

# GETTING STARTED

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# Manual Overview

### Overview of this Publication

The IronHorse General Purpose AC Motor User Manual describes the installation, maintenance and use of all IronHorse General Purpose Motors.

### Who Should Read This Manual

This manual contains important information for those who will install, maintain, use and/or resell any of the IronHorse motors.

### Technical Support

**By Telephone: 770-844-4200**

(Mon.-Fri., 9:00 a.m.-6:00 p.m. E.T.)

**On the Web: [support.automationdirect.com](http://support.automationdirect.com)**

Our technical support group is glad to work with you in answering your questions. If you cannot find the solution to your particular application, or, if for any reason you need additional technical assistance, please call technical support at **770-844-4200**. We are available weekdays from 9:00 a.m. to 6:00 p.m. Eastern Time.

We also encourage you to visit our web site where you can find technical and non-technical information about our products and our company. Visit us at **[www.automationdirect.com](http://www.automationdirect.com)**.

### Special Symbols



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**When you see the “exclamation mark” icon in the left-hand margin, the paragraph to its immediate right will be a WARNING. This information could prevent injury, loss of property, or even death (in extreme cases).**

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# Available Models

## Single Phase Motors Features and Specifications

### Rolled Steel 56C Frame



IronHorse single phase 56C frame motors are available from 1/3 hp to 2 hp. All models have a TEFC rolled steel frame, cast aluminum end bell and removable mounting bases. All motors are NEMA B design.

Motor Specifications – Single Phase 56C Frame Motors							
Part Number	HP	Base RPM	Voltage	NEMA Frame	Service Factor	F.L. Amps @ 115V/230V	Approx Weight (lbs.)
MTR-P33-1AB18	1/3	1800	115/208-230	56C flange mount	1.15	6.6 / 3.3	26
MTR-P50-1AB18	1/2					8.8 / 4.4	28
MTR-P75-1AB18	3/4					11.0 / 5.5	32
MTR-001-1AB18	1					13.6 / 6.8	38
MTR-1P5-1AB18	1-1/2					15.2 / 7.6	45
MTR-002-1AB18	2					20.0 / 10.0	51

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

Performance Data – Single Phase 56C Frame Motors (230V data except as indicated)											
Part Number	HP	FL RPM	Current @ 115V/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			
MTR-P33-1AB18	1/3	1725	2.2	6.6 / 3.3	31 / 18	1.02	3.06	2.81	56.0	0.62	0.075
MTR-P50-1AB18	1/2		2.93	8.8 / 4.4	37 / 21	1.52	4.56	4.18	57.0	0.63	0.080
MTR-P75-1AB18	3/4		3.67	11.0 / 5.5	55 / 32	2.29	6.30	5.73	65.0	0.65	0.095
MTR-001-1AB18	1		4.53	13.6 / 6.8	75 / 43	3.04	8.36	7.60	68.0	0.66	0.120
MTR-1P5-1AB18	1-1/2		5.07	15.2 / 7.6	120 / 65	4.57	11.43	10.28	71.0	0.75	0.142
MTR-002-1AB18	2		6.67	20.0 / 10.0	150 / 86	6.09	15.23	13.70	73.0	0.77	0.182

## Three Phase Motors Features and Specifications

### Rolled Steel 56C Frame



IronHorse 56C rolled steel frame three phase motors are available from 1/3 hp to 2 hp. All models have a TEFC frame, cast aluminum end bell and removable mounting bases.

Motor Specifications – Three Phase 56C Frame Motors									
Part Number	HP	Base RPM	Phase	Voltage	Housing	NEMA Frame	Service Factor	F.L. Amps @ 230V/460V	Approx Weight (lbs.)
MTR-P33-3BD18	1/3	1800	3	208-230/460	TEFC rolled steel frame w / cast aluminum end bell	56C flange mount	1.15	1.6 / 0.8	23
MTR-P50-3BD18	1/2							2.0 / 1.0	24
MTR-P75-3BD18	3/4							2.8 / 1.4	26
MTR-001-3BD18	1							3.6 / 1.8	29
MTR-1P5-3BD18	1-1/2							4.8 / 2.4	33
MTR-002-3BD18	2							6.0 / 3.0	42

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

Performance Data – Three Phase 56C Frame Motors (460V data except as indicated)								
Part Number	HP	NEMA Design	FL RPM	Minimum Speed (rpm)		Current @ 230V/460V (Amps)		
				CT	VT	No Load	Full Load	Locked Rotor
MTR-P33-3BD18	1/3	B	1725	900	360	0.53 / 0.27	1.6 / 0.8	8 / 4
MTR-P50-3BD18	1/2					0.67 / 0.33	2.0 / 1.0	12 / 6
MTR-P75-3BD18	3/4					0.93 / 0.47	2.8 / 1.4	18 / 9
MTR-001-3BD18	1					1.2 / 0.6	3.6 / 1.8	24 / 12
MTR-1P5-3BD18	1-1/2					1.53 / 0.77	4.8 / 2.4	36 / 18
MTR-002-3BD18	2					2.0 / 1.0	6.0 / 3.0	48 / 24

Performance Data – Three Phase 56C Frame Motors (cont) (460V data except as indicated)									
Part Number	HP	Torque (lb-ft)			Maximum Speed (rpm)		FL Efficiency (%)	FL Power Factor	Rotor Inertia (lb-ft <sup>2</sup> )
		Full Load	Locked Rotor	Break-down	CHP*	Safe			
MTR-P33-3BD18	1/3	1.02	2.55	2.81	2700	5400	67.0	0.70	0.058
MTR-P50-3BD18	1/2	1.52	3.80	4.18			69.0	0.72	0.068
MTR-P75-3BD18	3/4	2.29	5.73	6.30			71.0	0.74	0.075
MTR-001-3BD18	1	3.02	7.55	8.31			73.0	0.76	0.086
MTR-1P5-3BD18	1-1/2	4.57	10.28	11.43			75.0	0.78	0.108
MTR-002-3BD18	2	6.09	13.70	15.23			77.0	0.80	0.143

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

## Cast Iron T-Frame



IronHorse 1800 RPM industrial duty cast iron frame motors are available from 1 hp to 300 hp with. All models have a TEFC frame and full length mounting foot.

Motor Specifications – T Frame Three Phase Motors									
Part Number	HP	Voltage	NEMA Frame	Mounting	Holes in Foot	Service Factor	F.L. Amps @230V/460V	Approx Shipping Weight (lb)	Shaft Material
MTC-001-3BD18	1	208-230/460	143T	F1/F2	2	1.15	3.0 / 1.5	58	1045 CS
MTC-1P5-3BD18	1.5		145T	F1/F2	4		4.2 / 2.1	64	
MTC-002-3BD18	2		145T	F1/F2	4		5.4 / 2.7	68	
MTC-003-3BD18	3		182T	F1/F2	2		7.72 / 3.86	100	
MTC-005-3BD18 <sup>1)</sup>	5		184T	F1/F2	4		11.8 / 5.9	122 <sup>1)</sup>	
MTC-7P5-3BD18 <sup>1)</sup>	7.5		213T	F1/F2	2		18.6 / 9.3	170 <sup>1)</sup>	
MTC-010-3BD18 <sup>1)</sup>	10		215T	F1/F2	4		24.8 / 12.4	194 <sup>1)</sup>	
MTC-015-3BD18 <sup>1)</sup>	15		254T	F1/F2	2		35.4 / 17.7	298 <sup>1)</sup>	
MTC-020-3BD18 <sup>1)</sup>	20		256T	F1/F2	4		47.6 / 23.8	342 <sup>1)</sup>	
MTC-025-3BD18 <sup>1)</sup>	25		284T	F1	2		56.4 / 28.2	428 <sup>1)</sup>	
MTC-030-3BD18 <sup>1)</sup>	30		286T	F1	3		67.2 / 33.6	468 <sup>1)</sup>	
MTC-040-3BD18 <sup>1)</sup>	40		324T	F1	2		93.0 / 46.5	588 <sup>1)</sup>	
MTC-050-3BD18 <sup>1)2)</sup>	50 <sup>2)</sup>		326T	F1	3		114.6 / 57.3	624 <sup>1)</sup>	
MTC-060-3BD18 <sup>1)2)</sup>	60 <sup>2)</sup>		364T	F1	2		139.4 / 69.7	760 <sup>1)</sup>	
MTC-075-3BD18 <sup>1)2)</sup>	75 <sup>2)</sup>		365T	F1	3		172.8 / 86.4	818 <sup>1)</sup>	
MTC-100-3BD18 <sup>1)2)</sup>	100 <sup>2)</sup>		405T	F1	3		230 / 115	1248 <sup>1)</sup>	
MTC-125-3BD18 <sup>1)2)</sup>	125 <sup>2)</sup>		444T	F1/F2	2		274 / 137	1570 <sup>1)</sup>	
MTC-150-3BD18 <sup>1)2)</sup>	150 <sup>2)</sup>	445T	F1/F2	4	326 / 163	1752 <sup>1)</sup>			
MTC-200-3BD18 <sup>1)2)</sup>	200 <sup>2)</sup>	445/7T	F1	3	446 / 223	2164 <sup>1)</sup>			
MTC-250-3D18 <sup>1)2)</sup>	250 <sup>2)</sup>	460	449T	F1	2	- / 282	2754 <sup>1)</sup>	4140 CS	
MTC-300-3D18 <sup>1)2)</sup>	300 <sup>2)</sup>		449T	F1	2	- / 334	2966 <sup>1)</sup>		

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

1) For motors weighing over 100 lbs: A) LTL shipment required. B) Order before 4:00 p.m. EST for same day shipment. C) You must have a receiving loading dock. D) Not available in Hawaii or Puerto Rico.

2) For warranty on motors 50 hp and above, motors must be inspected by an EASA motor repair or service center. See AutomationDirect Terms & Conditions for details.

Performance Data – T Frame Three Phase Motors (460 Volt except as indicated)							
Part Number	HP	NEMA Design	FL RPM	Minimum Speed (rpm)		Current @230V/460V (Amps)	
				Constant Torque (CT)	Variable Torque (VT)	Full Load	No Load
MTC-001-3BD18	1	B	1760	900	360	3.0 / 1.5	1.9 / 0.95
MTC-1P5-3BD18	1.5		1755			4.2 / 2.1	2.44 / 1.22
MTC-002-3BD18	2		1750			5.4 / 2.7	2.76 / 1.38
MTC-003-3BD18	3		1750			7.72 / 3.86	3.74 / 1.87
MTC-005-3BD18	5		1750			11.8 / 5.9	5.1 / 2.55
MTC-7P5-3BD18	7.5		1760			18.6 / 9.3	8.98 / 4.49
MTC-010-3BD18	10	A	1760			24.8 / 12.4	13.0 / 6.5
MTC-015-3BD18	15		1770			35.4 / 17.7	15.6 / 7.8
MTC-020-3BD18	20		1770			47.6 / 23.8	19.0 / 9.5
MTC-025-3BD18	25		1775			56.4 / 28.2	24.0 / 12.0
MTC-030-3BD18	30		1775			67.2 / 33.6	27.0 / 13.5
MTC-040-3BD18	40		1775			93.0 / 46.5	35.0 / 17.5
MTC-050-3BD18	50	B	1775			114.6 / 57.3	38.6 / 19.3
MTC-060-3BD18	60		1785			139.4 / 69.7	48.0 / 24.0
MTC-075-3BD18	75		1785			172.8 / 86.4	59.2 / 29.6
MTC-100-3BD18	100		1785			230 / 115	72.0 / 36.0
MTC-125-3BD18	125		1785			274 / 137	82.0 / 41.0
MTC-150-3BD18	150		1785			326 / 163	97.6 / 48.8
MTC-200-3BD18	200	B	1785	446 / 223	140 / 70.0		
MTC-250-3D18	250		1790	- / 282	- / 85.6		
MTC-300-3D18	300		1790	- / 334	- / 96.6		

Performance Data – T Frame Three Phase Motors (con't) (460 Volt except as indicated)								
Part Number	HP	Torque (lb-ft)		Maximum Speed (rpm)		FL Efficiency (%)	F.L. Power Factor	Rotor Inertia (lb-ft <sup>2</sup> )
		Full Load	Breakdown	CHP*	Safe			
MTC-001-3BD18	1	3.00	10.50	2700	5400	82.5	0.71	0.015
MTC-1P5-3BD18	1.5	4.41	14.11		5400	84.0	0.74	0.015
MTC-002-3BD18	2	6.05	17.55		5400	84.0	0.77	0.020
MTC-003-3BD18	3	9.07	29.93		5400	87.5	0.81	0.020
MTC-005-3BD18	5	15.1	46.8		5400	87.5	0.84	0.069
MTC-7P5-3BD18	7.5	22.0	72.6		5400	89.5	0.81	0.155
MTC-010-3BD18	10	29.8	92.4		4200	89.5	0.83	0.4319
MTC-015-3BD18	15	44.5	124.6		4200	91.0	0.83	1.996
MTC-020-3BD18	20	59.7	155.2		4200	91.0	0.84	2.463
MTC-025-3BD18	25	73.9	206.9		4200	92.4	0.87	3.45
MTC-030-3BD18	30	88.7	257.2		4200	92.4	0.86	3.941
MTC-040-3BD18	40	118.3	354.9		3600	93.0	0.86	6.348
MTC-050-3BD18	50	148	444		3600	93.0	0.86	6.996
MTC-060-3BD18	60	179	483		3600	93.6	0.85	3.400
MTC-075-3BD18	75	221	530		3600	94.1	0.84	3.700
MTC-100-3BD18	100	296	858		2800	94.5	0.87	9.200
MTC-125-3BD18	125	355	888		2800	94.5	0.86	9.380
MTC-150-3BD18	150	433	1083		2800	95.0	0.87	11.220
MTC-200-3BD18	200	590	1652		2800	95.0	0.87	15.100
MTC-250-3D18	250	728	2402		2800	95.9	0.87	86.000
MTC-300-3D18	300	864	2817	2800	95.7	0.88	105.000	

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



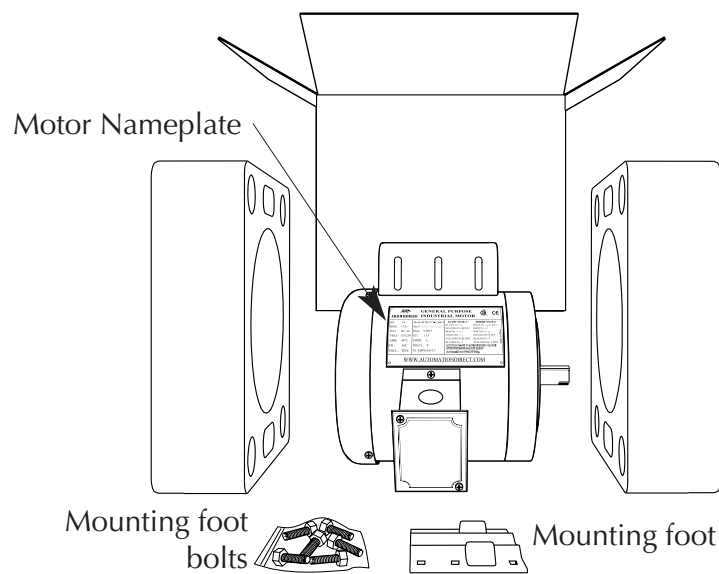
Performance Data – T Frame Three Phase Motors (cont) (460 Volt except as indicated)							
Part Number	HP	Temperature Rise @ Full Load	Locked Rotor Torque (%)	Locked Rotor Amps 230V/460V	Max Time Locked Rotor (Hot)	IL / IN	Slip (%)
MTC-001-3BD18	1	80° C (176°F)	250	30.0 / 15.0	20 Seconds	10.0 / Code N	2.22
MTC-1P5-3BD18	1.5		240	40.0 / 20.0		9.5 / Code M	2.50
MTC-002-3BD18	2		230	50.0 / 25.0		9.3 / Code L	2.78
MTC-003-3BD18	3		280	64.0 / 32.0		8.3 / Code K	
MTC-005-3BD18	5		270	92.0 / 46.0		7.8 / Code J	
MTC-7P5-3BD18	7.5		200	127 / 63.5		6.8 Code H	2.22
MTC-010-3BD18	10				200 / 100	13 Seconds	8.1 / Code J
MTC-015-3BD18	15		200	280 / 140	20 Seconds	7.9 / Code J	1.67
MTC-020-3BD18	20					400 / 200	
MTC-025-3BD18	25		206	440 / 220	16 Seconds	7.8 / Code H	1.38
MTC-030-3BD18	30		200	520 / 260	20 Seconds	7.7 / Code H	
MTC-040-3BD18	40		210	720 / 360		7.7 / Code J	1.39
MTC-050-3BD18	50			880 / 440		7.7 / Code H	
MTC-060-3BD18	60		180	870 / 435		20 Seconds	6.2 / Code G
MTC-075-3BD18	75			1086 / 543	6.3 / Code G		
MTC-100-3BD18	100		200	1450 / 725	15 Seconds	6.6 / Code G	
MTC-125-3BD18	125		175	1815 / 908		6.7 / Code G	
MTC-150-3BD18	150		180	2170 / 1085		6.5 / Code G	
MTC-200-3BD18	200		200	2900 / 1450			
MTC-250-3D18	250	85° C (185°F)	228	- / 2017	20 Seconds	7.2 / Code H	0.54
MTC-300-3D18	300		226	- / 2351		Code G	0.53

# Receiving and Inspection

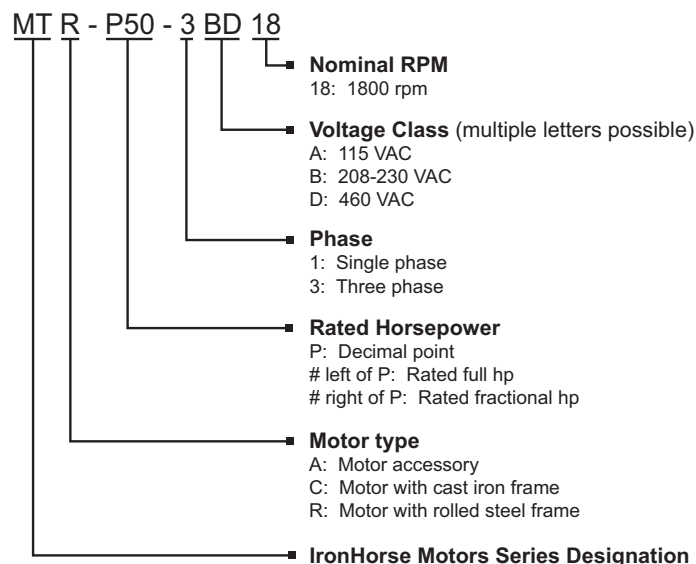
## Unpacking

After receiving an IronHorse motor, please check for the following:

- Open the motor packaging and inspect for damage during shipment.
- Make sure the part number indicated on the motor nameplate corresponds with the part number on your order.
- For all 56C framed motors, make sure that the shipment contains the motor, the removable mounting foot and six mounting foot bolts.
- Read the enclosed Product Advisory.



## IronHorse Part Number Information



## Reshipping

If an IronHorse motor needs to be reshipped from the initial shipping point, the following procedures should be followed to protect the motor from damage.

1. If the original packaging is to be used for reshipment, inspect the packaging for previous shipping damage and repackage if necessary. Take care to protect the motor body, fan cover and shaft.
2. It is a good idea to bolt the motor to a platform that fits securely in the bottom of the shipping crate or box. This helps prevent the motor from shifting during transport and thus protects the bearings from damage.
3. A shaft lock device should be installed on motors from 100 to 300 hp prior to shipment. The shaft lock helps prevent bearing damage.
4. Motors should only be lifted by the the eyebolt(s) provided on the motor. When lifting motors with more than one eyebolt, use every bolt provided.

## Long Term Storage

The following preventative measures should be taken when storing IronHorse motors for a long period of time.

1. Store motors in a controller temperature, dry atmosphere free of excess dirt, dust and airborne particles.
2. Rotate the motor shaft every sixty days to prevent hardening of the bearing grease.
3. Warehoused motors should have the bearing grease purged and replaced every six months. Use only Exxon POLYREX® EM Polyurea grease.

## Warranty

IronHorse motors carry a two year warranty from the date of invoice. All warranty issues must first be evaluated by AutomationDirect technical support services. For motors 40 hp and smaller, valid warranty claims will be resolved by product replacement. Motors 50 hp and larger must be evaluated by an authorized Electrical Apparatus Service Association (EASA) service center. Valid warranty claims will be resolved by repair or replacement at the discretion of AutomationDirect. See AutomationDirect Terms and Conditions in our current catalog or online at <http://www.automationdirect.com/static/specs/adpolicy.pdf> for complete details.

Authorized EASA service centers are available nationwide. Visit the EASA website at [www.easa.com](http://www.easa.com) to find the nearest authorized service center. These shops may also be able to assist with non-warranty service.