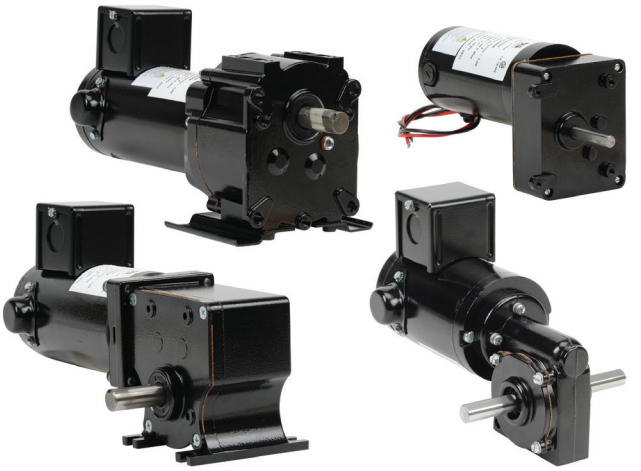
IronHorse® DC Gearmotors

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

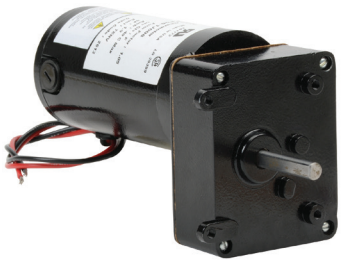
- TENV enclosure
- IP40 environmental rating
- Class F insulation
- SCR rated
- Externally replaceable brushes
- Double-shielded bearings
- Dynamically balanced armature
- Reversible design
- 18-inch leads, or junction box with 8-inch Leads
- Replacement components are available
- Can be mounted in any orientation
- Not intended for DC power generation
- UL recognized (E365956), CSA certified (259724), RoHS

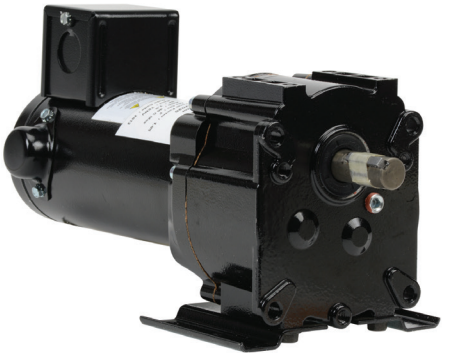
Replacement Parts for MTGP and MTGR DC Gearmotors

Replacement Parts for MTGP and MTGR Series DC Gearmotors *			
Part Number	***Price***	***Description***	***For Gearmotors***
MTPM-BRUSH-4	$28.00	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	$21.00	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	$24.00	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	$19.00	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	$36.00	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	Weight (lb)	Gearbox Features	Dimension Drawing #
MTGP-P06-1J008	$162.00	12	1/16	7.9	386:1	50	1.39	0.3125	50	0 (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	$179.00			24	120:1	50	2.41						
MTGP-P06-1J034	$182.00			34	83:1	45	2.86						
MTGP-P06-1J050	$162.00			50	55:1	45	3.88						
MTGP-P06-1J097	$162.00			97	26:1	36	5.68						
MTGP-P06-1L008	$173.00	90	1/17	8.4	386:1	50	0.19						
MTGP-P06-1L012	$179.00			12	269:1	50	0.23						
MTGP-P06-1L037	$179.00			37	83:1	45	0.40						
MTGP-P06-1L055	$162.00			55	55:1	45	0.54						
MTGP-P06-1L114	$162.00			114	26:1	26	0.61						
MTGP-P14-1L026	$289.00	90	1/7	26	69:1	280	1.58	0.625	150		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	$289.00			39	46:1	189	1.59						
MTGP-P14-1L061	$281.00			61	30:1	130	1.59						
MTGP-P14-1L091	$281.00			91	20:1	86	1.58						
MTGP-P14-1L165	$281.00			165	11:1	47	1.57						
MTGP-P20-1J026	$297.00	12	1/5	26	69:1	280	12.60						
MTGP-P20-1J037	$297.00			37	46:1	245	15.80						
MTGP-P20-1J056	$291.00			56	30:1	168	15.70						
MTGP-P20-1J084	$291.00			84	20:1	112	15.70						
MTGP-P20-1J154	$279.00			154	11:1	61	15.60						
MTGP-P20-1K018	$291.00	24	1/5	18	110:1	280	4.41						
MTGP-P20-1K036	$291.00			36	46:1	245	7.89						
MTGP-P20-1K084	$287.00			84	20:1	112	7.87						
MTGP-P20-1K153	$287.00			153	11:1	61	7.81						

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

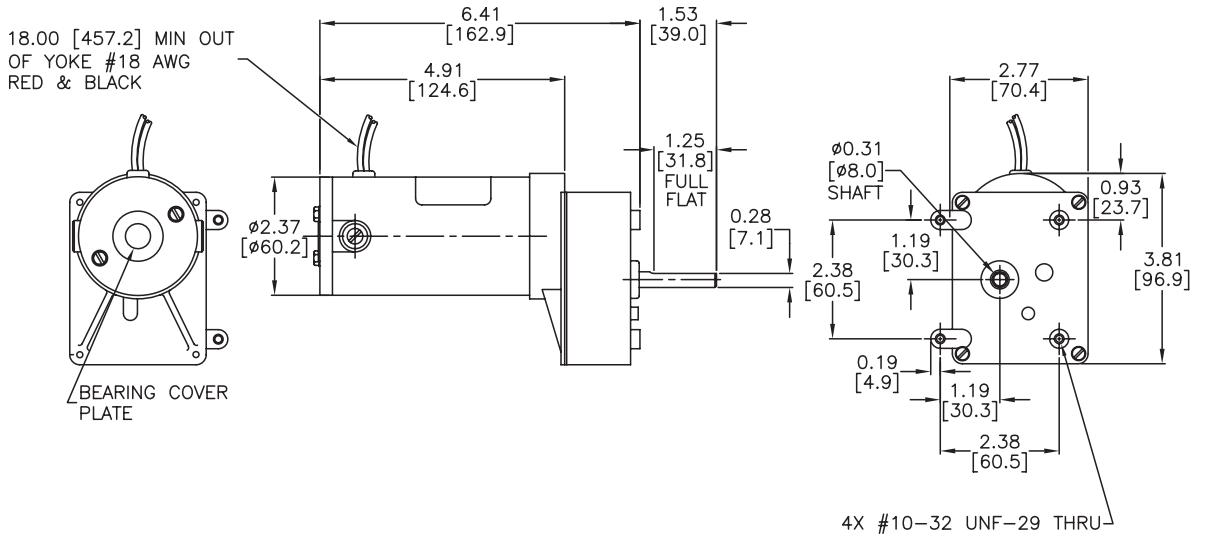
Replacement parts are available, as shown in "Replacement Parts for MTGP and MTGR DC Gearmotors" subsection.

IronHorse® DC Gearmotors

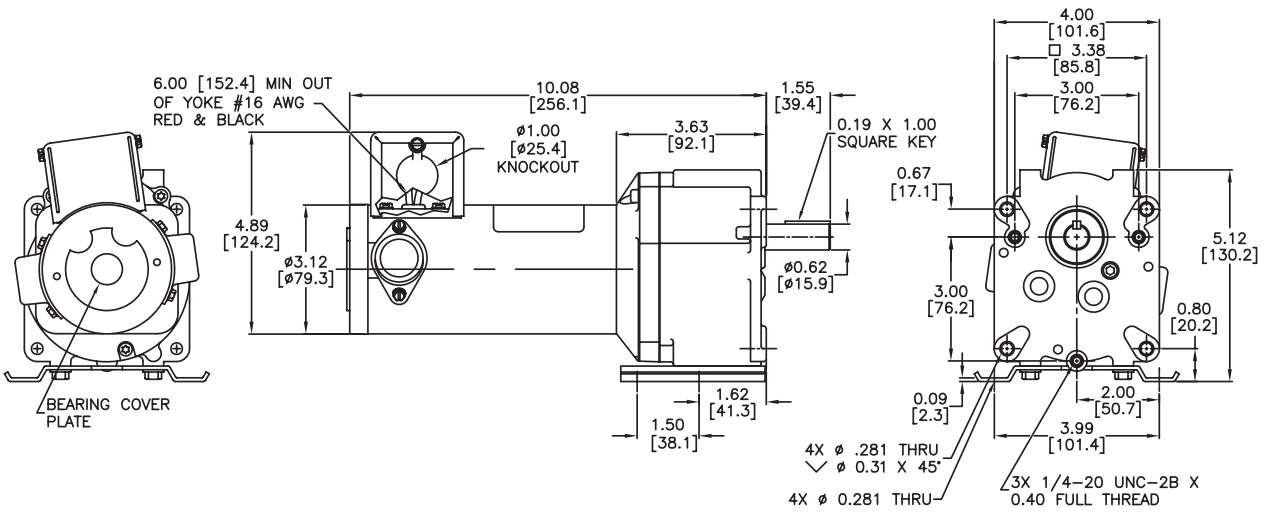
MTGP Parallel Shaft Gearmotors – 1/17 hp – 1/5 hp

Dimensions (in [mm])

Dimension Drawing # P-A

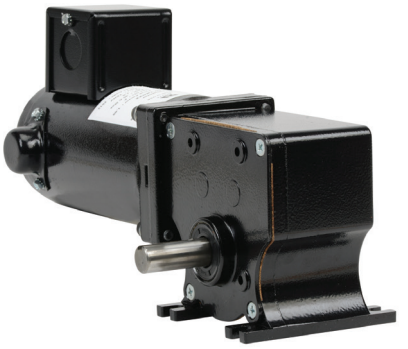


Dimension Drawing # P-B



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	Weight (lb)	Gearbox Features	Dimension Drawing #
MTGR-P05-1L038	$277.00	90	1/19	38	50:1	42	0.68	dual shaft 0.5 in diameter	200	0 (not suitable for applications with axial/thrust loading)	8.3	Grease lubrication **	R-A
MTGR-P05-1L053	$277.00			53	36:1	33	0.68					Ball bearings	
MTGR-P05-1L093	$277.00			93	20.5:1	23	0.68					Junction box with 8-inch wiring leads	
MTGR-P05-1L132	$277.00			132	14.5:1	17	0.67					Foot mounted	
MTGR-P05-1L197	$277.00			197	9.75:1	12	0.68					Single worm	
MTGR-P07-1J036	$221.00	12	1/15	36	50:1	50	5.69						
MTGR-P07-1J084	$221.00			84	20.5:1	34	6.78						
MTGR-P07-1J177	$221.00			177	9.75:1	18	6.78						
MTGR-P14-1L022	$287.00	90	1/7	22	82:1	280	1.41	single shaft 0.625 in diameter	150		14.4	Double shielded ball bearings	R-B
MTGR-P14-1L040	$289.00			40	44:1	185	1.64					Junction box with 8-inch wiring leads	
MTGR-P14-1L064	$309.00			64	28:1	116	1.65					Foot mounted	
MTGR-P14-1L077	$287.00			77	23:1	97	1.65					Bevel gears	
MTGR-P14-1L178	$287.00			178	10:1	44	1.64					80 – 90% efficient	
MTGR-P20-1K023	$295.00	24	1/5	23	82:1	280	5.64					Can be backdriven ***	
MTGR-P20-1K039	$291.00			39	44:1	263	8.74						
MTGR-P20-1K075	$295.00			75	23:1	137	8.72						
MTGR-P20-1K174	$295.00			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.*

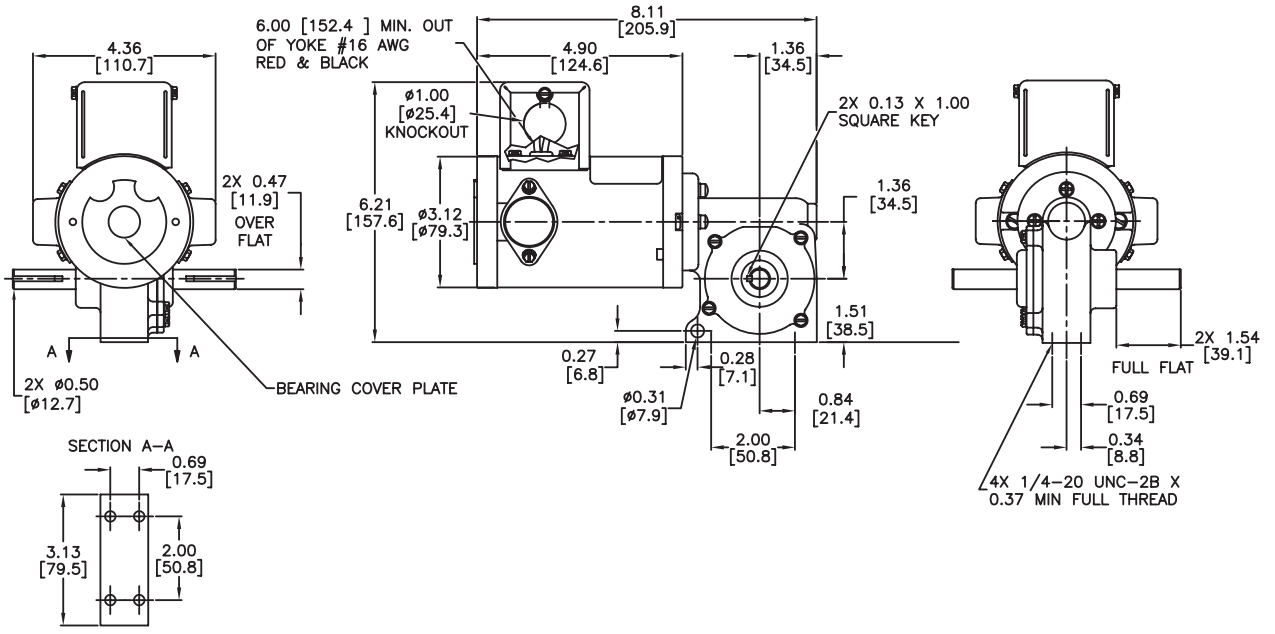
Replacement parts are available, as shown in "Replacement Parts for MTGP and MTGR DC Gearmotors" subsection.

IronHorse® DC Gearmotors

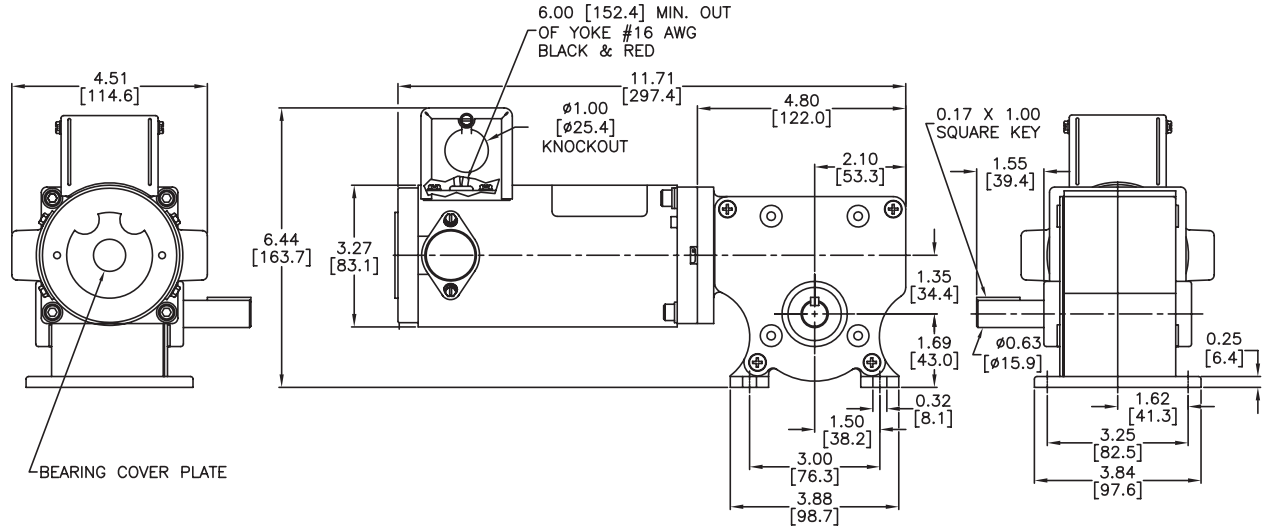
MTGR Right Angle Gearmotors – 1/19 hp – 1/5 hp

Dimensions (in [mm])

Dimension Drawing # R-A



Dimension Drawing # R-B



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

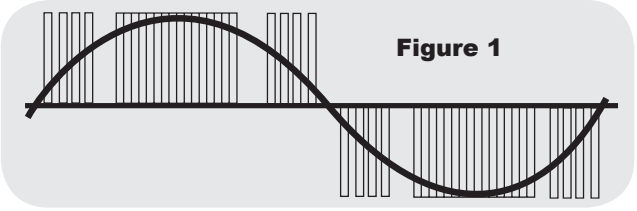
General purpose motors have been around for many years. They are the workhorse of almost every industry. An inverter-duty motor is a much newer concept that was necessary as general purpose motors began to be driven by VFDs (inverters or AC drives). An inverter duty motor can withstand the higher voltage 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 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].

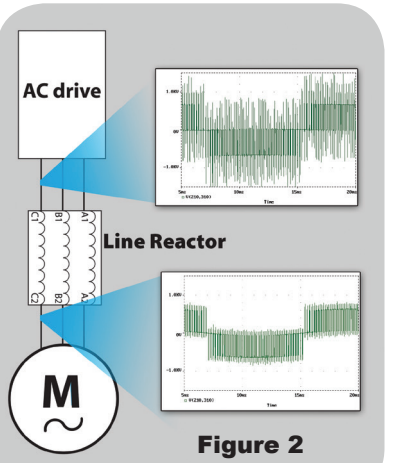


Figure 2

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

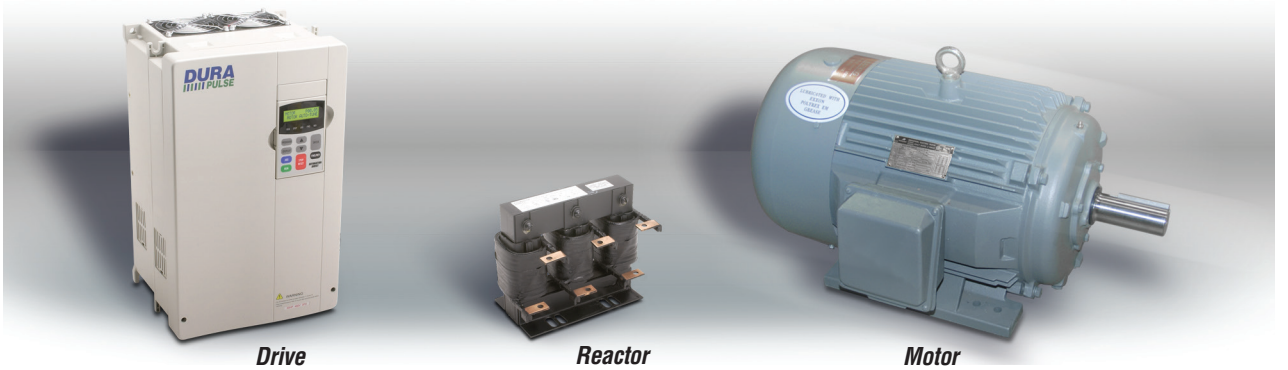
Voltage Spike considerations

	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® 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 T & TC Frames**
Electrical Characteristics					
Horsepower range	1/3 – 2	2 – 5	1/3 – 3	1/3 – 2	PE: 1–200(T); 1–100(TC) EPAct: 250–300(T)
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	230	208-230/460		208-230/460 (250 & 300 hp 460V only)
Phase / Base Frequency (Hz)	1 / 60		3 / 60		
Service Factor	1.15		1.15 (line) ; 1.0 (drive)		
Design Code (NEMA)	L, N	L	B		
Insulation Class	F				
Insulation System	dip & bake twice	VPI, then bake, then dip and bake	dip & bake	double dip & bake	EPAct: double dip & bake PE: VPI
Duty Cycle	continuous				
Thermal protection	none	yes	none		
Mechanical Characteristics					
Frame size (mounting)	56C or 56HC	182T – 184T	56C or 56HC		143T/TC – 405TC/449T
Enclosure	TEFC				
Frame material	rolled steel			304 stainless steel	cast iron
End bracket material	aluminum	cast iron	aluminum	304 stainless steel	cast iron
Junction box material	steel			304 stainless steel	cast iron
Fan guard material	steel	steel	steel	304 stainless steel	steel
Fan material	polypropylene plastic	plastic	plastic	heat-resistant polyethylene	plastic (143T/TC - 445/7T) aluminum (449T)
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-Flange kit available EPAct) C-Face with Rigid Base (1-100 hp)
Drive end shaft slinger	yes				
Paint	black	green	black	n/a	EPAct: epoxy primer / synthetic alkyd enamel PE: polyurethane enamel
Bearings	ball				1-75 hp: ball 100-300 hp: roller
Grease	Mobil Polyrex EM			Korschun lithium-based	Mobil Polyrex EM
Standard junction box assembly position	F1				F1 (some sizes reversible to F2)
Performance Characteristics					
Constant Torque speed range	n/a	n/a	2:1 (MTR, MTSS); 4:1 (MTRP)		2:1 (EPAct) 4:1 (Premium Efficiency)
Variable Torque speed range	n/a	n/a	5:1 (MTR, MTSS); 10:1 (MTRP)		5:1 (EPAct) 10:1 (Premium Efficiency)
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$_{US}$			$_{C}$CSA$_{US}$	CE, $_{C}$CSA$_{US}$

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 MTF, MTR, MTR2, MTC, MTCP, & MTSS

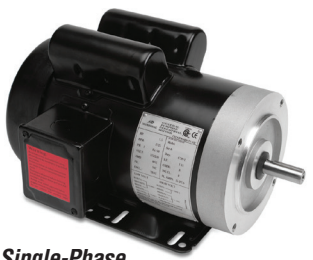
Model Overview

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:

- **MTR & 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
- **MTF Series:** TEFC T-frame **single-phase** Farm-Duty AC motors with rolled-steel frames and mounting feet; 2–5 hp
- **MTR Series:** TEFC 56C-frame **three-phase** AC motors with rolled-steel frames; flange mount and removable mounting feet; 0.33–2 hp
- **MTSS Series:** TEFC 56C-frame **three-phase** AC motors with stainless-steel frames; flange mount and round bodies or rigid mounting feet; 0.33–2 hp
- **MTCP Series:** TEFC T-frame **three-phase** Premium Efficiency AC motors with cast-iron frames and mounting feet; 1–200 hp (C-face 1–100 hp)
- **MTC Series:** TEFC T-frame **three-phase** EPAct AC motors with cast-iron frames and mounting feet; 250–300 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 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)

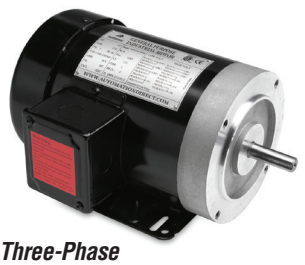
Single-Phase
Farm Duty T-Frame



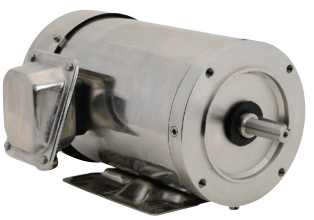
Single-Phase
Rolled Steel 56C Frame

Three-Phase
Stainless Steel 56C – Round Body

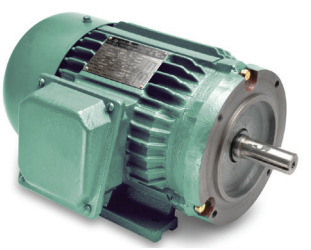
Three-Phase Premium Efficiency
Cast Iron T-Frame



Three-Phase
Rolled Steel 56C Frame



Three-Phase
Stainless Steel 56C – Rigid Base



Three-Phase Premium Efficiency
Cast Iron TC Frame

IronHorse® Farm-Duty AC Motors – 1-Phase

T-Frame TEFC Motors – Single-Phase 2 to 5 hp

Features

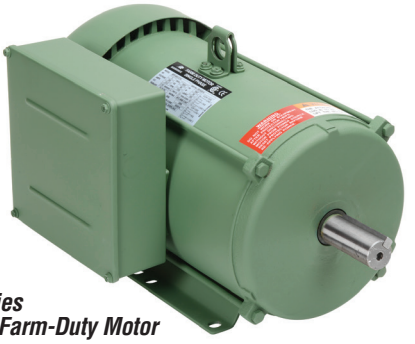
- 230VAC 1-phase
- Totally Enclosed Fan Cooled (TEFC) enclosure
- IP55 environmental rating
- NEMA T-frame
- Rolled-steel housing
- Rigid mounting base
- Can be mounted in horizontal orientation
- Steel fan cover
- Class-10 manual-reset locked-rotor thermal protector (motor thermal overload must be provided 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
- $_{C}CSA_{US}$ certified, CE

Accessories Available

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

Applications

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



MTF Series
1-Phase Farm-Duty Motor

Motor Specifications – Single-Phase Farm-Duty Motors

Part Number	Price	HP	Base RPM	Voltage	Housing	NEMA Frame	Service Factor	F.L. Amps @ 230VAC	Approx Weight (lb)
MTF-002-1C18-182	$309.00	2	1800	230VAC ±10%	TEFC	182T	1.15 @ 230VAC 1.0 @ 208VAC	8.5	74
MTF-003-1C18	$365.00	3				184T		12.9	85
MTF-005-1C18	$449.00	5				184T		21.2	105

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 ($lb\text{-}ft^2$)
				230V No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break -down			
MTF-002-1C18-182	2	L	1725	2.7	8.5	70.0	6.04	20.54	15.10	82.5	0.92	0.35
MTF-003-1C18	3			3.9	12.9	95.0	9.11	32.80	23.69	81.5	0.93	0.60
MTF-005-1C18	5			6.6	21.2	160.0	15.30	58.14	36.72	81.0	0.90	0.81

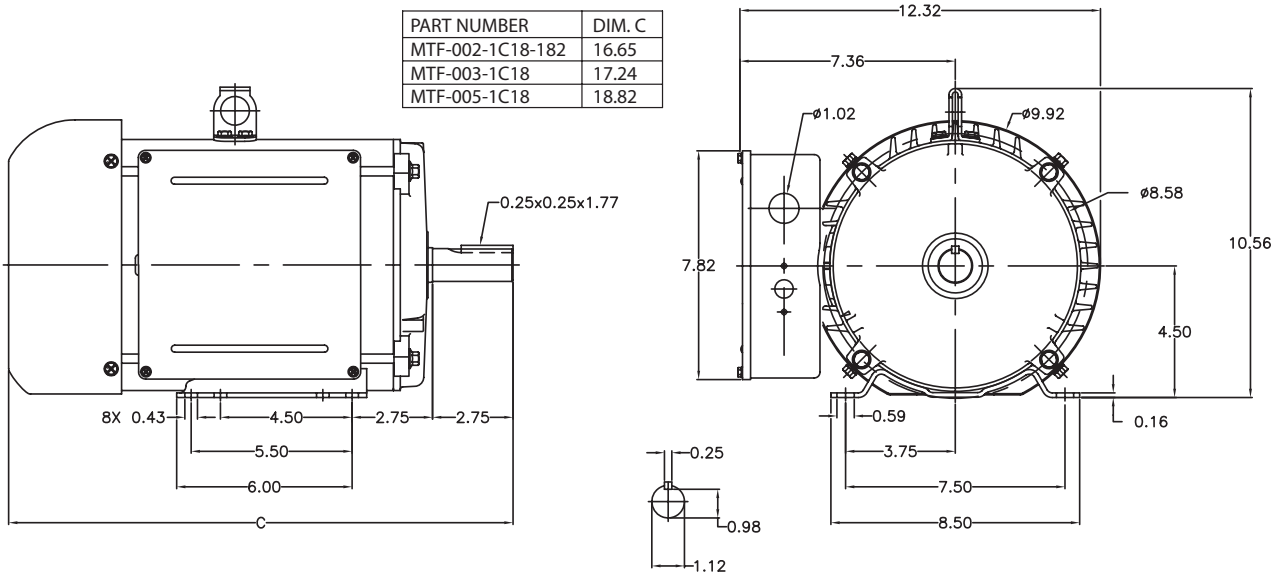
IronHorse® Farm-Duty AC Motors – 1-Phase

T-Frame TEFC Motors – Single-Phase 2 to 5 hp

Dimensions – (units = inches)

MTF-00x-1C18-xxx

PART NUMBER	DIM. C
MTF-002-1C18-182	16.65
MTF-003-1C18	17.24
MTF-005-1C18	18.82



IronHorse® Farm-Duty AC Motor Accessories

T-Frame TEFC Motors – Single-Phase 2 to 5 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

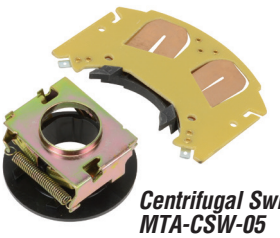
In addition to the start capacitors and centrifugal switches, IronHorse single-phase farm-duty motors also have run capacitors which allow the motors to develop higher running torque, greater efficiency, and improved power factor. We offer *spare/replacement* run capacitors for single-phase IronHorse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

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.



Centrifugal Switch MTA-CSW-05

Manual Overload Switch MTA-MOL-1

Junction Box MTAF-JBOX-180

Fan Shroud MTAF-SHROUD-180

Fan MTAF-FAN-184-2

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
MTA-CAP-16	$19.00	start capacitor	200	300	3.39 x 1.81 [86.1 x 46.0]	MTF-002-1C18-182	2
MTA-CAP-17	$24.00		300		3.39 x 1.81 [86.1 x 46.0]	MTF-003-1C18	3
MTA-CAP-18	$29.00		500		4.33 x 1.97 [110.0 x 50.0]	MTF-005-1C18	5
MTA-CAP-19	$18.00	run capacitor	35	450	3.96 x 1.77 [100.6 x 45.0]	MTF-002-1C18-182	2
MTA-CAP-20	$22.00		40		3.96 x 1.97 [100.6 x 50.0]	MTF-003-1C18	3
MTA-CAP-21	$26.00		50		4.17 x 1.97 [106.0 x 50.0]	MTF-005-1C18	5
MTA-CSW-05	$27.00	centrifugal switch	n/a	250	n/a	MTF-002-1C18-182	2
MTA-CSW-06	$27.00					MTF-003-1C18	3
MTA-CSW-07	$27.00					MTF-005-1C18	5
MTA-MOL-1	$19.00	manual overload switch				MTF-002-1C18-182	2
MTA-MOL-2	$20.00					MTF-003-1C18	3
MTA-MOL-3	$24.00					MTF-005-1C18	5
MTAF-JBOX-180	$42.00	junction box		n/a		MTF-xxx-1C18-xxx	all
MTAF-FAN-182	$9.00	fan				MTF-002-1C18-182	2
MTAF-FAN-184	$9.00					MTF-003-1C18	3
MTAF-FAN-184-2	$9.00					MTF-005-1C18	5
MTAF-SHROUD-180	$19.00	fan shroud				MTF-xxx-1C18-xxx	all

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

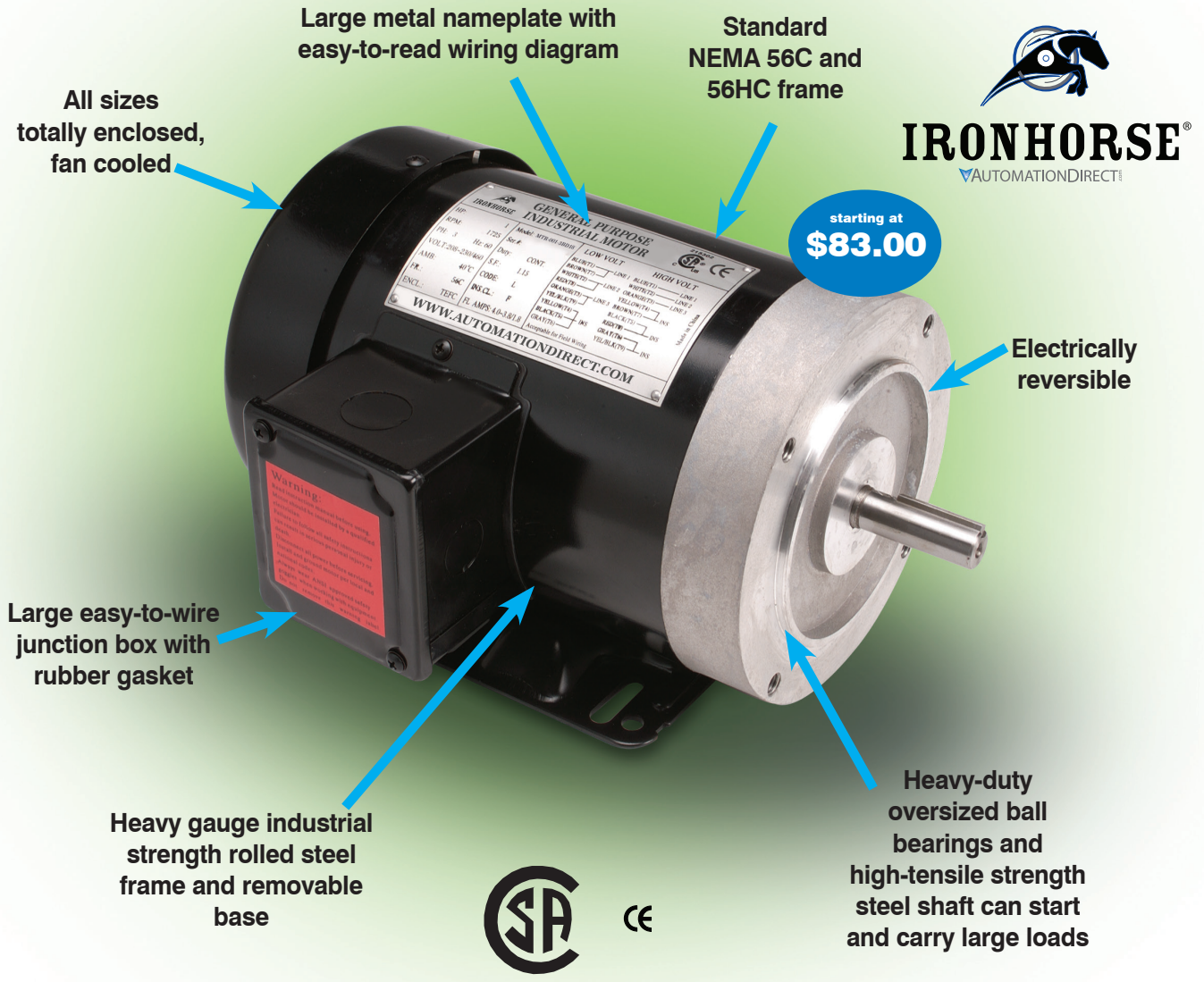
Start Capacitor MTA-CAP-16

Run Capacitor MTA-CAP-19

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 Accredition Program) compliance for motor efficiency testing through NIST. We comissioned them to put all IronHorse motors through rigorous mechnical 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 RPM

- 0.33 to 1.5 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

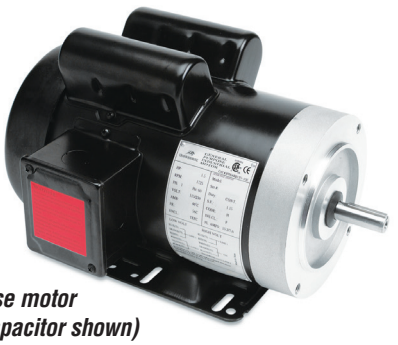
- Totally Enclosed Fan Cooled (TEFC) enclosure
- IP43 environmental rating
- NEMA 56C or 56HC flange mount (varies by model)
- Rolled steel shell frame / cast aluminum end bell
- Removable base / bolt-on/bolt-off mounting feet
- No mounting orientation restrictions
- Steel fan cover
- Large all-metal 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	
MTR-P33-1AB18	$101.00	1/3										6.6 / 3.3		26
MTR-P50-1AB18	$105.00	1/2						TEFC				8.8 / 4.4		28
MTR-P75-1AB18	$116.00	3/4	–		–	115/208-230	–	rolled steel frame with cast aluminum end bell	56C flange mount		–	11.0 / 5.5	–	32
MTR-001-1AB18	$129.00	1		1800						1.15		13.6 / 6.8		38
MTR-1P5-1AB18	$159.00	1-1/2										15.2 / 7.6		45
MTR2-1P5-1AB18	$165.00	1-1/2	1		1500	115/230	110/220	F1 conduit box location	56HC		1	14.5 / 7.3	14.0 / 7.0	37
MTR2-002-1AB18	$198.00	2	1-1/2									19.6 / 9.8	23.4 / 11.7	44
MTR2-P33-1AB36	$119.00	1/3	1/4									5.4 / 2.7	5.4 / 2.7	21
MTR2-P50-1AB36	$125.00	1/2	1/3		3000	115/230	110/220	TEFC			1	6.5 / 3.3	6.4 / 3.2	23
MTR2-P75-1AB36	$139.00	3/4	1/2					rolled steel frame with cast aluminum end bell	56C			9.2 / 4.6	9.2 / 4.6	27
MTR2-001-1AB36	$146.00	1	3/4	3600						1.15		11.5 / 5.8	10.2 / 5.1	30
MTR-1P5-1AB36	$152.00	1-1/2	–		–	115/208-230	–				–	14.2 / 7.1	–	37
MTR2-1P5-1AB36	$159.00	1-1/2	1		3000	115/230	110/220	F1 conduit box location			1	13.0 / 6.5	11.4 / 5.7	31
MTR2-002-1AB36	$187.00	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.

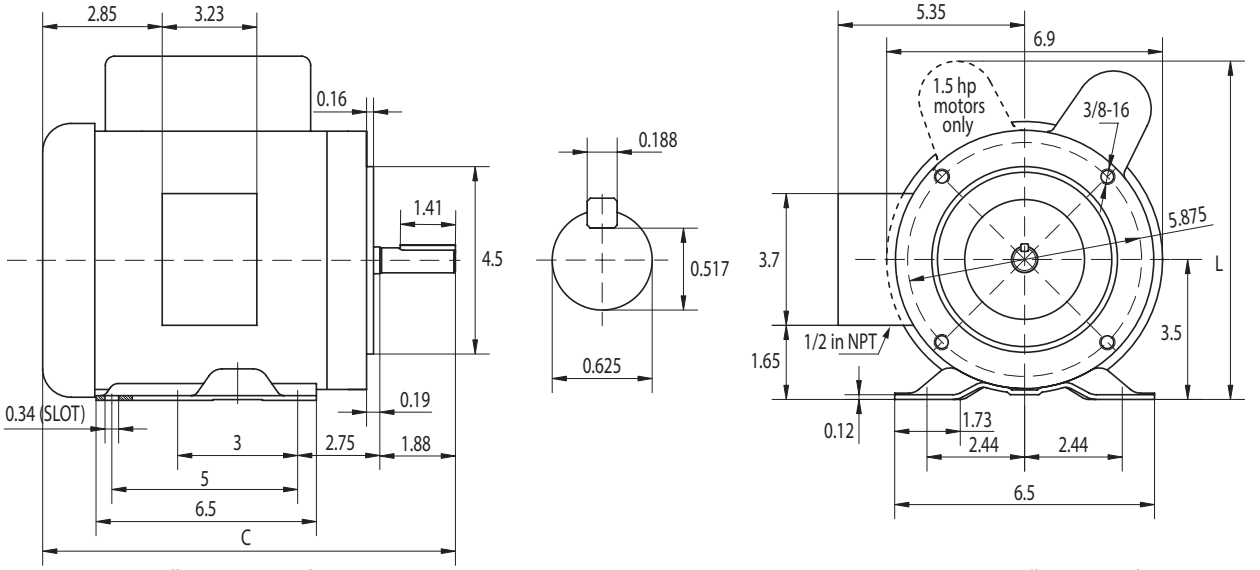
IronHorse® Rolled-Steel AC Motors – 1-Phase

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 ($lb·ft^2$)
	60 Hz	50 Hz		60 Hz	50 Hz	230V No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break -down			
1800 RPM														
MTR-P33-1AB18	1/3	–	N	1725	–	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
MTR-1P5-1AB18	1-1/2					5.07	15.2 / 7.6	120 / 65	4.57	11.43	10.28	71.0	0.75	0.142
MTR2-1P5-1AB18	1-1/2	1	L		1425	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
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
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	0.03
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

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

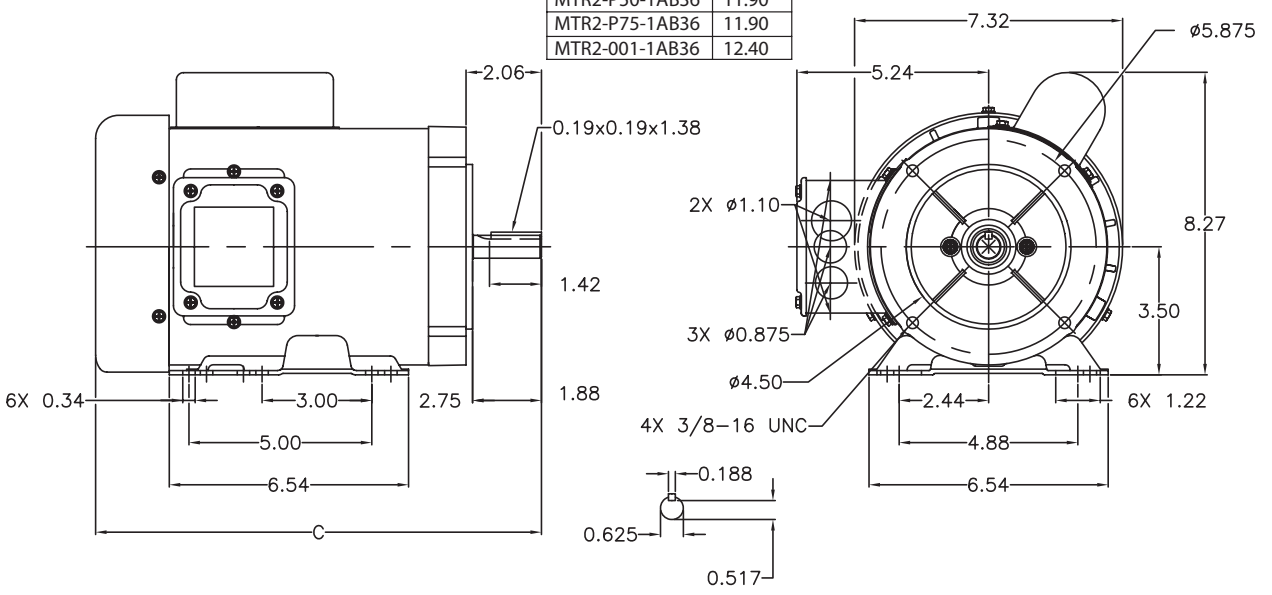
IronHorse® Rolled-Steel AC Motors – 1-Phase

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

Dimensions – (units = inches)

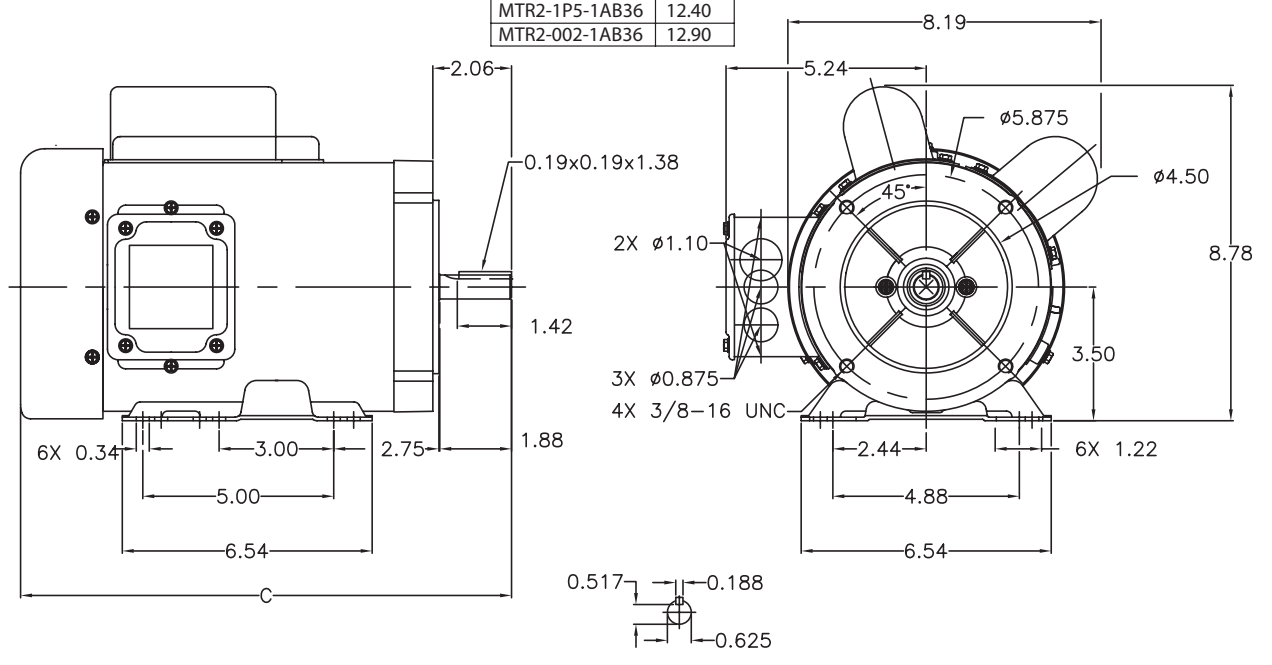
MTR2-Pxx-1AB36, MTR2-001-1AB36

PART NUMBER	DIM. C
MTR2-P33-1AB36	11.90
MTR2-P50-1AB36	11.90
MTR2-P75-1AB36	11.90
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

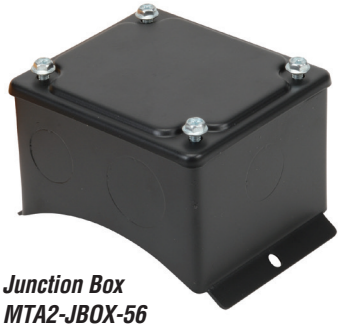
The start capacitors are no longer needed once the motors begin turning, so they are then taken out of the circuit by a centrifugal switch. We also offer *spare/replacement* switches for our motors.

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.)

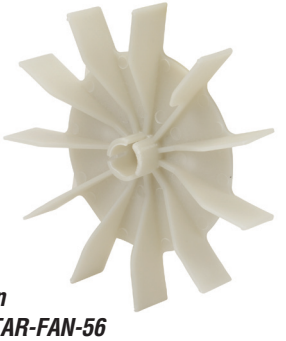
Junction Box
MTAR-JBOX-56



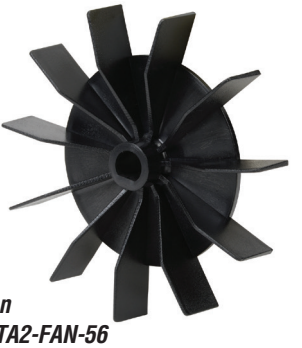
Junction Box
MTA2-JBOX-56

Start Capacitor
MTA-CAP-02

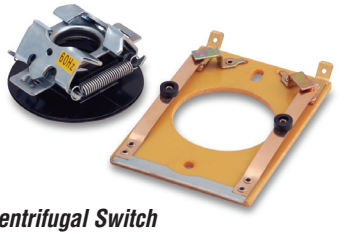
Run Capacitor
MTA-CAP-07



Fan
MTAR-FAN-56



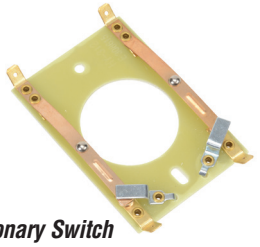
Fan
MTA2-FAN-56



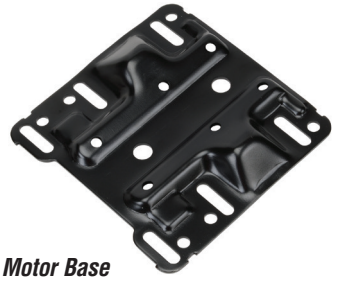
Centrifugal Switch
MTA-CSW-01

Fan
Shroud
MTAR-SHROUD-56

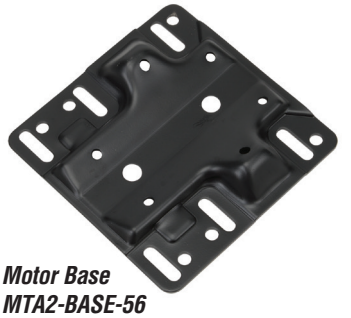
Fan
Shroud
MTA2-SHROUD-56



Stationary Switch
MTA-CSW-04



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	$10.50	start capacitor	200	165	3.15 x 1.65 [80.0 x 41.9]	MTR-P33-1AB18	1/3 : 1800
MTA-CAP-02	$10.50	start capacitor	250			MTR-P50-1AB18 MTR-P75-1AB18	1/2 : 1800 3/4 : 1800
MTA-CAP-03	$10.50	start capacitor	300			MTR-001-1AB18	1 : 1800
MTA-CAP-04	$10.50	start capacitor	250			MTR-1P5-1AB18	1-1/2 : 1800
MTA-CAP-08	$10.50	start capacitor	400			MTR-1P5-1AB36	1-1/2 : 3600
MTA-CAP-06	$10.50	run capacitor	40	450	4.02 x 1.75 [102.1 x 44.5]	MTR-1P5-1AB18	1-1/2 : 1800
MTA-CAP-09	$10.50	run capacitor	35		4.0 x 1.8 [101 x 45]	MTR-1P5-1AB36	1-1/2 : 3600
MTA-CSW-01	$10.50	centrifugal switch	n/a	250	n/a	MTR-xxx-1AB18	all 1800 rpm
MTA-CSW-02	$10.50					MTR-1P5-1AB36	all 3600 rpm
MTAR-BASE-56	$12.00	motor base		n/a		MTR-xxx-1ABxx	all
MTAR-FAN-56	$12.00	fan					
MTAR-JBOX-56	$12.00	junction box					
MTAR-SHROUD-56	$12.00	fan shroud					

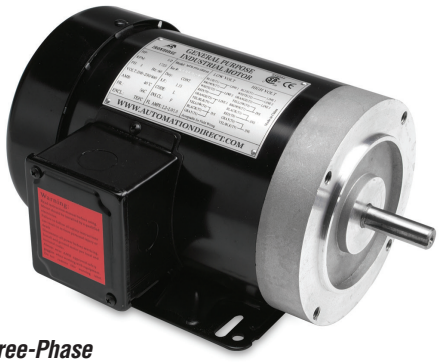
** These accessories are spare/replacement components only for MTR series IronHorse motors. Accessories for MTR series motors are not compatible with MTR2 series motors.*

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	$13.00	start capacitor	200	165	2.80 x 1.46 [71.1 x 37.1]	MTR2-P33-1AB36	1/3 : 3600
MTA-CAP-11	$14.00	start capacitor	300		3.39 x 1.85 [86.1 x 47.0]	MTR2-P50-1AB36	1/2 : 3600
MTA-CAP-12	$15.00	start capacitor	400			MTR2-P75-1AB36	3/4 : 3600
MTA-CAP-13	$22.00	start capacitor	500			MTR2-001-1AB36	1 : 3600
MTA-CAP-14	$22.00	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	$38.00	start capacitor	800	165	4.41 x 1.85 [112.0 x 47.0]		
MTA-CSW-03	$11.00	centrifugal switch	n/a	125	n/a	MTR2-xxx-1AB36	all 3600 rpm
MTA-CSW-04	$11.00	stationary switch				MTR2-xxx-1ABxx	all
MTA-CSW-08	$11.00	centrifugal switch				MTR2-xxx-1AB18	all 1800 rpm
MTA2-BASE-56	$12.00	motor base		n/a		MTR2-xxx-1ABxx	all
MTA2-FAN-56	$12.00	fan					
MTA2-JBOX-56	$12.00	junction box					
MTA2-SHROUD-56	$12.00	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® Rolled-Steel AC Motors – 3-Phase

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



Three-Phase

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

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)
MTR-P33-3BD18	$97.00	1/3	1800	3	208-230/460	TEFC rolled steel frame with cast aluminum end bell F1 conduit box location	56C flange mount (MTRP = 56HC)*	1.15	1.6 / 0.8	23
MTR-P33-3BD36	$79.00		3600						1.6 / 0.8	23
MTR-P50-3BD18	$100.00	1/2	1800						2.0 / 1.0	24
MTR-P50-3BD36	$87.00		3600						2.2 / 1.1	24
MTR-P75-3BD18	$112.00	3/4	1800						2.8 / 1.4	26
MTR-P75-3BD36	$95.00		3600						2.9 / 1.45	26
MTR-001-3BD18	$125.00	1	1800						3.6 / 1.8	29
MTR-001-3BD36	$101.00		3600						3.6 / 1.8	28
MTRP-001-3BD18	$153.00		1800						3.2 / 1.6	35
MTRP-001-3BD36	$125.00		3600						3.0 / 1.50	23
MTR-1P5-3BD18	$145.00	1-1/2	1800						4.8 / 2.4	33
MTR-1P5-3BD36	$114.00		3600						4.6 / 2.3	34
MTRP-1P5-3BD18	$175.00		1800						4.5 / 2.25	43
MTRP-1P5-3BD36	$142.00		3600						4.0 / 2.0	31
MTR-002-3BD18	$166.00	2	1800						6.0 / 3.0	42
MTR-002-3BD36	$127.00		3600						6.0 / 3.0	43
MTRP-002-3BD18	$204.00		1800						6.0 / 3.0	49
MTRP-002-3BD36	$152.00		3600						5.2 / 2.6	33
MTRP-003-3BD36	$197.00	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

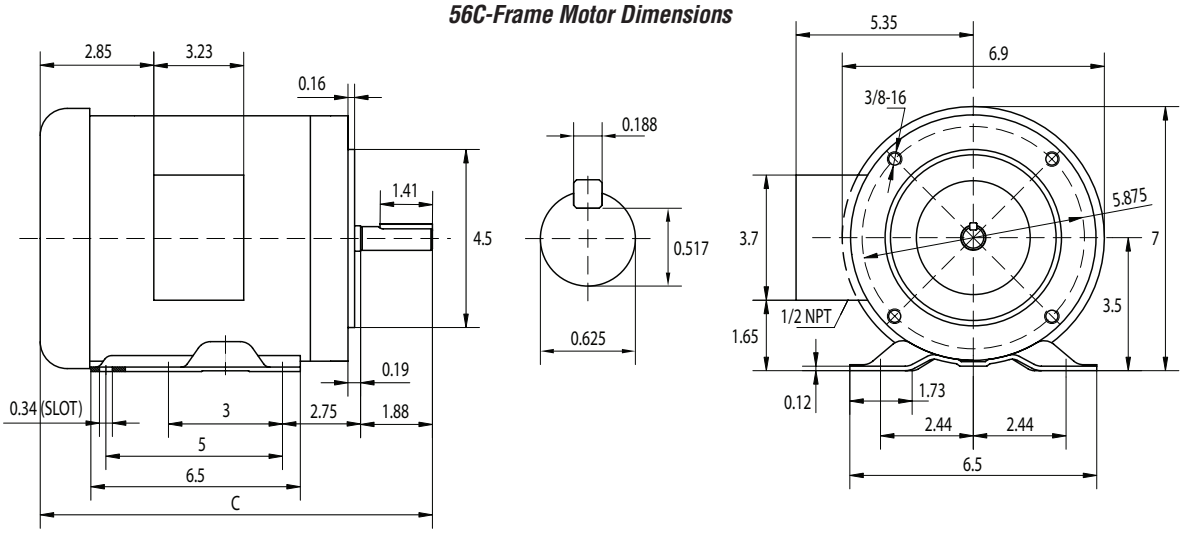
Performance Data – Three-Phase 56C/56HC-Frame Motors (460V data except as indicated) – 1800 & 3600 RPM																
Part Number	HP	NEMA Design	FL RPM	Minimum Speed (rpm)		Current @ 230V/460V (Amps)			Torque (lb·ft)			Maximum Speed (rpm)		FL Efficiency (%)	FL Power Factor	Rotor Inertia (lb·ft²)
				CT	VT	No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break -down	CHP*	Safe			
MTR-P33-3BD18	1/3	B	1725	863	345	0.53 / 0.27	1.6 / 0.8	8 / 4	1.02	2.55	2.81	2700	5400	67.0	0.70	0.058
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

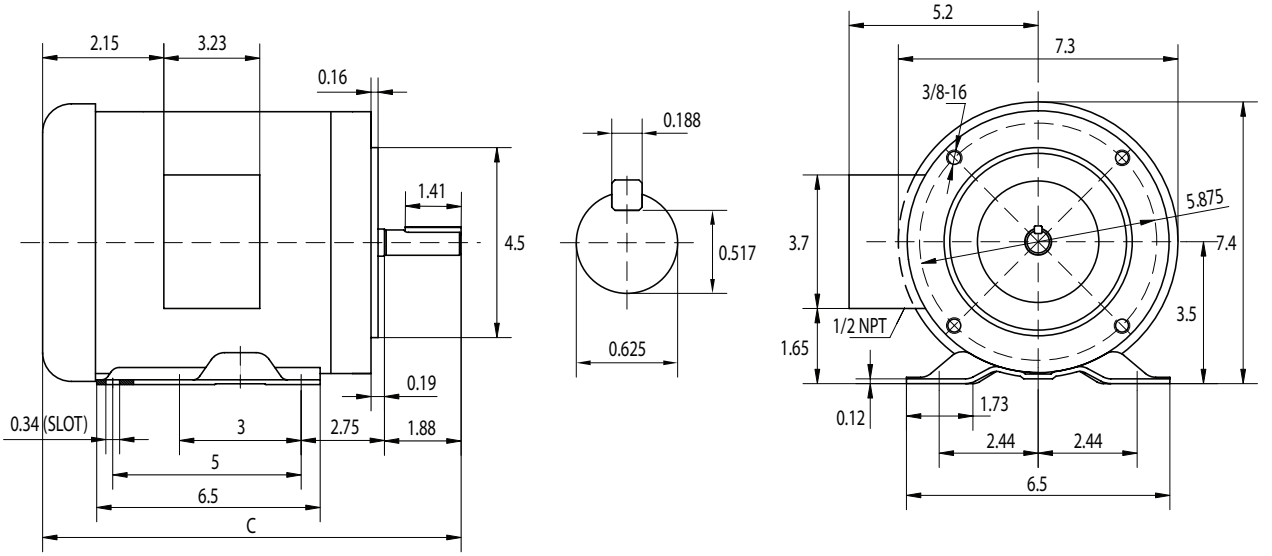


C = 12.2″; 0.33 to 1hp motors
C = 12.6″; 1.5hp MTR-1P5-3BD18
C = 12.2″; 1.5hp MTR-1P5-3BD36
C = 13.8″; 2hp MTR-002-3BD18
C = 12.4″; 2hp MTR-002-3BD36

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

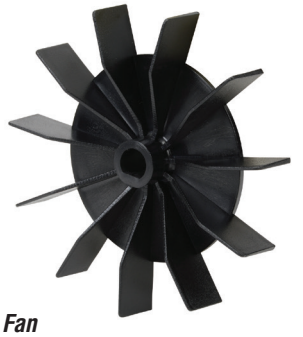
MTRP-xxx-3BDxx IronHorse Motors
(3-phase rolled steel)

IronHorse® 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-56-1

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	$12.00	motor base	MTR-xxx-xBDxx	all
MTAR-FAN-56	$12.00	fan		
MTAR-JBOX-56	$12.00	junction box		
MTAR-SHROUD-56	$12.00	fan shroud		
** These accessories are spare/replacement components only for MTR series IronHorse motors.*				

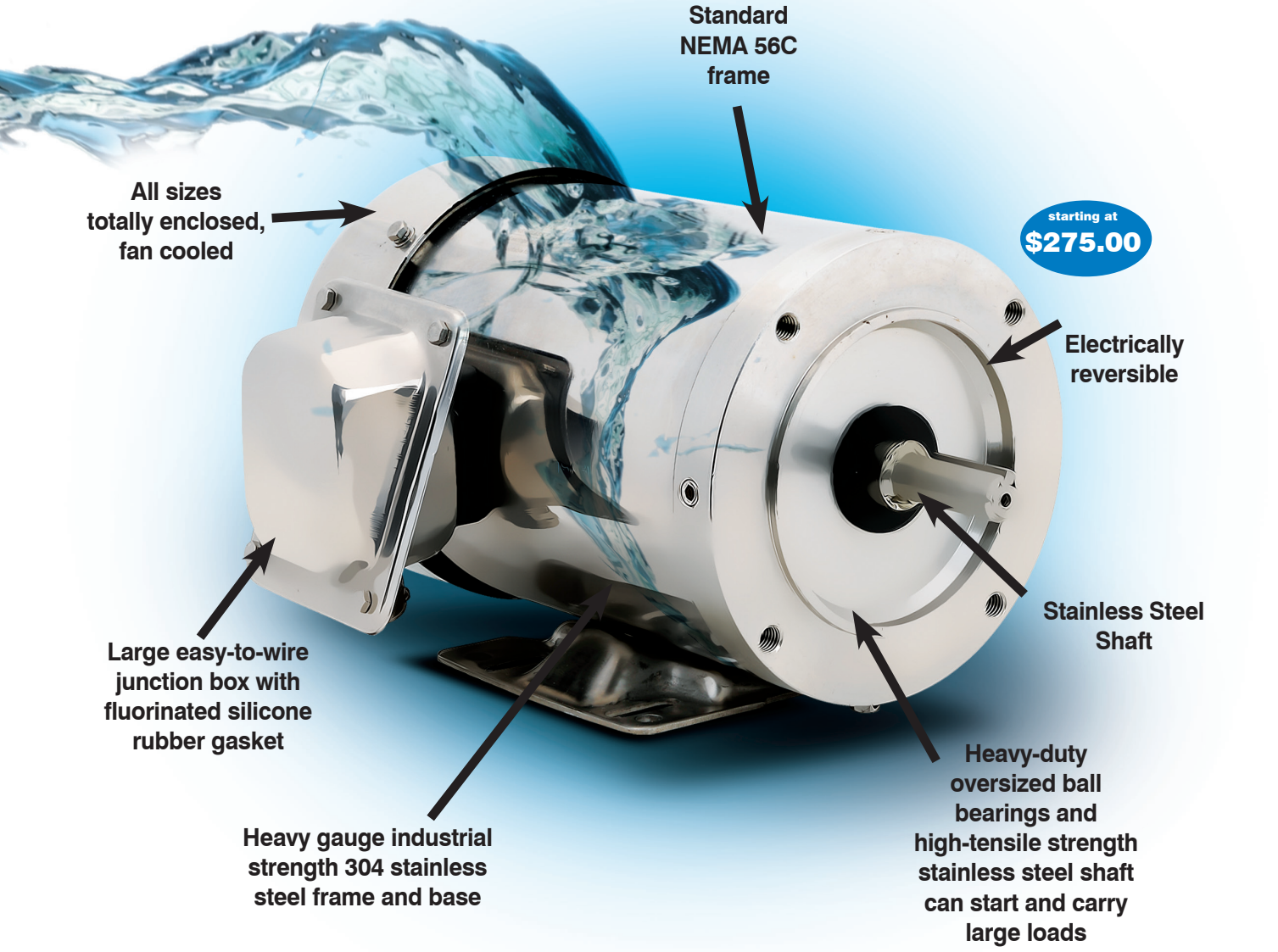
MTRP Series Three-Phase Motor Spare/Replacement Parts				
Part Number	*Price*	*Accessory Type*	*Applicable MTRP Motor Number*	*MTRP Motor HP : RPM*
MTA2-BASE-56	$12.00	motor base	MTRP-xxx-3BDxx	all
*MTA2-FAN-56-1**	$8.00	fan		
MTA2-JBOX-56	$12.00	junction box		
MTA2-SHROUD-56	$12.00	fan shroud		
** This 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 2 hp

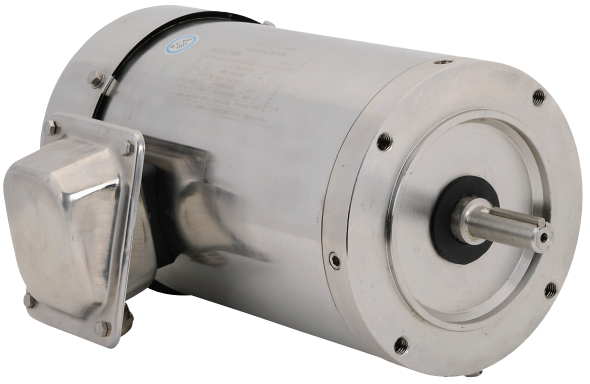


Three-phase - 208-230/460 Volt, 56C Frame - TEFC Enclosure, 1800 & 3600 RPM

- 0.33 to 2 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

56C Frame Stainless Steel TEFC Motors – Three Phase – 0.33 to 2 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 2 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	$275.00	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	$279.00	1/2							1.55-1.5 / 0.75	27
MTSS-P75-3BD18R	$288.00	3/4							2.6-2.4 / 1.2	29
MTSS-001-3BD18R	$291.00	1							3.5-3.2 / 1.6	34
MTSS-1P5-3BD18R	$306.00	1-1/2							4.6-4.2 / 2.1	36
MTSS-002-3BD18R	$323.00	2							6.6-6.0 / 3.0	43
MTSS-P33-3BD18	$289.00	1/3	1800			TEFC stainless steel frame with rigid base F1 conduit box location			1.5-1.4 / 0.7	28
MTSS-P50-3BD18	$294.00	1/2	1800						1.55-1.5 / 0.75	28
MTSS-P50-3BD36	$287.00		3600						1.99-1.8 / 0.9	29
MTSS-P75-3BD18	$303.00	3/4	1800						2.6-2.4 / 1.2	30
MTSS-P75-3BD36	$292.00		3600						2.4-2.3 / 1.15	31
MTSS-001-3BD18	$306.00	1	1800						3.5-3.2 / 1.6	35
MTSS-001-3BD36	$299.00		3600						3.3-3.0 / 1.5	31
MTSS-1P5-3BD18	$322.00	1-1/2	1800						4.6-4.2 / 2.1	36
MTSS-1P5-3BD36	$319.00		3600						4.2-4.0 / 2.0	36
MTSS-002-3BD18	$340.00	2	1800						6.6-6.0 / 3.0	44
MTSS-002-3BD36	$343.00		3600						5.0-4.8 / 2.4	43

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	$27.00	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·ft²)
				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
MTSS-001-3BD18(R)	1		1740	900	360	0.61	10.0	3.0	7.2	9.9	2250		84.0	0.78	0.090
MTSS-001-3BD36			3470	1800	720	0.58	10.0	1.5	4.6	5.5	4500		80.0	0.72	0.094
MTSS-1P5-3BD18(R)	1-1/2		1740	900	360	0.70	13.8	4.4	10.3	14.5	2250		84.0	0.83	0.087
MTSS-1P5-3BD36			3480	1800	720	0.70	15.0	2.3	6.6	9.0	4500		84.0	0.74	0.098
MTSS-002-3BD18(R)	2		1740	900	360	1.08	21.0	5.9	13.9	18.9	2250		84.0	0.83	0.101
MTSS-002-3BD36			3480	1800	720	0.85	18.0	2.9	8.6	11.3	4500		80.0	0.72	0.107

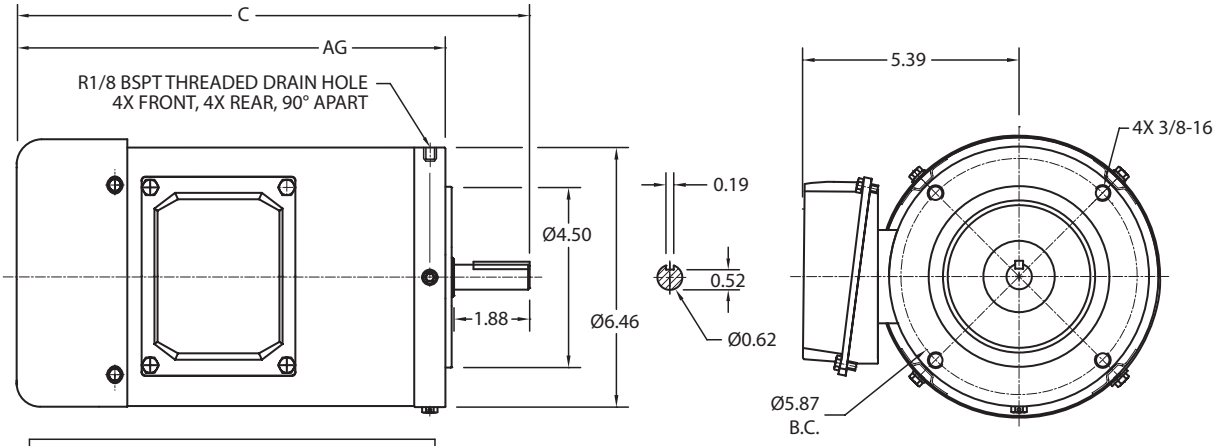
** Maximum Coupled HP speed is for direct-coupled loads.*

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

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

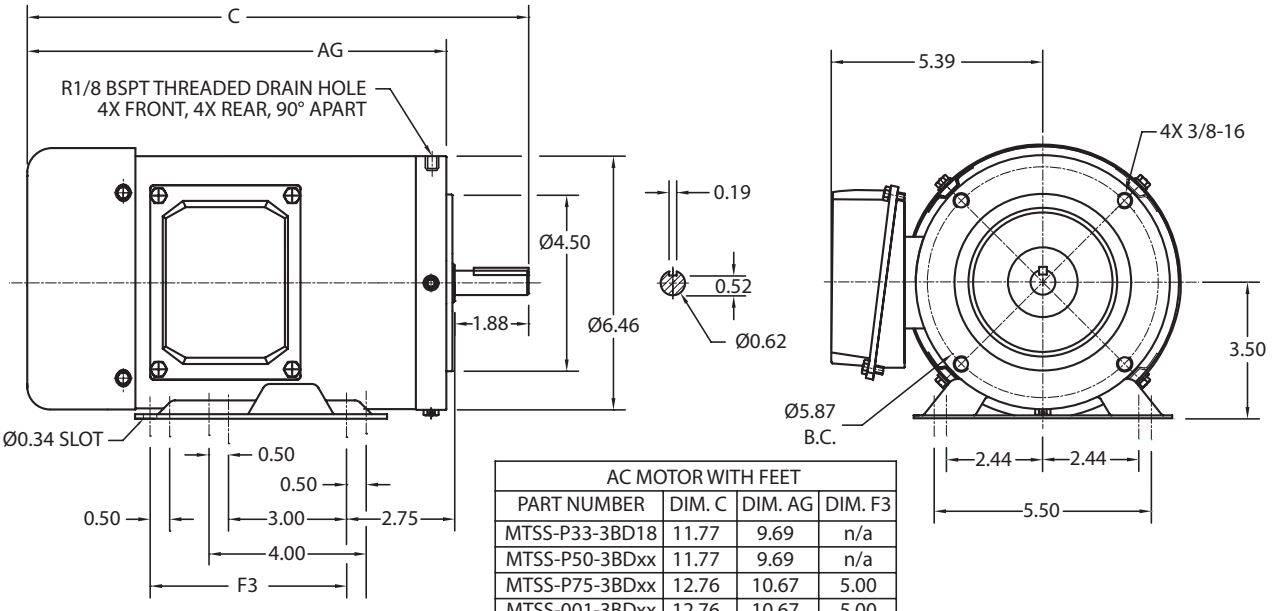
Dimensions = inches

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-001-3BD18R	12.76	10.67
MTSS-1P5-3BD18R	12.76	10.67
MTSS-002-3BD18R	12.76	10.48

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
MTSS-001-3BDxx	12.76	10.67	5.00
MTSS-1P5-3BDxx	12.76	10.67	5.00
MTSS-002-3BDxx	13.50	11.42	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 MTCP 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 100 hp

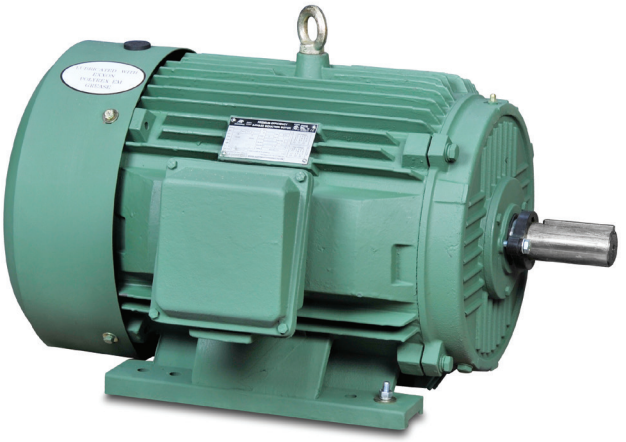
Three-phase - 208-230/460 Volt, T Frame - TEFC Enclosure, 1200,1800, 3600 RPM

- Premium Efficiency
- Premium grade quality
- All cast iron frames
- Drive-end ball bearings or roller bearings are available on all large horsepower motors
- Electrically reversible
- C-flange kits for C-face mounting are available
- C-face models available

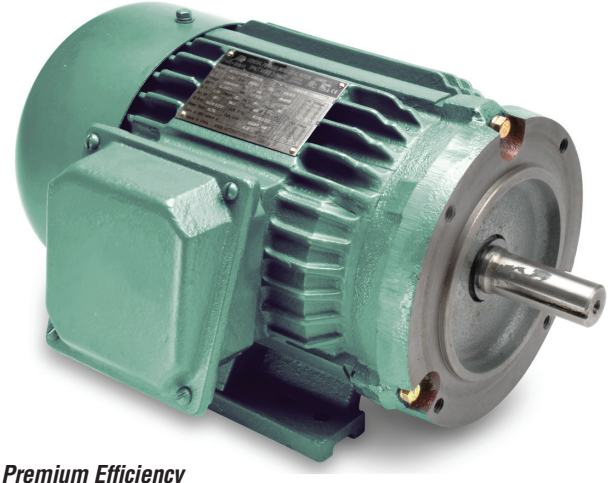
IronHorse® MTC & MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

T-Frame TEFC Motors – Three-Phase Industrial Duty – 1 to 200 hp[4]

TC-Frame (C-Face) TEFC Motors – Three-Phase Industrial Duty – 1 to 100 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 or roller bearings
- 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: 1.15 (1.0 with AC drive)
- Meets or exceeds Premium Efficiency standards
- Class I, Div 2 hazardous locations
- Inverter ratings: 10:1 (variable torque); 4:1 (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® MTC & MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

T-Frame TEFC Motors – Three-Phase Industrial Duty – 1–200 hp – 1800 rpm

TC-Frame (C-Face) TEFC Motors – 3-Phase Industrial Duty – 1–100 hp – 1800 rpm

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

Part Number (1)	Price	HP (2)	Base RPM	Phase	Voltage	Housing	NEMA Frame	Mounting (3)	Holes / Foot	Service Factor	F.L. Amps @230V/460V	Approx Product Weight (lb) (4)
MTCP-001-3BD18	$162.00	1	1800	3	208-230/460	TEFC	143T	F1(F2)	2	1.15	3.22 / 1.61	41
MTCP-001-3BD18C	$182.00						143TC					45
MTCP-1P5-3BD18	$202.00	1.5					145T		4		4.64 / 2.32	47
MTCP-1P5-3BD18C	$222.00						145TC					50
MTCP-002-3BD18	$228.00	2					145T		4		6.00 / 3.00	56
MTCP-002-3BD18C	$242.00						145TC					60
MTCP-003-3BD18	$365.00	3					182T		2		8.05 / 4.02	84
MTCP-003-3BD18C	$419.00						182TC					92
MTCP-005-3BD18	$379.00	5					184T		4		13.4 / 6.71	99
MTCP-005-3BD18C	$433.00						184TC					107
MTCP-7P5-3BD18	$583.00	7.5					213T		2		18.7 / 9.34	150
MTCP-7P5-3BD18C	$647.00						213TC					154
MTCP-010-3BD18	$659.00	10					215T		4		24.9 / 12.5	186
MTCP-010-3BD18C	$734.00						215TC					190
MTCP-015-3BD18	$893.00	15					254T		2		35.8 / 17.9	329
MTCP-015-3BD18C	$987.00						254TC					325
MTCP-020-3BD18	$1,034.00	20					256T		4		47.9 / 24.0	390
MTCP-020-3BD18C	$1,147.00						256TC					370
MTCP-025-3BD18	$1,337.00	25					284T		2		59.6 / 29.8	455
MTCP-025-3BD18C	$1,352.00						284TC					467
MTCP-030-3BD18	$1,436.00	30					286T		4		70.0 / 35.0	488
MTCP-030-3BD18C	$1,434.00						286TC					497
MTCP-040-3BD18	$1,722.00	40					324T		2		94.8 / 47.4	611
MTCP-040-3BD18C	$1,770.00						324TC					626
MTCP-050-3BD18	$1,928.00	50					326T		4		117 / 58.4	690
MTCP-050-3BD18C	$1,969.00						326TC					706
MTCP-060-3BD18	$2,569.00	60					364T		2		139 / 69.6	851
MTCP-060-3BD18C	$2,564.00						364TC					864
MTCP-075-3BD18	$2,769.00	75					365T		4		173 / 86.7	948
MTCP-075-3BD18C	$2,770.00						365TC					961
MTCP-100-3BD18	$3,499.00	100					405T		4		229 / 114	1199
MTCP-100-3BD18C	$3,433.00						405TC					1236
MTCP-125-3BD18	$4,269.00	125					444T		2		285 / 143	1500
MTCP-150-3BD18	$4,269.00	150					445T		4		342 / 171	1630
MTCP-200-3BD18	$6,189.00	200					445/7T				453 / 227	2127
MTC-250-3D18	$7,389.00	250	1800	3	460	TEFC	449T	F1	2	1.15	– / 282	2508
MTC-300-3D18	$9,579.00	300									– / 334	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. Premium Efficiency standards not applicable for MTC motors over 200 hp.*

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.*

IronHorse® MTC & MTCP 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	Phase	Voltage	Housing	NEMA Frame	Mounting (2)	Holes / Foot	Service Factor	F.L. Amps @230V/460V	Approx Product Weight (lb) (3)
MTCP-001-3BD12	$217.00	1	1200	3	208-230/460	TEFC cast iron	145T	F1(F2)	4	1.15	3.2 / 1.6	60
MTCP-1P5-3BD12	$321.00	1.5					182T		2		4.5 / 2.2	104
MTCP-002-3BD12	$355.00	2					184T		4		5.7 / 2.9	110
MTCP-003-3BD12	$449.00	3					213T		2		8.5 / 4.2	160
MTCP-005-3BD12	$539.00	5					215T		4		13.8 / 6.9	180
MTCP-7P5-3BD12	$834.00	7.5					254T		2		20.9 / 10.4	325
MTCP-010-3BD12	$917.00	10					256T		4		27.8 / 13.9	325
MTCP-015-3BD12	$1,249.00	15					284T		2		40.3 / 20.2	420
MTCP-020-3BD12	$1,348.00	20					286T		4		52.4 / 26.2	470

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.

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

Part Number (1)	Price	HP	Base RPM	Phase	Voltage	Housing	NEMA Frame	Mounting (2)	Holes / Foot	Service Factor	F.L. Amps @230V/460V	Approx Product Weight (lb) (3)
MTCP-1P5-3BD36	$183.00	1.5	3600	3	208-230/460	TEFC cast iron	143T	F1(F2)	2	1.15	4.08 / 2.04	44
MTCP-002-3BD36	$197.00	2					145T		4		5.4 / 2.7	53
MTCP-003-3BD36	$278.00	3					182T		2		7.74 / 3.87	79
MTCP-005-3BD36	$322.00	5					184T		4		12.6 / 6.3	92
MTCP-7P5-3BD36	$488.00	7.5					213T		2		18.46 / 9.23	140
MTCP-010-3BD36	$513.00	10					215T		4		24.4 / 12.2	161
MTCP-015-3BD36	$889.00	15					254T		2		35.0 / 17.5	278
MTCP-020-3BD36	$1,019.00	20					256T		4		46.4 / 23.2	306

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.

IronHorse® MTC & MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

T-Frame TEFC Motors – Three-Phase Industrial Duty – 1–200 hp(2)

TC-Frame (C-Face) TEFC Motors – Three-Phase Industrial Duty – 1–100 hp

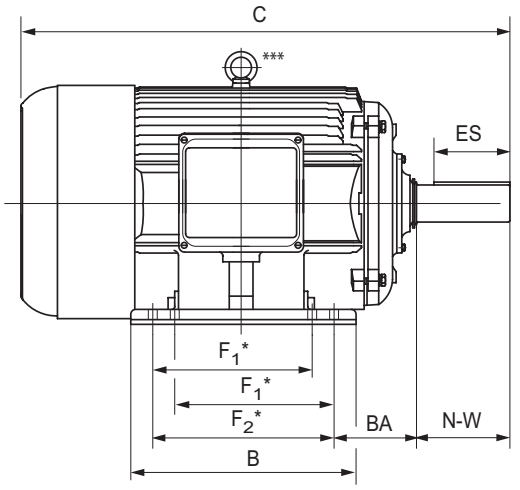
Performance Data – T & TC Frame Three-Phase MTCP Motors (460 Volt except as indicated) – 1200, 1800, 3600 rpm

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	VT	No Load	Full Load	Locked Rotor	Full Load	Locked Rotor	Break-down	CHP(1)	Safe			
MTCP-001-3BD12	1	B	1162	300	120	2.5 / 1.25	3.2 / 1.6	30 / 15	4.5	10.8	14.4	1800	3600	82.5	0.72	0.33
MTCP-001-3BD18(C)			1750	450	180	2.28 / 1.14	3.22 / 1.61	30.0 / 15.0	3.00	9.00	11.4	2700	5400	86.3	0.690	0.089
MTCP-1P5-3BD12	1.5		1180	300	120	3.2 / 1.6	4.5 / 2.2	40 / 20	6.68	15.36	21.38	1800	3600	87.5	0.72	0.36
MTCP-1P5-3BD18(C)			1750	450	180	3.12 / 1.56	4.64 / 2.32	40.0 / 20.0	4.5	9.0	14.0	2700	5400	87.3	0.726	0.11
MTCP-1P5-3BD36			3570	900	360	2.0 / 1.0	4.08 / 2.04	40.0 / 20.0	2.2	6.4	7.9	5400	5400	85.5	0.828	0.078
MTCP-002-3BD12	2		1180	300	120	4.2 / 2.1	5.7 / 2.9	50.0 / 25.0	8.61	20.66	29.88	1800	3600	88.5	0.74	0.47
MTCP-002-3BD18(C)			1750	450	180	3.6 / 1.8	6.0 / 3.0	50.0 / 25.0	6.0	17.4	19.2	2700	5400	87.3	0.725	0.13
MTCP-002-3BD36			3520	900	360	3.14 / 1.57	5.4 / 2.7	50.0 / 25.0	3.0	9.0	12.0	5400	5400	86.6	0.821	0.098
MTCP-003-3BD12	3		1180	300	120	6.4 / 3.2	8.5 / 4.2	68.0 / 34.0	13.36	29.39	40.08	1800	3600	89.5	0.74	0.50
MTCP-003-3BD18(C)			1750	450	180	4.1 / 2.05	8.05 / 4.02	64.0 / 32.0	9.0	20.7	25.2	2700	5400	90.3	0.786	0.28
MTCP-003-3BD36			3520	900	360	3.9 / 1.95	7.74 / 3.87	64.0 / 32.0	4.48	12.54	17.02	5400	5400	87.0	0.845	0.195
MTCP-005-3BD12	5		1180	300	120	9.2 / 4.6	13.8 / 6.9	92 / 46	22.2	48.8	66.6	1800	3600	89.5	0.76	1.97
MTCP-005-3BD18(C)			1750	450	180	6.2 / 3.1	13.41 / 6.71	92.0 / 46.0	15.0	34.5	43.5	2700	5400	90.3	0.786	0.33
MTCP-005-3BD36			3570	900	360	5.2 / 2.6	12.6 / 6.3	92.0 / 46.0	7.36	16.19	22.82	5400	5400	89.0	0.841	0.22
MTCP-7P5-3BD12	7.5		1180	300	120	12.0 / 6.0	20.9 / 10.4	127 / 63.5	33.4	76.8	116.9	1800	3600	91.1	0.74	2.74
MTCP-7P5-3BD18(C)			1760	450	180	8.44 / 4.22	18.68 / 9.34	127 / 63.5	22.4	44.8	69.4	2700	5400	91.8	0.825	1.814
MTCP-7P5-3BD36			3520	900	360	6.66 / 3.33	18.46 / 9.23	127 / 63.5	11.2	28.0	34.7	5400	5400	89.7	0.851	0.501
MTCP-010-3BD12	10		1180	300	120	10.8 / 5.4	27.8 / 13.9	162 / 81	44.5	97.9	106.8	1800	3600	91.0	0.74	2.98
MTCP-010-3BD18(C)			1750	450	180	10.54 / 5.27	24.9 / 12.45	163 / 81.5	30.0	61.5	93.0	2700	4200	92.5	0.826	1.97
MTCP-010-3BD36			3550	900	360	8.76 / 4.38	24.4 / 12.2	163 / 81.5	14.8	37.0	50.3	5400	5400	90.3	0.851	1.2
MTCP-015-3BD12	15		1180	300	120	18.0 / 9.0	40.3 / 20.2	232 / 116	60.23	132.51	174.67	1800	3600	91.7	0.76	5.49
MTCP-015-3BD18(C)			1750	450	180	15.4 / 7.7	35.8 / 17.9	232 / 116	45	92	126	2700	4200	92.5	0.890	3.33
MTCP-015-3BD36			3550	900	360	12 / 6	35.0 / 17.5	232 / 116	22.2	46.6	64.4	5400	5400	91.2	0.852	1.86
MTCP-020-3BD12	20		1180	300	120	17.8 / 8.9	52.4 / 26.2	290 / 145	89.1	196.0	258.4	1800	3600	91.7	0.78	12.9
MTCP-020-3BD18(C)			1770	450	180	17.11 / 8.56	47.94 / 23.97	290 / 145	59.4	118.8	166.3	2700	4200	93.8	0.846	4.09
MTCP-020-3BD36			3570	900	360	15 / 7.5	46.4 / 23.2	290 / 145	29.4	61.7	85.3	5400	5400	91.2	0.851	2.01
MTCP-025-3BD18(C)	25		1770	450	180	24 / 12	59.6 / 29.8	365 / 182.5	74.2	155.8	185.5	2700	4200	93.6	0.860	7.01
MTCP-030-3BD18(C)	30		1780			27 / 13.5	69.96 / 34.98	435 / 217.5	88.6	203.8	248.1			93.7	0.846	8.3
MTCP-040-3BD18(C)	40		1780			29.6 / 14.8	94.76 / 47.38	580 / 290	118.1	248.0	271.6			94.4	0.850	9
MTCP-050-3BD18(C)	50		1775			36.2 / 18.1	116.8 / 58.4	725 / 362.5	148	326	414			94.5	0.855	14.1
MTCP-060-3BD18(C)	60		1788			45.6 / 22.8	139.3 / 69.6	870 / 435	179	376	519			95.0	0.850	16.27
MTCP-075-3BD18(C)	75		1787			58.4 / 29.2	173.4 / 86.7	1085 / 542.5	221	464	619			95.4	0.850	18.8
MTCP-100-3BD18(C)	100		1790			75 / 37.5	228.6 / 114.3	1450 / 725	293.2	645.0	703.7			95.4	0.860	45.5
MTCP-125-3BD18	125		1790			94.54 / 47.27	285.2 / 142.6	1816 / 908	367	624	918			95.4	0.860	65.1
MTCP-150-3BD18	150		1790			104.4 / 52.2	342 / 171	2170 / 1085	443	797	1108			95.8	0.860	69.26
MTCP-200-3BD18	200		1790			133.26 / 66.63	453.2 / 226.6	2900 / 1450	587	1174	1644			96.3	0.860	84.0
MTC-250-3D18 (2)	250	B	1790	900	360	- / 85.6	- / 282	- / 1980	728	1660	2402	2700	4200	95.9	0.87	86.000
MTC-300-3D18 (2)	300					- / 96.6	- / 334	- / 2351	864	1953	2817			95.7	0.88	105.000

1) Maximum Constant HP RPM is for direct coupled loads.
2) Premium Efficiency standards not applicable for MTC motors over 200 hp(2).

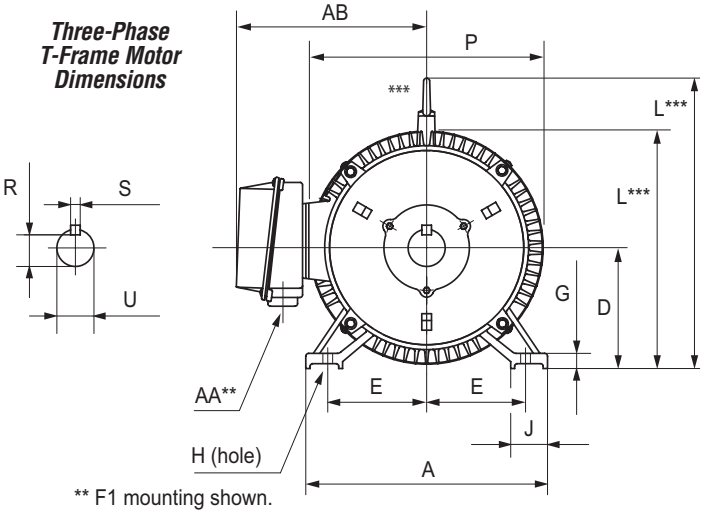
IronHorse® MTC & MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

T-Frame TEFC Motors – Three-Phase Industrial Duty – 1 to 200 hp(1)



* 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																						
MTCP-001-3BD18	1	143T	7	3/4"NPT	6.89	5.1	2.25	12.47	3.5	2.75	1.41	n/a	4	0.47	0.34	1.45	2.25	6.90	7.2	0.771	0.188	0.875
MTCP-1P5-3BD18	1.5	145T	7	3/4"NPT	6.89	6.1	2.25	13.47	3.5	2.75	1.41	4	5	0.47	0.34	1.45	2.25	6.90	7.2	0.771	0.188	0.875
MTCP-002-3BD18	2		7	3/4"NPT	6.89	6.1	2.25	13.47	3.5	2.75	1.41	4	5	0.47	0.34	1.45	2.25	6.90	7.2	0.771	0.188	0.875
MTCP-003-3BD18	3	182T	8.9	1" NPT	7.45	6.3	2.75	15.11	4.5	3.75	1.78	n/a	4.5	0.52	0.41	1.97	2.75	10.39	9.0	0.986	0.25	1.125
MTCP-005-3BD18	5	184T	8.9	1" NPT	7.45	7.1	2.75	16.12	4.5	3.75	1.78	4.5	5.5	0.52	0.41	1.97	2.75	10.39	9.0	0.986	0.25	1.125
MTCP-7P5-3BD18	7.5	213T	10.5	1" NPT	8.63	7.5	3.5	18.89	5.25	4.25	2.41	n/a	5.5	0.78	0.41	2.36	3.38	12.26	10.8	1.201	0.312	1.375
MTCP-010-3BD18	10	215T	10.5	1" NPT	8.63	9	3.5	20.49	5.25	4.25	2.41	5.5	7	0.78	0.41	2.36	3.38	12.26	10.8	1.201	0.312	1.375
MTCP-015-3BD18	15	254T	12.3	1.5" NPT	12.0	10.3	4.25	23.29	6.25	5	2.91	n/a	8.25	0.87	0.53	2.40	4	15.10	14.4	1.416	0.375	1.625
MTCP-020-3BD18	20	256T	12.3	1.5" NPT	12.0	12.4	4.25	25.06	6.25	5	2.91	8.25	10	0.87	0.53	2.40	4	15.10	14.4	1.416	0.375	1.625
MTCP-025-3BD18	25	284T	13.7	1.5" NPT	13.7	12.2	4.75	26.63	7	5.5	3.28	n/a	9.5	0.98	0.53	2.68	4.62	16.50	16.0	1.591	0.5	1.875
MTCP-030-3BD18	30	286T	13.7	1.5" NPT	13.7	13.7	4.75	28.18	7	5.5	3.28	9.5	11	0.98	0.53	2.68	4.62	16.50	16.0	1.591	0.5	1.875
MTCP-040-3BD18	40	324T	15.3	2"NPT	14.6	12.6	5.25	29.95	8	6.25	3.91	n/a	10.5	0.98	0.66	2.76	5.25	18.25	17.8	1.845	0.5	2.125
MTCP-050-3BD18	50	326T	15.3	2"NPT	14.6	14.0	5.25	31.24	8	6.25	3.91	10.5	12	0.98	0.66	2.76	5.25	18.25	17.8	1.845	0.5	2.125
MTCP-060-3BD18	60	364T	17.0	3"NPT	17.6	14.6	5.88	32.58	9	7	4.28	n/a	11.25	1.10	0.66	3.15	5.88	21.0	19.4	2.021	0.625	2.375
MTCP-075-3BD18	75	365T	17.0	3"NPT	17.6	15.6	5.88	34.11	9	7	4.28	11.25	12.25	1.10	0.66	3.15	5.88	21.0	19.4	2.021	0.625	2.375
MTCP-100-3BD18	100	405T	20	3"NPT	18.1	17.8	6.62	38.35	10	8	5.65	12.25	13.75	1.18	0.81	3.15	7.25	23.46	21.4	2.45	0.75	2.875
MTCP-125-3BD18	125	444T	22	2x3"NPT	19.1	18.5	7.5	42.52	11	9	6.91	n/a	14.5	1.38	0.81	3.35	8.5	26.43	23.4	2.88	0.875	3.375
MTCP-150-3BD18	150	445T	22	2x3"NPT	19.1	20.5	7.5	44.5	11	9	6.91	14.5	16.5	1.38	0.81	3.35	8.5	26.43	23.4	2.88	0.875	3.375
MTCP-200-3BD18	200	445/7T	22	2x3"NPT	19.1	24	7.5	48.03	11	9	6.91	16.5	20	1.38	0.81	3.35	8.5	26.43	23.4	2.88	0.875	3.375
MTC-250-3D18 (1)	250	449T	22	2x3"NPT	19.1	31	7.5	55.51	11	9	7.01	n/a	25	1.575	0.81	3.35	8.5	27.25	24	2.88	0.875	3.375
MTC-300-3D18 (1)	300																					

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

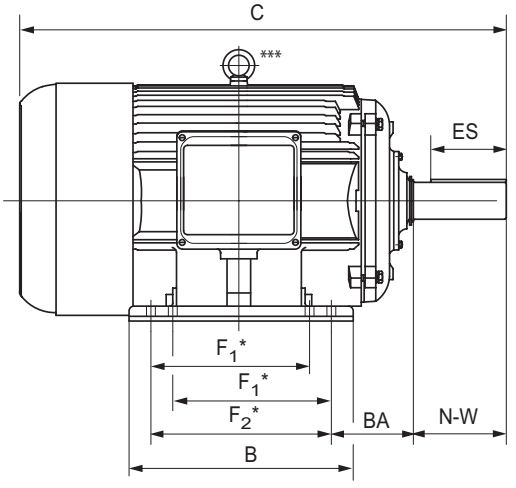
***** AA dimension is conduit fitting size.***
F1 mounting shown; some frame sizes are F1/F2 convertible; refer to T Frame "Motor Specifications" table.
(F2 mounting = conduit entrance on right side facing shaft.)

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

1) Premium Efficiency standards not applicable for MTC motors over 200 hp(1).

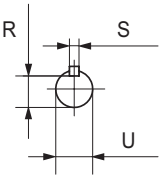
IronHorse® MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

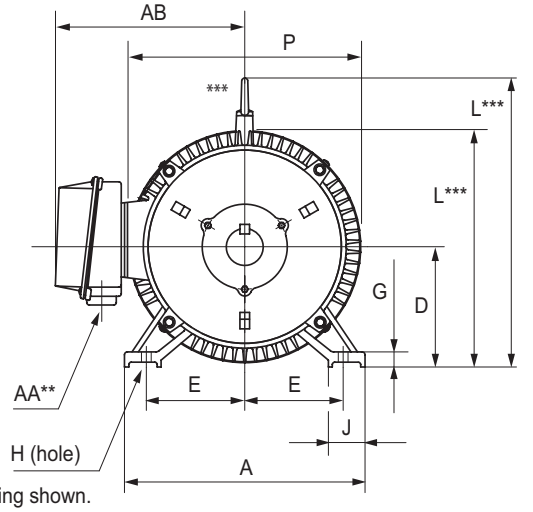
T-Frame TEFC Motors – Three-Phase Industrial Duty – Dimensions



* 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																						
MTCP-001-3BD12	1	145T	7	3/4"NPT	6.89	6.1	2.25	13.47	3.5	2.75	1.41	4	5	0.47	0.34	1.45	2.25	6.90	7.2	0.771	0.188	0.875
MTCP-1P5-3BD12	1-1/2	182T	8.9	1" NPT	7.45	6.3	2.75	15.11	4.5	3.75	1.78	n/a	4.5	0.52	0.41	1.97	2.75	10.39	9.0	0.986	0.25	1.125
MTCP-002-3BD12	2	184T	8.9	1" NPT	7.45	7.1	2.75	16.12	4.5	3.75	1.78	4.5	5.5	0.52	0.41	1.97	2.75	10.39	9.0	0.986	0.25	1.125
MTCP-003-3BD12	3	213T	10.5	1" NPT	8.63	7.5	3.5	18.89	5.25	4.25	2.41	n/a	5.5	0.78	0.41	2.36	3.38	12.26	10.8	1.201	0.312	1.375
MTCP-005-3BD12	5	215T	10.5	1" NPT	8.63	9	3.5	20.49	5.25	4.25	2.41	5.5	7	0.78	0.41	2.36	3.38	12.26	10.8	1.201	0.312	1.375
MTCP-7P5-3BD12	7-1/2	254T	12.3	1.5" NPT	12.0	10.3	4.25	23.29	6.25	5	2.91	n/a	8.25	0.87	0.53	2.40	4	15.10	14.4	1.416	0.375	1.625
MTCP-010-3BD12	10	256T	12.3	1.5" NPT	12.0	12.4	4.25	25.06	6.25	5	2.91	8.25	10	0.87	0.53	2.40	4	15.10	14.4	1.416	0.375	1.625
MTCP-015-3BD12	15	284T	13.7	1.5" NPT	13.7	12.2	4.75	26.63	7	5.5	3.28	n/a	9.5	0.98	0.53	2.68	4.62	16.50	16.0	1.591	0.5	1.875
MTCP-020-3BD12	20	286T	13.7	1.5" NPT	13.7	13.7	4.75	28.18	7	5.5	3.28	9.5	11	0.98	0.53	2.68	4.62	16.50	16.0	1.591	0.5	1.875
3600 rpm Motors																						
MTCP-1P5-3BD36	1-1/2	143T	7	3/4"NPT	6.89	5.1	2.25	12.47	3.5	2.75	1.41	n/a	4	0.47	0.34	1.45	2.25	6.90	7.2	0.771	0.188	0.875
MTCP-002-3BD36	2	145T	7	3/4"NPT	6.89	6.1	2.25	13.47	3.5	2.75	1.41	4	5	0.47	0.34	1.45	2.25	6.90	7.2	0.771	0.188	0.875
MTCP-003-3BD36	3	182T	8.9	1" NPT	7.45	6.3	2.75	15.11	4.5	3.75	1.78	n/a	4.5	0.52	0.41	1.97	2.75	10.39	9.0	0.986	0.25	1.125
MTCP-005-3BD36	5	184T	8.9	1" NPT	7.45	7.1	2.75	16.12	4.5	3.75	1.78	4.5	5.5	0.52	0.41	1.97	2.75	10.39	9.0	0.986	0.25	1.125
MTCP-7P5-3BD36	7-1/2	213T	10.5	1" NPT	8.63	7.5	3.5	18.89	5.25	4.25	2.41	n/a	5.5	0.78	0.41	2.36	3.38	12.26	10.8	1.201	0.312	1.375
MTCP-010-3BD36	10	215T	10.5	1" NPT	8.63	9	3.5	20.49	5.25	4.25	2.41	5.5	7	0.78	0.41	2.36	3.38	12.26	10.8	1.201	0.312	1.375
MTCP-015-3BD36	15	254T	12.3	1.5" NPT	12.0	10.3	4.25	23.29	6.25	5	2.91	n/a	8.25	0.87	0.53	2.40	4	15.10	14.4	1.416	0.375	1.625
MTCP-020-3BD36	20	256T	12.3	1.5" NPT	12.0	12.4	4.25	25.06	6.25	5	2.91	8.25	10	0.87	0.53	2.40	4	15.10	14.4	1.416	0.375	1.625

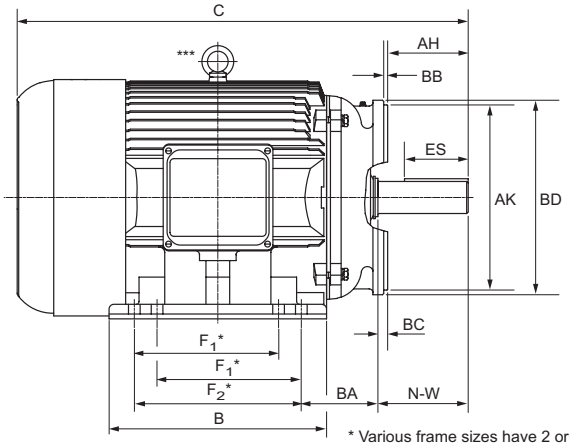
**** Various frame sizes have 2 or 4 mounting holes per mounting foot.***

***** 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.***

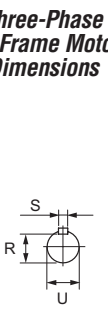
IronHorse® MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

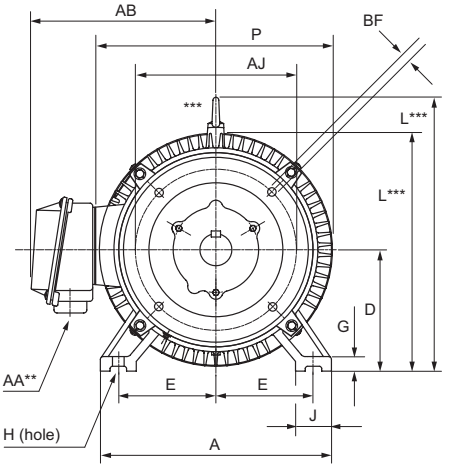
TC-Frame TEFC Motors – Three-Phase Industrial Duty – Dimensions



* 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 # MTCP-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	6.89	1.96	5.875	4.5	5.1	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	1.45	2.25	6.9	7.2	0.771	0.188	0.875
-1P5-	1.5	145TC	7	3/4"NPT	6.89	1.96	5.875	4.5	6	2.25	0.16	0.29	6.5	3/8-16	13.5	3.5	2.75	1.41	4	5	0.47	0.34	1.45	2.25	6.9	7.2	0.771	0.188	0.875
-002-	2																												
-003-	3	182TC	8.9	1" NPT	7.45	2.37	7.25	8.5	6.3	2.75	0.25	0.38	9	1/2-13	15.1	4.5	3.75	1.78	n/a	4.5	0.52	0.41	1.97	2.75	10.4	9.0	0.986	0.25	1.125
-005-	5	184TC	8.9	1" NPT	7.45	2.37	7.25	8.5	7.1	2.75	0.25	0.38	9	1/2-13	16.1	4.5	3.75	1.78	4.5	5.5	0.52	0.41	1.97	2.75	10.4	9.0	0.986	0.25	1.125
-7P5-	7.5	213TC	10.5	1" NPT	8.63	2.87	7.25	8.5	7.5	3.5	0.25	0.51	9	1/2-13	18.9	5.25	4.25	2.41	n/a	5.5	0.78	0.41	2.36	3.38	12.3	10.8	1.201	0.312	1.375
-010-	10	215TC	10.5	1" NPT	8.63	2.87	7.25	8.5	9	3.5	0.25	0.51	9	1/2-13	20.5	5.25	4.25	2.41	5.5	7	0.78	0.41	2.36	3.38	12.3	10.8	1.201	0.312	1.375
-015-	15	254TC	12.3	1.5"NPT	12.0	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	0.87	0.53	2.40	4	15.1	14.4	1.416	0.375	1.625
-020-	20	256TC	12.3	1.5"NPT	12.0	3.75	7.25	8.5	12.4	4.25	0.25	0.25	10	1/2-13	25.1	6.25	5	2.91	8.25	10	0.87	0.53	2.40	4	15.1	14.4	1.416	0.375	1.625
-025-	25	284TC	13.7	1.5"NPT	13.7	4.38	9	10.5	12.2	4.75	0.25	0.25	11.25	1/2-13	26.6	7	5.5	3.28	n/a	9.5	0.98	0.53	2.68	4.62	16.5	16.0	1.591	0.5	1.875
-030-	30	286TC	13.7	1.5"NPT	13.7	4.38	9	10.5	13.7	4.75	0.24	0.24	11.25	1/2-13	28.2	7	5.5	3.28	9.5	11	0.98	0.53	2.68	4.62	16.5	16.0	1.591	0.5	1.875
-040-	40	324TC	15.3	2" NPT	14.6	5	11	12.5	12.6	5.25	0.24	0.24	14	5/8-11	30.0	8	6.25	3.91	n/a	10.5	0.98	0.66	2.76	5.25	18.3	17.8	1.845	0.5	2.125
-050-	50	326TC	15.3	2" NPT	14.6	5	11	12.5	14.0	5.25	0.25	0.25	14	5/8-11	31.2	8	6.25	3.91	10.5	12	0.98	0.66	2.76	5.25	18.3	17.8	1.845	0.5	2.125
-060-	60	364TC	17.0	3" NPT	17.5	5.62	11	12.5	14.6	5.88	0.25	0.25	14	5/8-11	32.6	9	7	4.28	n/a	11.25	1.10	0.66	3.15	5.88	21.0	19.4	2.021	0.625	2.375
-075-	75	365TC	17.0	3" NPT	17.5	5.62	11	12.5	15.6	5.88	0.25	0.25	14	5/8-11	34.1	9	7	4.28	11.25	12.25	1.10	0.66	3.15	5.88	21.0	19.4	2.021	0.625	2.375
-100-	100	405TC	20	3" NPT	18.1	7	11	12.5	17.8	6.62	0.25	0.25	15.5	5/8-11	38.4	10	8	5.65	12.25	13.75	1.18	0.81	3.15	7.25	23.5	21.4	2.45	0.75	2.875

** 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.*

Dimensions [inches] - EPAct 449T-Frame Three-Phase Motor with C-Flange Kit Installed

C-Flange Part Number	Motor Part Number	Frame Type	AH*	AJ	AK	BB	BC*	BD	BF	CC	N-W*
MTA-CFACE-449TC	MTC-250-3D18	449T	8.248	14	16	0.26	0.26	17.72	5/8-11	4.35	8.5
	MTC-300-3D18										

** Motor dependent dimensions apply only to IronHorse MTC-xxx-3D18 motors. Refer to appropriate T-frame diagram for motor dimensions.*

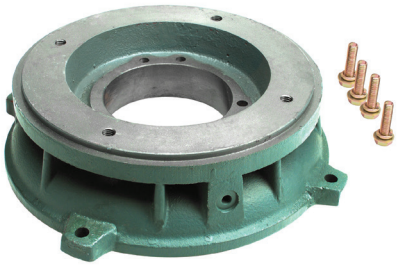
IronHorse® MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

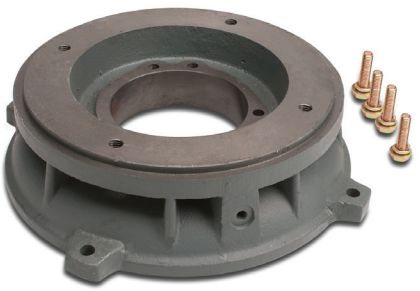
Premium Efficiency TEFC T-Frame Three-Phase Motor C-Flange Kits – 1 to 200 hp

We stock Premium Efficiency NEMA cast iron T-frame motors from 1–200 hp, and TC-frame motors from 1–100 hp.

We also offer IronHorse cast iron C-flange kits which can be used for C-face mounting of our 1–200 hp IronHorse MTCP Premium Efficiency cast iron T-frame motors.

The kits are field installable and include the C-faces and bolts.





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

Part Number (1)	Price	Fits Frame	Fits Motor Number (2)	Motor HP	Product Weight (lb) (3)
MTAP-CFACE-140TC	$14.00	143T & 145T	MTCP-001-3BD12 MTCP-001-3BD18 MTCP-1P5-3BD18 MTCP-1P5-3BD36 MTCP-002-3BD18 MTCP-002-3BD36	1 1 1-1/2 1-1/2 2 2	6.8
MTAP-CFACE-180TC	$19.00	182T & 184T	MTCP-1P5-3BD12 MTCP-002-3BD12 MTCP-003-3BD18 MTCP-003-3BD36 MTCP-005-3BD18 MTCP-005-3BD36	1-1/2 2 3 3 5 5	14.3
MTAP-CFACE-210TC	$26.00	213T & 215T	MTCP-003-3BD12 MTCP-005-3BD12 MTCP-7P5-3BD18 MTCP-7P5-3BD36 MTCP-010-3BD18 MTCP-010-3BD36	3 5 7-1/2 7-1/2 10 10	13.8
MTAP-CFACE-250TC	$44.00	254T & 256T	MTCP-7P5-3BD12 MTCP-010-3BD12 MTCP-015-3BD18 MTCP-015-3BD36 MTCP-020-3BD18 MTCP-020-3BD36	7-1/2 10 15 15 20 20	40.1
MTAP-CFACE-280TC	$55.00	284T & 286T	MTCP-015-3BD12 MTCP-020-3BD12 MTCP-025-3BD18 MTCP-030-3BD18	15 20 25 30	44.0
MTAP-CFACE-320TC	$76.00	324T & 326T	MTCP-040-3BD18 MTCP-050-3BD18	40 50	61.7
MTAP-CFACE-360TC	$110.00	364T & 365T	MTCP-060-3BD18 MTCP-075-3BD18	60 75	70.5
MTAP-CFACE-400TC	$168.00	405T	MTCP-100-3BD18	100	136.6
MTAP-CFACE-444TC	$177.00	444T & 445T	MTCP-125-3BD18 MTCP-150-3BD18	125 150	143.2
MTAP-CFACE-447TC	$177.00	445/7T	MTCP-200-3BD18	200	144.4

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

2) MTAP-CFACE C-flange kits will NOT fit MTC EPAct motors.

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

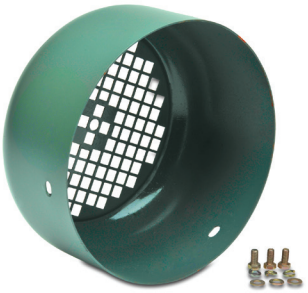
IronHorse® MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

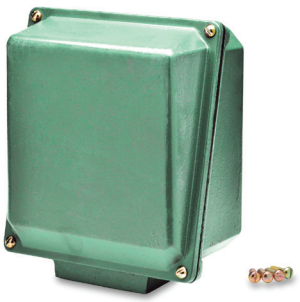
Premium Efficiency TEFC Three-Phase Motor Replacement Parts – 1 to 200 hp

We stock MTCP Premium Efficiency NEMA cast iron T-frame motors from 1–200 hp, and TC-frame motors from 1–100 hp.

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

These replacement parts are field installable. Instructions included.





MTCP 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)
MTAP-FAN-140	$22.00	Replacement Fan	143 & 145	MTCP-001-3BD12 MTCP-001-3BD18(C) MTCP-1P5-3BD18(C) MTCP-1P5-3BD36 MTCP-002-3BD18(C) MTCP-002-3BD36	1 1 1-1/2 1-1/2 2 2	0.3
MTAP-SHROUD-140	$18.00	Replacement Fan Shroud				1.1
MTAP-JBOX-140	$18.00	Replacement Junction Box				2.6
MTAP-FAN-180	$22.00	Replacement Fan	182 & 184	MTCP-1P5-3BD12 MTCP-002-3BD12 MTCP-003-3BD18(C) MTCP-003-3BD36 MTCP-005-3BD18(C) MTCP-005-3BD36	1-1/2 2 3 3 5 5	0.3
MTAP-SHROUD-180	$25.00	Replacement Fan Shroud				1.5
MTAP-JBOX-180	$26.00	Replacement Junction Box				3.1
MTAP-FAN-210-2	$26.00	Replacement Fan (for 2-pole motors)	213 & 215	MTCP-7P5-3BD36 MTCP-010-3BD36	7-1/2 10	0.3
MTAP-FAN-210	$26.00	Replacement Fan (4&6-pole)		MTCP-003-3BD12 MTCP-005-3BD12 MTCP-7P5-3BD18(C) MTCP-010-3BD18(C)	3 5 7-1/2 10	0.3
MTAP-SHROUD-210	$26.00	Replacement Fan Shroud				2.3
MTAP-JBOX-210	$26.00	Replacement Junction Box				3.4
MTAP-FAN-250-2	$44.00	Replacement Fan (for 2-pole motors)	254 & 256	MTCP-015-3BD36 MTCP-020-3BD36	15 20	0.3
MTAP-FAN-250	$44.00	Replacement Fan (4&6-pole)		MTCP-7P5-3BD12 MTCP-010-3BD12 MTCP-015-3BD18(C) MTCP-020-3BD18(C)	7-1/2 10 15 20	0.3
MTAP-SHROUD-250	$44.00	Replacement Fan Shroud				4.5
MTAP-JBOX-250	$44.00	Replacement Junction Box				7.0
MTAP-FAN-280	$61.00	Replacement Fan	284 & 286	MTCP-015-3BD12 MTCP-020-3BD12 MTCP-025-3BD18(C) MTCP-030-3BD18(C)	15 20 25 30	0.5
MTAP-SHROUD-280	$65.00	Replacement Fan Shroud				6.5
MTAP-JBOX-280	$78.00	Replacement Junction Box				7.0
MTAP-FAN-320	$78.00	Replacement Fan	324 & 326	MTCP-040-3BD18(C) MTCP-050-3BD18(C)	40 50	0.6
MTAP-SHROUD-320	$78.00	Replacement Fan Shroud				8.3
MTAP-JBOX-320	$78.00	Replacement Junction Box				22.3
MTAP-FAN-360	$130.00	Replacement Fan	364 & 365	MTCP-060-3BD18(C) MTCP-075-3BD18(C)	60 75	0.6
MTAP-SHROUD-360	$122.00	Replacement Fan Shroud				9.0
MTAP-JBOX-360	$148.00	Replacement Junction Box				22.3
MTAP-FAN-400	$156.00	Replacement Fan	405	MTCP-100-3BD18(C)	100	1.1
MTAP-SHROUD-400	$148.00	Replacement Fan Shroud				15.8
MTAP-JBOX-400	$148.00	Replacement Junction Box				30.0
MTAP-FAN-440	$173.00	Replacement Fan	444 445 & 447	MTCP-125-3BD18 MTCP-150-3BD18 MTCP-200-3BD18	125 150 200	2.0
MTAP-SHROUD-440	$165.00	Replacement Fan Shroud				17.5
MTAP-JBOX-440	$165.00	Replacement Junction Box				40.0

1) These MTAP replacement components fit only MTCP Premium Efficiency motors; they will NOT fit MTC EPAct 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.

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.

The models we carry are cost-effective, high performance motors that, in conjunction with today's drive technology, provide enhanced performance in virtually any industrial or commercial application.

MARATHON® ELECTRIC

¼ - 100 hp motors available

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.

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.

MARATHON® ELECTRIC

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 energy 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.

Compatible components for Marathon motors

IronHorse worm gearboxes

starting at **$147.00**

- Three output types: Dual Shaft, Right Hand Shaft and Hollow Shaft
- Cast iron or aluminum housings
- 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

See Section PT for complete details on gearboxes

starting at **$9.75**

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.

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

Marathon® 3-Phase Inverter-Duty Motor Selection						
3-Phase Characteristic	**microMAX™**	**MAX+**	**Black Max®**	**Blue Max®**	**NEMA Premium® XRI®**	**Blue Chip XRI®**
Electrical Characteristics						
Horsepower range	1/4 – 10	1/2 – 5	1/4 – 30	40 – 100	1 – 10	15 – 100
Base speed (# Poles)	1800 (4)	1800 (4)	1800 (4) and 1200 (6)	1800 (4)	1200(6),1800(4),3600(2)	1800 (4)
Standard Voltage	230/460 (<1/2 hp are 230V only)	230/460	230/460 and 575	230/460	208-230/460	230/460 and 575
Phase / Base Frequency (Hz)	3 / 60					
Service Factor	1.0	1.0	1.0	1.0	1.15 (line) ; 1.0 (drive)	
Design Code (NEMA)	A or B (varies by model)	A (1/2 –1 hp) B (>1hp)	A	A	A (E2001A) B (all others)	B
Insulation Class	H	F	F	H	F	F
Insulation System	CR200 magnet wire	CR200 magnet wire	MAX GUARD®		CR200 magnet wire	
Duty Cycle	Continuous					
Thermal protection	None	None	Class F thermostats		None	
Mechanical Characteristics						
Frame size (mounting)	56C – 215TC	56C – 184TC	56C – 286TC	324T(C) – 405T(C)	56C – 215TC	254T – 405T
Enclosure	TENV and TEFC	TENV	TENV	TEFC and TEBC	TEFC	TEFC
Frame material	Rolled Steel	Rolled Steel (<2hp) Cast Iron (2hp) Aluminum (>2hp)	Rolled Steel w Al face Cast Iron Aluminum	Cast Iron	Rolled Steel	Cast Iron
End bracket material	Aluminum	Cast Iron	Aluminum, Cast Iron	Cast Iron	Aluminum	Cast Iron
Conduit box material	Steel	Steel	Steel	Cast Iron	Steel	Steel (<326T) Cast Iron (>364T)
Fan guard material	Polypropylene	None (all ratings TENV)	None (all ratings TENV)	Cast Iron	Plastic	Polyprop. (<286T) Cast Iron (>324T)
Fan material	Polypropylene	None (all ratings TENV)	None (all ratings TENV)	Polypropylene	Polypropylene	Polypropylene
Lead termination	Conduit box except Terminal block (<1/2 hp)	Conduit box	Conduit box	Conduit box	Conduit box	Conduit box
Standard mounting	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
Drive end shaft slinger	No	No	No	Yes	Yes	Yes
Paint	Black powder-coat; Black enamel	Black powder; Black enamel	Black enamel	Blue enamel	Blue enamel	Blue alkyd enamel
Bearings	Ball (C3 fit)					
Grease	Exxon Polyrex EM					
Standard conduit box assembly position	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
Performance Characteristics						
Constant Torque speed range	20:1 (TEFC) 1000:1 (TENV)	1000:1	1000:1 (TENV)	2000:1 (all enclosures)	10:1	20:1
Variable Torque speed range	–	–	–	–	10:1	–
Constant Horsepower speed range	2:1	2:1	2:1 (90–120Hz intermittent @50% duty cycle)	2:1	2:1	2:1
Temperature rise	B	varies by model #	varies by model #	F (TEFC) B (TEBC)	F	B
Encoder provisions	No	Yes	Yes	Yes	No	No
Other Characteristics						
Warranty *	3 years (through Marathon Electric)					
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 web site 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.***

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 web site 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	$164.00	1/4	1800	230	TENV	56C	56H17T2011	1.0	17	Q
Y502	$192.00	1/3					56H17T2013A	1.2	17	Q
Y360	$218.00	1/2		230/460			56H17T2017	1.8 / 0.9	25	–
Y362	$281.00	3/4			TEFC		56H17F2017A	2.8 / 1.4	25	–
Y364	$298.00	1					56H17F2021	3.2 / 1.6	28	–
Y366	$394.00	1-1/2			TENV	145TC	145THTR5329AA	4.8 / 2.4	45	6
Y368	$483.00	2			TEFC		145THFR5329	5.8 / 2.9	45	6
Y1999 †	$579.00	3				182TC	182THFW7729AA	8.4 / 4.2	64	6
Y1372 †	$673.00	5				184TC	184THFW7726AA	13.0 / 6.5	92	6
Y994	$855.00	7-1/2				213TC	213THFW7726	21.4 / 10.7	125	6
Y996	$1,103.00	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

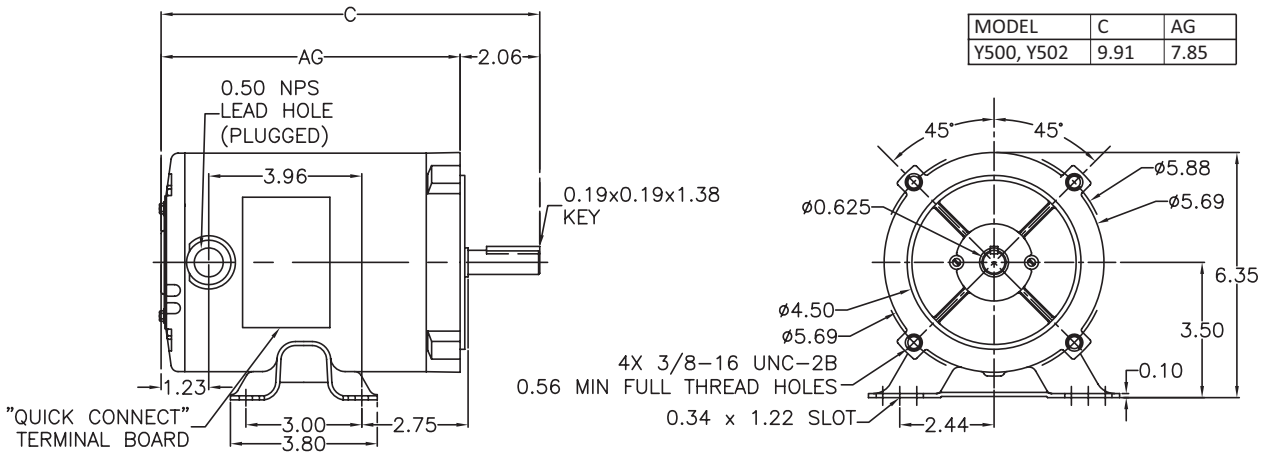
Performance Data (460 Volt except as indicated) – microMAX													
Part Number	**HP**	**NEMA Design**	**F.L. RPM**	**Min. RPM**	**F.L. AMPS @460V**	**N.L. AMPS @460V**	**F.L. Torque (lb·ft)**	**B.D. Torque (lb·ft)**	**Max. CHP RPM***	**Max. Safe RPM**	**F.L. Effic.**	**F.L. Power Factor**	**Rotor Inertia ($lb·ft^2$)**
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)

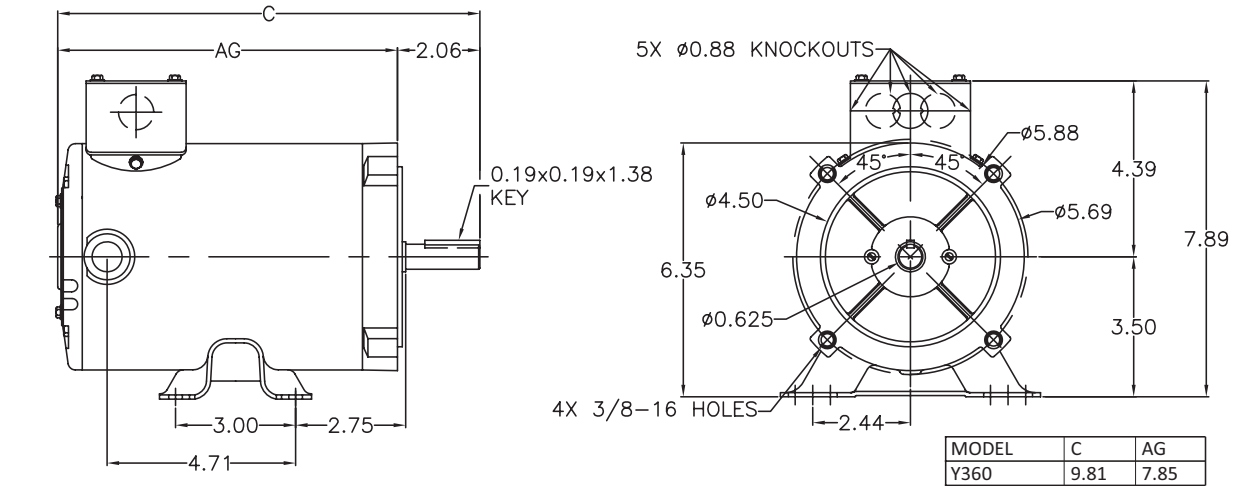
See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 1 – Y500, Y502



MODEL	C	AG
Y500, Y502	9.91	7.85

Figure 2 – Y360



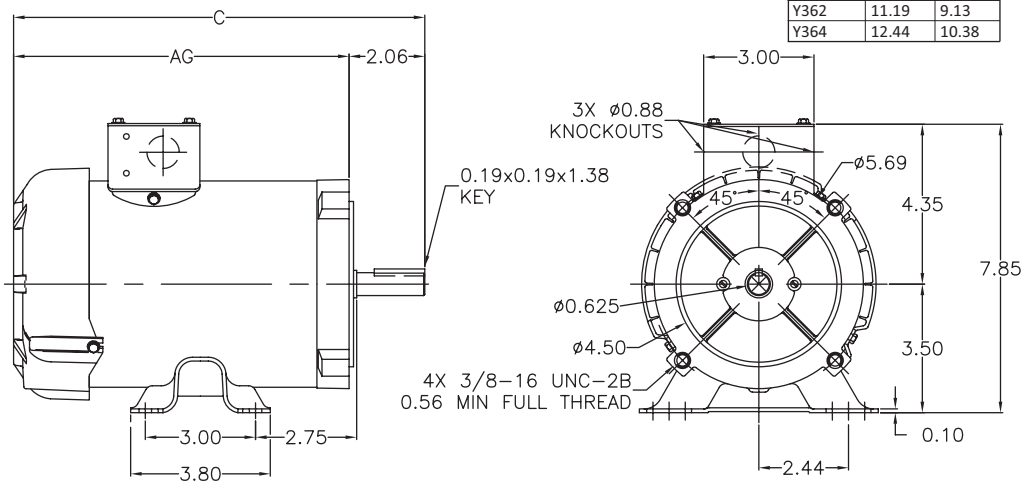
MODEL	C	AG
Y360	9.81	7.85

microMAX™ AC Inverter-Duty Motors

Dimensions (units = inches)

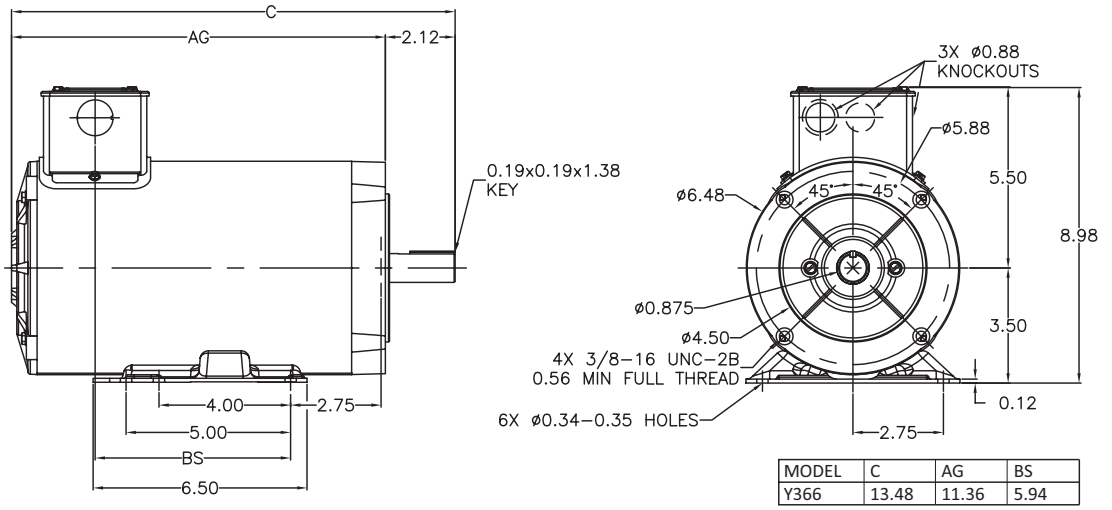
See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 3 – Y362, Y364



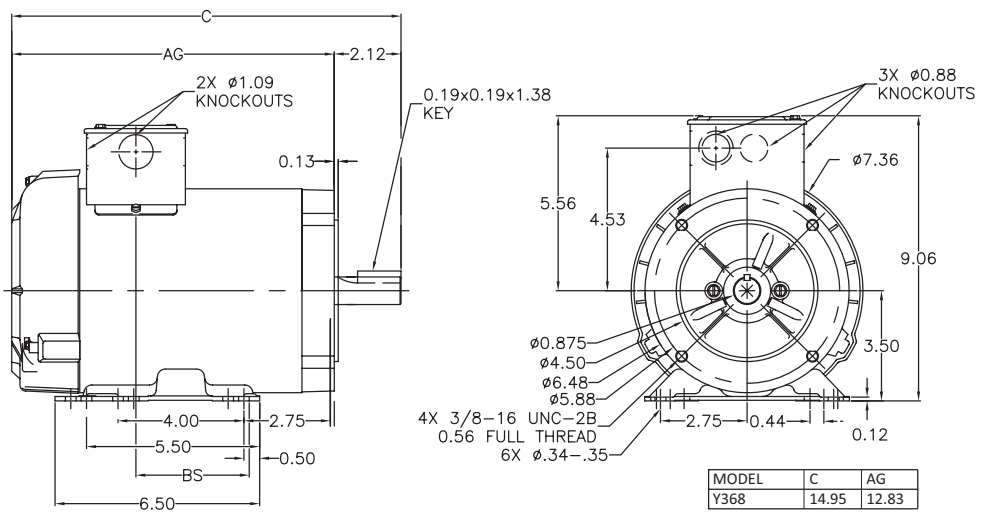
MODEL	C	AG
Y362	11.19	9.13
Y364	12.44	10.38

Figure 4 – Y366



MODEL	C	AG	BS
Y366	13.48	11.36	5.94

Figure 5 – Y368



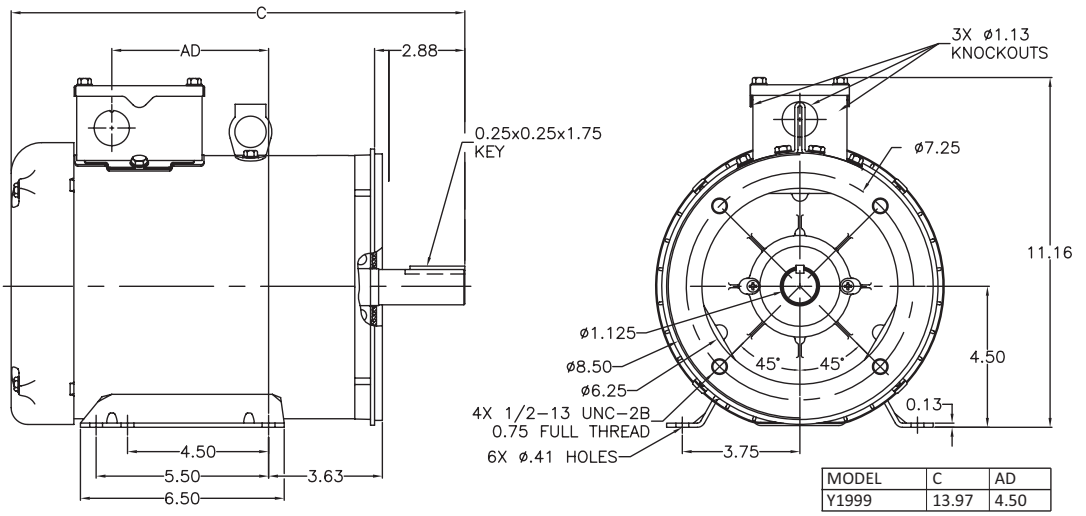
MODEL	C	AG
Y368	14.95	12.83

microMAX™ AC Inverter-Duty Motors

Dimensions (units = inches)

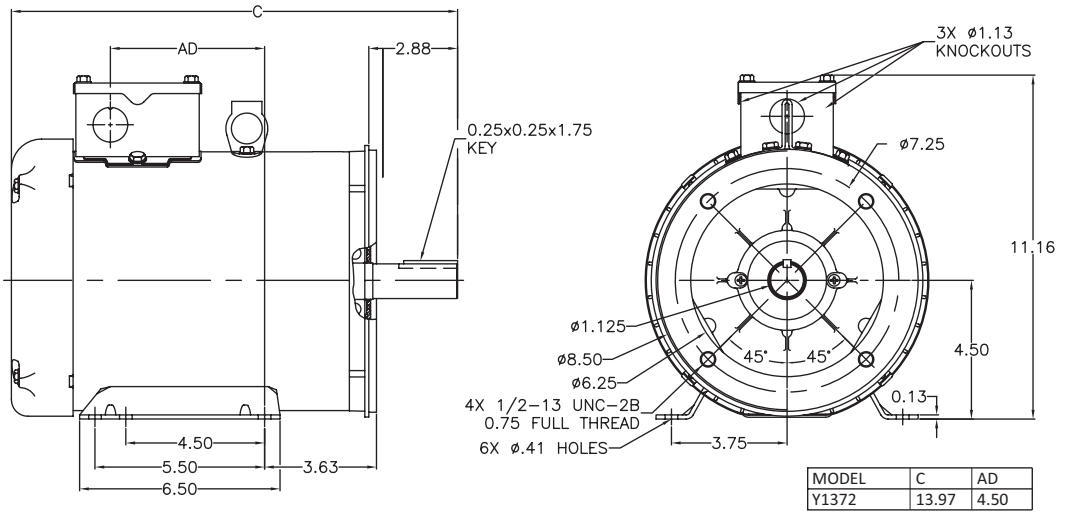
See our website: www.AutomationDirect.com for complete engineering drawings.

Figure 6 – Y1999



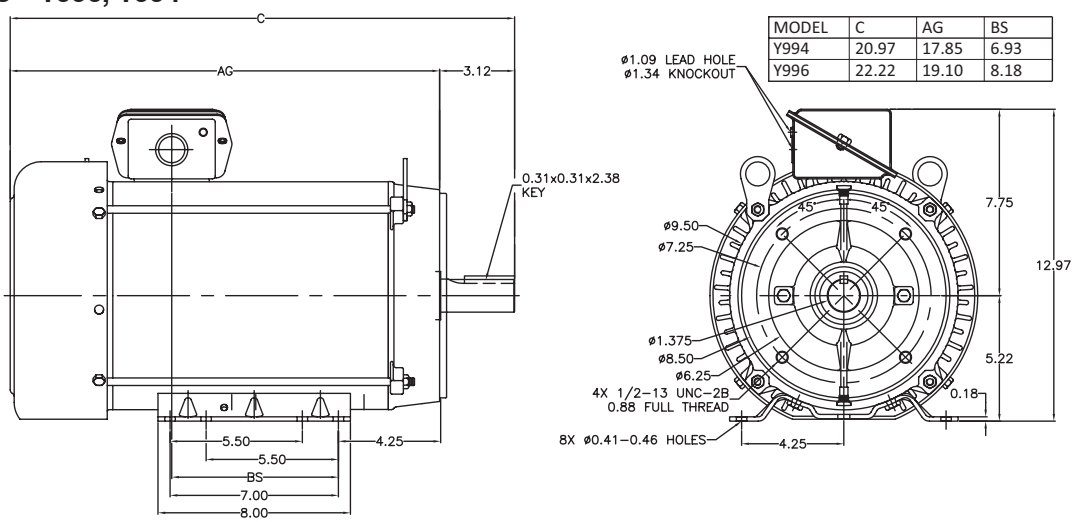
MODEL	C	AD
Y1999	13.97	4.50

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)

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)

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 web site for current shipping method constraints by part number.*

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.

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	$702.00	1/2	1800	230/460	TENV	56C	56H17T15526A	1.6 / 0.8	25	6
Y281	$734.00	3/4					56H17T15528A	2.4 / 1.2	35	6
Y282	$777.00	1					56H17T15527A	3.0 / 1.5	42	6
Y284	$927.00	1-1/2				145TC	145THTR15540AA	4.8 / 2.4	45	6
Y285	$1,243.00	2					145THTN17034AA	6.0 / 3.0	68	13b
Y286A	$1,394.00	3				182TC	182THTY17041AA	8.2 / 4.1	110	13b
Y287A	$1,518.00	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*

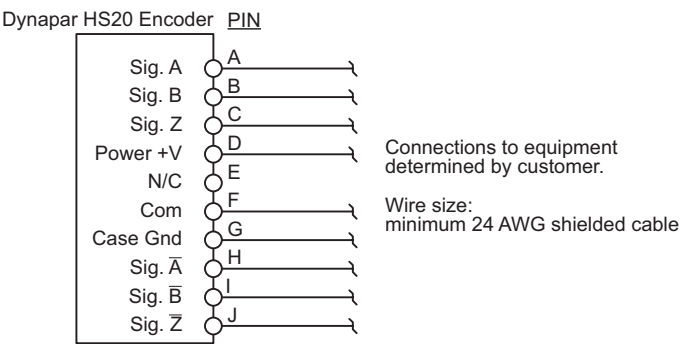
A Dynapar Model HS20 shaft-mounted encoder is supplied with the MAX+ motor. The 5/8-in hollow-shaft encoder requires a 5–26 VDC power source, provides a count of 1024 pulses per revolution (PPR), differential line driver output, and includes 10 screw-terminal wiring connections.

** 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



MAX+ AC Inverter-Duty Motors with Encoder

Performance Data

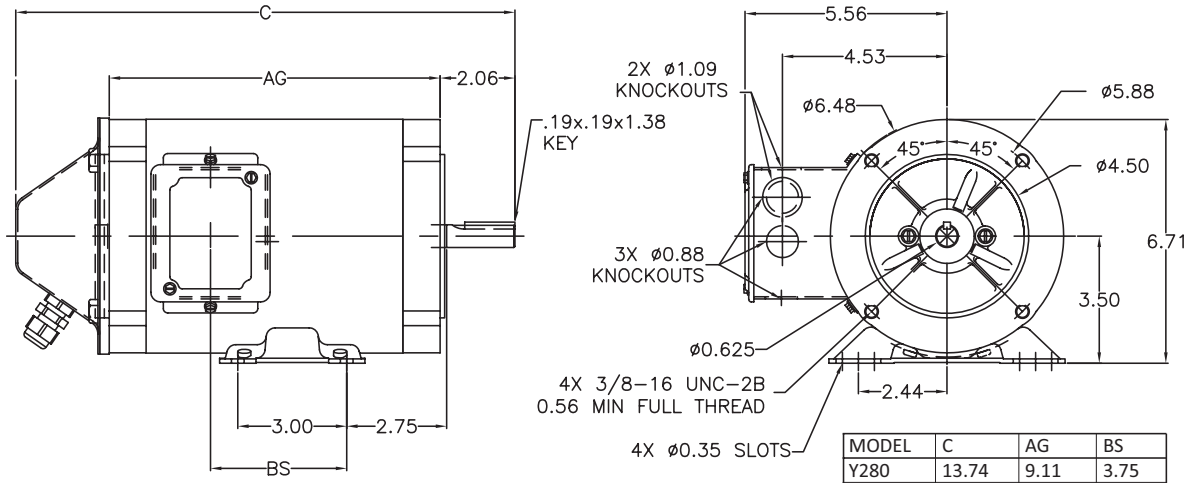
Performance Data (460 Volt) – MAX+													
Part Number	HP	NEMA Design	F.L. RPM	Min. RPM	F.L. AMPS @460V	N.L. AMPS @460V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	Max. CHP RPM*	Max. Safe RPM	F.L. Effic.	F.L. Power Factor	Rotor Inertia ($lb·ft^2$)
Y280	1/2	A	1725	0	0.8	0.5	1.5	5.8	3510	5400	80.0	72.0	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		2.4	1.6	4.5	29.0	3500		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)

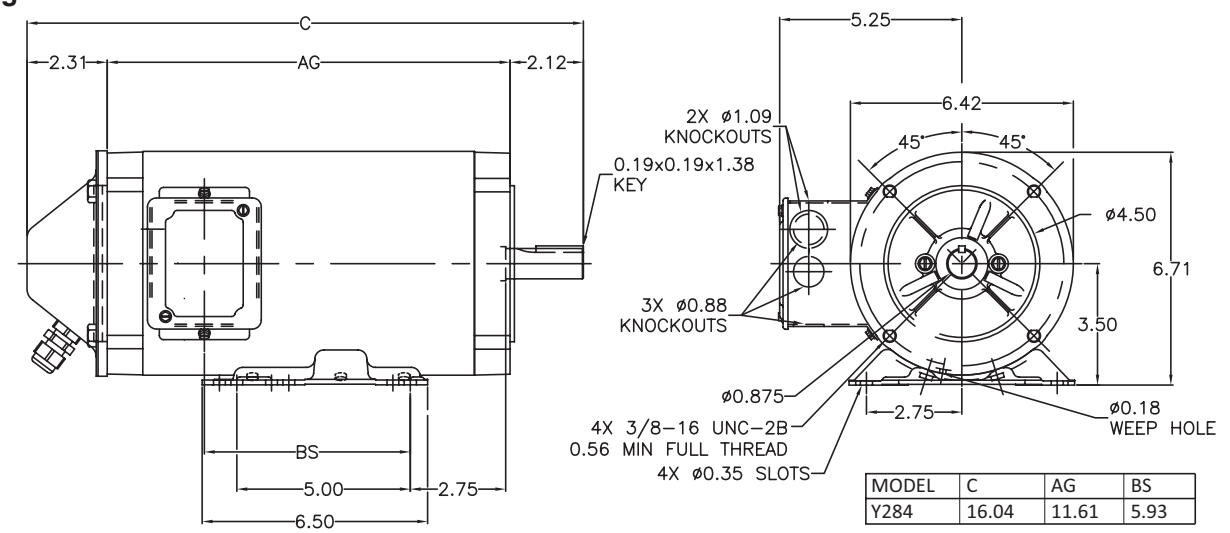
See our website: www.AutomationDirect.com for complete engineering drawings.

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



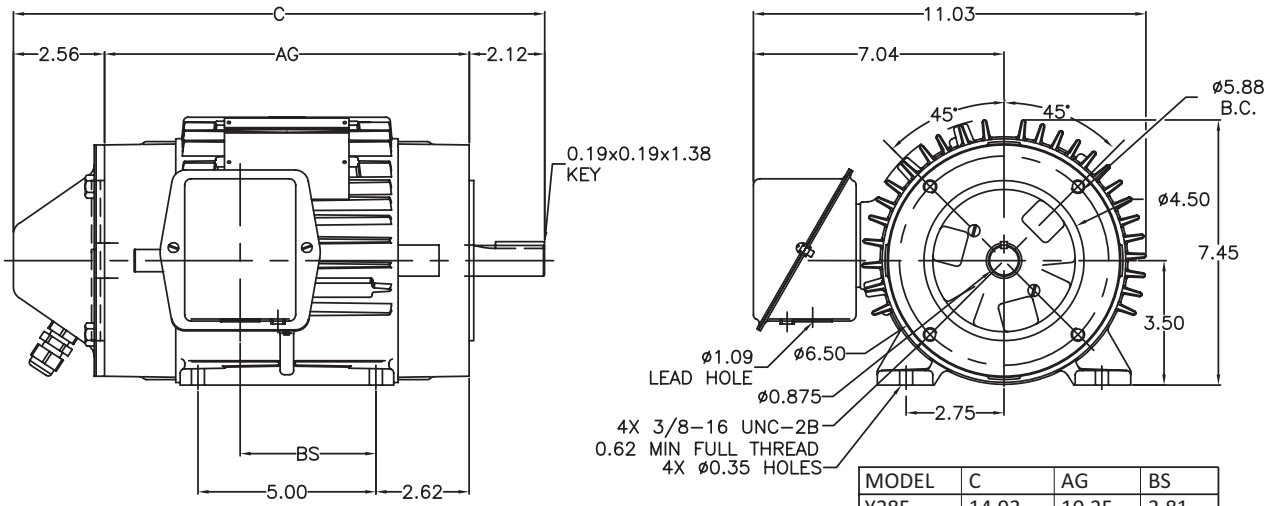
MODEL	C	AG	BS
Y284	16.04	11.61	5.93

MAX+ AC Inverter-Duty Motors with Encoder

Motors – Dimensions (units = inches)

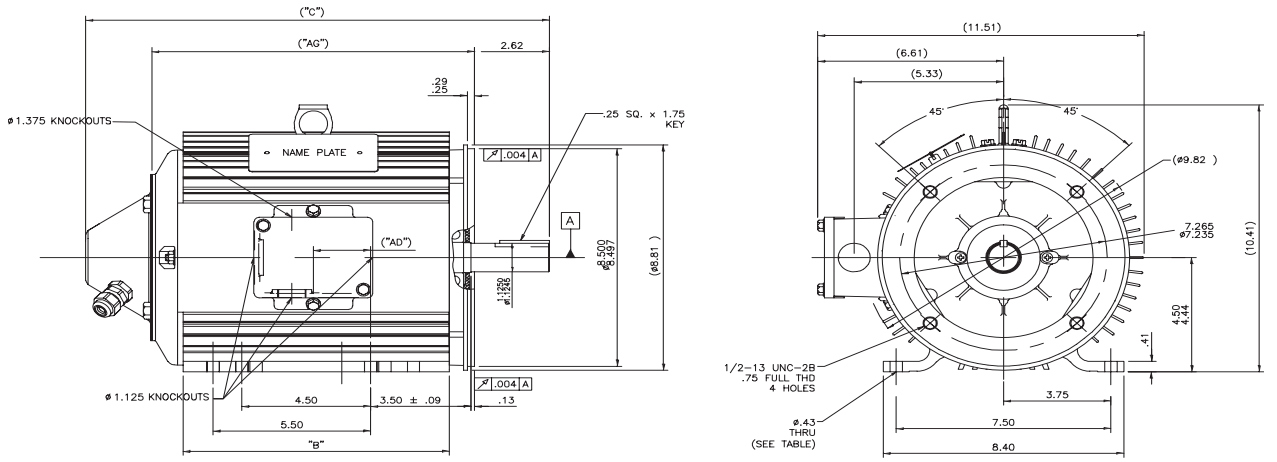
See our website: www.AutomationDirect.com for complete engineering drawings.

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® ELECTRIC

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 web site 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	$243.00	1/4	1800	230/460	TENV	56C	56H17T2001	1.2 / 0.6	19	T, S, 13
Y534	$303.00	1/2	1800	230/460	TENV	56C	56H17T5301	1.6 / 0.8	28	T, S, 6, 13
Y535	$363.00	1	1800	230/460	TENV	56C	56H17T5302	3.0 / 1.5	41	T, S, 6, 13
Y536	$376.00	1	1800	230/460	TENV	143TC	143THTR5326	3.0 / 1.5	43	T, S, 6, 13
Y537	$429.00	1	1200	230/460	TENV	145TC	145THTR5376	3.8 / 1.9	49	T, S, 6, 13
Y538	$454.00	1-1/2	1800	230/460	TENV	145TC	145THTR5326	4.8 / 2.4	50	T, S, 6, 13
Y551	$625.00	2	1800	230/460	TENV	145TC	145THTN6046	6.0 / 3.0	72	T, CI
Y540	$894.00	2	1200	230/460	TENV	184TC	184THTL7776	6.6 / 3.3	88	T, AL
Y541A	$787.00	3	1800	230/460	TENV	182TC	182THTY7726	8.2 / 4.1	110	T, AL
Y542	$1,098.00	3	1200	230/460	TENV	213TC	213THTL7776	9.4 / 4.7	118	T, AL
Y543A	$940.00	5	1800	230/460	TENV	184TC	184THTY7726	13.4 / 6.7	125	T, AL
Y544	$1,339.00	5	1200	230/460	TENV	215TC	215THTL7776	15.4 / 7.7	138	T, AL
Y545	$1,209.00	7-1/2	1800	230/460	TENV	213TC	213THTL7726	21.0 / 10.5	146	T, AL
Y546	$1,798.00	7-1/2	1200	230/460	TENV	254TC	254THTL5776	22.0 / 11.0	209	T, AL
Y547	$1,449.00	10	1800	230/460	TENV	215TC	215THTL7726	27.0 / 13.5	159	T, AL
Y548	$2,029.00	10	1200	230/460	TENV	256TC	256THTL5776	28 / 14	203	T, AL
Y549	$1,723.00	15	1800	230/460	TENV	254TC	254THTL5726	40 / 20	250	T, AL, I
Y552	$2,519.00	20	1800	230/460	TENV	256TC	256THTNA7026	52 / 26	300	T, I, CI
Y553	$2,739.00	25	1800	230/460	TENV	284TC	284THTNA7026	62 / 31	495	T, I, CI
Y393	$2,739.00	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.

575V Motor Specifications

Part Number	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	F.L. Amps	Weight (lb)	Footnotes
Y555	$303.00	1/2	1800	575	TENV	56C	56H17T5311	0.64	28	T, S, 6, 13
Y556	$363.00	1	1800	575	TENV	56C	56H17T5312	1.2	41	T, S, 6, 13
Y557	$624.00	2	1800	575	TENV	145TC	145THTN6060	2.4	72	T, CI
Y558A	$787.00	3	1800	575	TENV	182TC	182THTY7736	3.3	110	T, AL
Y559A	$940.00	5	1800	575	TENV	184TC	184THTY7736	5.4	125	T, AL
Y560	$1,209.00	7-1/2	1800	575	TENV	213TC	213THTL7736	8.4	146	T, AL
Y561	$1,449.00	10	1800	575	TENV	215TC	215THTL7736	10.8	159	T, AL
Y562	$1,739.00	15	1800	575	TENV	254TC	254THTL5736	16.0	250	T, AL, I
Y563	$2,519.00	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	$775.00	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

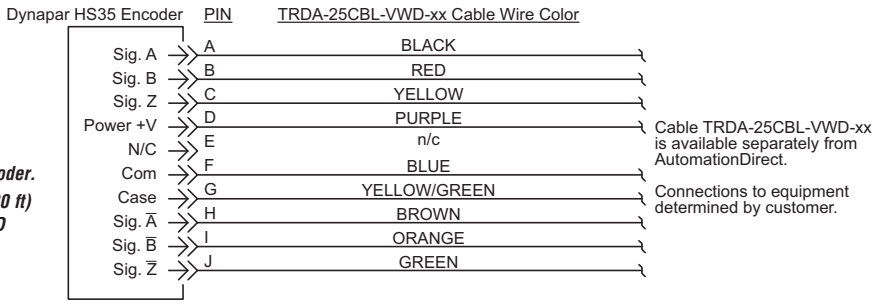
230/460V Motors						575V Motors		
Part Number	Price	HP	Part Number	Price	HP	Part Number	Price	HP
Y592-A772	$976.00	1/4	Y544-A772	$2,079.00	5	Y557-A772	$1,362.00	2
Y534-A772	$1,038.00	1/2	Y545-A772	$1,943.00	7-1/2	Y558A-A772	$1,534.00	3
Y535-A772	$1,089.00	1	Y546-A772	$2,529.00	7-1/2	Y559A-A772	$1,687.00	5
Y536-A772	$1,109.00	1	Y547-A772	$2,179.00	10	Y560-A772	$1,939.00	7-1/2
Y537-A772	$1,158.00	1	Y548-A772	$2,789.00	10	Y561-A772	$2,189.00	10
Y538-A772	$1,178.00	1-1/2	Y549-A772	$2,448.00	15	Y562-A772	$2,449.00	15
Y551-A772	$1,349.00	2	Y552-A772	$3,239.00	20	Y563-A772	$3,239.00	20
Y540-A772	$1,629.00	2	Y553-A772	$3,468.00	25			
Y541A-A772	$1,534.00	3	Y393-A772	$3,809.00	30			
Y542-A772	$1,829.00	3	Y555-A772	$1,038.00	1/2			
Y543A-A772	$1,687.00	5	Y556-A772	$1,093.00	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

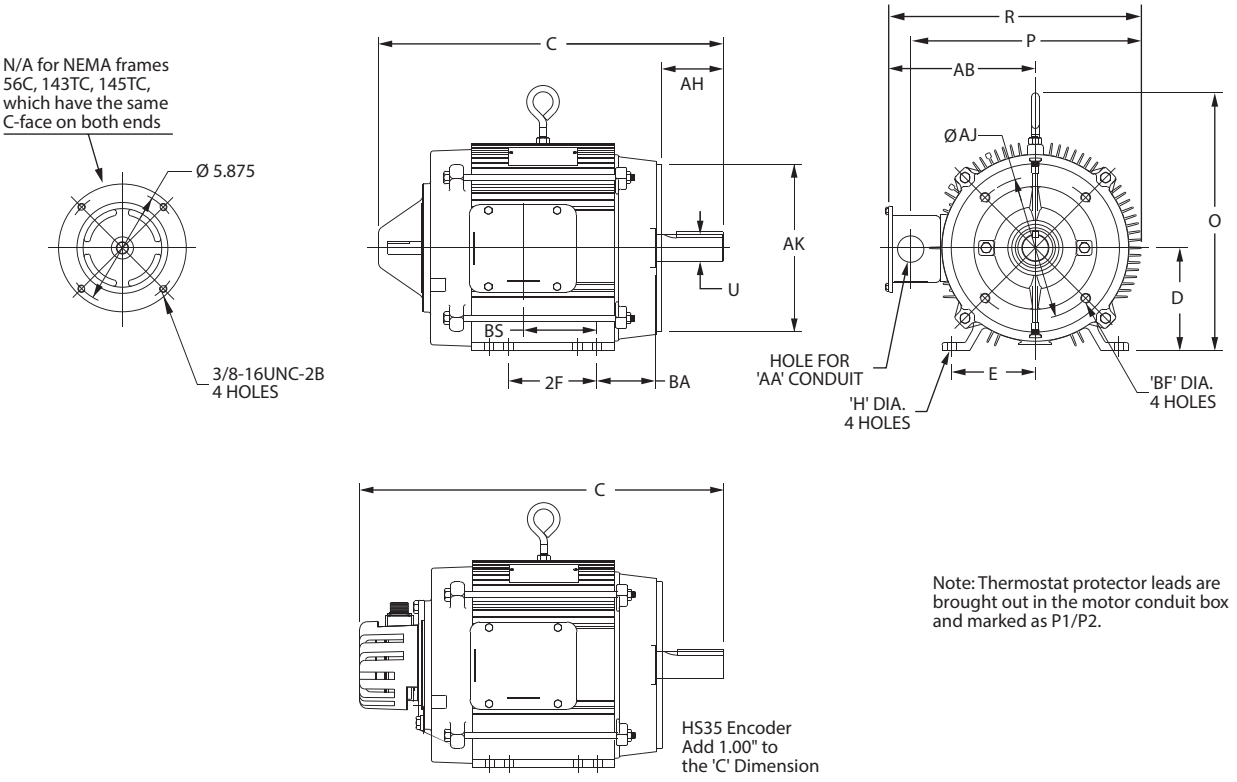
**** Maximum Constant hp rpm is for direct coupled loads.***

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.*

Motor Dimensions



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

Black Max® Vector Duty Motors

Motor Dimensions

Black Max Vector Duty Motors Dimensions [Inches]																				
Part #		NEMA Frame	Frame Construct	C	D	E	2F	H	O	P	R	U	AA	AB	AH	AJ	AK Max	BA	BF	BS	Key
230/460V	575V																				
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	3/8-16	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	3/8-16	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® ELECTRIC

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 web site 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	$3,569.00	40	1800	230/460	TEFC	324T	324THFPA8028	100 / 50.0	540
Y513	$4,449.00	40	1800	230/460	TEBC	324TC	324THFPA8038	100 / 50.0	620
Y572	$4,409.00	50	1800	230/460	TEFC	326T	326THFS8028	121 / 60.5	540
Y514	$5,098.00	50	1800	230/460	TEBC	326TC	326THFPA8038	120 / 60.0	640
Y573	$5,689.00	60	1800	230/460	TEFC	364T	364THFS8036	147 / 73.5	965
Y515	$6,239.00	60	1800	230/460	TEBC	364TC	364THFS8046	147 / 73.5	1062
Y574	$6,449.00	75	1800	230/460	TEFC	365T	365THFS8036	184 / 92.0	1006
Y516	$7,489.00	75	1800	230/460	TEBC	365TC	365THFS8046	180 / 90.0	1106
Y575	$8,725.00	100	1800	230/460	TEFC	405T	405THFS8036	230 / 115	1308
Y517	$10,409.00	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 ($lb·ft^2$)	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 web site for current shipping method constraints by part number.*

Motor Accessories		
Part Number	Price	Description *
A774	$757.00	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	$757.00	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).*

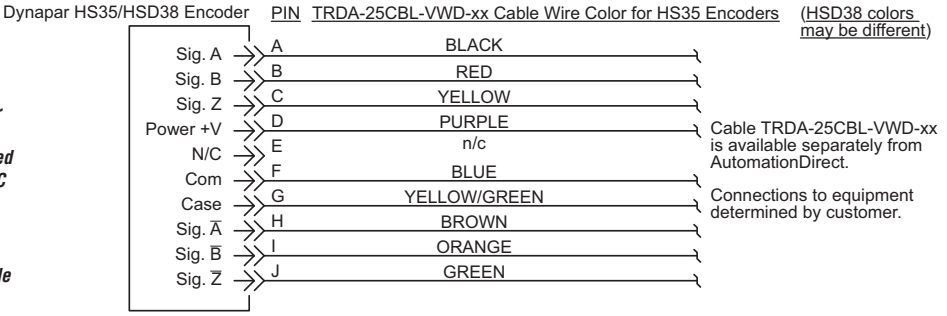
Motor with Pre-installed Shaft-Mounted Encoder					
Part Number	Price	HP	Part Number	Price	HP
Y571-A774	$4,376.00	40 (TEFC)	Y574-A774	$7,243.00	75 (TEFC)
Y513-A775	$5,175.00	40 (TEBC)	Y516-A775	$8,248.00	75 (TEBC)
Y572-A774	$5,229.00	50 (TEFC)	Y575-A774	$9,506.00	100 (TEFC)
Y514-A775	$5,832.00	50 (TEBC)	Y517-A775	$11,192.00	100 (TEBC)
Y573-A774	$6,449.00	60 (TEFC)			
Y515-A775	$7,034.00	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.

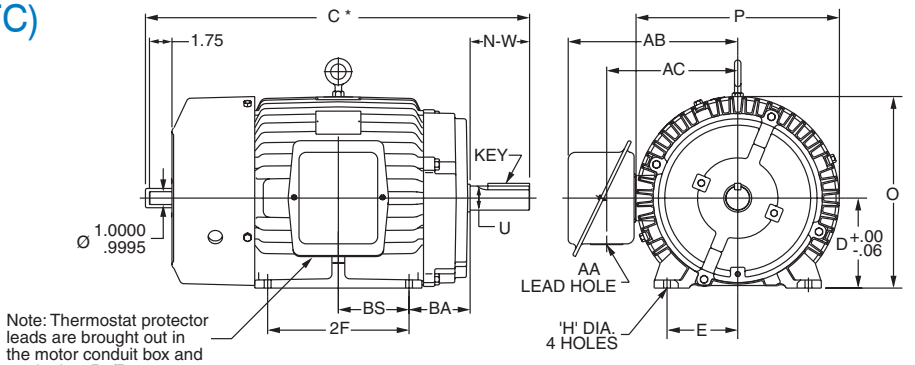
Prewired cables TRDA-25CBL-VWD-xx (10, 20, & 30 ft) and replacement MS connectors TRDA-25CON-VWD are available from AutomationDirect.



Blue Max® 2000 Vector Duty Motors

Motor Dimensions

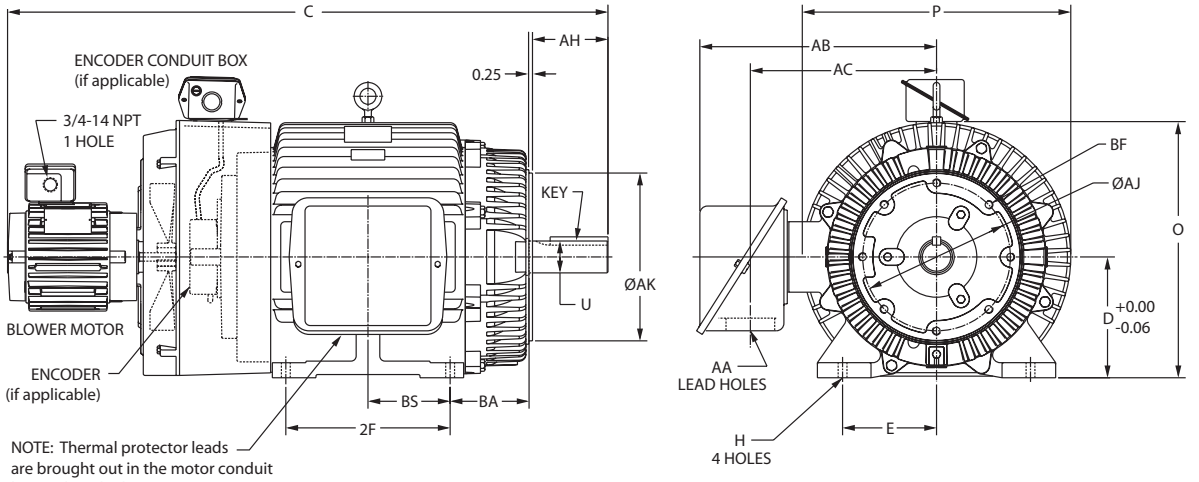
Figure 1 (TEFC)



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

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

Figure 2 (TEBC)



NOTE: Thermal protector leads are brought out in the motor conduit box and marked as P1/P2

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

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)

Motor Shipping Schedule
*Same or one day **
** Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.*

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.

208–230/460V Motor Specifications

Part Number *	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	N.P. F.L. Amps	Weight (lb) *
E2000	$459.00	1	3600	208–230/460	TEFC	56C	056T34F5940	3.0–2.8/1.4	28
E2001A	$383.00		1800			143TC	143TTFR16053	3.3–3.3/1.65	48
E2002	$441.00		1200			145TC	145TTFR6078	3.8–3.8/1.9	42
E2003	$424.00	1-1/2	3600			143TC	143TTFR5582	4.4–4.0/2.0	39
E2004A	$411.00		1800			145TC	145TTFR16331	4.7–4.6/2.3	50
E2005 †	$586.00		1200			182TC	182TTFW6076	5.6–5.2/2.6	77
E2006	$469.00	2	3600			145TC	145TTFR3002	5.2–4.8/2.4	48
E2007A	$469.00		1800			145TC	145TTFR16329	6.2–6.0/3.0	65
E2008 †	$698.00		1200			184TC	184TTFW6076	7.35–6.4/3.2	94
E2009 †	$617.00	3	3600			182TC	182TTFW6001	8.4–7.8/3.9	63
E2010 †	$545.00		1800			182TC	182TTFW6026	8.4–7.8/3.9	87
E2011	$788.00		1200			213TC	213TTFW6076	9.2–8.8/4.4	125
E2012 †	$727.00	5	3600			184TC	184TTFW6001	13–12/6	86
E2013 †	$648.00		1800			184TC	184TTFW6026	13.8–12.6/6.3	87
E2014	$999.00		1200			215TC	215TTFW6076	15.0–14.0/7.0	160
E2015	$828.00	7-1/2	3600			213TC	213TTFW6001	19.6–17.8/8.9	116
E2016A	$845.00		1800				213TTFW16039	21.0–19.4/9.7	140
E2018	$882.00	10	3600			215TC	215TTFW6001	26.4–23.6/11.8	230
E2019A	$926.00		1800				215TTFW16047	28.0–25.6/12.8	150

** 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.

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.

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·ft²)
					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	80.0	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	26.0	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
E2006	2		3490	349	1.0	2.4	26	3.0	10.8	13.0	5235	7200	85.5	88	0.08
E2007A			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	36.0	2640	4000	89.5	80.5	0.38
E2011			1170	117	2.5	4.4	32	13.5	34.0	47.5	1755	4200	89.5	70	0.80
E2012 †	5		3495	350	1.7	6.0	46	7.5	16.0	26.0	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
E2014			1170	117	3.7	7.0	46	22.5	47.0	79.0	1755	4200	90.2	75	1.00
E2015	7-1/2		3540	354	3.0	8.9	64	11.1	24.0	38.0	5310	5400	90.2	87	0.55
E2016A			1765	177	4.7	9.7	63.5	22.0	52.0	72.0	1765	4000	91.7	80	0.85
E2018	10		3535	354	3.5	11.8	80	14.9	30.0	46.0	5302.5	5400	91.7	87	0.65
E2019A			1760	176	5.5	12.8	80	29.8	65.0	90.0	1760	4000	91.7	80	1.10

** 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.

Previous Marathon Model Numbers

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

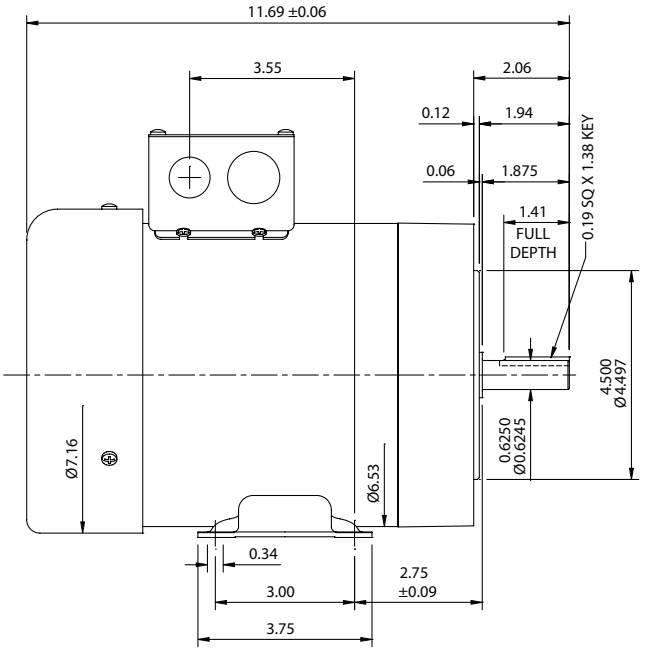
Visit www.AutomationDirect.com/Retired-Products for detailed specifications of previous models. (The model # appears on the motor nameplate.)

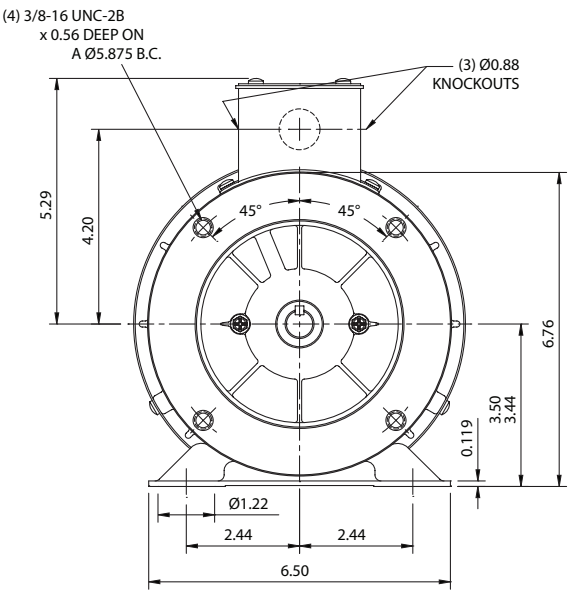
NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

Dimensions (units = inches)

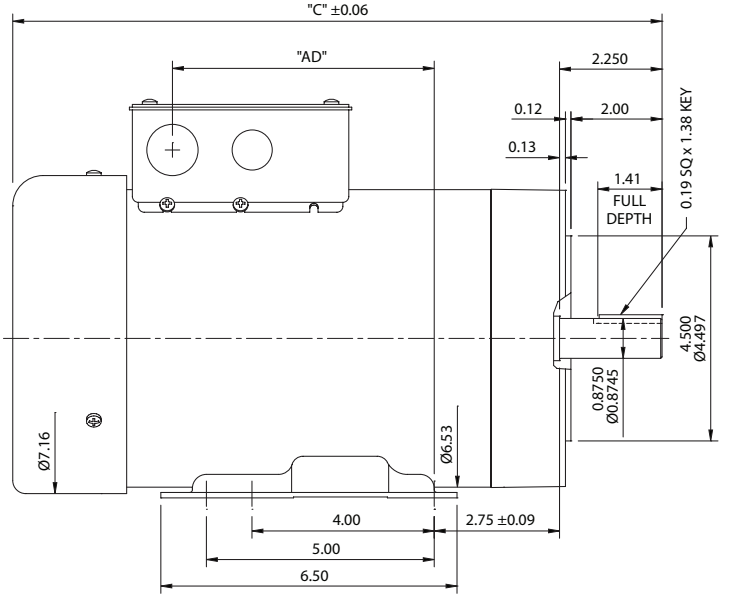
See our website: www.AutomationDirect.com for complete engineering drawings.

Frame 56C – Part #: E2000

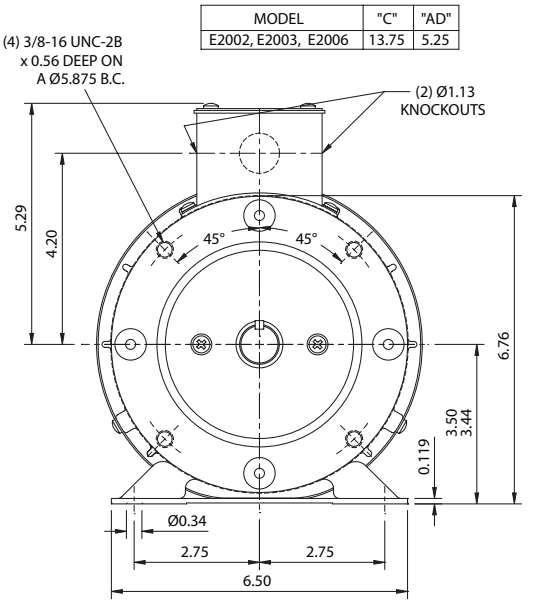




Frame 143/5TC – Part #: E2002, E2003, E2006



MODEL	"C"	"AD"
E2002, E2003, E2006	13.75	5.25

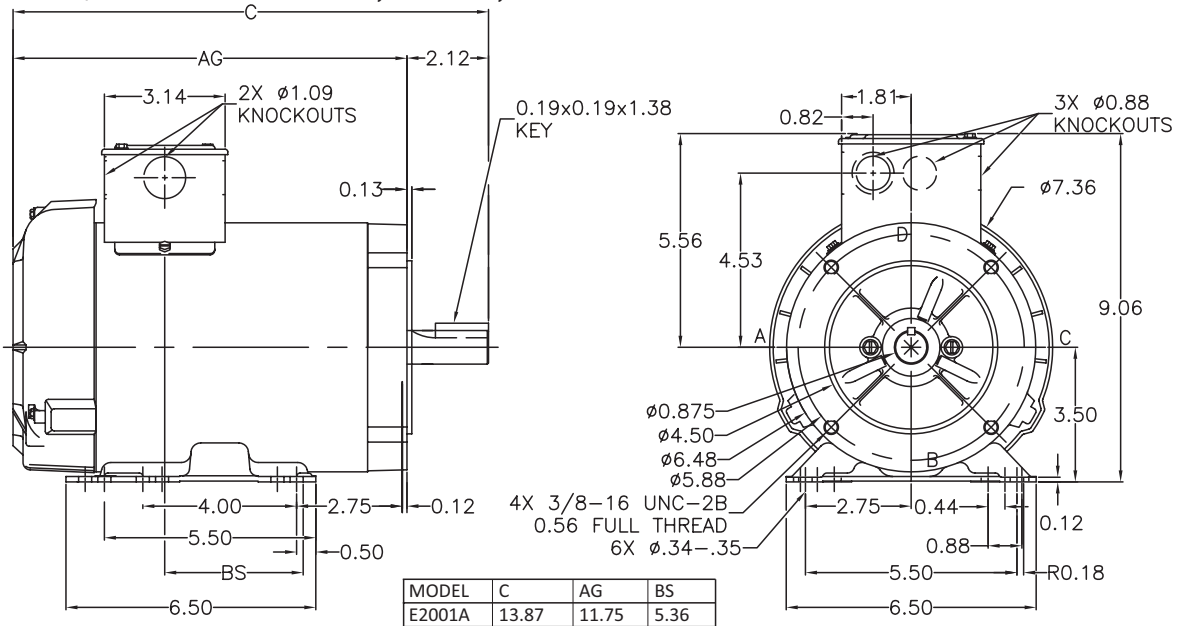


NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

Dimensions (units = inches)

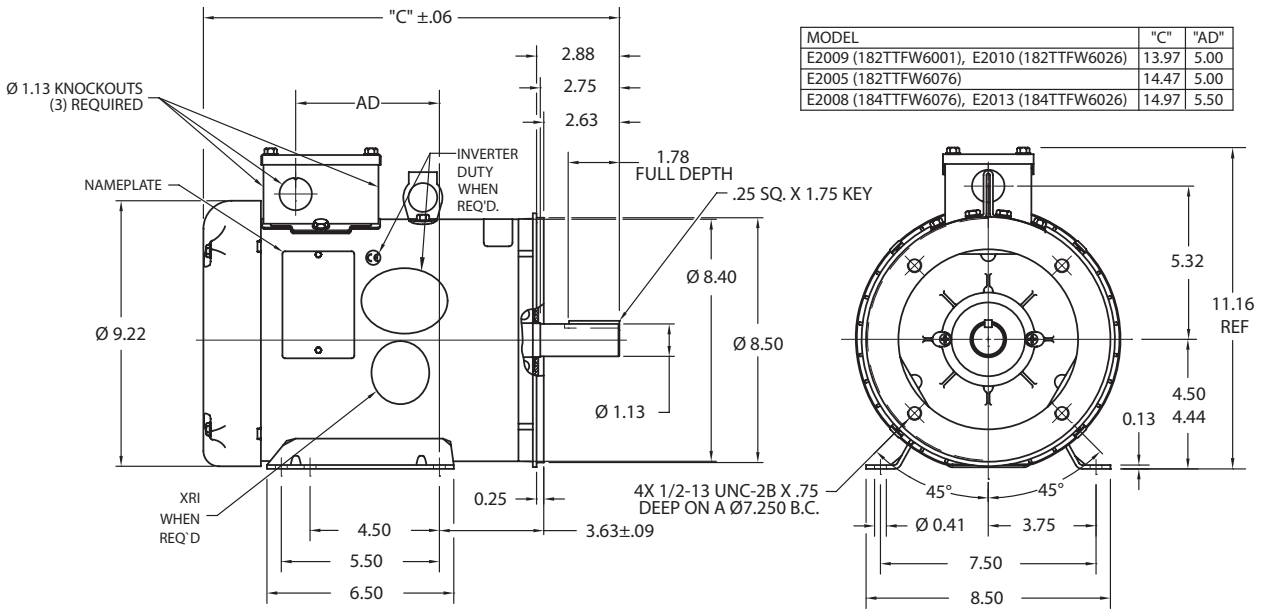
See our website: www.AutomationDirect.com for complete engineering drawings.

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

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



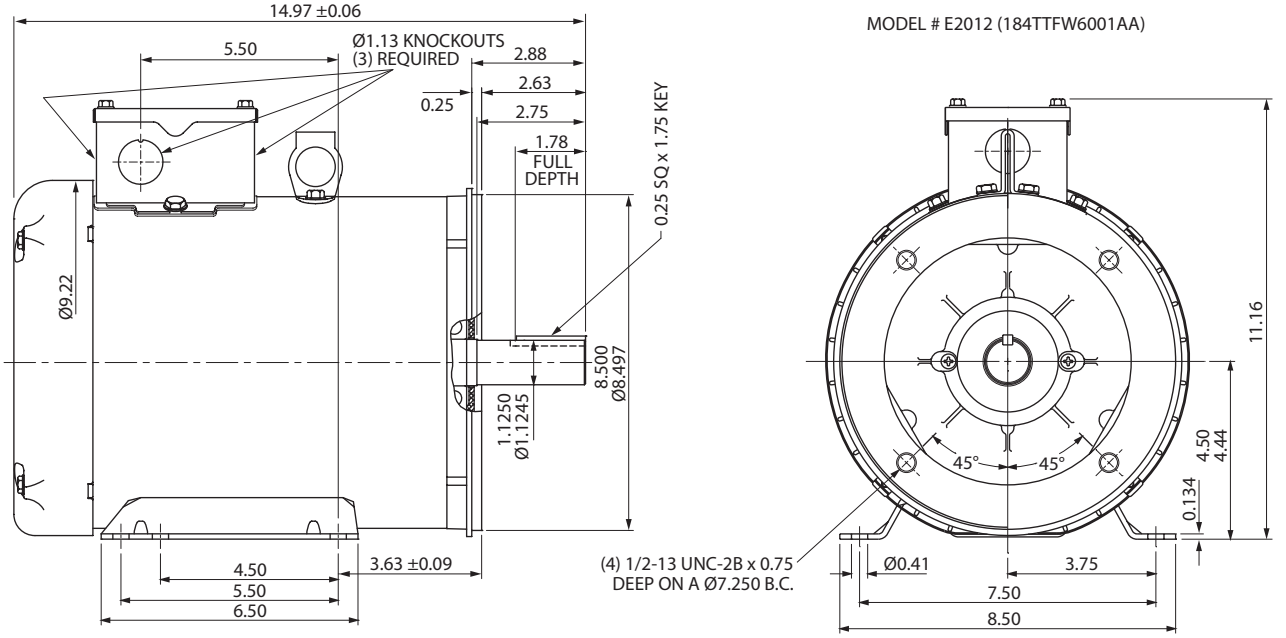
MODEL	"C"	"AD"
E2009 (182TTFW6001), E2010 (182TTFW6026)	13.97	5.00
E2005 (182TTFW6076)	14.47	5.00
E2008 (184TTFW6076), E2013 (184TTFW6026)	14.97	5.50

NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

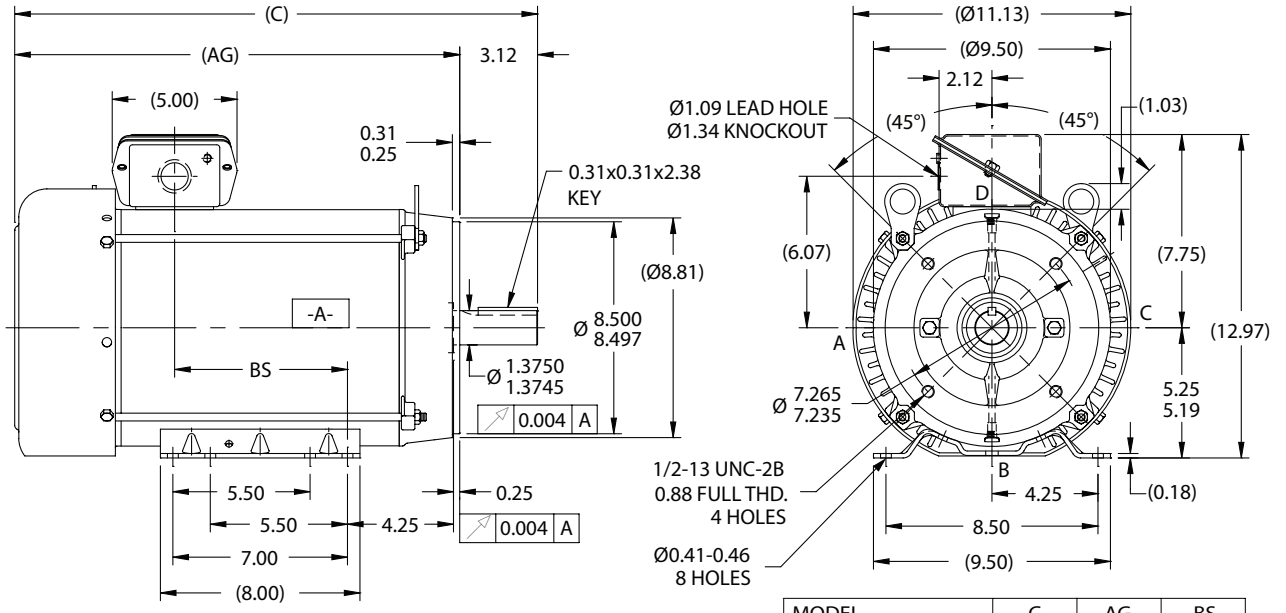
Dimensions (units = inches)

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

Frame 184TC – Part #: E2012



Frame 213/5TC – Part #: E2011, E2014, E2015, E2016A, E2018, E2019A



MODEL	C	AG	BS
E2011	19.47	16.35	5.43
E2014, E2015, E2016A	20.97	17.85	6.93
E2018, E2019A	22.22	19.10	8.18

Blue Chip XRI® – Ultra High Efficiency Motors

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

MARATHON® ELECTRIC

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.

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 web site for current shipping method constraints by part number.*

230/460V Motor Specifications

Part Number *	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	N.P. F.L. Amps	Weight (lb) *
E205	$1,167.00	15	1800	230/460	TEFC	254T	254TTFNA6026	37.5 / 18.8	322
E206	$1,457.00	20	1800	230/460	TEFC	256T	256TTFNA6026	48 / 24.1	368
E207	$1,735.00	25	1800	230/460	TEFC	284T	284TTFNA6026	62 / 31	495
E208	$2,023.00	30	1800	230/460	TEFC	286T	286TTFNA6026	73 / 36.5	423
E209	$2,643.00	40	1800	230/460	TEFC	324T	324TTFS6026	95 / 47.5	675
E210	$3,250.00	50	1800	230/460	TEFC	326T	326TTFS6026	120 / 60	745
E211	$4,650.00	60	1800	230/460	TEFC	364T	364TTFS6036	138 / 69	920
E212	$5,890.00	75	1800	230/460	TEFC	365T	365TTFS6036	172 / 86	1125
E213	$7,275.00	100	1800	230/460	TEFC	405T	405TTFS6036	226 / 113	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.

575V Motor Specifications

Part Number *	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	N.P. F.L. Amps	Weight (lb) *
E307	$1,150.00	15	1800	575	TEFC	254T	254TTFNA6030	15.0	326
E308	$1,435.00	20	1800	575	TEFC	256T	256TTFNA6030	19.3	368
E309	$1,710.00	25	1800	575	TEFC	284T	284TTFNA6030	24.8	565
E310	$1,985.00	30	1800	575	TEFC	286T	286TTFNA6030	29.2	514
E311	$2,640.00	40	1800	575	TEFC	324T	324TTFS6030	38.8	675
E312	$3,500.00	50	1800	575	TEFC	326T	326TTFS6030	48.0	640
E313	$4,645.00	60	1800	575	TEFC	364T	364TTFS6040	55.2	1025
E315	$5,890.00	75	1800	575	TEFC	365T	365TTFS6040	68.8	1125
E314	$7,275.00	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 ($lb·ft^2$)	Ohms/Ph - Equiv. Wye Circuit (460 VAC) (at rated operating temp. in 40° C ambient)				
										R1	R2	X1	X2	XM
E205	15	1775	19	8	44.5	126.4	92.4	81	2.4	0.376	0.238	1.351	1.777	32.508
E206	20	1775	24	8	59.5	144.6	93.0	84	3.2	0.267	0.207	0.990	1.491	28.4
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
E211	60	1780	69	22	177	449	95.0	86	16	0.065	0.047	0.412	0.473	11.447
E212	75	1780	86	28	221	574	95.4	86	18	0.048	0.037	0.319	0.386	9.238
E213	100	1780	113	28	295	773	95.4	87	28	0.034	0.028	0.307	0.287	8.920

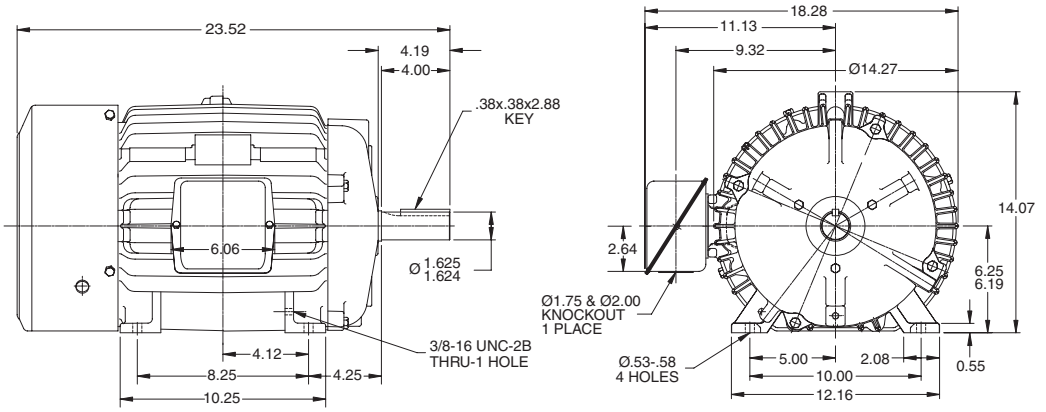
Motor Performance Data (575 Volt)														
Part Number	HP	F.L. rpm	F.L. Amps @460V	N.L. Amps @460V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	F.L. Effic. (%)	F.L. Power Factor	Rotor Inertia ($lb·ft^2$)	Ohms/Ph - Equiv. Wye Circuit (460 VAC) (at rated operating temp. in 40° C ambient)				
										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
E312	50	1775	48.0	19.2	148	340	94.5	82	9.5	0.068	0.062	0.483	0.648	11.068
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

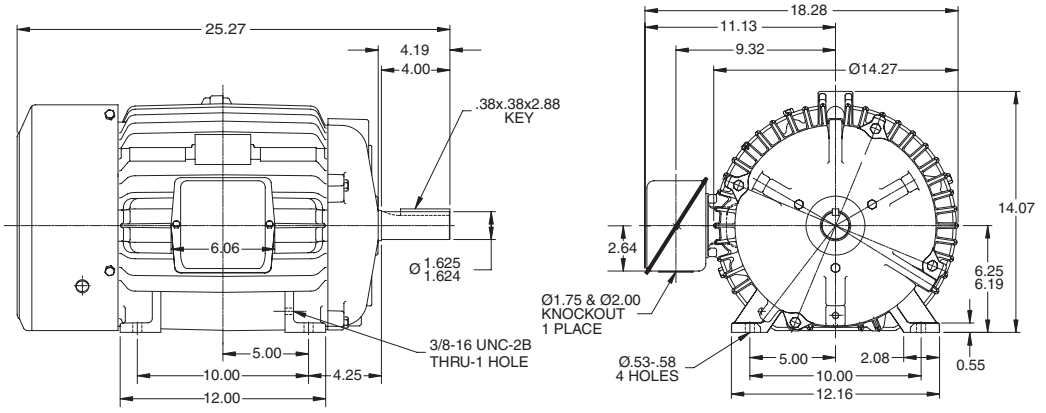
Dimensions (units = inches)

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

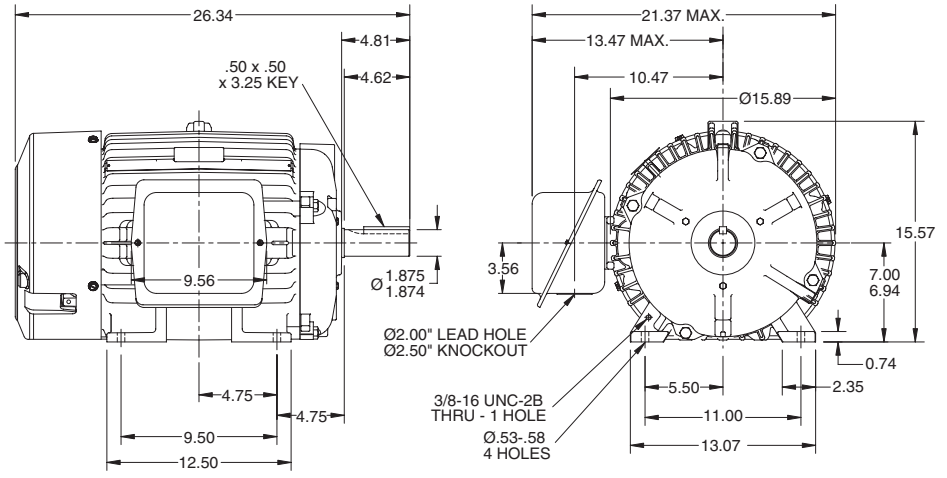
254T frame - part number E205 & E307



256T frame - part number E206 & E308



284T frame - part number E207 & E309

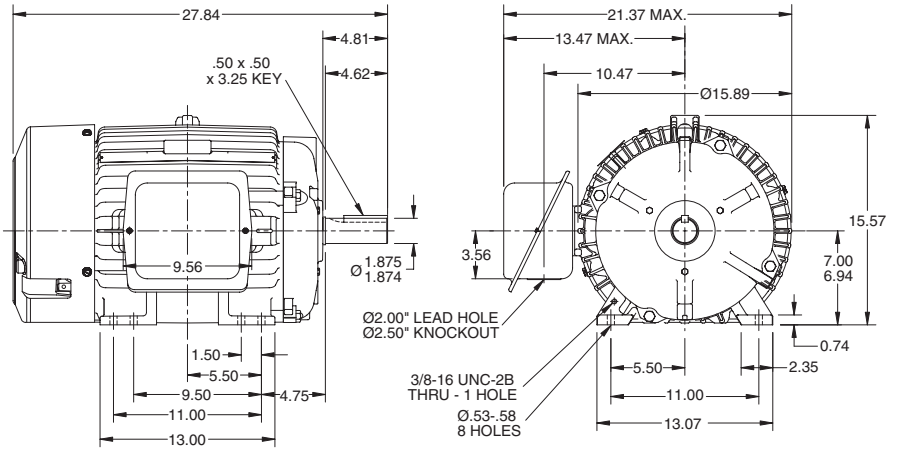


Blue Chip XRI® – Ultra High Efficiency Motors

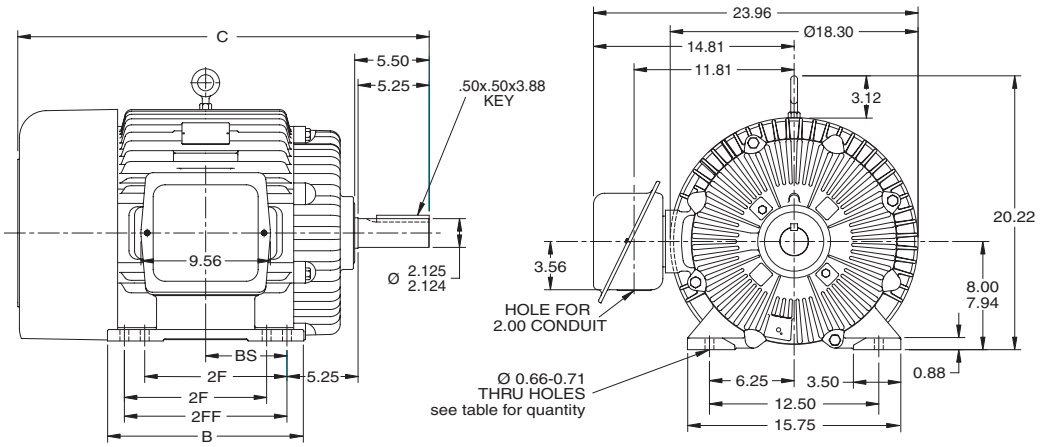
Dimensions (units = inches)

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

286T frame - part number E208 & E310

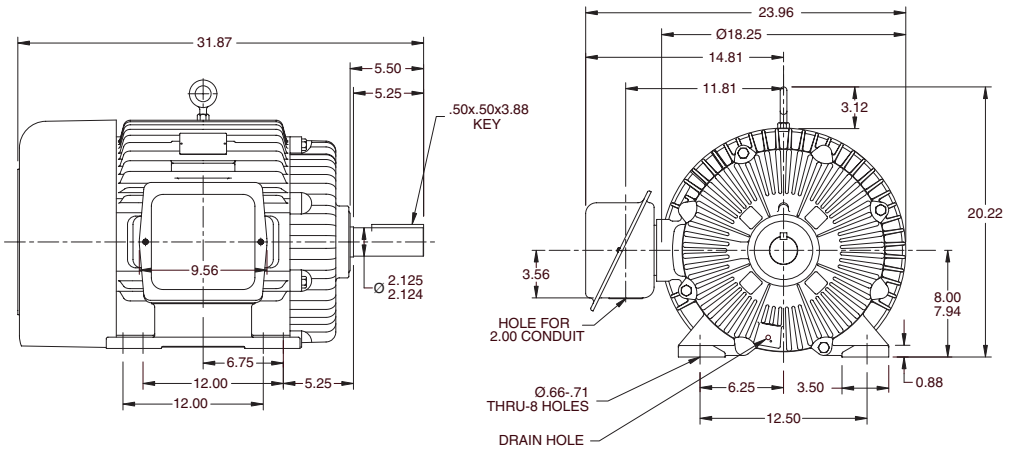


324T frame - part number E209 & E311



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 & E312

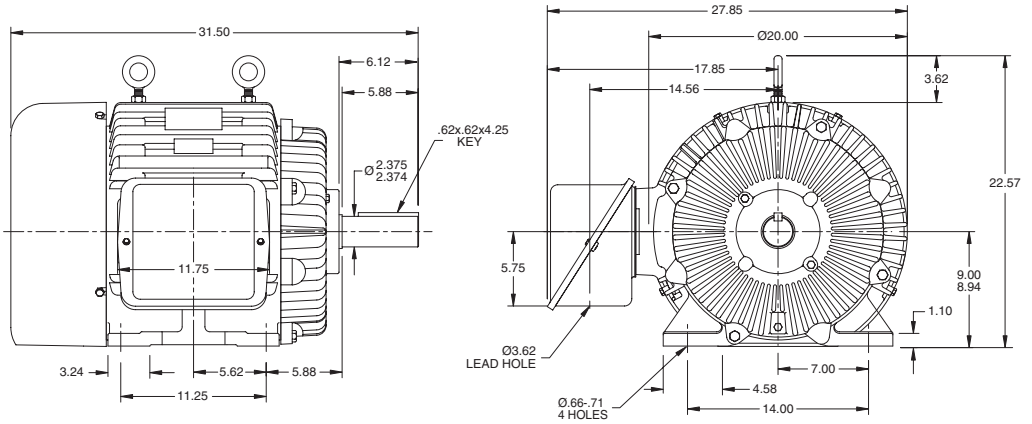


Blue Chip XRI®– Ultra High Efficiency Motors

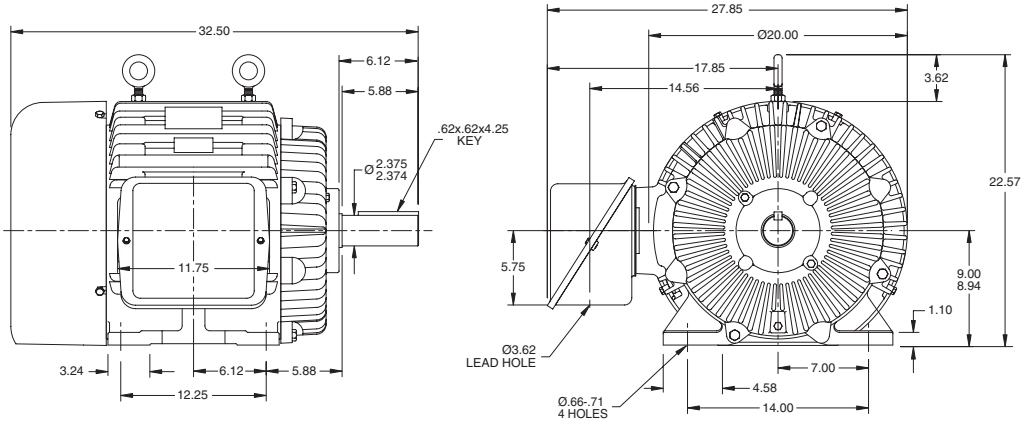
Dimensions (units = inches)

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

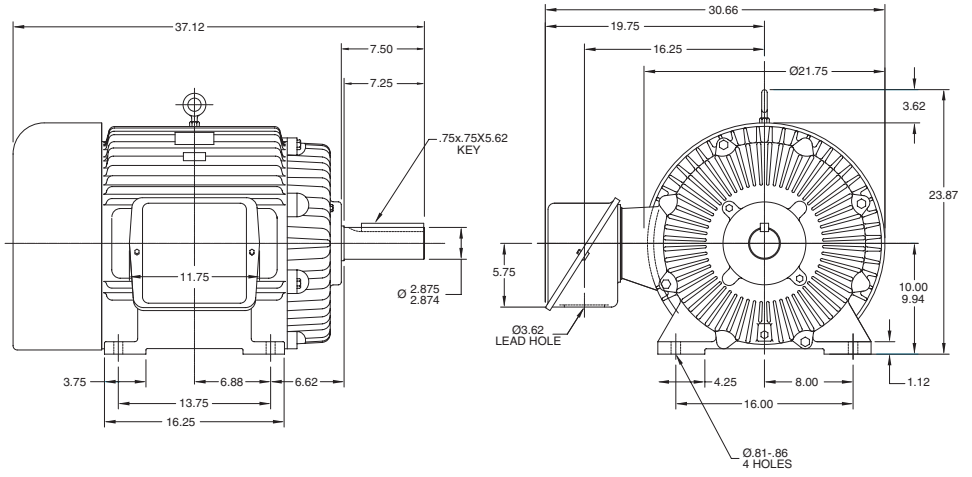
364T frame - part number E211 & E313



365T frame - part number E212 & E315



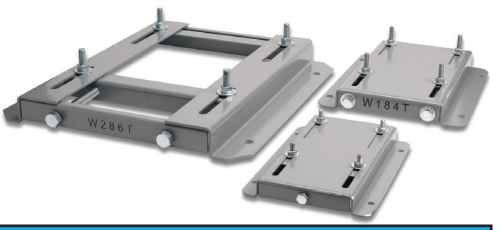
405T frame - part number E213 & E314



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



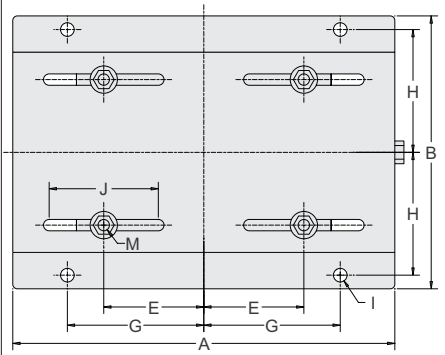
STABLE Motor Slide Bases

Part Number	Price	Fits Frame Type	Product Weight (lb)	Fits Motor								
				IronHorse	Marathon							
					micro -MAX	MAX+	Black Max 230/460V	Black Max 575V	Blue Max	NEMA Premium XRI	Blue Chip XRI 230/460V	Blue Chip XRI 575V
MTA-BASE-W56*	$9.75	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	–	–
MTA-BASE-W143T	$18.00	143T/TC	4.6	MTC(P)-001-3BD18(C)(CK) MTC(P)-1P5-3BD36	–	–	Y536(-A772)	–	–	E2001A E2003	–	–
MTA-BASE-W145T	$18.00	145T/TC	5.1	MTC(P)-001-3BD12 MTC(P)-1P5-3BD18(C)(CK) MTC(P)-002-3BD18(C)(CK) MTC(P)-002-3BD36	Y366 Y368	Y284 Y285	Y537(-A772) Y538(-A772) Y551(-A772)	Y557(-A772)	–	E2002 E2004A E2006 E2007A	–	–
MTA-BASE-W182T	$24.00	182T/TC	9.2	MTC(P)-1P5-3BD12 MTC(P)-003-3BD18(C)(CK) MTC(P)-003-3BD36 MTF-002-1C18-182	Y1999	Y286A	Y541A(-A772)	Y558A(-A772)	–	E2005 E2009 E2010	–	–
MTA-BASE-W184T	$24.00	184T/TC	10	MTC(P)-002-3BD12 MTC(P)-005-3BD18(C)(CK) MTC(P)-005-3BD36 MTF-00x-1C18	Y1372	Y287A	Y540(-A772) Y543A(-A772)	Y559A(-A772)	–	E2008 E2012 E2013	–	–
MTA-BASE-W213T	$35.00	213T/TC	13	MTC(P)-003-3BD12 MTC(P)-7P5-3BD18(C)(CK) MTC(P)-7P5-3BD36	Y994	–	Y542(-A772) Y545(-A772)	Y560(-A772)	–	E2011 E2015 E2016A	–	–
MTA-BASE-W215T	$35.00	215T/TC	15	MTC(P)-005-3BD12 MTC(P)-010-3BD18(C)(CK) MTC(P)-010-3BD36	Y996	–	Y544(-A772) Y547(-A772)	Y561(-A772)	–	E2014 E2018 E2019A	–	–
MTA-BASE-W254T	$49.00	254T/TC	18	MTC(P)-7P5-3BD12 MTC(P)-015-3BD18(C)(CK) MTCP-015-3BD36	–	–	Y546(-A772) Y549(-A772)	Y562(-A772)	–	–	E205	E307
MTA-BASE-W256T	$49.00	256T/TC	19	MTC(P)-010-3BD12 MTC(P)-020-3BD18(C)(CK) MTCP-20-3BD36	–	–	Y548(-A772) Y552(-A772)	Y563(-A772)	–	–	E206	E308
MTA-BASE-W284T	$54.00	284T/TC	20	MTCP-015-3BD12 MTC(P)-025-3BD18(C)(CK)	–	–	Y553(-A772)	–	–	–	E207	E309
MTA-BASE-W286T	$54.00	286T/TC	21	MTCP-20-3BD12 MTC(P)-030-3BD18(C)(CK)	–	–	Y393(-A772)	–	–	–	E208	E310
MTA-BASE-W324T	$81.00	324T/TC	30	MTC(P)-040-3BD18(C)(CK)	–	–	–	–	Y571(-A774) Y513(-A775)	–	E209	E311
MTA-BASE-W326T	$81.00	326T/TC	31	MTC(P)-050-3BD18(C)(CK)	–	–	–	–	Y572(-A774) Y514(-A775)	–	E210	E312
MTA-BASE-W364T	$110.00	364T/TC	43	MTC(P)-060-3BD18(C)(CK)	–	–	–	–	Y573(-A774) Y515(-A775)	–	E211	E313
MTA-BASE-W365T	$110.00	365T/TC	43	MTC(P)-075-3BD18(C)(CK)	–	–	–	–	Y574(-A774) Y516(-A775)	–	E212	E315
MTA-BASE-W404T	$136.00	404T/TC	58	–	–	–	–	–	–	–	–	–
MTA-BASE-W405T	$136.00	405T/TC	60	MTC(P)-100-3BD18(C)(CK)	–	–	–	–	Y575(-A774) Y517(-A775)	–	E213	E314
MTA-BASE-W444T	$157.00	444T	63	MTC(P)-125-3BD18	–	–	–	–	–	–	–	–
MTA-BASE-W445T	$157.00	445T	65	MTC(P)-150-3BD18	–	–	–	–	–	–	–	–
MTA-BASE-W447T	$207.00	447T	89	MTC(P)-200-3BD18	–	–	–	–	–	–	–	–
MTA-BASE-W449T	$207.00	449T	94	MTC-250-3D18 MTC-300-3D18	–	–	–	–	–	–	–	–

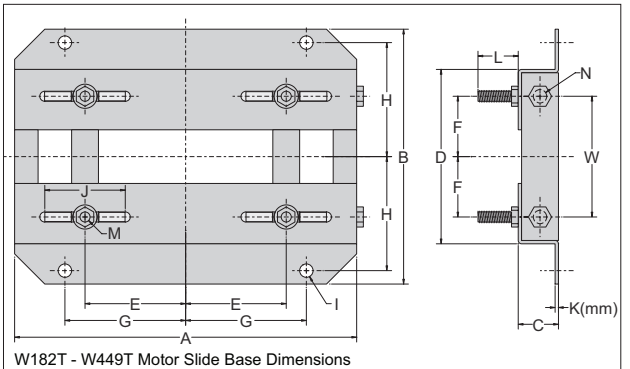
** IronHorse MTR2 56HC motors have double-punched bases to fit on slide base MTA-BASE-W56.*

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