

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer :					
Product line	: NEMA Premium Efficiency Three-Phase	Product code :	14407389		
		Catalog # :	02012XT3E286T		
Frame	: 286T	Cooling method	: IC411 - TEFC		
Insulation class	: F	Mounting	: F-1		
Duty cycle	: Cont.(S1)	Rotation <sup>1</sup>	: Both (CW and CCW)		
Ambient temperature	: -20°C to +40°C	Starting method	: Direct On Line		
Altitude	: 1000 m.a.s.l.	Approx. weight <sup>2</sup>	: 496 lb		
Protection degree	: IP55	Moment of inertia (J)	: 8.02 sq.ft.lb		
Design	: B				
Output [HP]	20	20	20	20	
Poles	6	6	6	6	
Frequency [Hz]	60	50	50	50	
Rated voltage [V]	230/460	380	400	415	
Rated current [A]	48.4/24.2	29.6	27.9	27.2	
L. R. Amperes [A]	348/174	163	167	177	
LRC [A]	7.2x(Code H)	5.5x(Code F)	6.0x(Code G)	6.5x(Code H)	
No load current [A]	18.0/9.00	9.50	10.0	10.5	
Rated speed [RPM]	1175	970	975	975	
Slip [%]	2.08	3.00	2.50	2.50	
Rated torque [ft.lb]	89.4	108	108	108	
Locked rotor torque [%]	250	190	200	220	
Breakdown torque [%]	260	210	229	250	
Service factor	1.15	1.00	1.00	1.00	
Temperature rise	80 K	80 K	80 K	80 K	
Locked rotor time	39s (cold) 22s (hot)	45s (cold) 25s (hot)	45s (cold) 25s (hot)	45s (cold) 25s (hot)	
Noise level <sup>2</sup>	59.0 dB(A)	56.0 dB(A)	56.0 dB(A)	56.0 dB(A)	
Efficiency (%)	25%	91.5	91.3	90.7	89.9
	50%	91.7	90.2	90.2	89.5
	75%	91.7	91.0	91.0	91.0
	100%	91.7	89.5	90.2	90.2
Power Factor	25%	0.45	0.50	0.47	0.44
	50%	0.70	0.75	0.73	0.70
	75%	0.80	0.83	0.82	0.80
	100%	0.85	0.86	0.86	0.85
Bearing type	: <u>Drive end</u> 6311 C3 <u>Non drive end</u> 6211 C3	Foundation loads			
Sealing	: Oil Seal Lip Seal	Max. traction	: 926 lb		
Lubrication interval	: 20000 h 20000 h	Max. compression	: 1422 lb		
Lubricant amount	: 18 g 11 g				
Lubricant type	: Mobil Polyrex EM				
Notes USABLE @208V 53.5A SF 1.15 SFA 61.5A					
This revision replaces and cancel the previous one, which must be eliminated. (1) Looking the motor from the shaft end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At 100% of full load.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in NEMA MG-1.		
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# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_

### Thermal protection

ID	Application	Type	Quantity	Sensing Temperature
1	Winding	Thermostat - 2 wires	1 x Phase	155 °C

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# TORQUE AND CURRENT VS SPEED CURVE



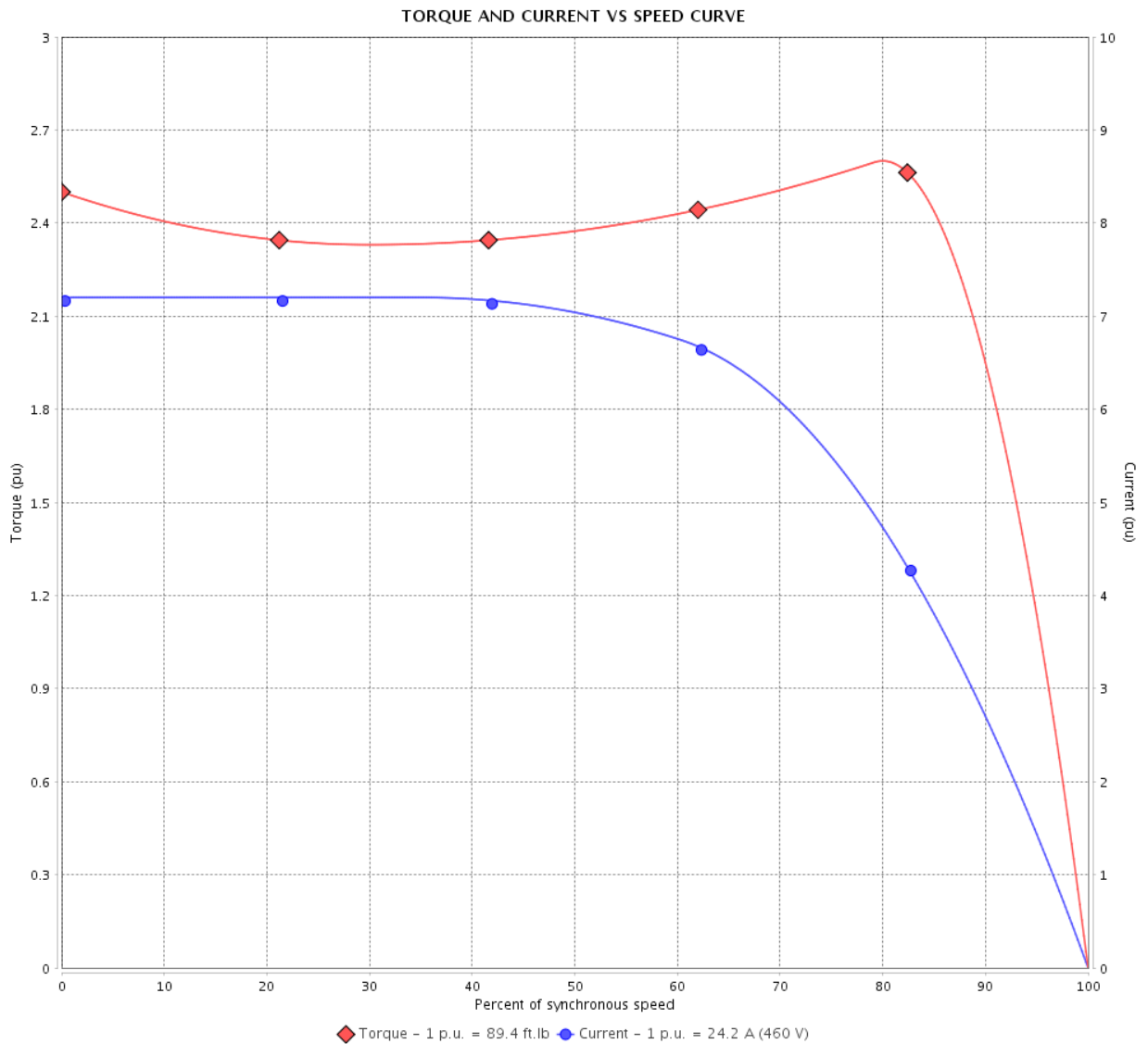
## Three Phase Induction Motor - Squirrel Cage

Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T



Performance : 230/460 V 60 Hz 6P

Rated current : 48.4/24.2 A  
 LRC : 7.2  
 Rated torque : 89.4 ft.lb  
 Locked rotor torque : 250 %  
 Breakdown torque : 260 %  
 Rated speed : 1175 rpm

Moment of inertia (J) : 8.02 sq.ft.lb  
 Duty cycle : Cont.(S1)  
 Insulation class : F  
 Service factor : 1.15  
 Temperature rise : 80 K  
 Design : B

Locked rotor time : 39s (cold) 22s (hot)

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# TORQUE AND CURRENT VS SPEED CURVE

## Three Phase Induction Motor - Squirrel Cage



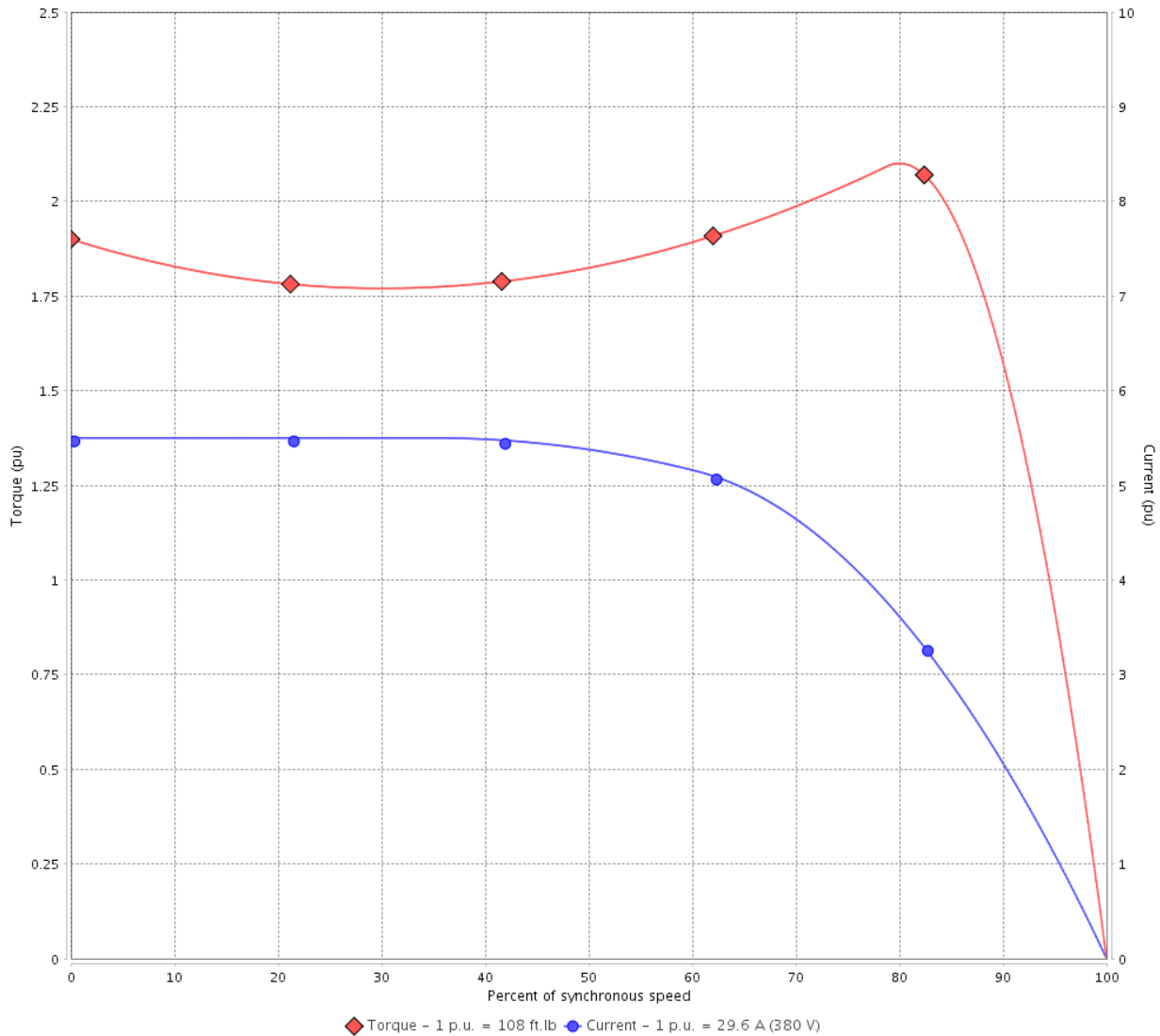
Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T

TORQUE AND CURRENT VS SPEED CURVE



Performance : 380 V 50 Hz 6P IE1

Rated current	: 29.6 A	Moment of inertia (J)	: 8.02 sq.ft.lb
LRC	: 5.5	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 190 %	Service factor	: 1.00
Breakdown torque	: 210 %	Temperature rise	: 80 K
Rated speed	: 970 rpm	Design	: B

Locked rotor time : 45s (cold) 25s (hot)

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# TORQUE AND CURRENT VS SPEED CURVE



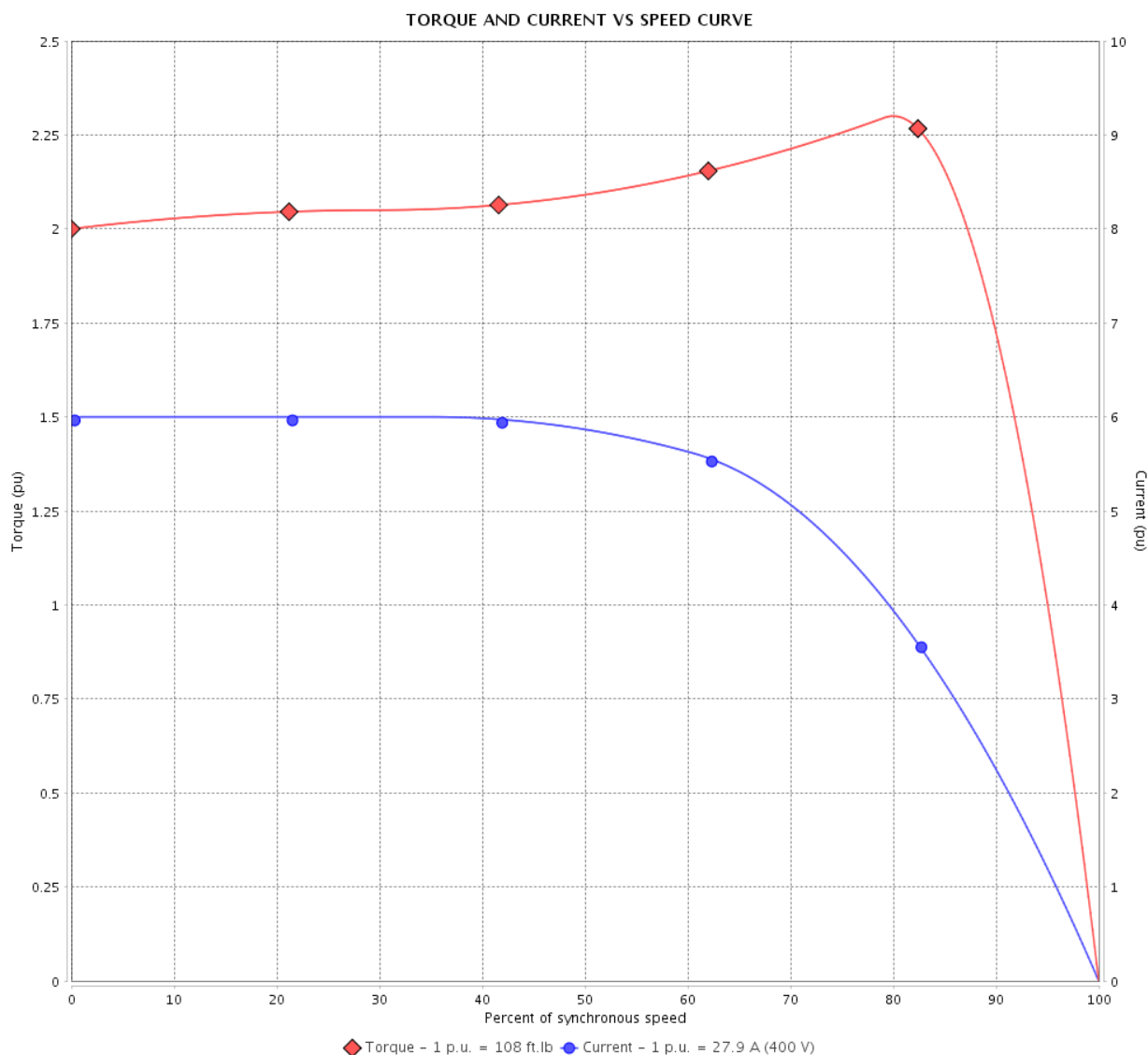
## Three Phase Induction Motor - Squirrel Cage

Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T



Performance : 400 V 50 Hz 6P IE2

Rated current	: 27.9 A	Moment of inertia (J)	: 8.02 sq.ft.lb
LRC	: 6.0	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 200 %	Service factor	: 1.00
Breakdown torque	: 229 %	Temperature rise	: 80 K
Rated speed	: 975 rpm	Design	: B

Locked rotor time : 45s (cold) 25s (hot)

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# TORQUE AND CURRENT VS SPEED CURVE

Three Phase Induction Motor - Squirrel Cage



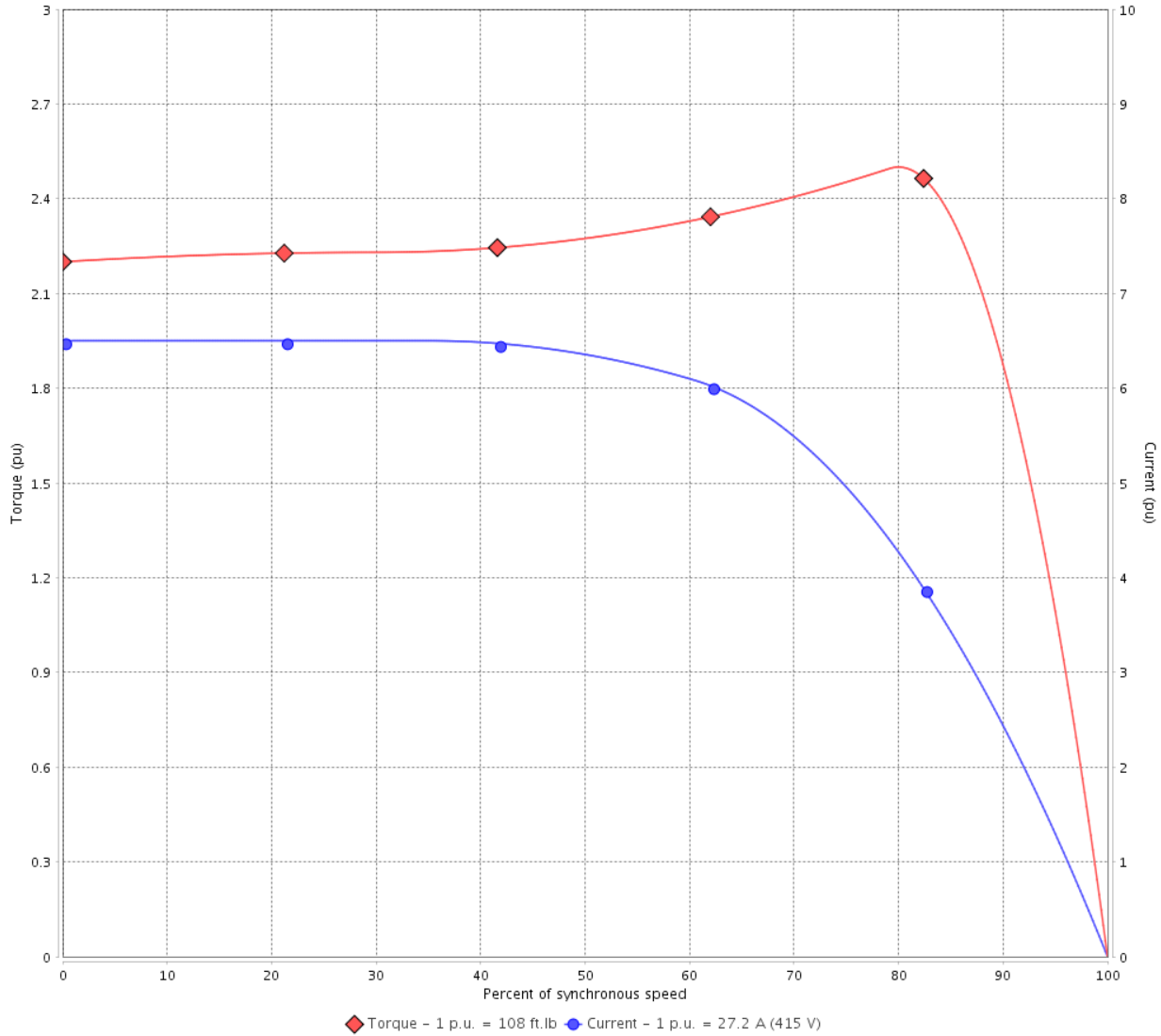
Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T

TORQUE AND CURRENT VS SPEED CURVE



Performance : 415 V 50 Hz 6P IE2

Rated current	: 27.2 A	Moment of inertia (J)	: 8.02 sq.ft.lb
LRC	: 6.5	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 220 %	Service factor	: 1.00
Breakdown torque	: 250 %	Temperature rise	: 80 K
Rated speed	: 975 rpm	Design	: B

Locked rotor time : 45s (cold) 25s (hot)

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# LOAD PERFORMANCE CURVE

## Three Phase Induction Motor - Squirrel Cage

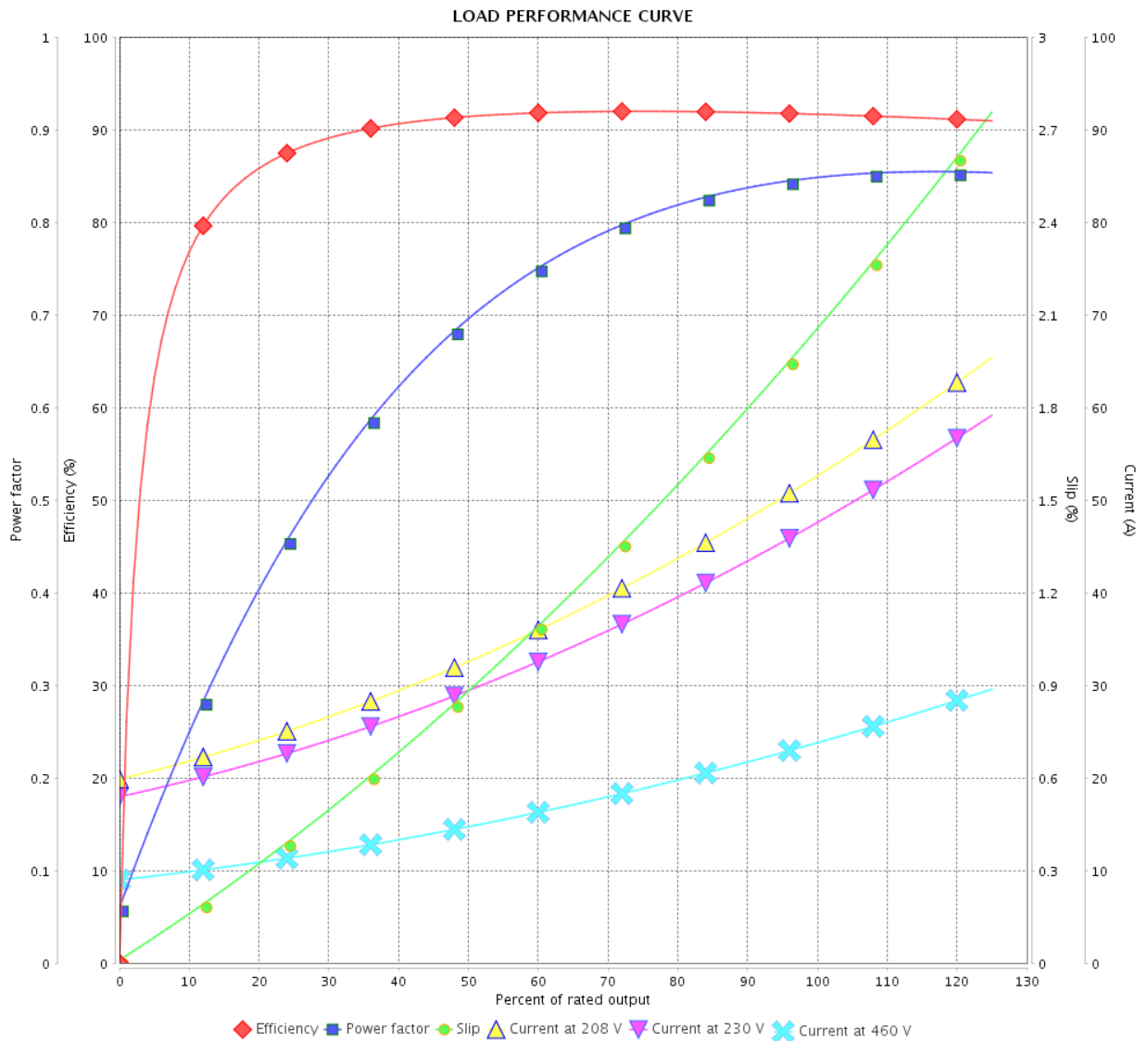


Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T



Performance : 230/460 V 60 Hz 6P

Rated current : 48.4/24.2 A  
 LRC : 7.2  
 Rated torque : 89.4 ft.lb  
 Locked rotor torque : 250 %  
 Breakdown torque : 260 %  
 Rated speed : 1175 rpm

Moment of inertia (J) : 8.02 sq.ft.lb  
 Duty cycle : Cont.(S1)  
 Insulation class : F  
 Service factor : 1.15  
 Temperature rise : 80 K  
 Design : B

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# LOAD PERFORMANCE CURVE

Three Phase Induction Motor - Squirrel Cage



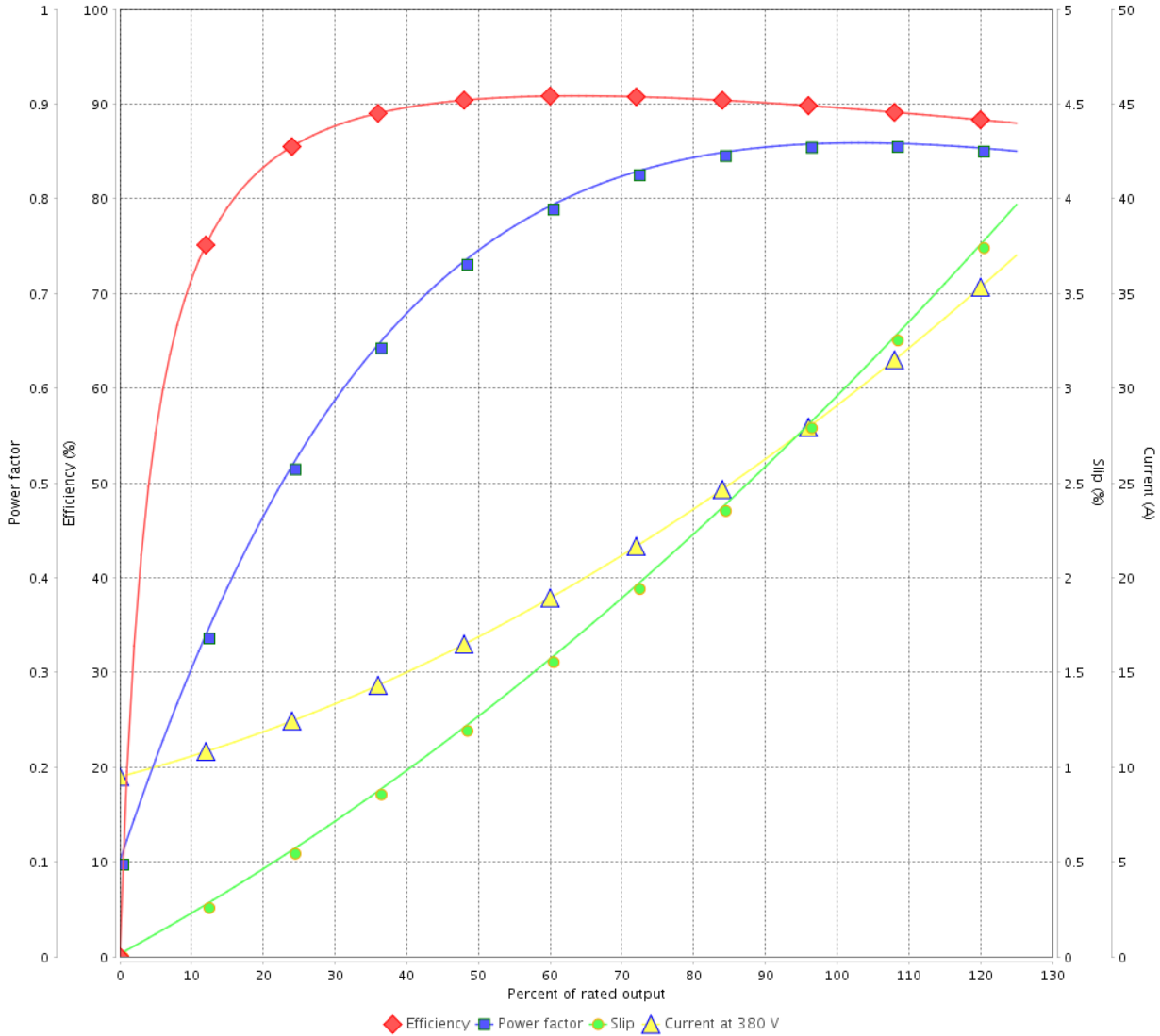
Customer : \_\_\_\_\_

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T

LOAD PERFORMANCE CURVE



Performance : 380 V 50 Hz 6P IE1

Rated current : 29.6 A  
 LRC : 5.5  
 Rated torque : 108 ft.lb  
 Locked rotor torque : 190 %  
 Breakdown torque : 210 %  
 Rated speed : 970 rpm

Moment of inertia (J) : 8.02 sq.ft.lb  
 Duty cycle : Cont.(S1)  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : B

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Date				



# LOAD PERFORMANCE CURVE

## Three Phase Induction Motor - Squirrel Cage

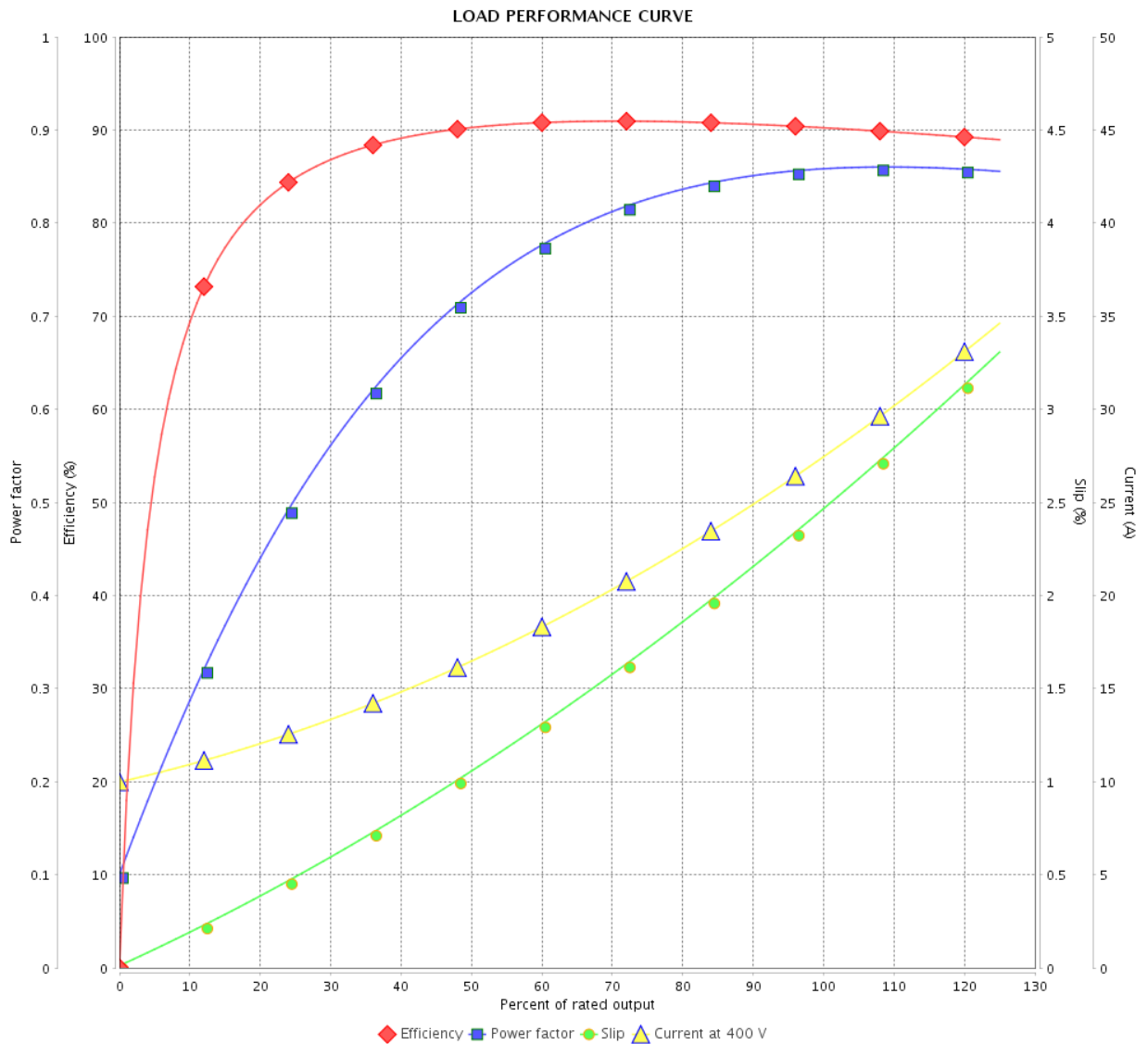


Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T



Performance : 400 V 50 Hz 6P IE2

Rated current : 27.9 A  
 LRC : 6.0  
 Rated torque : 108 ft.lb  
 Locked rotor torque : 200 %  
 Breakdown torque : 229 %  
 Rated speed : 975 rpm

Moment of inertia (J) : 8.02 sq.ft.lb  
 Duty cycle : Cont.(S1)  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : B

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# LOAD PERFORMANCE CURVE

Three Phase Induction Motor - Squirrel Cage



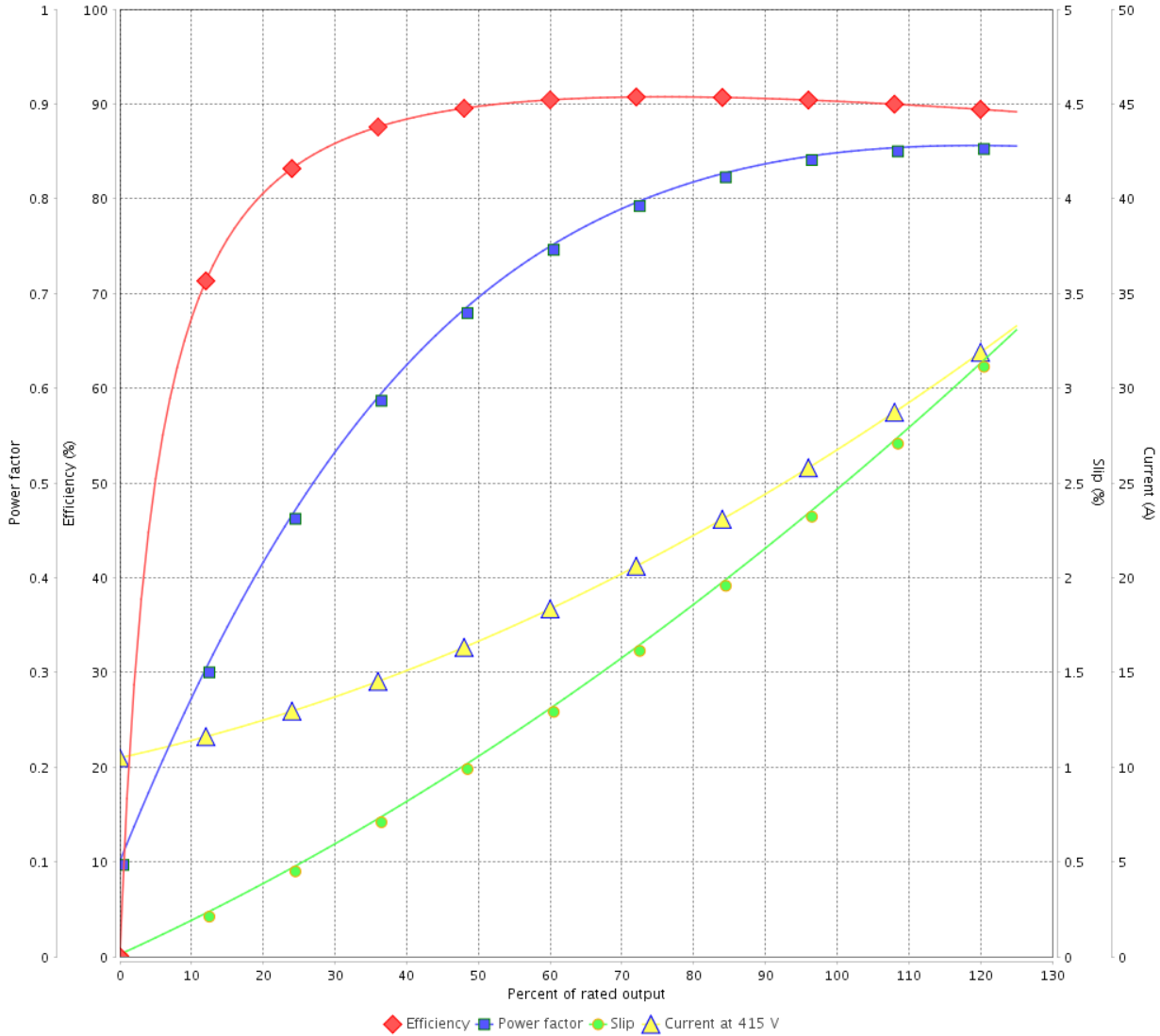
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Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T

LOAD PERFORMANCE CURVE



Performance : 415 V 50 Hz 6P IE2

Rated current : 27.2 A  
 LRC : 6.5  
 Rated torque : 108 ft.lb  
 Locked rotor torque : 220 %  
 Breakdown torque : 250 %  
 Rated speed : 975 rpm

Moment of inertia (J) : 8.02 sq.ft.lb  
 Duty cycle : Cont.(S1)  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : B

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# THERMAL LIMIT CURVE

## Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : NEMA Premium Efficiency Three-Phase  
 Product code : 14407389  
 Catalog # : 02012XT3E286T

Performance : 230/460 V 60 Hz 6P

Rated current : 48.4/24.2 A	Moment of inertia (J) : 8.02 sq.ft.lb
LRC : 7.2	Duty cycle : Cont.(S1)
Rated torque : 89.4 ft.lb	Insulation class : F
Locked rotor torque : 250 %	Service factor : 1.15
Breakdown torque : 260 %	Temperature rise : 80 K
Rated speed : 1175 rpm	Design : B

Heating constant

Cooling constant

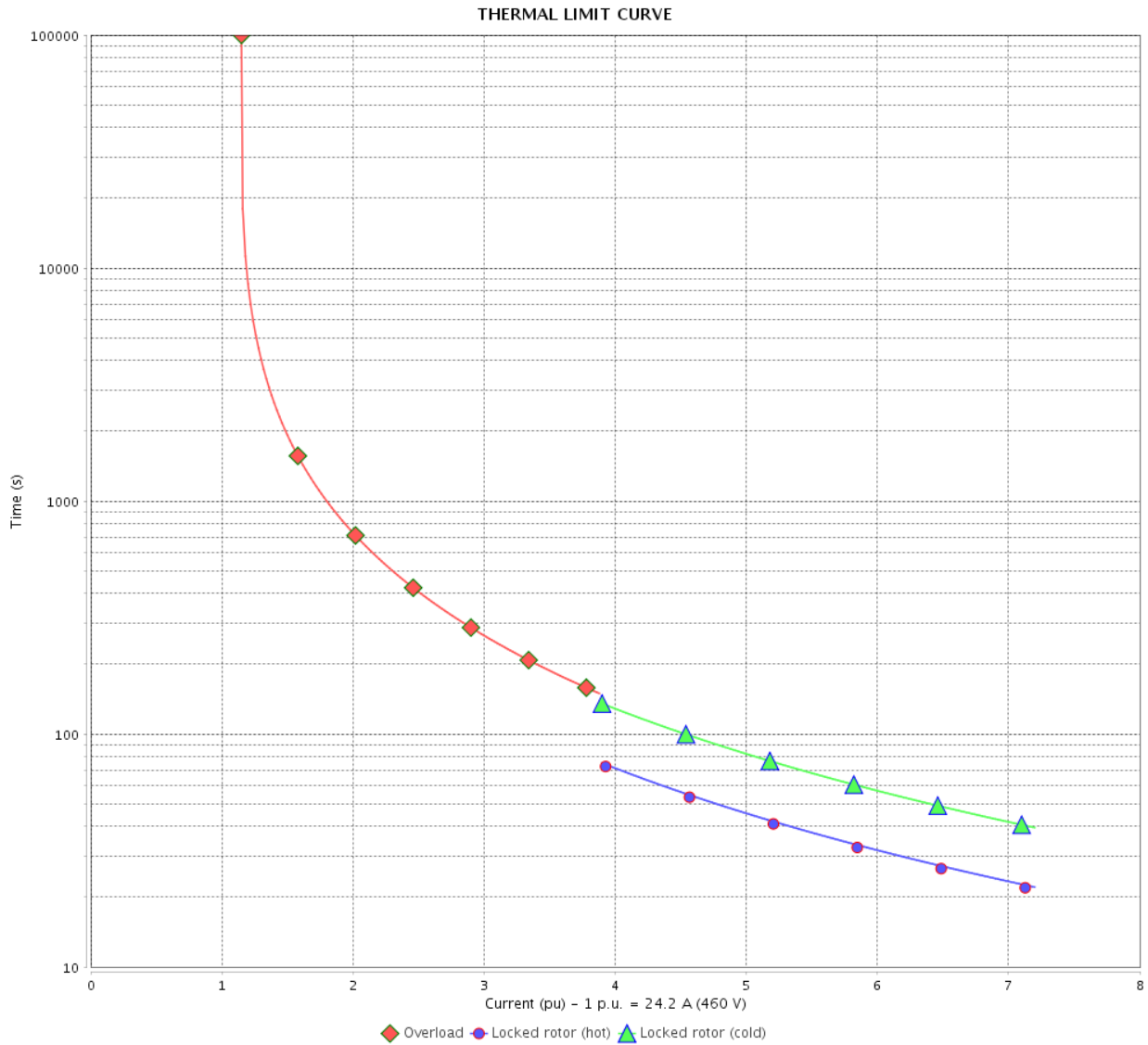
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# THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage



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# THERMAL LIMIT CURVE



## Three Phase Induction Motor - Squirrel Cage

Customer :

Product line : NEMA Premium Efficiency Three-Phase  
 Product code : 14407389  
 Catalog # : 02012XT3E286T

Performance : 380 V 50 Hz 6P IE1

Rated current : 29.6 A	Moment of inertia (J) : 8.02 sq.ft.lb
LRC : 5.5	Duty cycle : Cont.(S1)
Rated torque : 108 ft.lb	Insulation class : F
Locked rotor torque : 190 %	Service factor : 1.00
Breakdown torque : 210 %	Temperature rise : 80 K
Rated speed : 970 rpm	Design : B

Heating constant

Cooling constant

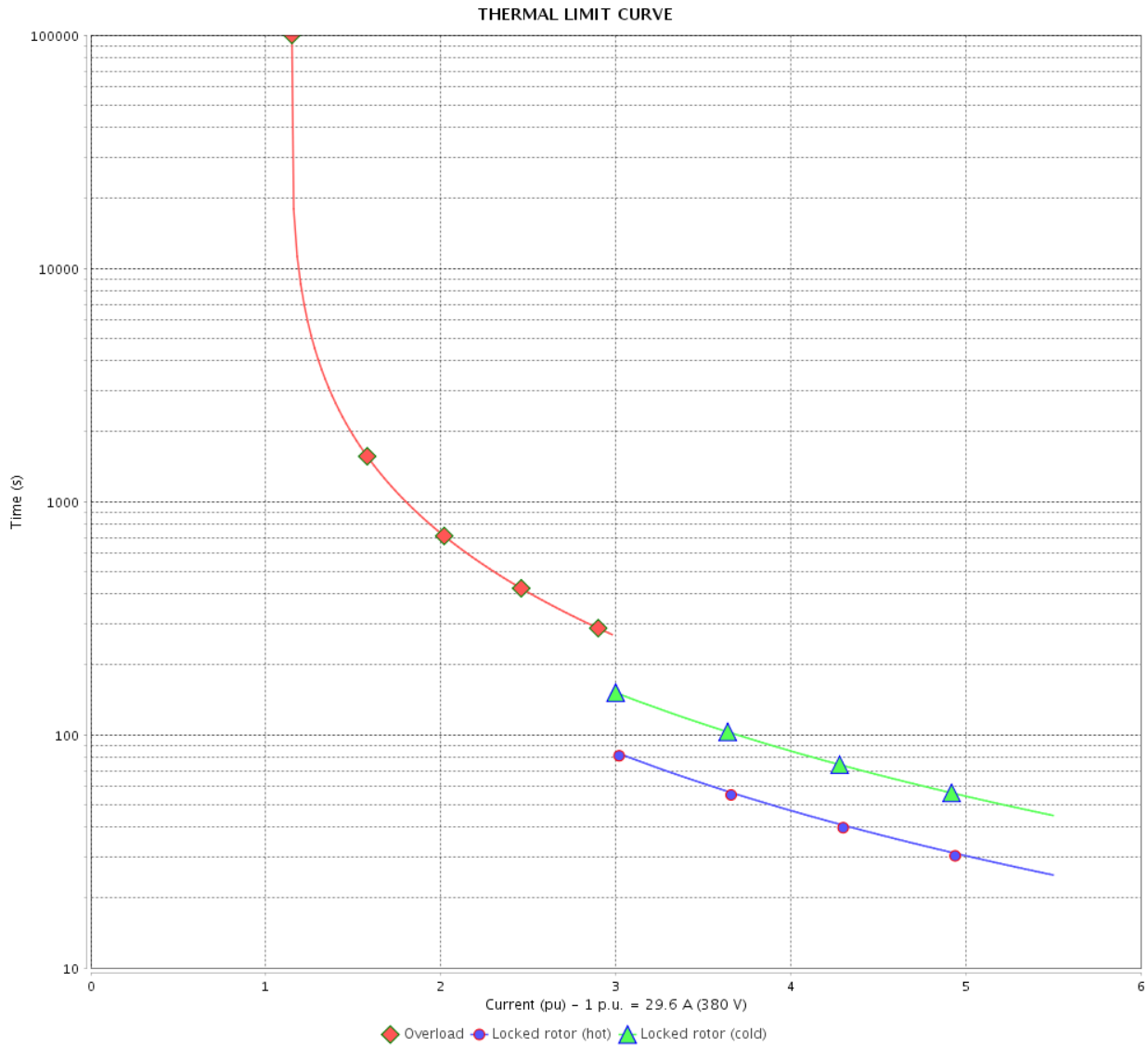
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# THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_



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Date				

# THERMAL LIMIT CURVE



## Three Phase Induction Motor - Squirrel Cage

Customer :

Product line : NEMA Premium Efficiency Three-Phase  
 Product code : 14407389  
 Catalog # : 02012XT3E286T

Performance : 400 V 50 Hz 6P IE2

Rated current : 27.9 A	Moment of inertia (J) : 8.02 sq.ft.lb
LRC : 6.0	Duty cycle : Cont.(S1)
Rated torque : 108 ft.lb	Insulation class : F
Locked rotor torque : 200 %	Service factor : 1.00
Breakdown torque : 229 %	Temperature rise : 80 K
Rated speed : 975 rpm	Design : B

Heating constant

Cooling constant

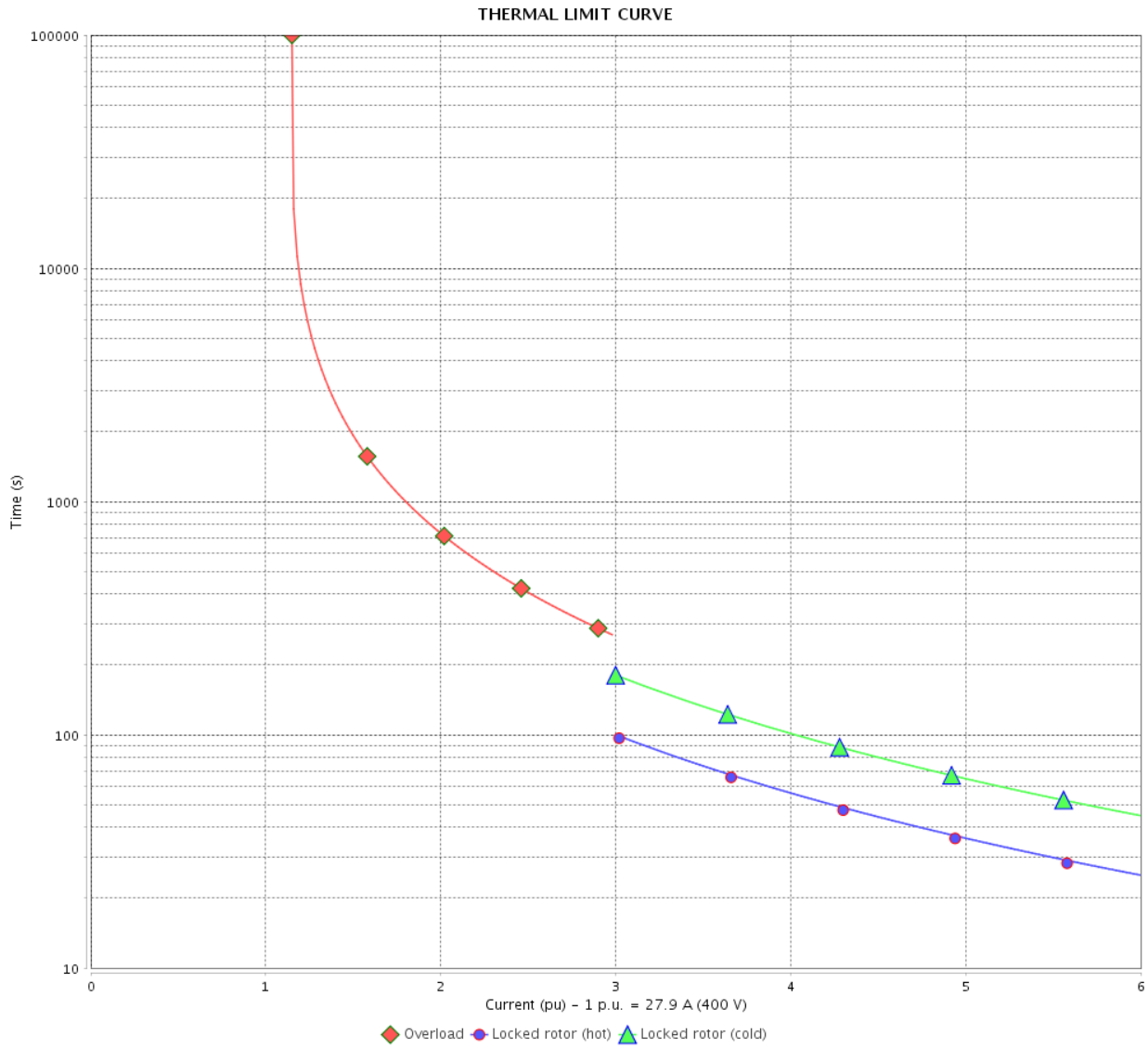
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# THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_



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# THERMAL LIMIT CURVE



## Three Phase Induction Motor - Squirrel Cage

Customer :

Product line : NEMA Premium Efficiency Three-Phase  
 Product code : 14407389  
 Catalog # : 02012XT3E286T

Performance : 415 V 50 Hz 6P IE2

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LRC : 6.5	Duty cycle : Cont.(S1)
Rated torque : 108 ft.lb	Insulation class : F
Locked rotor torque : 220 %	Service factor : 1.00
Breakdown torque : 250 %	Temperature rise : 80 K
Rated speed : 975 rpm	Design : B

Heating constant

Cooling constant

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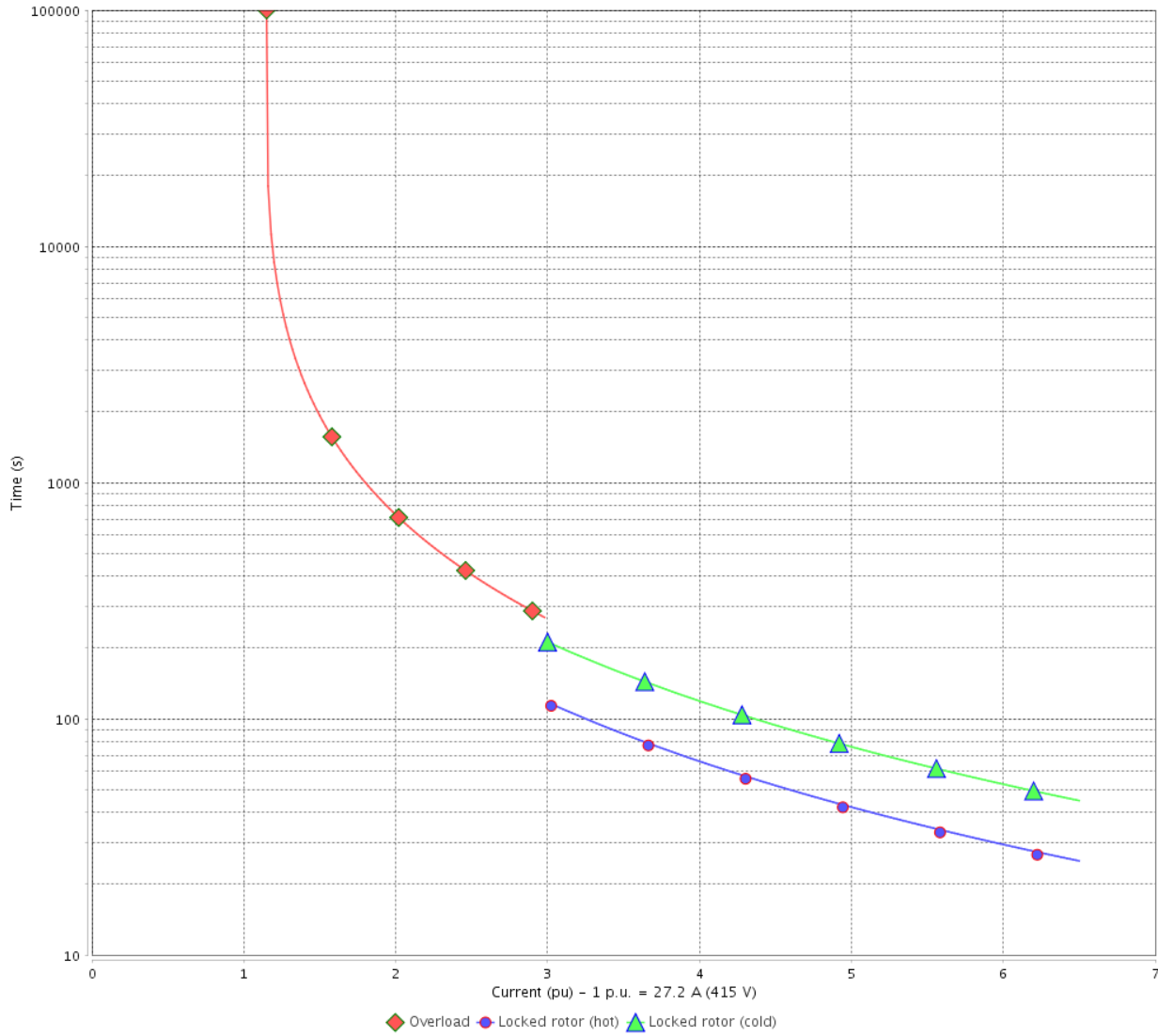
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THERMAL LIMIT CURVE



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# VFD OPERATION CURVE

## Three Phase Induction Motor - Squirrel Cage

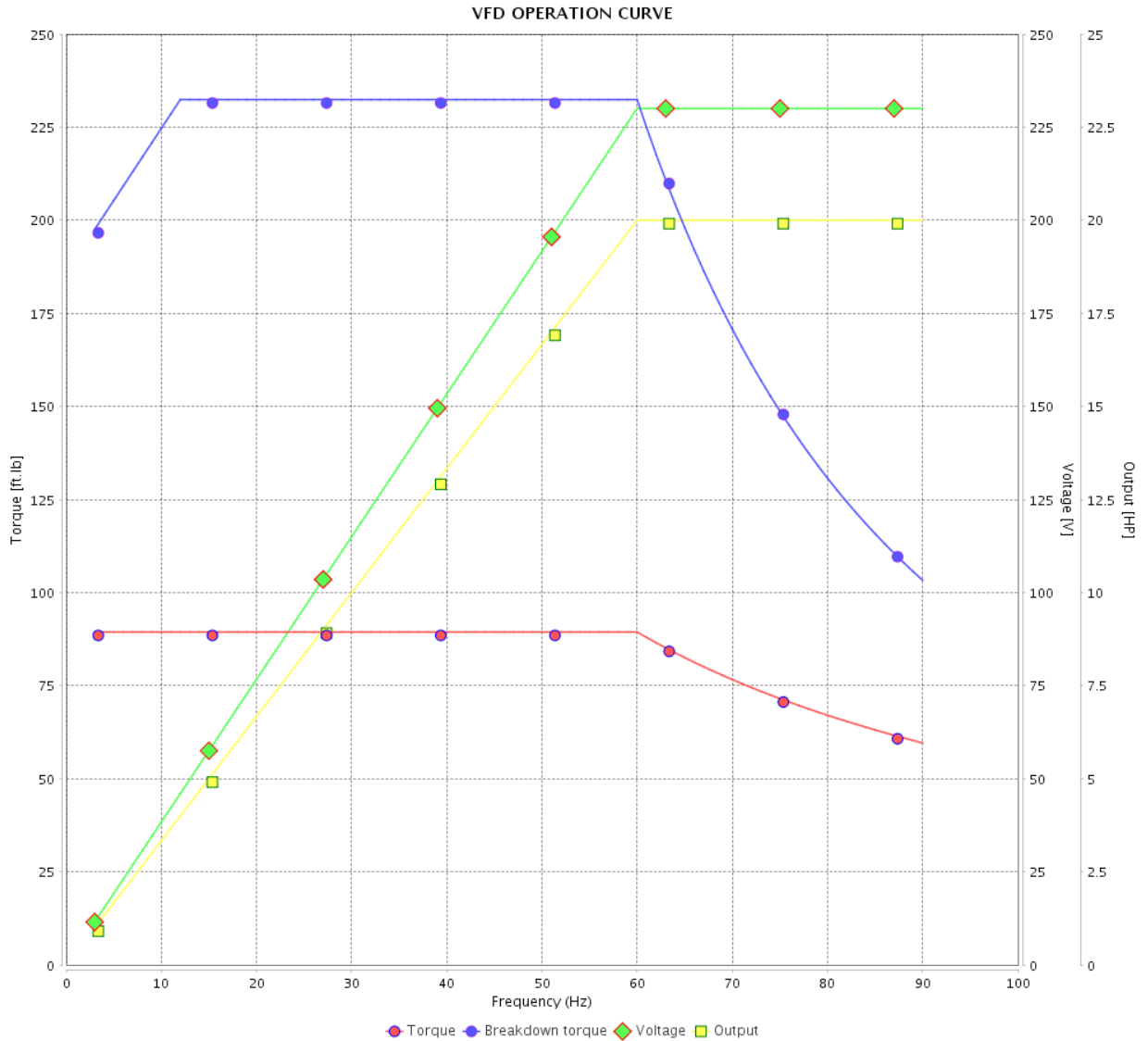


Customer : \_\_\_\_\_

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T



Performance : 230/460 V 60 Hz 6P

Rated current : 48.4/24.2 A  
 LRC : 7.2  
 Rated torque : 89.4 ft.lb  
 Locked rotor torque : 250 %  
 Breakdown torque : 260 %  
 Rated speed : 1175 rpm

Moment of inertia (J) : 8.02 sq.ft.lb  
 Duty cycle : Cont.(S1)  
 Insulation class : F  
 Service factor : 1.15  
 Temperature rise : 80 K  
 Design : B

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# VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

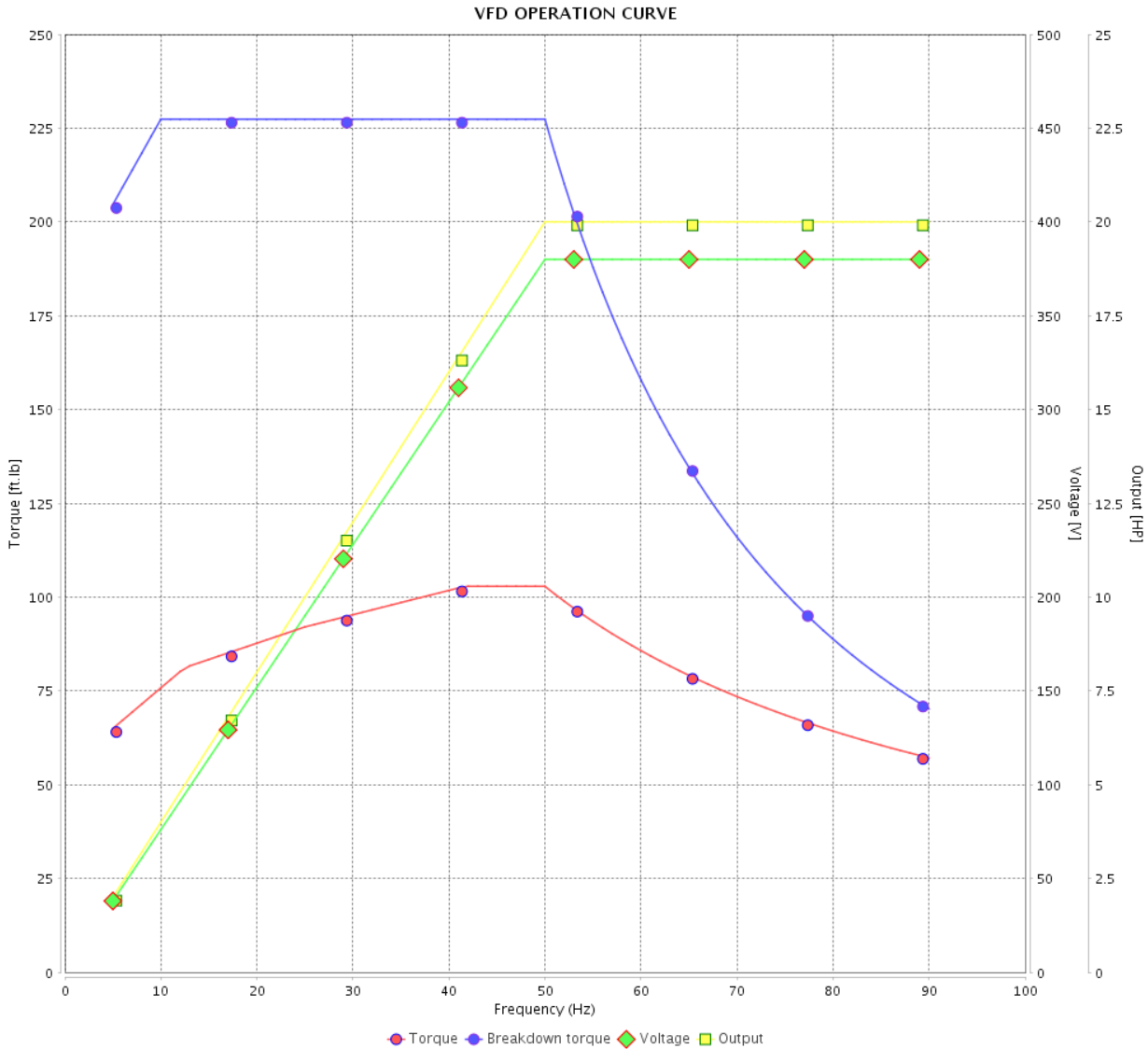


Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T



Performance : 380 V 50 Hz 6P IE1

Rated current : 29.6 A  
 LRC : 5.5  
 Rated torque : 108 ft.lb  
 Locked rotor torque : 190 %  
 Breakdown torque : 210 %  
 Rated speed : 970 rpm

Moment of inertia (J) : 8.02 sq.ft.lb  
 Duty cycle : Cont.(S1)  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : B

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# VFD OPERATION CURVE

## Three Phase Induction Motor - Squirrel Cage

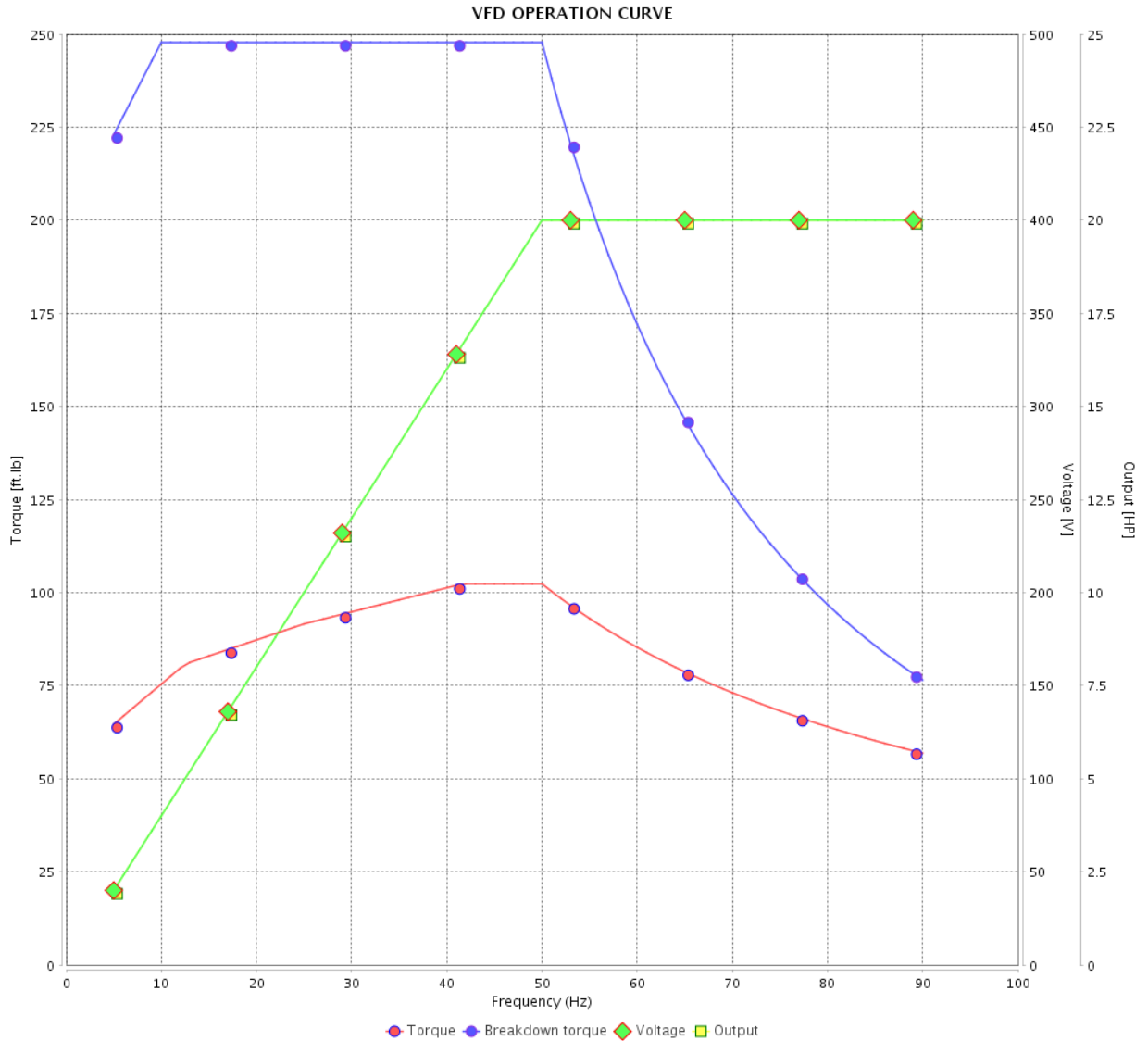


Customer :

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Product code : 14407389

Catalog # : 02012XT3E286T



Performance : 400 V 50 Hz 6P IE2

Rated current : 27.9 A  
 LRC : 6.0  
 Rated torque : 108 ft.lb  
 Locked rotor torque : 200 %  
 Breakdown torque : 229 %  
 Rated speed : 975 rpm

Moment of inertia (J) : 8.02 sq.ft.lb  
 Duty cycle : Cont.(S1)  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : B

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# VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage



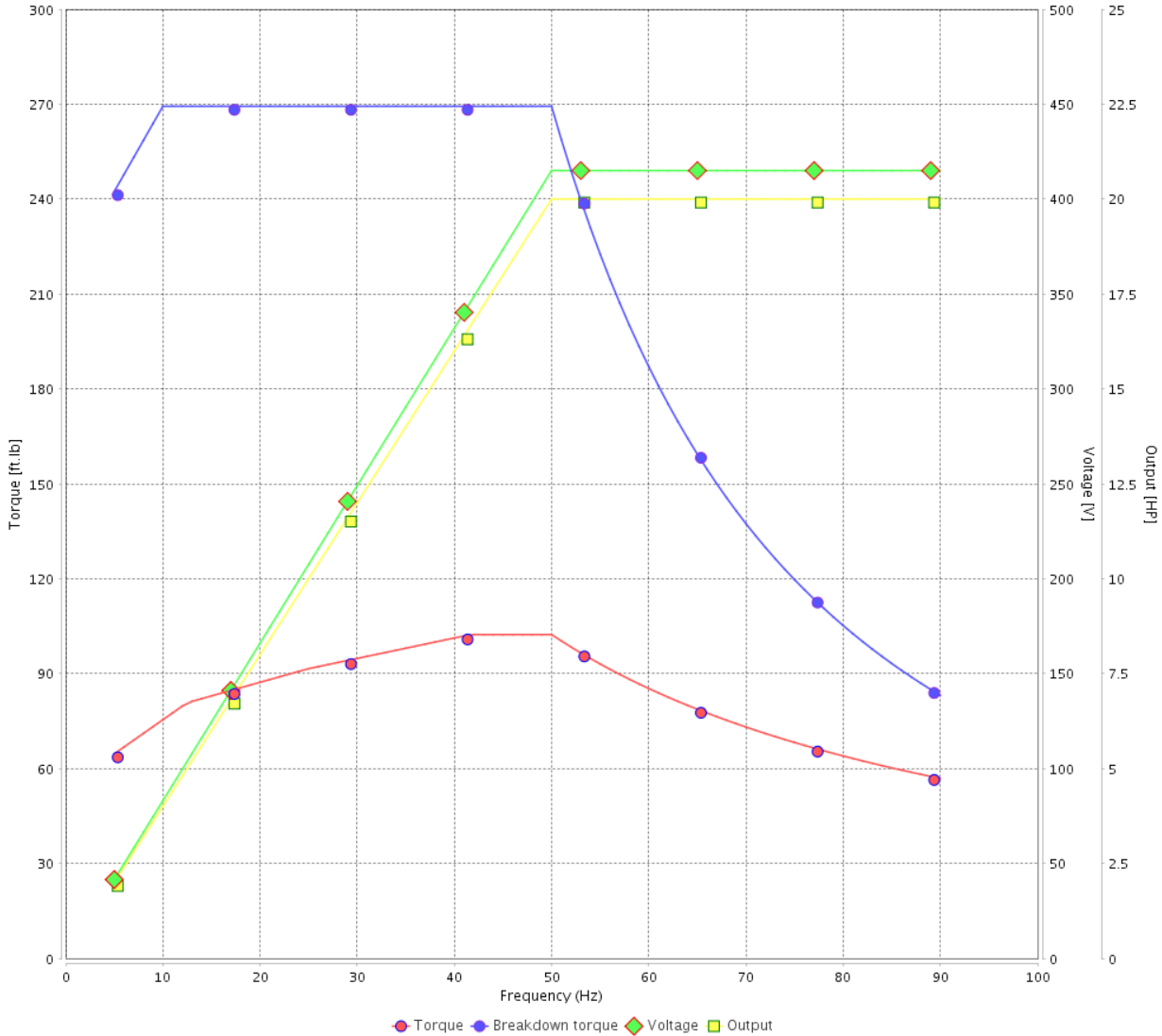
Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 14407389

Catalog # : 02012XT3E286T

VFD OPERATION CURVE



Performance : 415 V 50 Hz 6P IE2

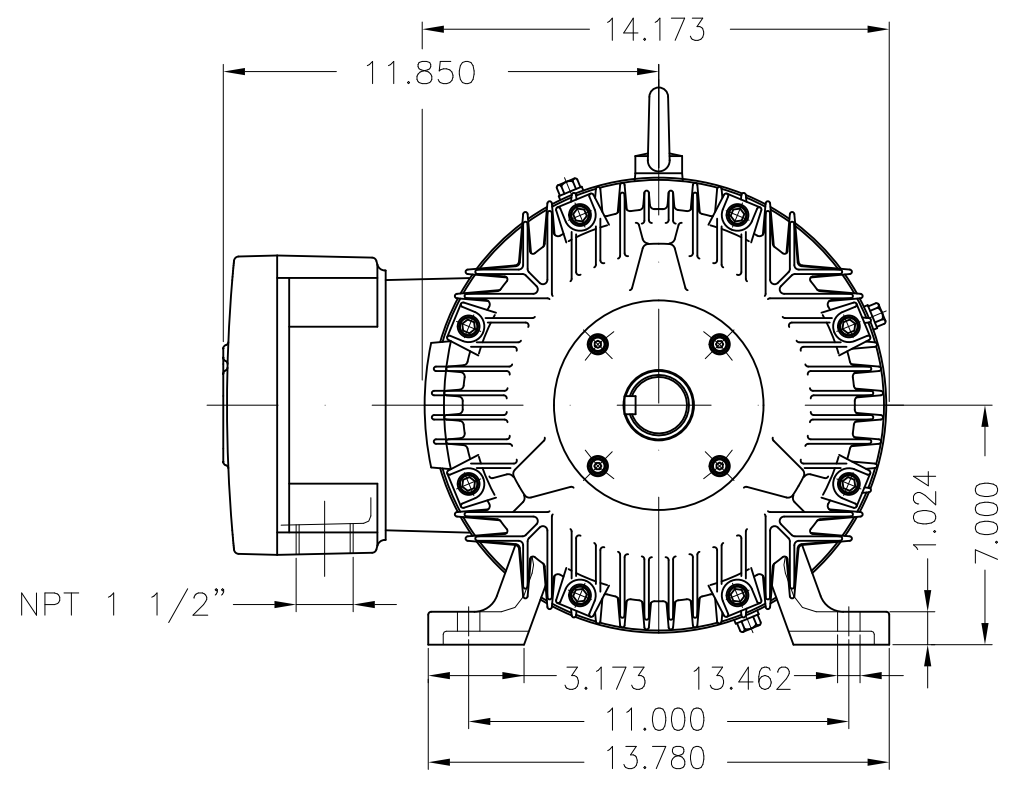
Rated current : 27.2 A  
 LRC : 6.5  
 Rated torque : 108 ft.lb  
 Locked rotor torque : 220 %  
 Breakdown torque : 250 %  
 Rated speed : 975 rpm

Moment of inertia (J) : 8.02 sq.ft.lb  
 Duty cycle : Cont.(S1)  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : B

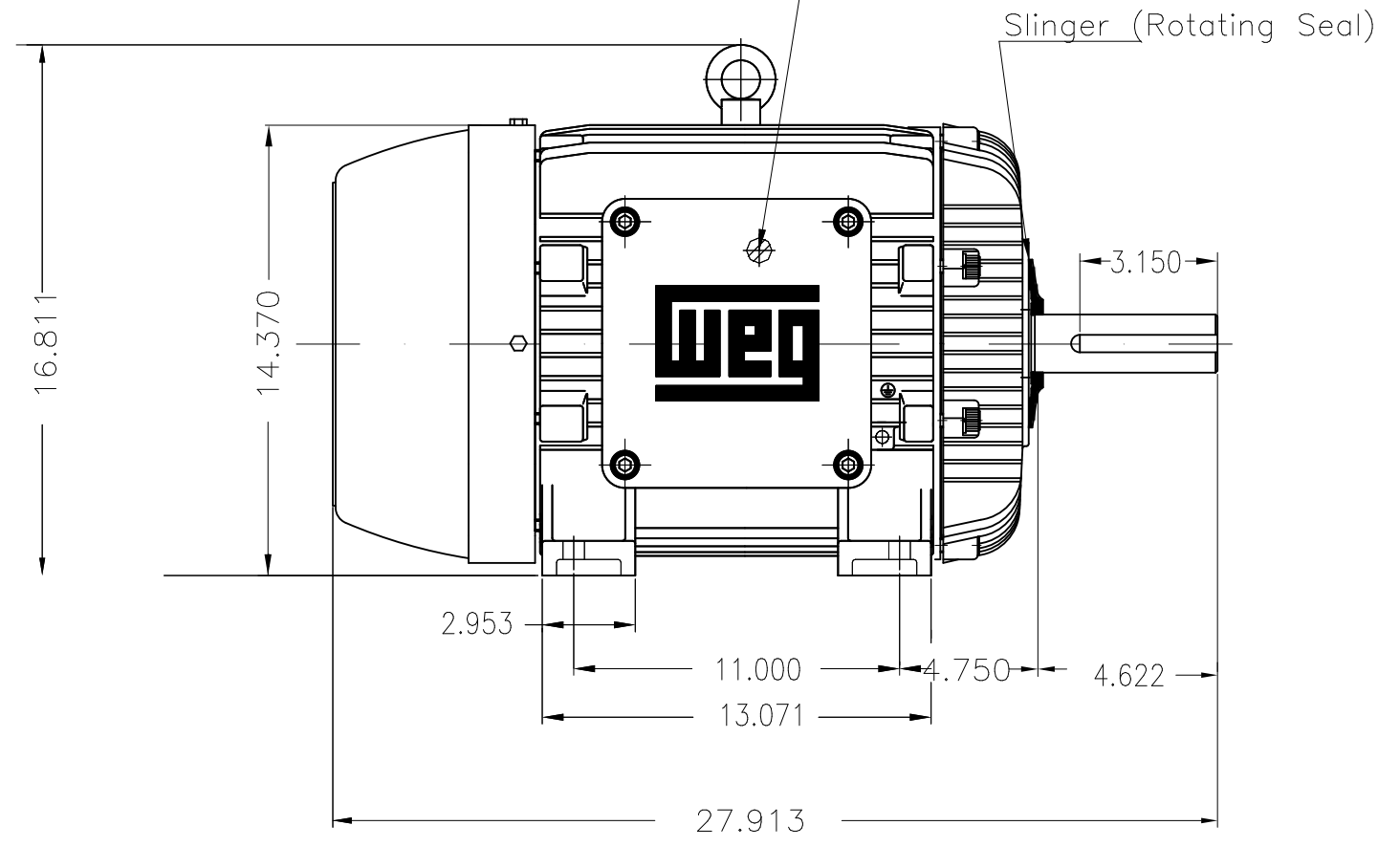
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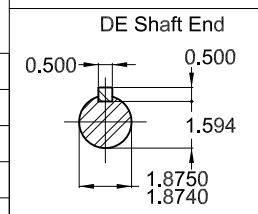
A  
B  
C  
D  
E



Grounding for leads 5.2–25 mm<sup>2</sup> / 10–4 AWG



With grease fitting
Color RAL 5009
Painting plan 202P
Mounting NEMA F-1
Mounting B3R(D)



20 HP 06 Poles 60 Hz A

ECM	LOC	SUMMARY OF MODIFICATIONS	EXECUTED	CHECKED	RELEASED	DATE	VER
EXECUTED	PIRWBUSER	THREE PH. MOTOR EXPLOSION PROOF PREM. EFF.					
CHECKED		FRAME 286T IP55 TEFC					
RELEASED							
REL DT.	WMO	Jaragua do Sul	Product Engineering	SHEET 1 / 1			

PREVIEW  
WDD



MADE IN BRAZIL


**W21X NEMA**  
**Premium**

14407389



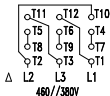
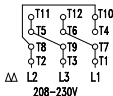
LISTED

CC029A

*Inverter Duty Motor*  
*Severe Duty*

MODEL 02012XT3E286T

PH 3	FR 286T		
HP(kW) 20.0(15.0)		HZ 60	IP55
V 230/460		A 48.4/24.2	
RPM 1175		NEMA NOM EFF 91.7%	
PF 0.85		SFA 55.7/27.8	DES B
INS CL F $\Delta$ T 80 K		SF 1.15	ENCL TEFC
DUTY CONT.		CODE H	ALT 1000 m.a.s.l.
AMB 40°C	USABLE @208V	53.5 A	SF 1.15 SFA 61.5
AMB 55°C SF1.0			
20HP 15kW 50Hz 380V 29.6A 970RPM SF1.00 EFF 89.5% (IE1)			



→ 6311-C3 MOBIL POLYREX EM  
 → 6211-C3 18 g 20000 h

496 Lbs



TEMP CODE T3C  
 CSA/UL: Class I - Div. 1 - Groups C and D  
 CSA: Class II - Div. 1 - Groups F and G  
 CSA: Class I - Zone 1 - IIB

EXPLOSION PROOF MOTOR

FOR USE ON VPWM VFD 1000:1VT, 6:1CT, 1.0SF, T3C, AMB 40°C.