

# PRODUCT INFORMATION PACKET

Model No: 160MTFC4586

Catalog No: R332

Cast Iron Motor, 10 & 10 HP, 3 Ph, 60 & 50 Hz, 230/460 & 200/400 V, 1200 & 1000 RPM, 160M Frame,  
TEFC



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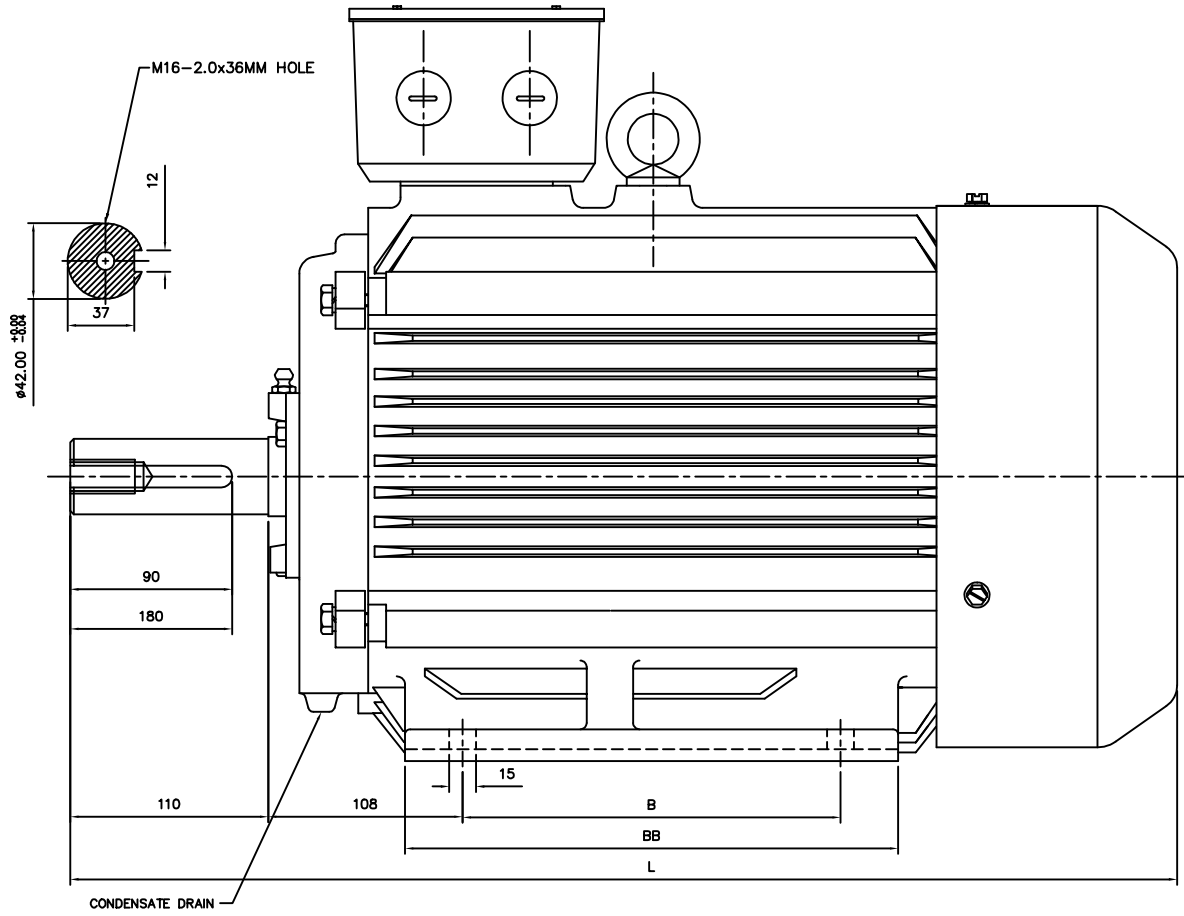
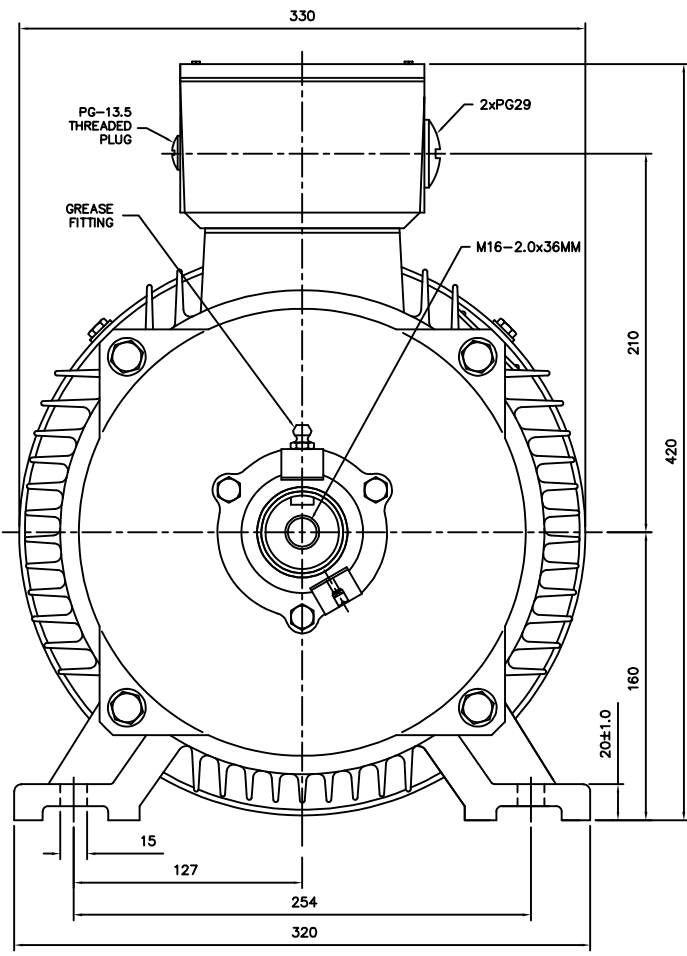
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### Nameplate Specifications

Phase	<b>3</b>	Output HP	<b>10 &amp; 10 Hp</b>
Output KW	<b>7.5 &amp; 7.5 kW</b>	Voltage	<b>230/460 &amp; 200/400 V</b>
Speed	<b>1180 &amp; 975 rpm</b>	Service Factor	<b>1.15 &amp; 1.15</b>
Frame	<b>160M</b>	Enclosure	<b>Totally Enclosed Fan Cooled</b>
Thermal Protection	<b>No Protection</b>	Efficiency	<b>90.2 &amp; 88.5 %</b>
Ambient Temperature	<b>40 °C</b>	Frequency	<b>60 &amp; 50 Hz</b>
Current	<b>29/14.5 &amp; 34/17 A</b>	Power Factor	<b>70.5</b>
Duty	<b>Continuous</b>	Insulation Class	<b>F</b>
Design Code	<b>N (IEC)</b>	KVA Code	<b>K</b>
Drive End Bearing Size	<b>6309</b>	Opp Drive End Bearing Size	<b>6308</b>
UL	<b>Recognized</b>	CSA	<b>Y</b>
CE	<b>Y</b>	IP Code	<b>55</b>
Number of Speeds	<b>1</b>		

### Technical Specifications

Electrical Type	<b>Squirrel Cage Inverter Rated</b>	Starting Method	<b>Part Wdg Start &amp; Wye Start Delta Run Or Inverter</b>
Poles	<b>6</b>	Rotation	<b>Reversible</b>
Resistance Main	<b>.766 Ohms</b>	Mounting	<b>Rigid Base</b>
Motor Orientation	<b>Horizontal</b>	Drive End Bearing	<b>Ball</b>
Opp Drive End Bearing	<b>Ball</b>	Frame Material	<b>Cast Iron</b>
Shaft Type	<b>IEC</b>	Overall Length	<b>24.21 in</b>
Shaft Diameter	<b>1.666 in</b>	Shaft Extension	<b>4.33 in</b>
Assembly/Box Mounting	<b>F3</b>	Inverter Load	<b>CONSTANT 2:1</b>
Connection Drawing	<b>004172.03ME</b>	Outline Drawing	<b>16989460ME</b>



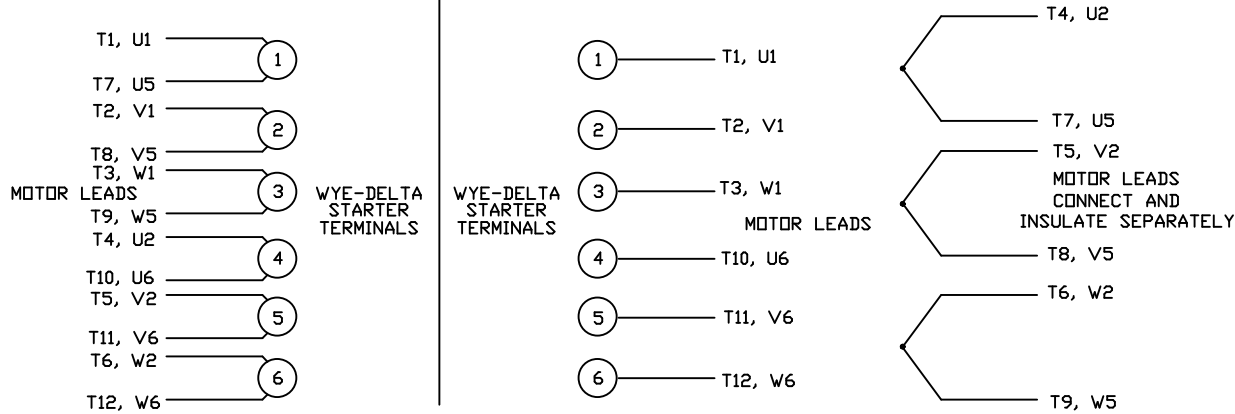
FRAME	B	BB	L
DF160M	210	274	615
DF160L	254	318	670

		TOLERANCES UNLESS SPECIFIED		MARATHON ELECTRIC	DRAWN CTO 06-28-2004				
		DEC.	METRIC		CHK				
		.X	±2.5	TITLE	APPD				
		.XX	±.76		SCALE	1=25.4			
2	CORRECTED DIMENSIONS ISAAC 10-5238	MOL2-07-2010	.XXX	OUTLINE - DF160-F3	REF				
1	REISSUE -ENDMILL WAS 42, 'L' (TABLE) WAS 615 & 670	MS09-16-2005	ML	.XXXX	±.0127	MAT'L.			
NO.	REVISION	BY & DATE	CHK	ANG	±1/2"	FINISH			
THIS DRAWING IN DESIGN AND DETAIL IS OUR PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH OUR WORK. ALL RIGHTS OF DESIGN AND INVENTION ARE RESERVED. THIS IS AN ELECTRONICALLY GENERATED DOCUMENT - DO NOT SCALE THIS PRINT				RFP	CAD FILE	16989460me	SIZE	DRAWING NO.	REV.
				DIST	WA		B	169894-60ME	2

WYE - DELTA STARTING USEABLE ON 2,4 AND 6 POLE MOTORS.

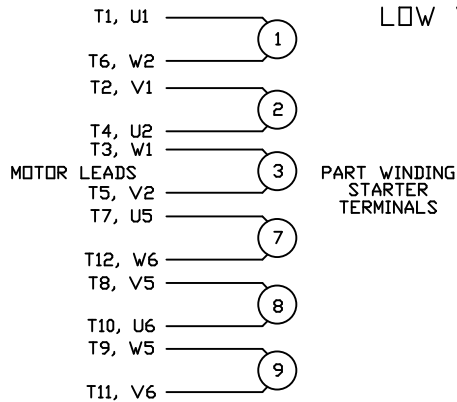
LOW VOLTAGE CONNECTION

HIGH VOLTAGE CONNECTION



REFER TO THE WYE-DELTA STARTER CONNECTION INSTRUCTIONS FOR PROPER CONNECTION OF POWER LINES TO STARTER.

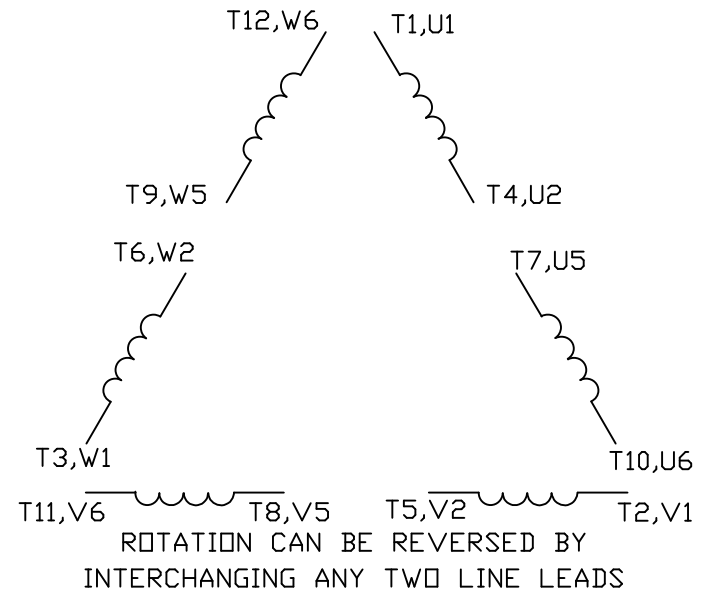
PART WINDING START USABLE ON 4 & 6 POLE MOTORS  
LOW VOLTAGE CONNECTION ONLY



REFER TO THE PART WINDING STARTER INSTRUCTIONS FOR PROPER CONNECTION OF POWER LINES TO STARTER.

REFER TO THE CUTLER - HAMMER OR EQUIV. FOR PROPER SELECTION OF OVERLOAD HEATER COILS.

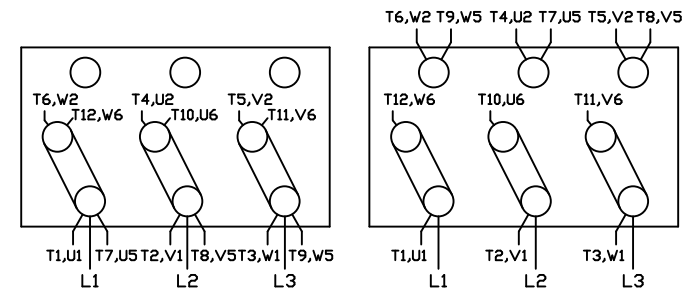
LINE LEADS



12 LEAD DELTA CONNECTION ACROSS THE LINE START  
(FOR Y START DELTA RUN, REMOVE THE JUMPERS)

LOW VOLTAGE  
(MUST BE REWIRED  
AS SHOWN)

HIGH VOLTAGE  
(FACTORY WIRED FOR HIGH  
VOLTAGE AS SHOWN)



TOLERANCES  
UNLESS SPECIFIED

DEC. INCHES

.X ±.1

.XX ±.01

.XXX ±.005

.XXXX ±.0005

ANG ±1/2\*



TITLE DELTA - WYE CONNECTION DIAGRAM  
IEC CAST IRON MOTORS

MAT'L.

FINISH

DRAWN CJW 08/28/02

CHK

APPD

SCALE 1=1

REF

FMF

PREV

NO. REVISION BY & DATE

CHK

RFP

DIST

CAD FILE 00417203ME

SIZE DRAWING NO.

A 004172-03ME

REV.

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WAUSAU, WI 54401-8003  
PH. 715-675-3311

DATA VOLTS: 460

**CERTIFICATION DATA SHEET**

**CUSTOMER:** \_\_\_\_\_ **CUSTOMER P.O. #:** \_\_\_\_\_  
**ORDER #:** \_\_\_\_\_ **REFERENCE MODEL #:** 160MTFC4586  
**CONN. DIAGRAM:** 004172.03ME **CAT #:** R332A  
**OUTLINE:** 16989460ME **CUSTOMER PART #:** \_\_\_\_\_  
**WINDING:** T12906015 NONE 3 **MOUNTING:** F3  
**SPEED:** \_\_\_\_\_

**TYPICAL MOTOR PERFORMANCE DATA**

HP	KW	SYNC RPM	FL RPM	FRAME	ENCLOSURE	TYPE	KVA CODE	DESIGN
10	7.5	1200	1185	160M	TEFC	TFC	G	N

PH	HZ	VOLTS	AMPS	START TYPE	DUTY	INSL	S.F.	AMB	ELEV.
3	60/50	230/460#200/400	29/14.5&33/16.5	PWS & YDRUN OR INV	CONT	F	1.15	40	3300

F.L. EFF	91.7	3/4 LD EFF	91.7	1/2 LD EFF	91.0	GTD EFF	91.0	ELECT. TYPE	SQ CAGE INV RATED
F.L. PF	71.4	3/4 LD PF	65.7	1/2 LD PF	54.7				

F.L. TORQUE	LR AMPS @ 460 V	L.R. TORQUE	B.D. TORQUE	F.L. RISE (°C)
44.3 LB-FT	80.2	83.2 LB-FT 188%	105 LB-FT 237%	38

@ 3 FT.	POWER	ROTOR WK <sup>2</sup>	MAX. LOAD WK <sup>2</sup>	SAFE STALL TIME	STARTS/HOUR	MOTOR WGT
999 dBA	1008 dBA	3.6 LB-FT <sup>2</sup>	3.6 LB-FT <sup>2</sup>	15 SEC.	2	0 LB.

**\*\*\* SUPPLEMENTAL INFORMATION \*\*\***

DE BRACKET TYPE	ODE BRACKET TYPE	MOUNT TYPE	MOTOR ORIENTATION	SEVERE DUTY	HAZARDOUS LOCATION	DRIP COVER	SCREENS	PAINT
STANDARD	STANDARD	RIGID	HORIZONTAL	UM SEVERE	NONE	NO	NONE	VERIFY

BEARINGS		GREASE	SHAFT TYPE	SPECIAL DE	SPECIAL ODE	SHAFT MATERIAL	FRAME MATERIAL
DE	ODE						
BALL	BALL	VERIFY	STANDARD IEC	NONE	NONE	VERIFY	CAST IRON
6309	6308						

THERMOSTATS	PROTECTORS	WDG RTD's	BRG RTD's	THERMISTORS	CONTROL	SPACE HEATERS
NONE	NOT	NONE	NONE	NONE	FALSE	NA

R1 (ohms/ph)	R2 (ohms/ph)	X1 (ohms/ph)	X2 (ohms/ph)	Xm (ohms/ph)	VIBRATION (in/sec)	FLOAT
0	0	0	0	0	0.080	ODE

* N O T E S *	<b>INVERTER TORQUE: CONSTANT 2:1</b> <b>INV. HP SPEED RANGE: 1.5 X BASE SPEED</b>					
	ENCODER: NONE NONE NONE NONE PPR					

<b>PREPARED BY:</b> EARL BABBITTS <b>DATE:</b> 5/5/2017	<b>BRAKE:</b> NONE NONE NONE <b>FT-LB:</b> NA <b>VOLTAGE:</b> NONE <b>HZ:</b> <b>UL:</b> V-INS, CONST UL REC
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FORM: 3531 REV\_4 2/27/06

Data Sheet

Date: 5/5/2017  
 Customer: \_\_\_\_\_  
 Attention: \_\_\_\_\_  
 Submitted by: EARL BABBITTS



160MTC4586

Submittal

Data @ 460 V

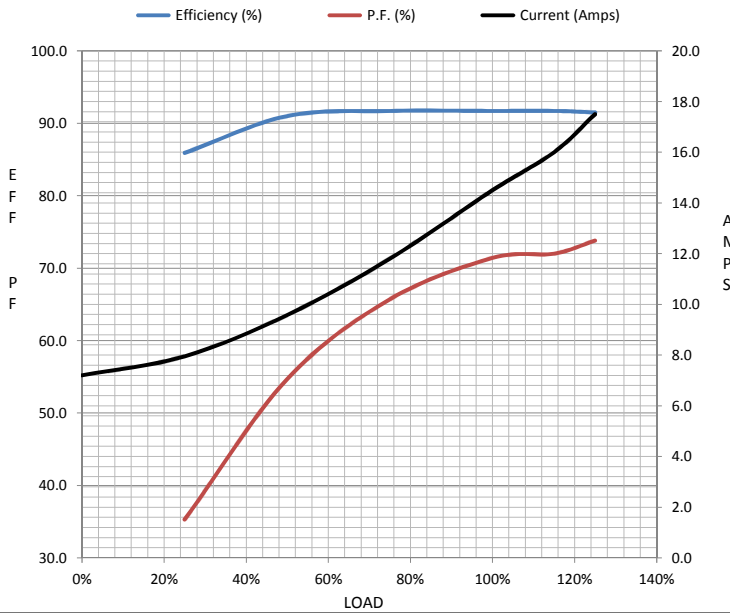
Motor Load Data

Load	0%	25%	50%	75%	100%	115%	125%	LR
Current (Amps)	7.2	8.0	9.6	11.8	14.5	16.0	17.5	80.2
Torque (ft-lb)	0.00	11.3	22.5	33.8	44.3	51.0	56.3	83.2
RPM	1200	1196	1192	1188	1185	1,180	1177	0
Efficiency (%)		85.9	91.0	91.7	91.7	91.7	91.5	
P.F. (%)	11.2	35.3	54.7	65.7	71.4	72.0	73.8	0.0

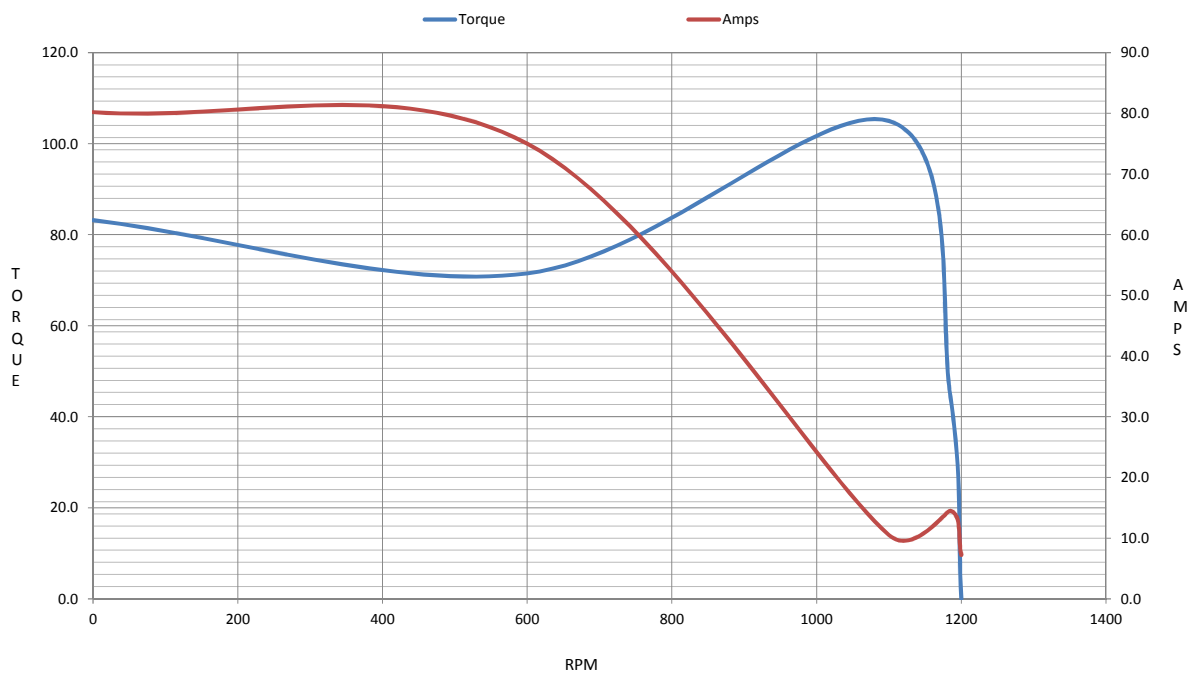
Motor Speed Data

	LR	Pull-Up	BD	Rated	Idle
Speed (RPM)	0	600	1100	1185	1200
Current (Amps)	80.2	75.0	10.5	14.5	7.2
Torque (ft-lb)	83.2	71.5	105	44.3	0.00

Information Block				
HP	10.0			
Sync. RPM	1200			
Frame	256			
Enclosure	TEFC			
Construction	TFC			
Voltage	30/460#200/401 V			
Frequency	60 Hz			
Design	B			
LR Code letter	G			
Service Factor	1.15			
Temp Rise @ FL	38 °C			
Duty	CONT			
Ambient	40 °C			
Elevation	1,000 feet			
Rotor/Shaft wk <sup>2</sup>	3.6 Lb-Ft <sup>2</sup>			
Ref Wdg	T12906015 NONE			
Sound Pressure @ 1M	999 dBA			
VFD Rating	CONSTANT 2:1			
Outline Dwg	16989460ME			
Conn. Diag	004172.03ME			
Additional Specifications:				
0				
0				
EQUIV CKT (OHMS / PHASE)				
R1	R2	X1	X2	Xm
0.0000	0.0000	0.0000	0.0000	0.0000



Speed - Torque Curve



<b>Date:</b> 5/5/2017	<b>REF:</b> 160MTC4586	<b>Torque Capability Curve</b>
<b>Customer:</b> _____		
<b>Attention:</b> _____		
<b>Submitted by:</b> EARL BABBITTS		
	Data @ 460 Volts	

	Min CT RPM	Base RPM	CHP RPM	Max CHP RPM	Max RPM	Peak
HP	0.00	0.0	0.0	0.0	125	
Voltage (volts)	-	460	460	460	460	
Frequency (HZ)	0	60	90	91	134	
RPM	0	1,185	1,800	1,800	2,682	
Current (Amps)	14.5	14.5	14.5	14.5	181	158
Rated Tq (ft-lb)	44.3	44.3	29.2	29.2	245	
Peak Tq (ft-lb)	96.6	96.6	40.2	40.2	17.4	

Motor Speed Data						Information Block	
	Locked Rotor	Pull-Up	Breakdown	Rated Load	Idle		
Speed (RPM)	0	750	1375	1475	1500	HP	10.0
Current (Amps)	295	261	176	55.1	21.4	Sync. RPM	1,200
Torque (ft-lbs)	235	200	325	142	0.00	Frame	256
						Enclosure	TEFC
						Construction	TFC
						Voltage	230/460#200/400
						Frequency	60 Hz
						Duty	CONT
						Design	B
						LR Code letter	G
						Poles	6
						Temp Rise @ FL	38 °C
						Ambient	40 °C
						Elevation	1,000 feet
						Ref Wdg	T12906015
						R #	NONE
						dBA @ 1M	999
						VFD rating	CONSTANT 2:1
						OUTLINE:	16989460ME
						CONN DIAG:	004172.03ME
							0
							0

**Speed -Torque Curve**

Legend: Torque (ft-lbs) (blue line), Current (Amps) (red line)

The graph shows torque increasing from ~235 ft-lb at 0 RPM to a peak of ~325 ft-lb at 1375 RPM, then dropping to 0 at 1500 RPM. Current starts at ~295 A at 0 RPM and decreases to ~21.4 A at 1500 RPM.

