

# 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)	
<b>Included – must meet the new Premium Efficiency standards – Industrial AC electric squirrel-cage general-purpose motors as follows:</b>	
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	
<b>Not Included in Premium Efficiency standards, but must now meet EPAct standards:</b>	
JM; JP; Round body (footless); 201–500 hp; Fire pump; U-frame; Design C; 8-pole	
<i>Certain motors (Inverter/Vector Duty, NEMA design D, etc.) are not covered by EISA 2007.</i>	
<i>For full text, visit <a href="http://www.energy.senate.gov">www.energy.senate.gov</a> and click "ENERGY INDEPENDENCE &amp; SECURITY ACT OF 2007".</i>	

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.

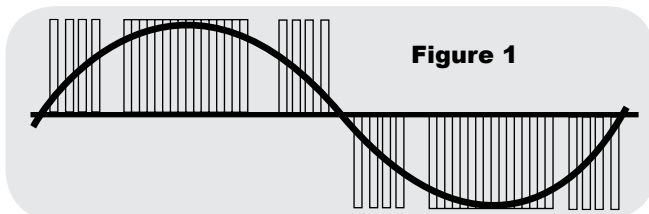
**Background:** For many years, AC motors were driven by across-the-line contactors and starters. The electricity sent to the motor was a very clean sine wave at 60Hz. Noise and voltage peaks were relatively small. **However, there were drawbacks:** they only ran electrically at one speed (speed reduction 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).

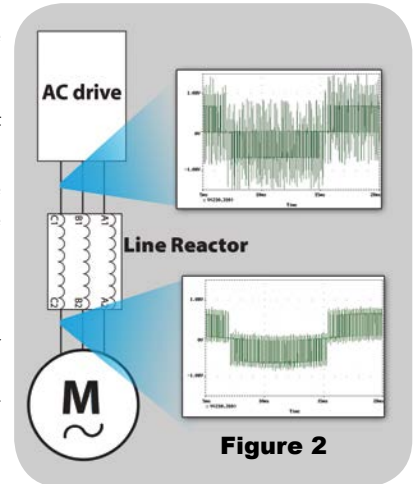
This DC voltage is then "chopped" by power transistors at very high frequencies to simulate a sine wave that is sent to the motor [see Figure 1]. By converting the incoming power to DC and then reconverting it to AC, the drive can vary its output voltage and output



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].



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)	1800/5 = 360RPM
	10:1 (PE motors)	1800/5 = 180RPM
Constant Torque Applications (conveyors, extruders, etc.)	2:1 (EPAct motors)	1800/2 = 900RPM
	4:1 (PE motors)	1800/4 = 450RPM

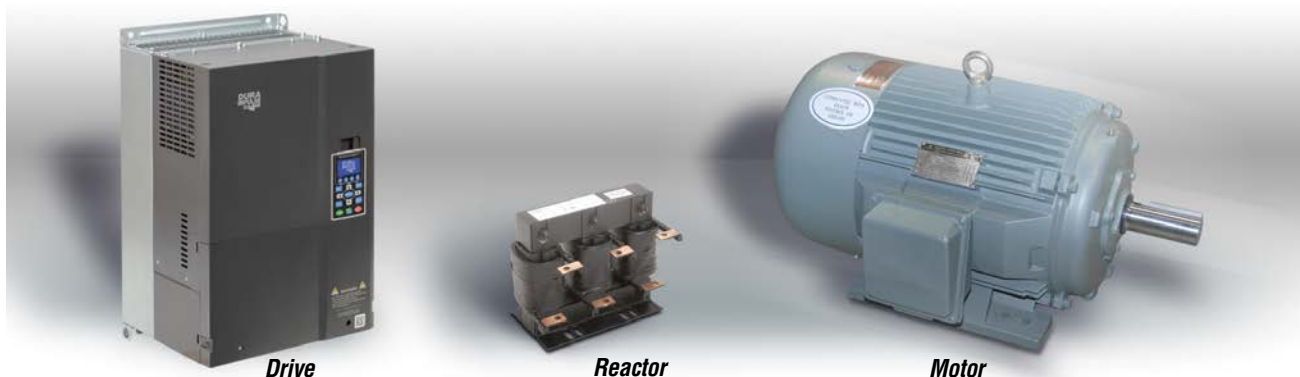
### Voltage Spike considerations

	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



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

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

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

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

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

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

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

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

### 1. Heat considerations for AC drive control

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

#### • Constant Torque (CT) Applications

**PE motors: 4:1 (1/4 rated speed)**

**EPAct motors: 2:1 (1/2 rated speed)**

The CT minimum continuous speed for an IronHorse general purpose motor is either one quarter or one half of its rated speed, as shown in the motor Performance Data tables. (Constant torque loads require the same amount of torque from the motor regardless of speed; e.g., conveyors, cranes, machine tools.)

#### • Variable Torque (VT) Applications

**PE motors: 10:1 (1/10 rated speed)**

**EPAct motors: 5:1 (1/5 rated speed)**

The VT minimum continuous speed for an IronHorse general purpose motor is either one tenth or one fifth of its rated speed, as shown in the motor Performance Data tables. (Variable torque loads require less torque at lower speeds, resulting in less heat generated by the motor; e.g., fans, centrifugal pumps.)

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

### 2. Voltage spike considerations for AC drive control

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

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

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

### 3. Carrier frequency limitation for AC drive control

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

# AC Motor Selection – IronHorse® General Purpose Motors



**IRONHORSE®**  
AUTOMATIONDIRECT

IronHorse® General Purpose Motor Selection					
Characteristics	1-Phase		3-Phase		
	56C/56HC Frame Rolled Steel***	T-Frame Farm Duty	56C/56HC Frame Rolled Steel***	56C Frame Stainless Steel	Cast Iron and Rolled Steel T & TC Frames
<b>Electrical Characteristics</b>					
<b>Horsepower range</b>	1/3 – 2	2 - 10	1/3 – 3	1/3 – 3/4	1-300(T); 1-30(TC)
<b>Base speed (# Poles)</b>	1800 (4), 3600 (2)	1800 (4)	1800 (4), 3600 (2)		1200 (6); 1800 (4); 3600 (2)
<b>Standard Voltage</b>	115/208-230, 115/230	208-230	208-230/460		208-230/460, 460
<b>Phase / Base Frequency (Hz)</b>	1 / 60		3 / 60		
<b>Service Factor</b>	1.15		1.15 (line) ; 1.0 (drive)		1.25 (TEFC, Line); 1.15 (ODP, Line); 1.00 (drive)
<b>Design Code (NEMA)</b>	L, N	L	B		
<b>Insulation Class</b>	F				
<b>Insulation System</b>	dip & bake twice	Double VPI	dip & bake	double dip & bake	TEFC : VI (Vacuum Impregnation); ODP: Double VPI
<b>Duty Cycle</b>	continuous				
<b>Thermal protection</b>	none	yes	none		
<b>Mechanical Characteristics</b>					
<b>Frame size (mounting)</b>	56C or 56HC	182T – 215T	56C or 56HC		143T/TC - 449T
<b>Enclosure</b>	TEFC				TEFC / ODP (MTC2 / MTDP)
<b>Frame material</b>	rolled steel			304 stainless steel	Cast Iron / Rolled Steel
<b>End bracket material</b>	aluminum	aluminum	aluminum	304 stainless steel	Cast Iron / Aluminum 143T-256T, Cast Iron 284T-326T (TEFC / ODP)
<b>Junction box material</b>	steel	Base: Aluminum, Cover: Steel	steel	304 stainless steel	Cast Iron / Steel
<b>Fan guard material</b>	steel	steel	steel	304 stainless steel	Steel / N/A for ODP
<b>Fan material</b>	polypropylene plastic	plastic	plastic	heat-resistant polyethylene	Plastic / N/A for ODP
<b>Lead termination</b>	junction box				
<b>Standard mounting</b>	C-Face with Removable Rigid Base	Rigid Base	C-Face with Removable Rigid Base	C-Face with Rigid Base C-Face with Round Body	Rigid Base, C-Face with Rigid Base (1-100 hp)
<b>Drive end shaft slinger</b>	yes	no	yes		Yes / No 143T-256T, Yes 284T-326T
<b>Paint</b>	black	green	black	n/a	Grey / Blue
<b>Bearings</b>	ball				1-300HP - 2P, 1-75 HP - 4P & 6P: Ball; 100-300 HP - 4P & 6P: Roller
<b>Grease</b>	Mobil Polyrex EM	NS7 ENS	Mobil Polyrex EM	Korschun lithium-based	Mobil Polyrex EM / NS7 ENS (TEFC / ODP)
<b>Standard junction box assembly position</b>	F1				F1 (Some sizes reversible to F2)
<b>Performance Characteristics</b>					
<b>Constant Torque speed range</b>	n/a	n/a	2:1 (MTR2, MTSS); 4:1 (MTRP, MTR2)		10:1
<b>Variable Torque speed range</b>	n/a	n/a	5:1 (MTR, MTSS); 10:1 (MTRP, MTR2)		20:1
<b>Constant Horsepower speed range</b>	n/a	n/a	1.5:1		1.5:1
<b>Temperature rise</b>	F	B			
<b>Encoder provisions</b>	none				
<b>Other Characteristics</b>					
<b>Warranty*</b>	2 years			1 year	2 Years
<b>Agency Approvals **</b>	CE, cCSA <sub>US</sub>	CE, cUR <sub>US</sub>	cCSA <sub>US</sub>		CE, cCSA <sub>US</sub> / CE, cUR <sub>US</sub>

\* See Terms and Conditions for motor warranty explanation.

1) For warranty on IronHorse motors below 50 hp, warranty service can be arranged through AutomationDirect.

2) For warranty on IronHorse motors 50 hp and above, motors must be inspected by a local EASA motor repair or service center; (see AutomationDirect Terms & Conditions).

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

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

# IronHorse® General-Purpose AC Motors

## MTF2, MTDP, MTR2, MTCP2, & MTSS

### Model Overview

IronHorse motors are manufactured by leading motor suppliers with over 20 years experience delivering high-quality motors to the demanding U.S. market. Our suppliers produce motors in ISO9001 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).



**Single-Phase  
Farm Duty T-Frame**



**Single-Phase  
Rolled Steel 56C Frame**



**Three-Phase  
Rolled Steel 56C Frame**



**Three-Phase Premium Efficiency  
Rolled Steel Open Drip-Proof**



**Three-Phase  
Stainless Steel 56C – Round Body**



**Three-Phase  
Stainless Steel 56C – Rigid Base**



**Three-Phase Premium Efficiency  
Cast Iron T-Frame**



**Three-Phase Premium Efficiency  
Cast Iron TC Frame**

The IronHorse line of motors includes:

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



# IronHorse<sup>®</sup> 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
- cCSA<sub>US</sub> 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	
<a href="#">MTR2-P33-1AB18</a>	\$115.00	1/3	1/4	1800	1500	115/230	110/220	TEFC rolled steel frame with cast aluminum end bell F1 conduit box location	56C flange mount	1.15	1	5.2 / 2.6	5.4 / 2.7	22
<a href="#">MTR2-P50-1AB18</a>	\$121.00	1/2	1/3									7.2 / 3.6	7.2 / 3.6	25
<a href="#">MTR2-P75-1AB18</a>	\$132.00	3/4	1/2									10.0 / 5.0	9.6 / 4.8	29
<a href="#">MTR2-001-1AB18</a>	\$146.00	1	3/4									13.0 / 6.5	12.4 / 6.2	36
<a href="#">MTR2-1P5-1AB18</a>	\$190.00	1-1/2	1									14.5 / 7.3	14.0 / 7.0	37
<a href="#">MTR2-002-1AB18</a>	\$220.00	2	1-1/2									19.6 / 9.8	23.4 / 11.7	44
<a href="#">MTR2-P33-1AB36</a>	\$129.00	1/3	1/4	3600	3000	115/230	110/220	TEFC rolled steel frame with cast aluminum end bell F1 conduit box location	56C	1.15	1	5.4 / 2.7	5.4 / 2.7	21
<a href="#">MTR2-P50-1AB36</a>	\$136.00	1/2	1/3									6.5 / 3.3	6.4 / 3.2	23
<a href="#">MTR2-P75-1AB36</a>	\$150.00	3/4	1/2									9.2 / 4.6	9.2 / 4.6	27
<a href="#">MTR2-001-1AB36</a>	\$159.00	1	3/4									11.5 / 5.8	10.2 / 5.1	30
<a href="#">MTR2-1P5-1AB36</a>	\$174.00	1-1/2	1									13.0 / 6.5	11.4 / 5.7	31
<a href="#">MTR2-002-1AB36</a>	\$204.00	2	1-1/2									17.0 / 8.5	14.6 / 7.3	37

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

# IronHorse® Farm-Duty AC Motors – 1-Phase

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

### Features

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

### Accessories Available

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

### Applications

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



### Motor Specifications – Single-Phase Farm-Duty Motors

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

**Notes:**

- 1) Please review the AutomationDirect Terms & Conditions for warranty and service on this product.
- 2) Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.
- 3) Operate on 230VAC +/- 10% (1.15 @ 230VAC; 1.0 S.F. @ 208V), single-phase power only.

### Performance Data – Single-Phase Farm-Duty Motors

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

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

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



**MTDP Series 3-Phase Motor**

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

### Features

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

### Accessories Available

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

### Applications

- Conveyors
- Fans
- Gear reducers
- Pumps



# IronHorse® Rolled-Steel AC Motors – 3-Phase

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

### Features

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

- 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

### Accessories Available



*MTR Series 3-phase motor*



*MTRP Series 3-phase motor*



*MTR2 Series 3-phase motor*

# IronHorse<sup>®</sup> Rolled-Steel AC Motors – 3-Phase

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

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

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



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

## 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
- cCSA<sub>US</sub> certified

## Accessories & Spare Parts Available

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



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

## Applications

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



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

# IronHorse<sup>®</sup> MTSS Stainless-Steel Three-Phase General-Purpose AC Motors

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

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

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

Motor Accessory (Optional) – 3-phase 56C Frame Stainless Steel Motors – 1800 & 3600 RPM			
Part Number	Price	Description	Approx Weight (lb)
<b>MTAS-CG-M22</b>	\$29.00	Cable gland; M22 x 1.5 mm thread; (1) silicone rubber gasket accommodates a cable diameter range of 0.393 to 0.512 in (10 to 13 mm); IP66 protection level; nickel-plated brass housing. <i>This is a SPARE part for IronHorse MTSS motors - one cable gland is pre-installed on each MTSS motor.</i>	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-ft <sup>2</sup> )
				CT (2:1)	VT (5:1)	No Load	Locked Rotor	Full Load	Locked Rotor	Break-down	CHP*	Safe			
<b>MTSS-P33-3BD18(R)</b>	1/3	B	1725	900	360	0.29	4.2	1.0	2.9	3.9	2250	4500	82.5	0.71	0.078
<b>MTSS-P50-3BD18(R)</b>	1/2		1725	900	360	0.30	4.6	1.5	3.8	5.2	2250		82.5	0.76	0.078
<b>MTSS-P50-3BD36</b>			3460	1800	720	0.36	6.0	0.7	1.9	2.5	4500		77.0	0.88	0.077
<b>MTSS-P75-3BD18(R)</b>	3/4		1725	900	360	0.44	7.3	2.2	5.0	7.0	2250		82.5	0.78	0.081
<b>MTSS-P75-3BD36</b>			3470	1800	720	0.43	7.6	1.1	2.7	3.3	4500		73.0	0.84	0.100

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

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

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

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



**Premium Efficiency  
Three-Phase Cast Iron T-Frame**



**Premium Efficiency  
Three-Phase Cast Iron TC-Frame**

## Features

- Available in 1200, 1800, & 3600 rpm
- Totally Enclosed Fan Cooled (TEFC) enclosure
- NEMA TC-frame (C-face) and T-frame motors
- Cast iron frame with ribbed design for maximum cooling
- Solid full frame length cast iron mounting feet
- Steel fan cover
- Cast iron junction box with rubber gasket and rubber dust cover
- NSK/NTN/SKF brand premium quality ball (1-75 hp) or roller bearings (100-300 hp)
- Maintenance free bearings (10 hp and below)
- V-ring shaft seals on drive end and on opposite drive end
- Electrically reversible
- Class F winding insulation
- Service Factor: 1.25 (1-200 hp), 1.15 (250-300 hp), 1.0 with AC drive (ALL)
- Meets or exceeds Premium Efficiency standards
- Class I, Div 2 hazardous locations
- Inverter ratings: 20:1 (variable torque); 10:1 (constant torque)
- Two year warranty
- cCSA<sub>US</sub> 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<sup>®</sup> MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

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

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

Motor Specifications – Premium-Efficiency T & TC Frame Three-Phase Motors – 1800 rpm												
Part Number <sup>(1)</sup>	Price	HP <sup>(2)</sup>	Base RPM @60Hz (50Hz)	Phase	Voltage	Housing	NEMA Frame	Mounting <sup>(3)</sup>	Holes / Foot	Service Factor <sup>(6)</sup> (@50Hz)	F.L. Amps @208-230V/460V	Approx Product Weight (lb) <sup>(4)</sup>
<a href="#">MTCP2-001-3BD18</a>	\$190.00	1	1800 (1500)	3	208-230/460V	TEFC cast iron	143T	F1(F2)	2	1.25 (1.0)	3.61-3.27 / 1.63	41
<a href="#">MTCP2-001-3BD18C</a>	\$213.00						143TC					
<a href="#">MTCP2-1P5-3BD18</a>	\$225.00	1.5					145T					
<a href="#">MTCP2-1P5-3BD18C</a>	\$229.00						145TC					
<a href="#">MTCP2-002-3BD18</a>	\$256.00	2					145T					
<a href="#">MTCP2-002-3BD18C</a>	\$281.00						145TC					
<a href="#">MTCP2-003-3BD18</a>	\$462.00	3					182T					
<a href="#">MTCP2-003-3BD18C</a>	\$490.00						182TC					
<a href="#">MTCP2-005-3BD18</a>	\$441.00	5					184T					
<a href="#">MTCP2-005-3BD18C</a>	\$508.00						184TC					
<a href="#">MTCP2-7P5-3BD18</a>	\$677.00	7.5					213T					
<a href="#">MTCP2-7P5-3BD18C</a>	\$706.00						213TC					
<a href="#">MTCP2-010-3BD18</a>	\$760.00	10					215T					
<a href="#">MTCP2-010-3BD18C</a>	\$867.00						215TC					
<a href="#">MTCP2-015-3BD18</a>	\$1,038.00	15					254T					
<a href="#">MTCP2-015-3BD18C</a>	\$1,152.00						254TC					
<a href="#">MTCP2-020-3BD18</a>	\$1,238.00	20					256T					
<a href="#">MTCP2-020-3BD18C</a>	\$1,377.00						256TC					
<a href="#">MTCP2-025-3BD18</a>	\$1,705.00	25					284T					
<a href="#">MTCP2-025-3BD18C</a>	\$1,652.00						284TC					
<a href="#">MTCP2-030-3BD18</a>	\$1,757.00	30					286T					
<a href="#">MTCP2-030-3BD18C</a>	\$1,763.00						286TC					
<a href="#">MTCP2-040-3BD18</a>	\$2,178.00	40					324T					
<a href="#">MTCP2-050-3BD18</a>	\$2,265.00	50					326T					
<a href="#">MTCP2-060-3BD18</a>	\$3,242.00	60					364T					
<a href="#">MTCP2-075-3BD18</a>	\$3,446.00	75					365T					
<a href="#">MTCP2-100-3BD18</a>	\$4,179.00	100					405T					
<a href="#">MTCP2-125-3BD18</a>	\$4,827.00	125					444T					
<a href="#">MTCP2-150-3BD18</a>	\$6,157.00	150					445T					
<a href="#">MTCP2-200-3BD18</a>	\$7,203.00	200					445/7T					
<a href="#">MTCP2-250-3D18</a>	\$10,551.00	250	449T									
<a href="#">MTCP2-300-3D18</a>	\$13,688.00	300	449T									

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

# IronHorse<sup>®</sup> MTCP2 Premium-Efficiency Cast-Iron Three-Phase AC Motors

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

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

1) Please review the AutomationDirect Terms & Conditions for warranty and service on this product.  
 2) F1(F2) indicates F1 conduit box mounting location, field convertible to F2 (as shown on dimensional diagram).  
 3) Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.  
 4) The service factor changes from 1.25 to 1.0 under the following conditions:

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

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

1) Please review the AutomationDirect Terms & Conditions for warranty and service on this product.  
 2) F1(F2) indicates F1 conduit box mounting location, field convertible to F2 (as shown on dimensional diagram).  
 3) Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.  
 4) The service factor changes from 1.25 to 1.0 under the following conditions:

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

# AC Motor Selection – Marathon® Single-Phase Motors

**marathon®**  
Motors

Marathon® Single-Phase Motor Selection					
Single-Phase Characteristic	Powerwash SXT	JetPump	General Purpose	Air Compressor	Fan & Blower
<b>Electrical Characteristics</b>					
<b>Horsepower range</b>	1/3 – 5	1/3 – 2	1/4 – 10	1/2 – 5	1/4 – 2
<b>Base speed (# poles)</b>	1800 (4) / 3600 (2)	3600 (2)	1800 (4) / 3600 (2)	1800 (4) / 3600 (2)	1800 (4) / 3600 (2)
<b>Standard voltage</b>	115 / 230	115 / 230	115 / 230, 208 / 230, 115 / 208 – 230, 100 – 120 / 200 – 240, 120 / 140 & 100 – 120 / 200 – 240	230, 115 / 230, 115 / 208 – 230	115 / 230 (G1115), 115 / 208 – 230
<b>Phase / Base frequency (Hz)</b>	1 / 60				
<b>Service factor</b>	1.0	1.0 / 1.15	1.15 / 1.35	1.15 / 1.25 (C169)	1.15 / 1.2 / 1.25 / 1.35
<b>Design code (NEMA)</b>	B	N/A***	B, L, N, O	E, L	E, L, N
<b>Insulation class</b>	F	B	B, B3, F4	B, B3	B, B3
<b>Insulation system</b>	CR200 magnet wire	N/A***	N/A***	N/A***	N/A***
<b>Duty cycle</b>	Continuous				
<b>Thermal protection</b>	None	Automatic Reset	Automatic / Manual / None	Manual / None (Z502)	Automatic / Manual / None (C235)
<b>Mechanical Characteristics</b>					
<b>Frame size (mounting)</b>	56C – 145TC	56J	48 – 215T	56 – 56H – 184T	48 – 56 – 56H
<b>Enclosure</b>	TEFC, TENV	TEFC	DP	DP	DP
<b>Frame material</b>	300 Series Stainless Steel	Rolled Steel	Rolled Steel	Rolled Steel	Rolled Steel
<b>End bracket material</b>	Stainless Steel	Cast Aluminum, Steel	Cast Aluminum	Cast Aluminum	Cast Aluminum
<b>Conduit box material</b>	Stainless Steel	Steel	Steel	Steel	N/A***
<b>Fan guard material</b>	Stainless Steel	Steel	N/A***	N/A***	N/A***
<b>Fan material</b>	Polypropylene	Plastic	N/A***	N/A***	N/A***
<b>Lead termination</b>	Conduit box	Conduit box Flying Leads (Jxxx Models) .33HP to 3HP	Conduit box	Conduit box	NPS Hole
<b>Standard mounting</b>	C-Face with Rigid Base & C-Face Round Body	Footless	Rigid Base	Rigid Base	Resilient Base
<b>Drive end shaft slinger</b>	No	Yes	No	No	No
<b>Paint</b>	N/A	Gray powder-coat	Gray powder-coat Blue enamel	Black powder-coat	Black powder-coat
<b>Bearings</b>	Double Sealed		Ball Bearings	Ball Bearings	Ball Bearings
<b>Grease</b>	Exxon Polyrex EM				
<b>Standard conduit box assembly position</b>	F1	F1	F1	F1	F1 (NPS Hole)
<b>Performance Characteristics</b>					
<b>Temperature rise</b>	N/A***				
<b>Encoder provisions</b>	No				
<b>Other Characteristics</b>					
<b>Warranty *</b>	12 months from Installation. 18 months from Purchase.				
<b>Agency listings **</b>	UL Recognized, CSA Certified, and CE Mark				
<p>* See Terms and Conditions for motor warranty explanation. Marathon warranty service can be arranged through Marathon Electric service centers. See list of service centers on our website at <a href="http://www.automationdirect.com">www.automationdirect.com</a>.</p> <p>** To obtain the most current agency approval information, see the Agency Approval Checklist on the specific part number's web page.</p> <p>*** Data not available from manufacturer.</p>					

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

## C-Face Footed (Rigid Base)



### Features

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

### Applications

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

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days
Color indicates shipping lead time in business days. Check stock status online.		
* Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.		

Motor Specifications – Powerwash SXT Washdown Duty, Single-Phase, Totally Enclosed, All Stainless Steel Motors										
Part Number*	Price	HP	Base RPM	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*
<b>N341</b>	\$501.00	1/2	1800	115 / 230	1.15	TEFC	B	56C	56C17WD5327 A	29
<b>N343</b>	\$575.00	3/4							56C17WD5328 A	36
<b>N345</b>	\$593.00	1							56C17WD5329 A	42
<b>N347</b>	\$601.00	1-1/2							56C17WD5330 A	53
<b>N349</b>	\$668.00	2						145TC	145TBWD5335 A	62
<b>N348</b>	\$681.00	2	3600	145TBWD5305	49					
* Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.										
Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at <a href="http://www.automationdirect.com">www.automationdirect.com</a> .										

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

C-Face Footless, 56J



## Features

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

## Applications

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



Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days
Color indicates shipping lead time in business days. Check stock status online.		
* Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.		

Motor Specifications – Jet Pump (Centrifugal) Single-Phase Totally Enclosed Motors										
Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*	Footnotes
<b>C1336</b>	\$259.00	1/3	3600	115/230	TEFC	N/A**	56J	5KC33FN4180X	13.5	None
<b>C465</b>	\$321.00	1/2						5KC39QN3218X	24.5	Model on nameplate may be 5KC39QN3218GX
<b>C352</b>	\$368.00	1						5KC49NN2135X	29	15
<b>C878</b>	\$554.00	2						5KCR49TN2164T	38	ES,1,15
* Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number. ** Data not available from manufacturer.										
Footnotes: 1 = Capacitor Start/Capacitor Run design for reduced amperage 15 = Fixed CW Rotation, viewing opposite shaft (or lead end) of motor ES = Energy Saver Design										
Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Website at <a href="http://www.automationdirect.com">www.automationdirect.com</a> .										



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



*Rigid Base*



*C-Face Footed (Rigid Base)*



## Rigid Base and C-Face Footed (Rigid Base)

### Rigid Base Features

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

### C-Face Footed (Rigid Base) Features

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

### Applications

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

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days
<p><i>Color indicates shipping lead time in business days. Check stock status online.</i></p> <p><i>* Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.</i></p>		

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

Rigid Base

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

\* Refer to the Motor Shipping Schedule table for shipping information.  
 Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.  
 \*\* Data not available from manufacturer.  
 \*\*\* Base of 56HZ frame motors has holes and slots to match NEMA 56, 56H, 143T, and 145T mounting dimensions.  
 Note: Please review the AutomationDirect Terms & Conditions for warranty and service for this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at [www.automationdirect.com](http://www.automationdirect.com)

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

C-Face Footed (Rigid Base)

Motor Specifications – General Purpose, Single Phase (NEMA Service Factor), C-Face Footed (Rigid Base), Drip-proof Motors											
Part Number*	Price	HP	Base RPM	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*	Notes
<b>E261A</b>	\$254.00	1/2	1800	100 - 120 / 200 - 240	1.25	DP	N/A**	56C	056B17D11029	25	Auto Overload
<b>E268A</b>	\$361.00	3/4		100 - 120 / 200 - 240			N		056B17DRR70008A1	35	Manual Overload
<b>EG277A</b>	\$494.00	1		100 / 240 & 100 - 120 / 200 - 240	1.15		N		056B17DRR70019A1	35	Manual Overload

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

\*\*Data not available from manufacturer.

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



**marathon**<sup>®</sup>  
Motors

## C-Face Footed (Removable Base)

### Features

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

### Applications

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

#### Motor Shipping Schedule \*

<b>Same or one day *</b>	<b>Up to 7 days</b>	<b>Up to 10 days</b>
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Color indicates shipping lead time in business days. Check stock status online.

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

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

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

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

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

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

# Air Compressor, Single-Phase, Drip-proof Motors



Rigid Base

## Features

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

## Applications

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

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days
Color indicates shipping lead time in business days. Check stock status online.		
* Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.		

Motor Specifications – Air Compressor, Single-Phase, Drip-proof Motors											
Part Number*	Price	HP	Base RPM	Volts	Service Factor	Encl.	NEMA Design	NEMA Frame	Model No.	Weight (lb)*	Notes
<b>C169</b>	\$243.00	1/2	1800	115 / 230	1.25	DP	N/A**	56	5KC49GN0010Y	21	Manual Overload
<b>D010</b>	\$268.00	1	3600	115 / 208-230	1.15		E	56	056B34D2029	23	Manual Overload
<b>C704</b>	\$260.00	1-1/2	3600	115 / 230			N/A**	56	5KC49PN2521Y	31	Manual Overload
<b>Z502</b>	\$543.00	3	1800	230			L	184T	184TBDR5326	51	No Overload
<b>D017</b>	\$643.00	5	3600	230			N/A**	56H	56B34D5302	55	Manual Overload
* Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.											
** Data not available from manufacturer.											
Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at <a href="http://www.automationdirect.com">www.automationdirect.com</a> .											



# Fan & Blower - Capacitor Start, Drip-proof Motors

Resilient Base



**marathon**  
Motors

## Features

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

## Applications

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

### Motor Shipping Schedule \*

Same or one day *	Up to 7 days	Up to 10 days
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Color indicates shipping lead time in business days. Check stock status online.

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

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

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

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

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

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

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

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

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

\* See Terms and Conditions for motor warranty explanation.  
 Marathon warranty service can be arranged through Marathon Electric service centers. See list of service centers on our website at [www.automationdirect.com](http://www.automationdirect.com).  
 \*\* To obtain the most current agency approval information, see the Agency Approval Checklist on the specific part number's web page.

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

Continued from previous page

Marathon® 3-Phase Inverter-Duty Motor Selection									
3-Phase Characteristic	Powerwash SXT	Jet Pump	Micro MAX™	MAX+	Black Max®	Blue Max®	NEMA Premium® XRI®	Blue Chip XRI®	XRI 4N1 General Purpose
<b>Paint</b>	N/A	N/A	Black powder-coat; Black enamel	Black powder; Black enamel	Black enamel	Blue enamel	Blue enamel	Blue alkyd enamel	Gray powder
<b>Bearings</b>	Ball	Ball	Ball (C3 fit)						Ball
<b>Grease</b>	Exxon Polyrex EM								
<b>Standard conduit box assembly position</b>	F1, reversible to F2	F1	F1 (1/4 & 1/3 hp) F3 (all others)	F1, reversible to F2 (2hp) F1 (all others)	F1, reversible to F2	F1, reversible to F2	F3	F1	F1 & NPO
Performance Characteristics									
<b>Constant torque speed range</b>	10:1	10:1	20:1 (TEFC) 1000:1 (TENV)	1000:1	1000:1 (TENV)	2000:1 (all enclosures)	10:1	20:1	10:1 (TEFC) 1000:1 (TENV)
<b>Variable torque speed range</b>	10:1 (TEFC) 1000:1 (TENV)	10:1	–	–	–	–	10:1	–	–
<b>Constant horsepower speed range</b>	2:1	2:1	2:1	2:1	2:1 (90–120Hz intermittent @50% duty cycle)	2:1	2:1	2:1	2:1
<b>Temperature rise</b>	F	B	B	varies by model #	varies by model #	F (TEFC) B (TEBC)	F	B	F
<b>Encoder provisions</b>	No	No	No	Yes	Yes	Yes	No	No	No
Other Characteristics									
<b>Warranty *</b>	12 months from installation, 18 months from purchase. (through Marathon Electric)		3 years (through Marathon Electric for MAX, XRI and 4N1 Motors)						
<b>Agency listings **</b>	UL Recognized, CSA Certified, CE Mark								
<p>* See Terms and Conditions for motor warranty explanation. Marathon warranty service can be arranged through Marathon Electric service centers. See list of service centers on our website at <a href="http://www.automationdirect.com">www.automationdirect.com</a>.</p> <p>** To obtain the most current agency approval information, see the Agency Approval Checklist on the specific part number's web page.</p>									

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

C-Face Footless



**marathon**  
Motors

## Features

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

## Applications

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

### Motor Shipping Schedule \*

Same or one day *	Up to 7 days	Up to 10 days
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Color indicates shipping lead time in business days. Check stock status online.

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

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

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

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

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

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

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

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



### Features

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

### Applications

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

#### Motor Shipping Schedule \*

Same or one day \*    Up to 7 days    Up to 10 days

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

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

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

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

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

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

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

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

## C-Face Footed (Removable Base) 56J

### Features

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

### Applications

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



Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days
Color indicates shipping lead time in business days. Check stock status online.		
* Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.		

Motor Specifications – Jet Pump (Centrifugal) 3-Phase Totally Enclosed Motors											
Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*	Footnotes
<b>J061</b>	\$226.00	1/2	3600	208-230 / 460 - 190 / 380	TEFC	B	56J	56T34F5342 D	2.0 - 2.2 / 1.1 - 1.85 / 0.92	23	68
<b>J062</b>	\$266.00	3/4		208-230 / 460 - 190 / 380				56T34F5343 D	3.0 - 3.2 / 1.6 - 3.0 / 1.5	23	
<b>J063A</b>	\$322.00	1		230 / 460 - 190 / 380				56T34F99029 A	3 / 0 / 1.5 - 2.6 / 1.3	25	68 Nameplate footnote: Suitable for 208V at 60Hz
<b>J064A</b>	\$399.00	1-1/2		208-230 / 460 - 190 / 380				56T34F99018 A	4.2 - 4.0 / 2.0 - 3.4 / 1.7	26	68
<b>J065A</b>	\$459.00	2		230 / 460 - 190 / 380				56T34F15592 A	5.0 / 2.5 - 4.6 / 2.3	30	68 Nameplate footnote: Suitable for 208V at 60Hz
<b>J066A</b>	\$467.00	3						056T34F15601	7.6 / 3.8 - 6.4 / 3.2	48	
* Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.											
Footnotes: 68 = Rated 60/50 hertz, 190/380 or 380 volt at next lower horsepower											
Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at <a href="http://www.automationdirect.com">www.automationdirect.com</a> .											



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

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

### Features

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

### Applications

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



Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days
Color indicates shipping lead time in business days. Check stock status online.		
* Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.		

Motor Specifications – Jet Pump (Centrifugal) 3-Phase Drip-proof Motors											
Part Number*	Price	HP	Base RPM	Volts	Encl.	NEMA Design	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*	Footnotes
<b>J047</b>	\$168.00	1/3	3600	208-230/460 - 190/380	DP	B	56J	56T34D5368 D	1.2-1.1/0.55 - 1.1/0.55	21	68
<b>J048</b>	\$189.00	1/2						56T34D5367 D	1.9-2.2/1.1 - 2.0/1.0	21	
<b>J050</b>	\$258.00	1						56T34D5366 D	3.7-3.7/1.85 - 3.4/1.7	23	
<b>J051</b>	\$313.00	1-1/2						56T34D5369 D	5.2-5.0/2.5 - 4.3/2.15	23	
<b>J052</b>	\$366.00	2					56HJ	56T34D5370 D	6.4-6.2/3.1 - 6.0/3.0	30	
<b>J053</b>	\$411.00	3					56T34D5371 D	8.9-8.4/4.2 - 7.0/3.5	32		
* Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.											
Footnotes: 68 = Rated 60/50 hertz, 190/380 or 380 volt at next lower horsepower											
Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our website at <a href="http://www.automationdirect.com">www.automationdirect.com</a> .											

# microMAX™ AC Inverter-Duty Motors

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



**marathon**®  
Motors

## Features

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

## Applications

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

Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days
Color indicates shipping lead time in business days. Check stock status online.		
* Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.		

## Prices & Specifications

Motor Specifications – microMAX											
Part Number *	Price	HP	Base RPM	Volts	Encl.	NEMA Frame	Model No.	F.L. Amps	Weight (lb) *	Footnotes	
<b>Y500</b>	\$203.00	1/4	1800	230	TENV	56C	56H17T2011	1.0	17	Q	
<b>Y502</b>	\$232.00	1/3					56H17T2013A	1.2	17	Q	
<b>Y360</b>	\$267.00	1/2					56H17T2017	1.8 / 0.9	25	–	
<b>Y362</b>	\$344.00	3/4					56H17F2017A	2.8 / 1.4	25	–	
<b>Y364</b>	\$355.00	1		230/460	TEFC	145TC	56H17F2021	3.2 / 1.6	28	–	
<b>Y366</b>	\$479.00	1-1/2					145THTR5329AA	4.8 / 2.4	45	6	
<b>Y368</b>	\$591.00	2					145THFR5329	5.8 / 2.9	45	6	
<b>Y1999 †</b>	\$721.00	3					182TC	182THFW729AA	8.4 / 4.2	64	6
<b>Y1372 †</b>	\$820.00	5					184TC	184THFW726AA	13.0 / 6.5	92	6
<b>Y994</b>	\$1,048.00	7-1/2					213TC	213THFW7726	21.4 / 10.7	125	6
<b>Y996</b>	\$1,305.00	10					215TC	215THFW7726	27.6 / 13.8	135	6

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

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

# 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)



## 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 Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days
Color indicates shipping lead time in business days. Check stock status online.		
* Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.		

Motor Specifications – MAX+ (with encoder)											
Part Number *	Price	HP	Base RPM	Volts	Encl.	NEMA Frame	Model No.	F.L. Amps	Weight (lb) *	Footnotes	
Y280	\$864.00	1/2	1800	230/460	TENV	56C	56H17T15526A	1.6 / 0.8	25	6	
Y281	\$903.00	3/4					56H17T15528A	2.4 / 1.2	35	6	
Y282	\$958.00	1					56H17T15527A	3.0 / 1.5	42	6	
Y284	\$1,115.00	1-1/2				145TC	145THTR15540AA	4.8 / 2.4	45	6	
Y285	\$1,517.00	2					145THTN17034AA	6.0 / 3.0	68	13b	
Y286A	\$1,702.00	3					182TC	182THTY17041AA	8.2 / 4.1	110	13b
Y287A	\$1,841.00	5					184TC	184THTY17038AA	13.4 / 6.7	125	13b
* Refer to the Motor Shipping Schedule table for shipping information. Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.											
Footnotes: 6 = Bolt-on, removable base for footless mounting option 13b = Field reversible from F1 to F2 mounting											
Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at <a href="http://www.automationdirect.com">www.automationdirect.com</a> .											

## 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.

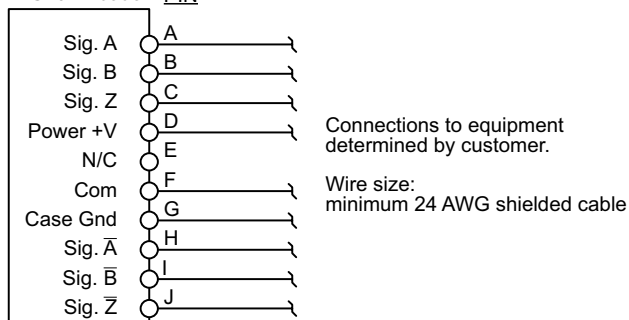
\* The encoder cable gland accepts cable diameters from 0.187–0.30 in.

\* 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

Dynapar HS20 Encoder PIN



# NEMA Premium® Efficiency XRI® Series Inverter Duty Motors



**marathon**<sup>®</sup>  
Motors

## Features

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

## Applications

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

### Motor Shipping Schedule \*

**Same or one day \***    **Up to 7 days**    **Up to 10 days**

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

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

### 208–230/460V Motor Specifications

Part Number*	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	F.L. Amps	Weight (lb)*
<b>E2000</b>	\$578.00	1	3600	208–230 / 460	TEFC	56C	056T34F5940	3.0–2.8 / 1.4	28
<b>E2001A</b>	\$499.00		1800			143TC	143TFR16053	3.3–3.3 / 1.65	48
<b>E2002</b>	\$558.00		1200			145TC	145TFR6078	3.8–3.8 / 1.9	42
<b>E2003</b>	\$537.00	1-1/2	3600			143TC	143TFR5582	4.4–4.0 / 2.0	39
<b>E2004A</b>	\$542.00		1800			145TC	145TFR16331	4.7–4.6 / 2.3	50
<b>E2005 †</b>	\$742.00		1200			182TC	182TFW6076	5.6–5.2 / 2.6	77
<b>E2007A</b>	\$594.00	2	1800			145TC	145TFR16329	6.2–6.0 / 3.0	65
<b>E2008 †</b>	\$851.00		1200			184TC	184TFW6076	7.35–6.4 / 3.2	94
<b>E2009 †</b>	\$783.00		3600			182TC	182TFW6001	8.4–7.8 / 3.9	63
<b>E2010 †</b>	\$693.00	1800	182TFW6026				8.4–7.8 / 3.9	87	
<b>E2011A</b>	\$910.00	3	1200			213TC	213TTFWD6076	9.2–8.8 / 4.4	117

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

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

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

( table continued next page )

# NEMA Premium® Efficiency XRI® Series Inverter Duty Motors

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

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

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

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See list of service centers on our Web site at [www.automationdirect.com](http://www.automationdirect.com).

# Blue Chip XRI<sup>®</sup> – Ultra High Efficiency Motors

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



**marathon<sup>®</sup>**  
Motors

## 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<sup>®</sup> 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
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Color indicates shipping lead time in business days. Check stock status online.

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

### 230/460V Motor Specifications

Part Number *	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	N.P. F.L. Amps	Weight (lb) *
<b>E207</b>	\$2,324.00	25	1800	230/460	TEFC	284T	284TTFNA6026	62 / 31	495
<b>E208</b>	\$2,701.00	30	1800	230/460	TEFC	286T	286TTFNA6026	73 / 36.5	423
<b>E209</b>	\$3,587.00	40	1800	230/460	TEFC	324T	324TTFNS6026	95 / 47.5	675
<b>E210</b>	\$4,405.00	50	1800	230/460	TEFC	326T	326TTFNS6026	120 / 60	745
<b>E212</b>	\$8,010.00	75	1800	230/460	TEFC	365T	365TTFNS6036	172 / 86	1125

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

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at [www.automationdirect.com](http://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) *
<b>E307</b>	\$1,566.00	15	1800	575	TEFC	254T	254TTFNA6030	15.0	326
<b>E308</b>	\$1,950.00	20	1800	575	TEFC	256T	256TTFNA6030	19.3	368
<b>E309</b>	\$2,324.00	25	1800	575	TEFC	284T	284TTFNA6030	24.8	565
<b>E310</b>	\$2,701.00	30	1800	575	TEFC	286T	286TTFNA6030	29.2	514
<b>E311</b>	\$3,587.00	40	1800	575	TEFC	324T	324TTFNS6030	38.8	675
<b>E313</b>	\$6,319.00	60	1800	575	TEFC	364T	364TTFNS6040	55.2	1025
<b>E315</b>	\$8,010.00	75	1800	575	TEFC	365T	365TTFNS6040	68.8	1125
<b>E314</b>	\$9,898.00	100	1800	575	TEFC	405T	405TTFNS6040	90.4	1400

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

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

## C-Face Footed (Rigid and Removable Base)

### Features

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

- UL recognized, CSA certified and CE mark

4N1 Motor features include:

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

### Applications

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



Motor Shipping Schedule *		
Same or one day *	Up to 7 days	Up to 10 days
Color indicates shipping lead time in business days. Check stock status online.		
* Certain heavy and oversized items can be shipped only via LTL. Check our website for current shipping method constraints by part number.		

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

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

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

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

C-Face Footed (Rigid and Removable Base)

( table continued from previous page )

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

\* Refer to the Motor Shipping Schedule table for shipping information.  
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 Footnotes: The following part numbers are 4N1 motors; they are NOT NEMA Premium: D390, G580, K703, D391, G581, K705, D392, G582, and K707.  
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