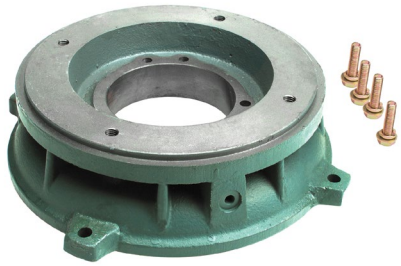
IronHorse® MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

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

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

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

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



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

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

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

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

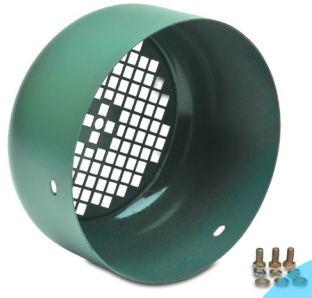
IronHorse® MTCP Premium-Efficiency Cast-Iron Three-Phase AC Motors

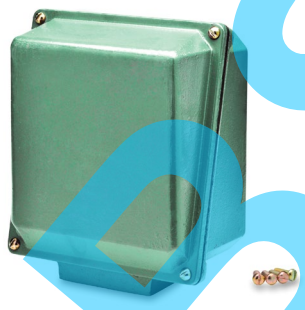
Premium Efficiency TEFC Three-Phase Motor Replacement Parts – 1 to 200 hp

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

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

These replacement parts are field installable. Instructions included.





MTCP Premium-Efficiency Three-Phase Motor Replacement Parts

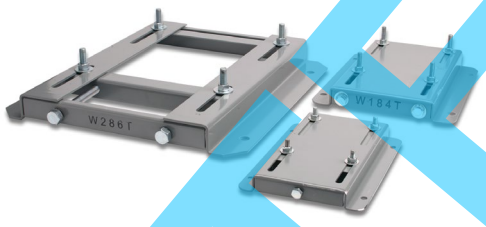
Part Number (1)	Price	Description (2)(3)(4)	Fits Frame	Fits PE Motor Number (1)	Motor HP	Product Wt. (lb)
MTAP-FAN-140		Replacement Fan	143 & 145	MTCP-001-3BD12 MTCP-001-3BD18(C) MTCP-1P5-3BD18(C) MTCP-1P5-3BD36 MTCP-002-3BD18(C) MTCP-002-3BD36	1 1 1-1/2 1-1/2 2 2	0.3
MTAP-SHROUD-140		Replacement Fan Shroud				1.1
MTAP-JBOX-140		Replacement Junction Box				2.6
MTAP-FAN-180		Replacement Fan	182 & 184	MTCP-002-3BD12 MTCP-003-3BD18(C) MTCP-003-3BD36 MTCP-005-3BD18(C) MTCP-005-3BD36	2 3 3 5 5	0.3
MTAP-SHROUD-180		Replacement Fan Shroud				1.5
MTAP-JBOX-180		Replacement Junction Box				3.1
MTAP-FAN-210-2		Replacement Fan (for 2-pole motors)	213 & 215	MTCP-7P5-3BD36 MTCP-010-3BD36	7-1/2 10	0.3
MTAP-FAN-210		Replacement Fan (4&6-pole)		MTCP-003-3BD12 MTCP-005-3BD12 MTCP-7P5-3BD18(C) MTCP-010-3BD18(C)	3 5 7-1/2 10	0.3
MTAP-SHROUD-210		Replacement Fan Shroud				2.3
MTAP-JBOX-210		Replacement Junction Box				3.4
MTAP-FAN-250-2		Replacement Fan (for 2-pole motors)	254 & 256	MTCP-015-3BD36 MTCP-020-3BD36	15 20	0.3
MTAP-FAN-250		Replacement Fan (4&6-pole)		MTCP-7P5-3BD12 MTCP-010-3BD12 MTCP-015-3BD18(C) MTCP-020-3BD18(C)	7-1/2 10 15 20	0.3
MTAP-JBOX-250		Replacement Junction Box				7.0
MTAP-FAN-280		Replacement Fan	284 & 286	MTCP-015-3BD12 MTCP-020-3BD12 MTCP-025-3BD18(C) MTCP-030-3BD18(C)	15 20 25 30	0.5
MTAP-SHROUD-280		Replacement Fan Shroud				6.5
MTAP-JBOX-280		Replacement Junction Box				7.0
MTAP-FAN-320		Replacement Fan	324 & 326	MTCP-040-3BD18(C) MTCP-050-3BD18(C)	40 50	0.6
MTAP-SHROUD-320		Replacement Fan Shroud				8.3
MTAP-JBOX-320		Replacement Junction Box				22.3
MTAP-FAN-360		Replacement Fan	364 & 365	MTCP-060-3BD18(C) MTCP-075-3BD18(C)	60 75	0.6
MTAP-SHROUD-360		Replacement Fan Shroud				9.0
MTAP-JBOX-360		Replacement Junction Box				22.3
MTAP-FAN-400		Replacement Fan	405	MTCP-100-3BD18(C)	100	1.1
MTAP-SHROUD-400		Replacement Fan Shroud				15.8
MTAP-JBOX-400		Replacement Junction Box				30.0
MTAP-FAN-440		Replacement Fan	444 445 & 447	MTCP-125-3BD18 MTCP-150-3BD18	125 150 200	2.0
MTAP-SHROUD-440		Replacement Fan Shroud				17.5
MTAP-JBOX-440		Replacement Junction Box				40.0

1) These MTAP replacement components fit only MTCP Premium Efficiency motors.
2) Replacement Fans include fan and snap ring.
3) Replacement Fan Shrouds include shroud, bolts w/washers, and rubber plug.
4) Replacement Junction Boxes include gasketed base & cover assembly, base gasket, and base bolts.

STABLE™ Motor Slide Bases

Mounting Slide Bases for 56 to 449T NEMA Motors Features

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



STABLE Motor Slide Bases for 3-Phase Motors

Part Number	Price	Fits Frame Type	Product Wt. (lb)	Fits Motor						
				IronHorse	Marathon					
					micro -MAX ---- Max+	Black Max 230/460V ---- Black Max 575V	Blue Max	XRI GP & NEMA Premium	Powerwash SXT & Jet Pump	Blue Chip XRI 230/ 460V ---- Blue Chip XRI 575V
MTA-BASE-W56*		56*	2.8	MTPM-P3x-1x18 MTPM-P5x-1x18 MTPM-P7x-1x18 MTPM-0xx-1x18 MTPM-1xx-1x18 MTR(2)(P)-xxx-xxxxx*	Y500 Y502 Y360 Y362 Y364 ---- Y280 Y281 Y282	Y592(-A772) Y534(-A772) Y535(-A772) ---- Y555(-A772) Y556(-A772)	–	E2000 D390 G580 K703 D391 K704 G581 K705 D392 K706 G582 K707 D393A K708A G583A K709A D394A K721A G584A K722A D395A K723A G585A K724A D396A K725A	N344 N410 J066A	–
MTA-BASE-W143T		143T/TC	4.6	MTCP-001-3BD18(C)(CK) MTCP-1P5-3BD36	–	Y536(-A772) ---- –	–	E2001A E2003		N454A
MTA-BASE-W145T		145T/TC	5.1	MTCP-001-3BD12 MTCP-1P5-3BD18(C)(CK) MTCP-002-3BD18(C)(CK) MTCP-002-3BD36	Y366 Y368 ---- Y284 Y285	Y537(-A772) Y538(-A772) Y551(-A772) ---- Y557(-A772)	–	E2002 E2004A E2006 E2007A		–
MTA-BASE-W182T		182T/TC	9.2	MTCP-1P5-3BD12 MTCP-003-3BD18(C)(CK) MTCP-003-3BD36 MTF-002-1C18-182	Y1999 ---- Y286A	Y541A(-A772) ---- Y558A(-A772)	–	E2005 E2009 E2010	G590A C382B C383B	–

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

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

Continued on next page.

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).

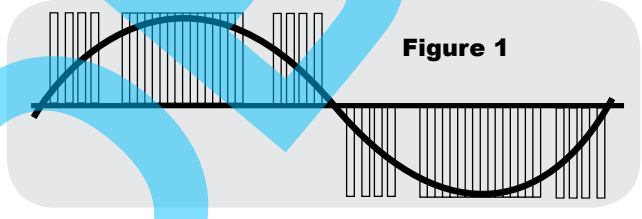


Figure 1

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

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

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

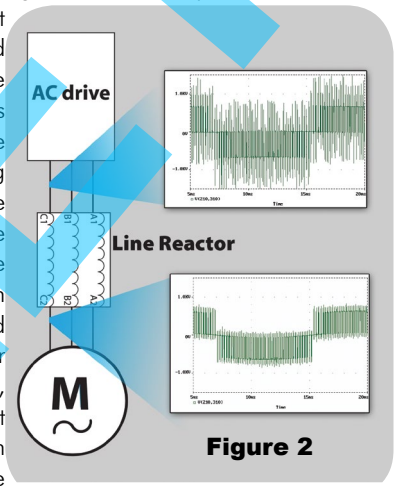


Figure 2

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

The considerations for applying IronHorse motors are given below.

Heat considerations

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

Voltage Spike considerations

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

** Up to 6kHz carrier frequency*