

DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer							
Product line	: NEMA Premium Efficiency Three-Phase			Product code :	12447724		
				Catalog # :	02009ST3QIE324T-W22		
Frame	: 324/6T			Cooling method	: IC411 - TEFC		
Insulation class	: F			Mounting	: F-1		
Duty cycle	: Cont.(S1)			Rotation ¹	: Both (CW and CCW)		
Ambient temperature	: -20°C to +40°C			Starting method	: Direct On Line		
Altitude	: 1000 m.a.s.l.			Approx. weight ²	: 517 lb		
Protection degree	: IP55			Moment of inertia (J)	: 9.37 sq.ft.lb		
Design	: B						
Output [HP]	20	15	15	15	20	20	20
Poles	8	8	8	8	8	8	8
Frequency [Hz]	60	50	50	50	50	50	50
Rated voltage [V]	460	380	400	415	380	400	415
Rated current [A]	28.3	26.5	26.4	27.1	33.4	32.6	32.7
L. R. Amperes [A]	142	133	142	152	134	143	150
LRC [A]	5.0x(Code G)	5.0x(Code G)	5.4x(Code H)	5.6x(Code J)	4.0x(Code D)	4.4x(Code E)	4.6x(Code F)
No load current [A]	16.0	15.7	17.6	19.3	15.7	17.6	19.3
Rated speed [RPM]	880	730	730	735	725	725	730
Slip [%]	2.22	2.67	2.67	2.00	3.33	3.33	2.67
Rated torque [ft.lb]	119	108	108	107	145	145	144
Locked rotor torque [%]	190	190	210	240	140	160	180
Breakdown torque [%]	220	229	260	280	170	190	210
Service factor	1.25	1.00	1.15	1.15	1.00	1.15	1.15
Temperature rise	80 K	80 K	80 K	80 K	105 K	105 K	80 K
Locked rotor time	48s (cold)	36s (cold)	36s (cold)	36s (cold)	36s (cold)	36s (cold)	36s (cold)
	27s (hot)	20s (hot)	20s (hot)	20s (hot)	20s (hot)	20s (hot)	20s (hot)
Noise level ²	56.0 dB(A)	56.0 dB(A)	56.0 dB(A)	56.0 dB(A)	56.0 dB(A)	56.0 dB(A)	56.0 dB(A)
Efficiency (%)	25%						
	50%	89.5	88.5	87.4	86.3	89.5	87.5
	75%	91.0	89.6	89.0	88.5	89.5	89.5
	100%	91.0	89.5	89.3	89.0	88.5	88.5
Power Factor	25%						
	50%	0.54	0.51	0.46	0.42	0.61	0.52
	75%	0.66	0.64	0.60	0.56	0.72	0.65
	100%	0.73	0.72	0.69	0.65	0.77	0.72
Bearing type	: Drive end		: Non drive end		Foundation loads		
	: 6312 C3		: 6212 C3		Max. traction : 901 lb		
	: Inpro/Seal		: Inpro/Seal		Max. compression : 1418 lb		
	: 20000 h		: 20000 h				
	: 21 g		: 13 g				
Lubricant type		: Mobil Polyrex EM					
Notes							
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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TORQUE AND CURRENT VS SPEED CURVE

Three Phase Induction Motor - Squirrel Cage



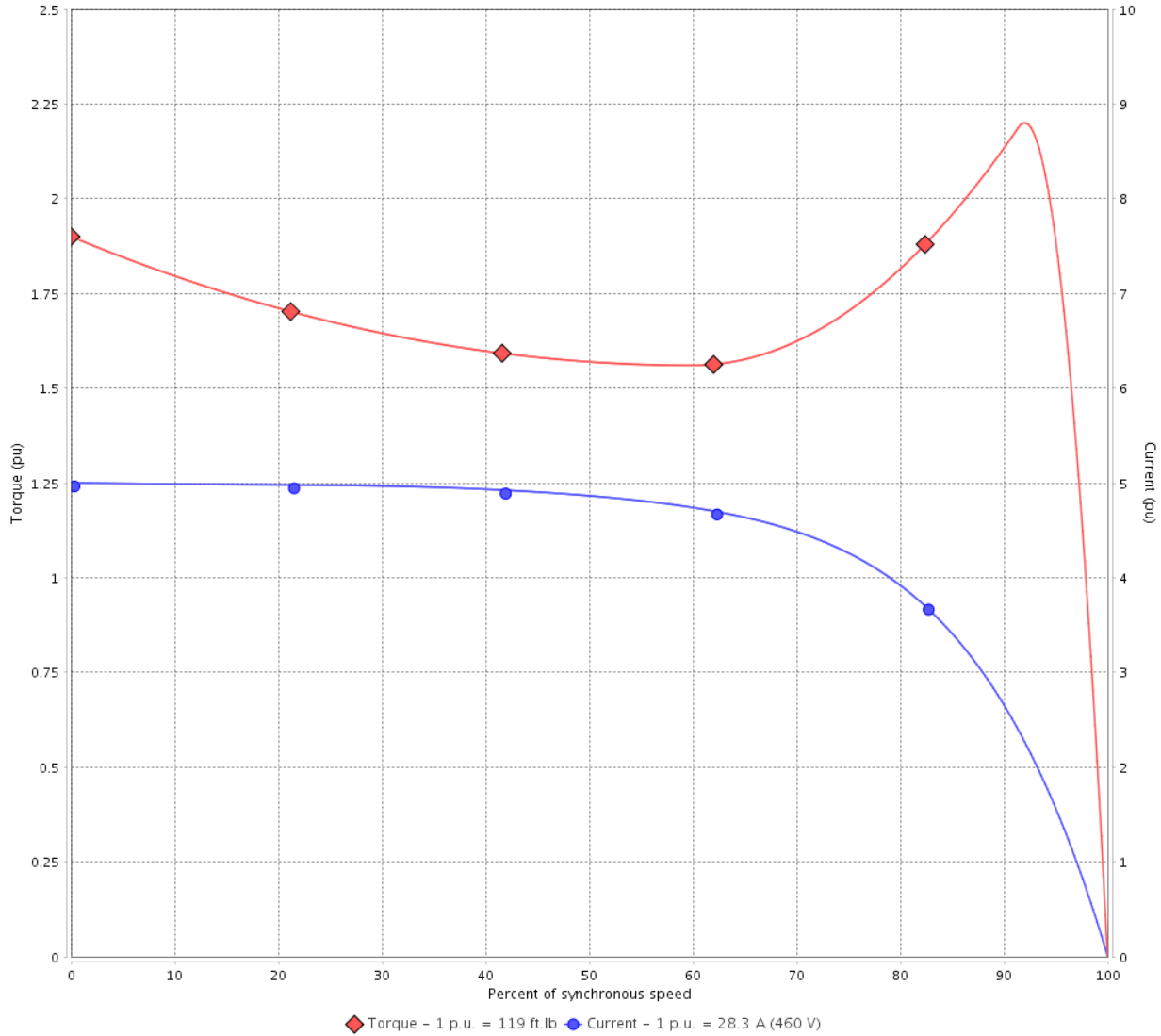
Customer :

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Product code : 12447724

Catalog # : 02009ST3QIE324T-W22

TORQUE AND CURRENT VS SPEED CURVE



Performance : 460 V 60 Hz 8P

Rated current	: 28.3 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 5.0	Duty cycle	: Cont.(S1)
Rated torque	: 119 ft.lb	Insulation class	: F
Locked rotor torque	: 190 %	Service factor	: 1.25
Breakdown torque	: 220 %	Temperature rise	: 80 K
Rated speed	: 880 rpm	Design	: B

Locked rotor time : 48s (cold) 27s (hot)

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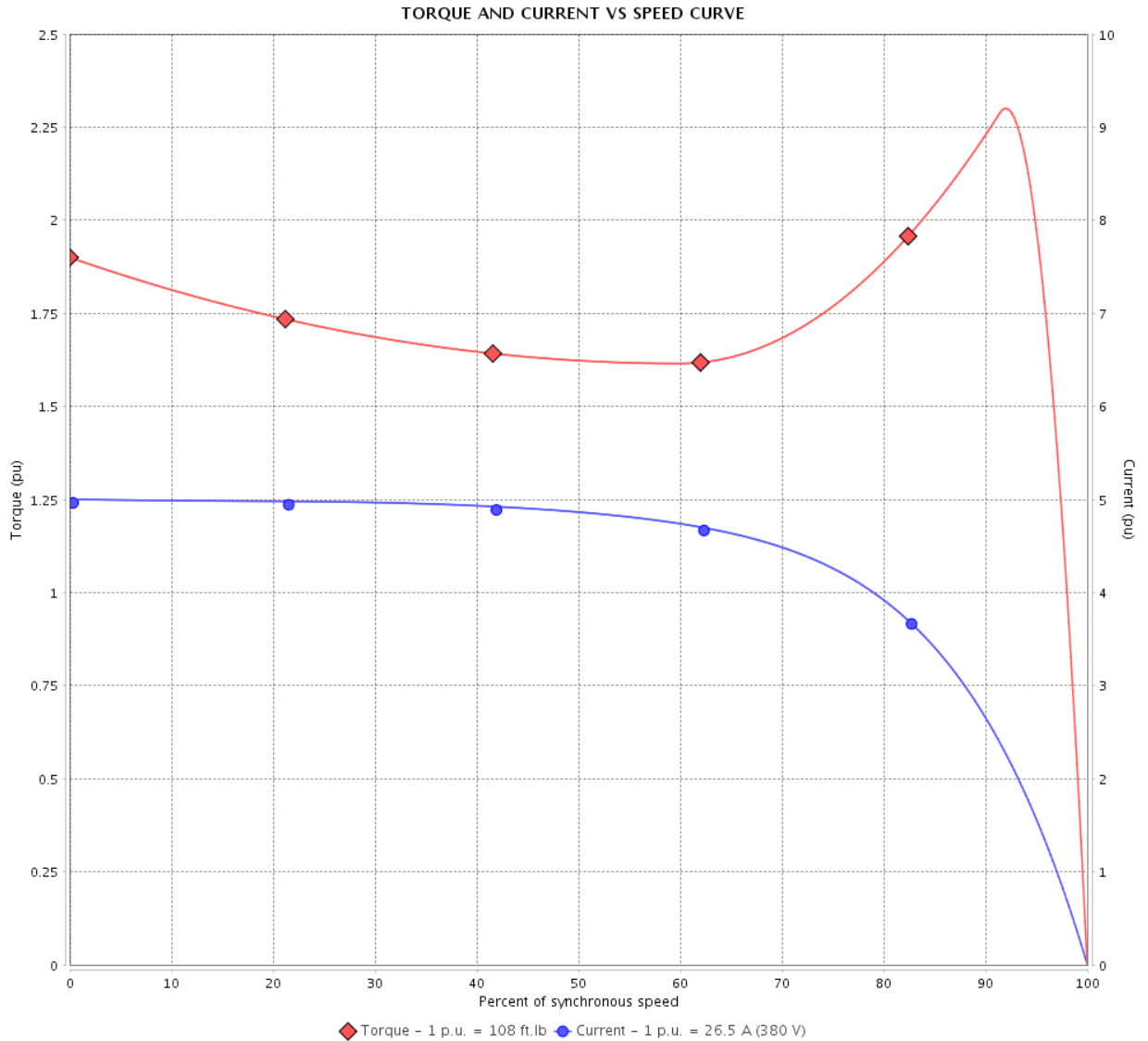
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Performance : 380 V 50 Hz 8P IE3

Rated current	: 26.5 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 5.0	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 190 %	Service factor	: 1.00
Breakdown torque	: 229 %	Temperature rise	: 80 K
Rated speed	: 730 rpm	Design	: B

Locked rotor time : 36s (cold) 20s (hot)

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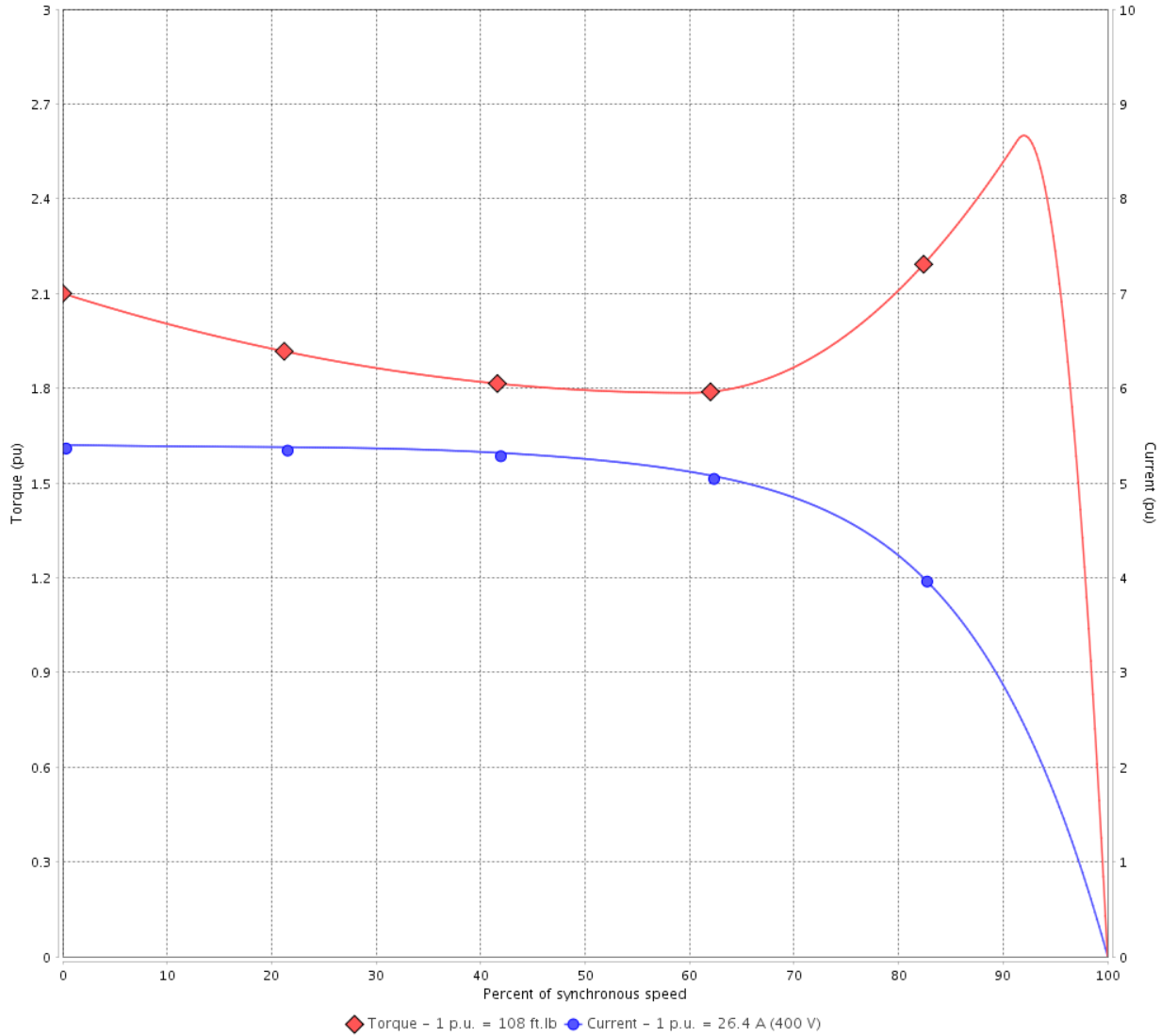
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TORQUE AND CURRENT VS SPEED CURVE



Performance : 400 V 50 Hz 8P IE3

Rated current	: 26.4 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 5.4	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 210 %	Service factor	: 1.15
Breakdown torque	: 260 %	Temperature rise	: 80 K
Rated speed	: 730 rpm	Design	: B

Locked rotor time : 36s (cold) 20s (hot)

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TORQUE AND CURRENT VS SPEED CURVE



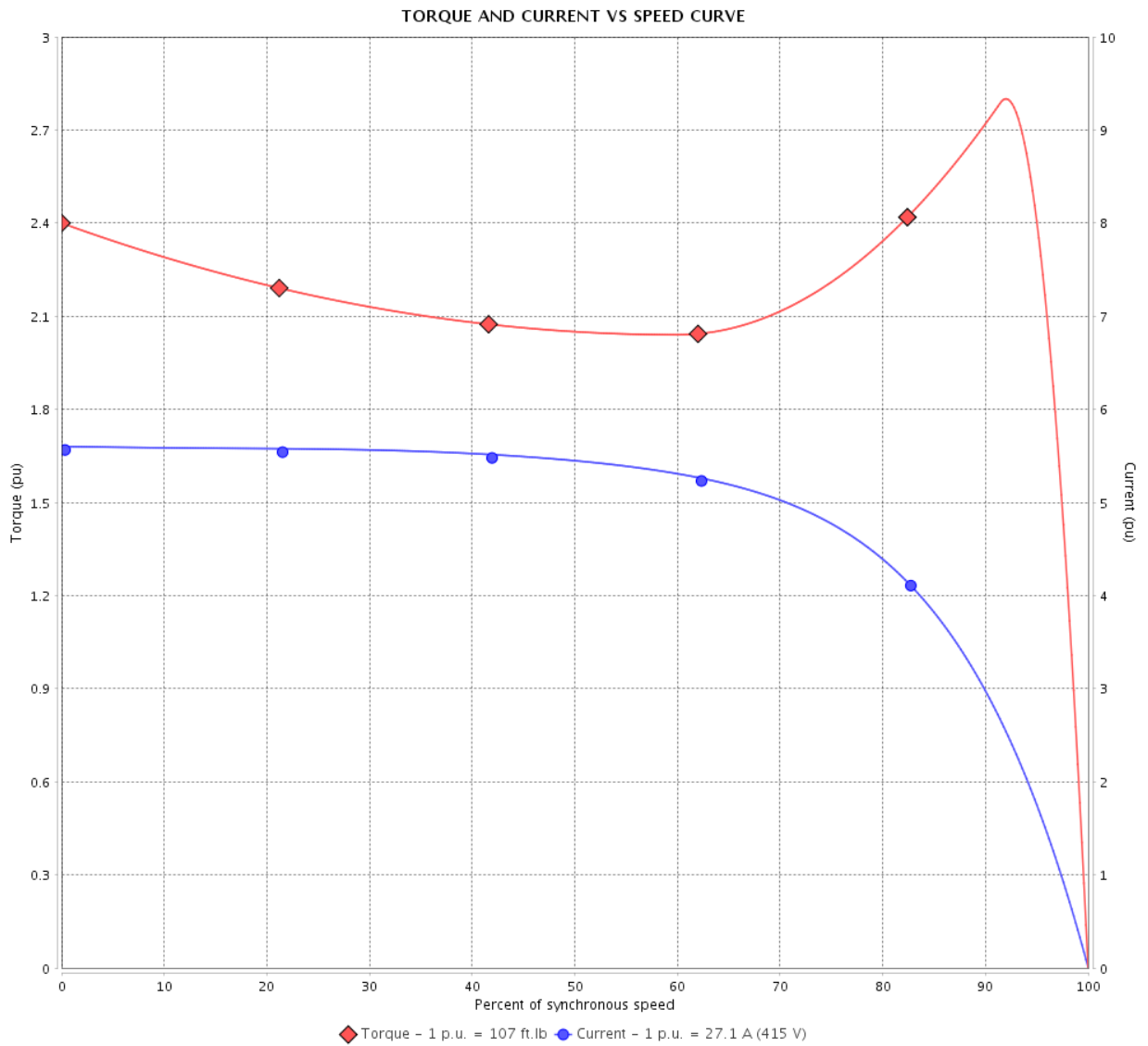
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Rated current	: 27.1 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 5.6	Duty cycle	: Cont.(S1)
Rated torque	: 107 ft.lb	Insulation class	: F
Locked rotor torque	: 240 %	Service factor	: 1.15
Breakdown torque	: 280 %	Temperature rise	: 80 K
Rated speed	: 735 rpm	Design	: B

Locked rotor time : 36s (cold) 20s (hot)

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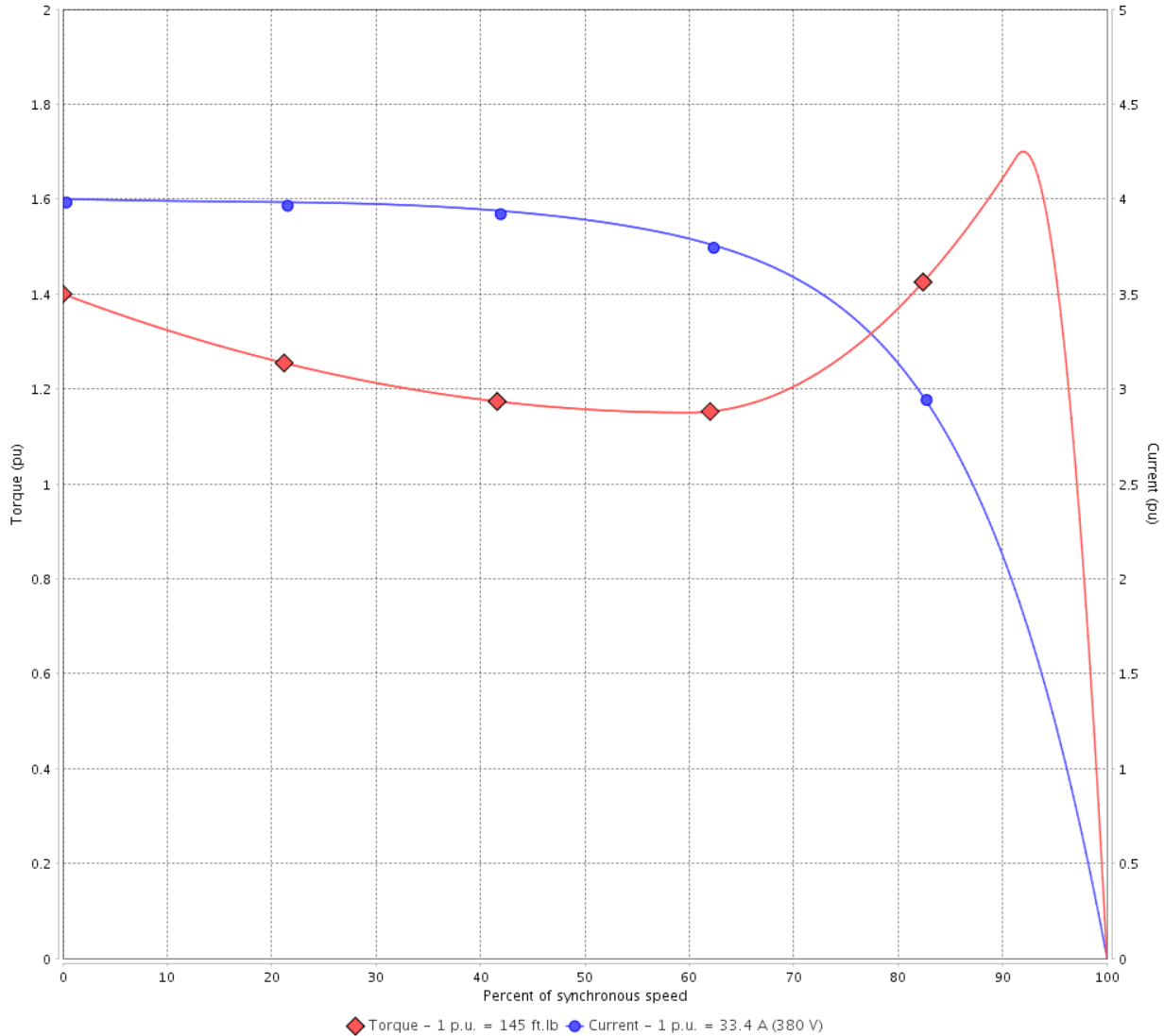
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TORQUE AND CURRENT VS SPEED CURVE



Performance : 380 V 50 Hz 8P IE2

Rated current	: 33.4 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 4.0	Duty cycle	: Cont.(S1)
Rated torque	: 145 ft.lb	Insulation class	: F
Locked rotor torque	: 140 %	Service factor	: 1.00
Breakdown torque	: 170 %	Temperature rise	: 105 K
Rated speed	: 725 rpm	Design	: B

Locked rotor time : 36s (cold) 20s (hot)

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TORQUE AND CURRENT VS SPEED CURVE



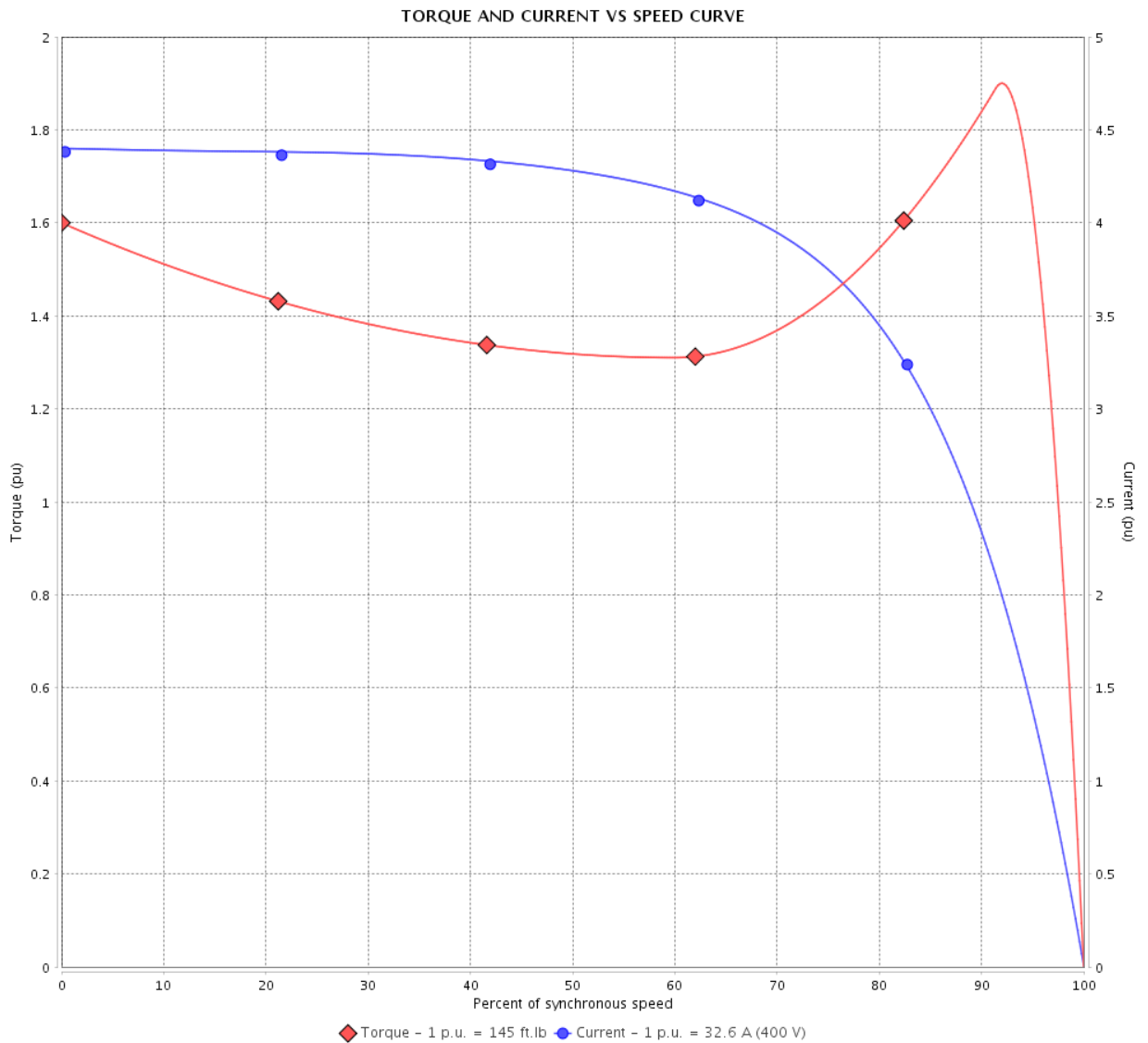
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Rated current	: 32.6 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 4.4	Duty cycle	: Cont.(S1)
Rated torque	: 145 ft.lb	Insulation class	: F
Locked rotor torque	: 160 %	Service factor	: 1.15
Breakdown torque	: 190 %	Temperature rise	: 105 K
Rated speed	: 725 rpm	Design	: B

Locked rotor time : 36s (cold) 20s (hot)

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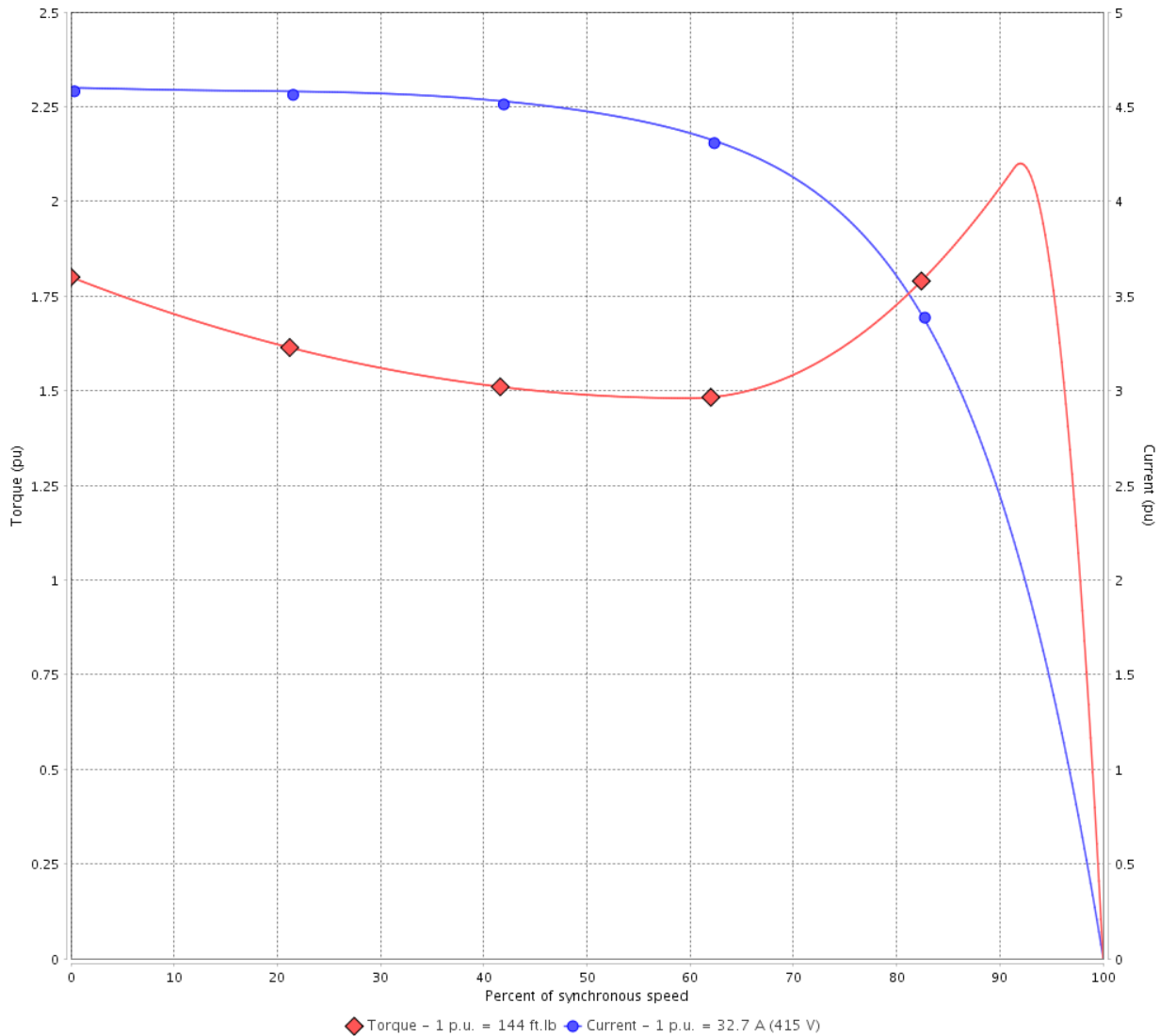
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TORQUE AND CURRENT VS SPEED CURVE



Performance : 415 V 50 Hz 8P IE2

Rated current	: 32.7 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 4.6	Duty cycle	: Cont.(S1)
Rated torque	: 144 ft.lb	Insulation class	: F
Locked rotor torque	: 180 %	Service factor	: 1.15
Breakdown torque	: 210 %	Temperature rise	: 80 K
Rated speed	: 730 rpm	Design	: B

Locked rotor time : 36s (cold) 20s (hot)

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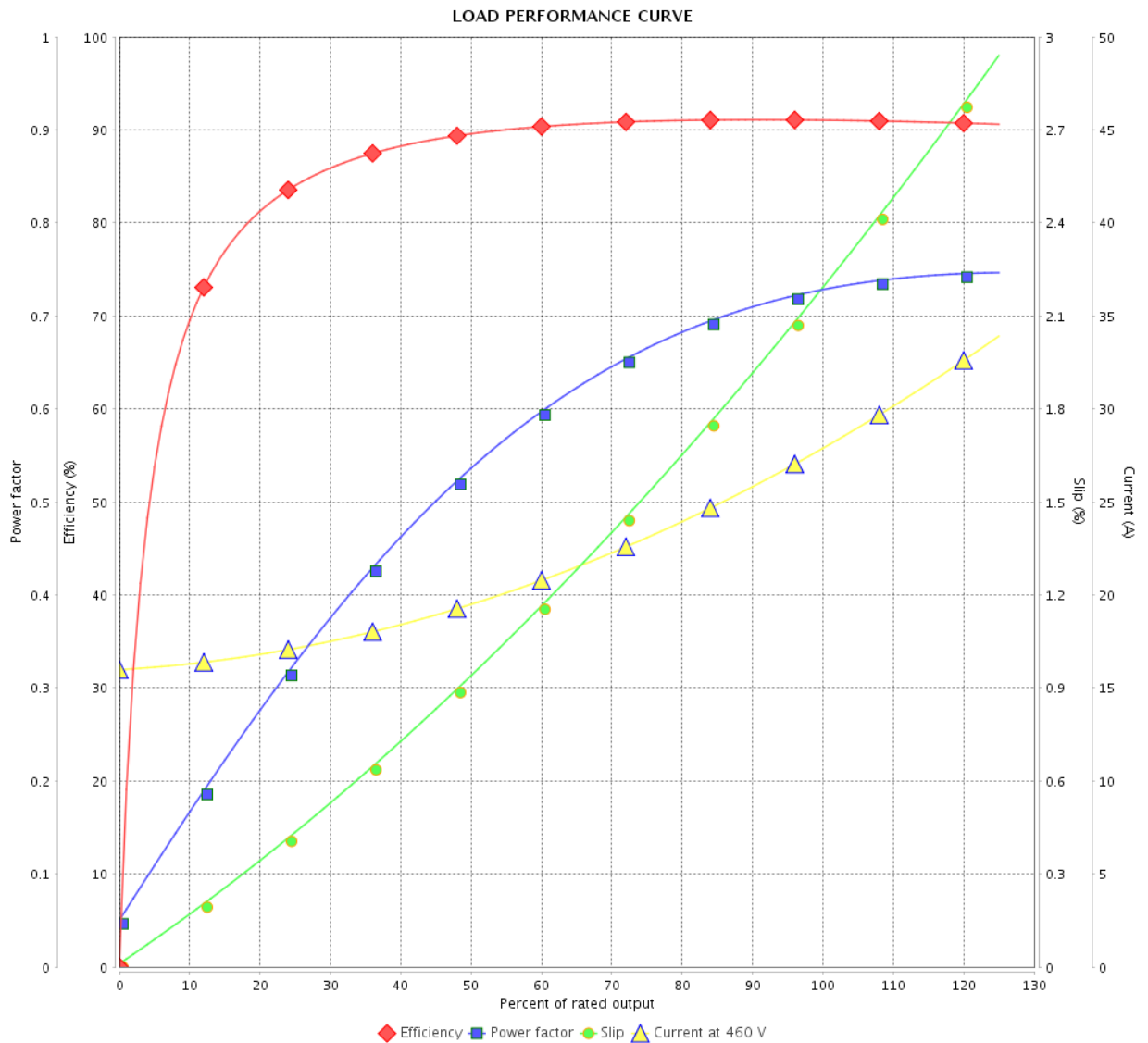


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Rated current : 28.3 A
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 Rated torque : 119 ft.lb
 Locked rotor torque : 190 %
 Breakdown torque : 220 %
 Rated speed : 880 rpm

Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.25
 Temperature rise : 80 K
 Design : B

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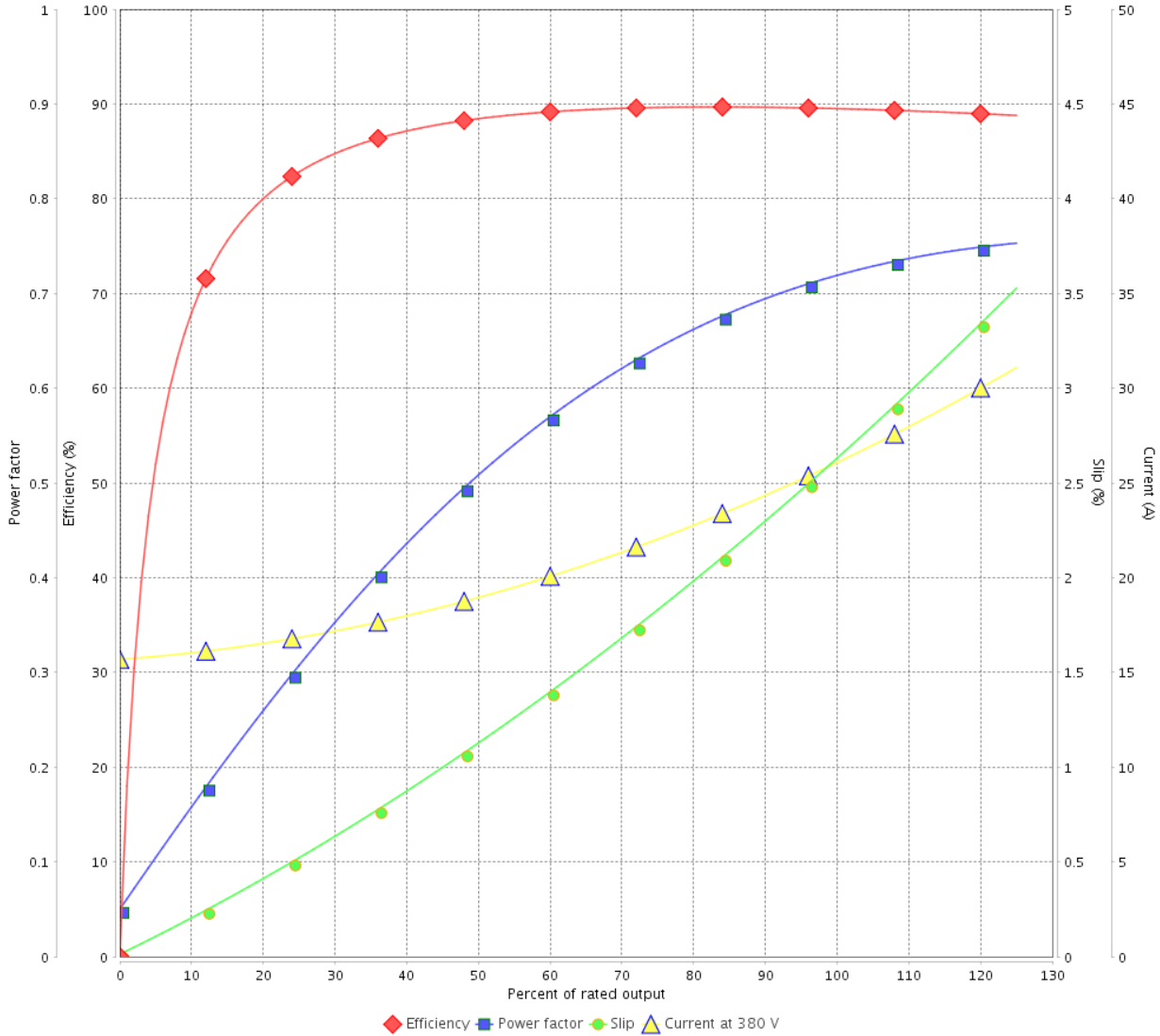
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Performance : 380 V 50 Hz 8P IE3

Rated current : 26.5 A
 LRC : 5.0
 Rated torque : 108 ft.lb
 Locked rotor torque : 190 %
 Breakdown torque : 229 %
 Rated speed : 730 rpm

Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.00
 Temperature rise : 80 K
 Design : B

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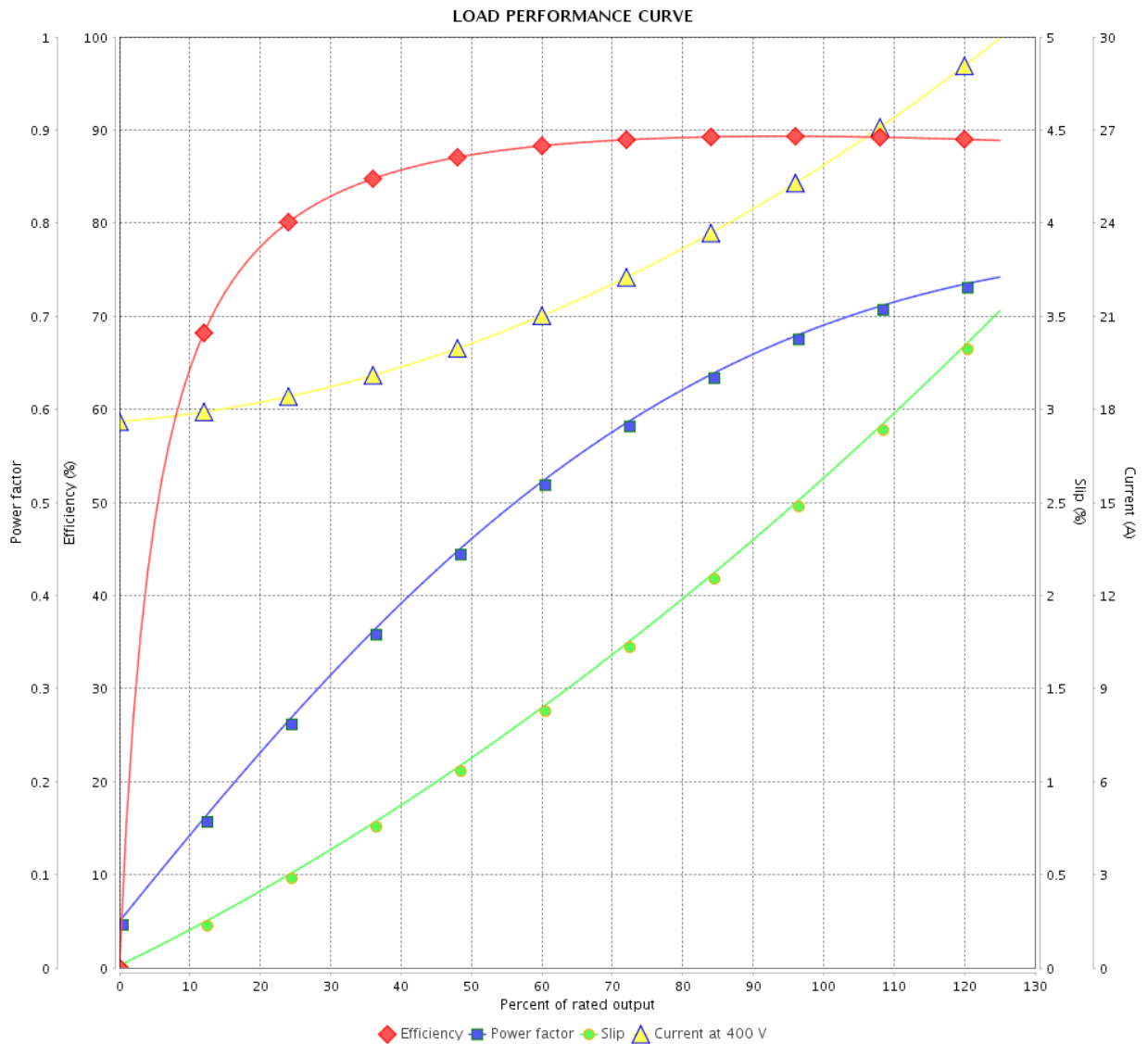


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Performance : 400 V 50 Hz 8P IE3

Rated current : 26.4 A
 LRC : 5.4
 Rated torque : 108 ft.lb
 Locked rotor torque : 210 %
 Breakdown torque : 260 %
 Rated speed : 730 rpm

Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : B

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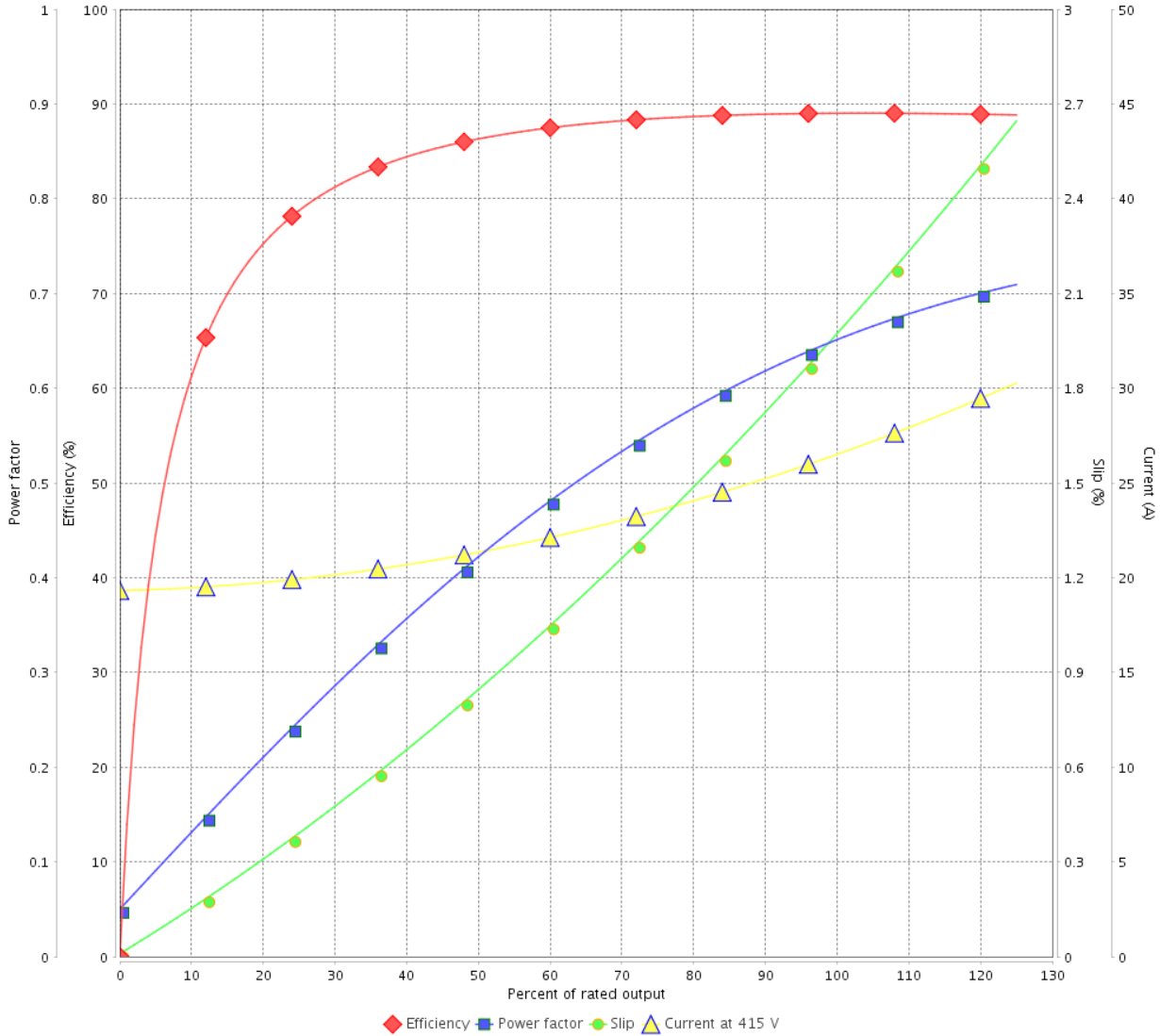
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Performance : 415 V 50 Hz 8P IE3

Rated current : 27.1 A
 LRC : 5.6
 Rated torque : 107 ft.lb
 Locked rotor torque : 240 %
 Breakdown torque : 280 %
 Rated speed : 735 rpm

Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : B

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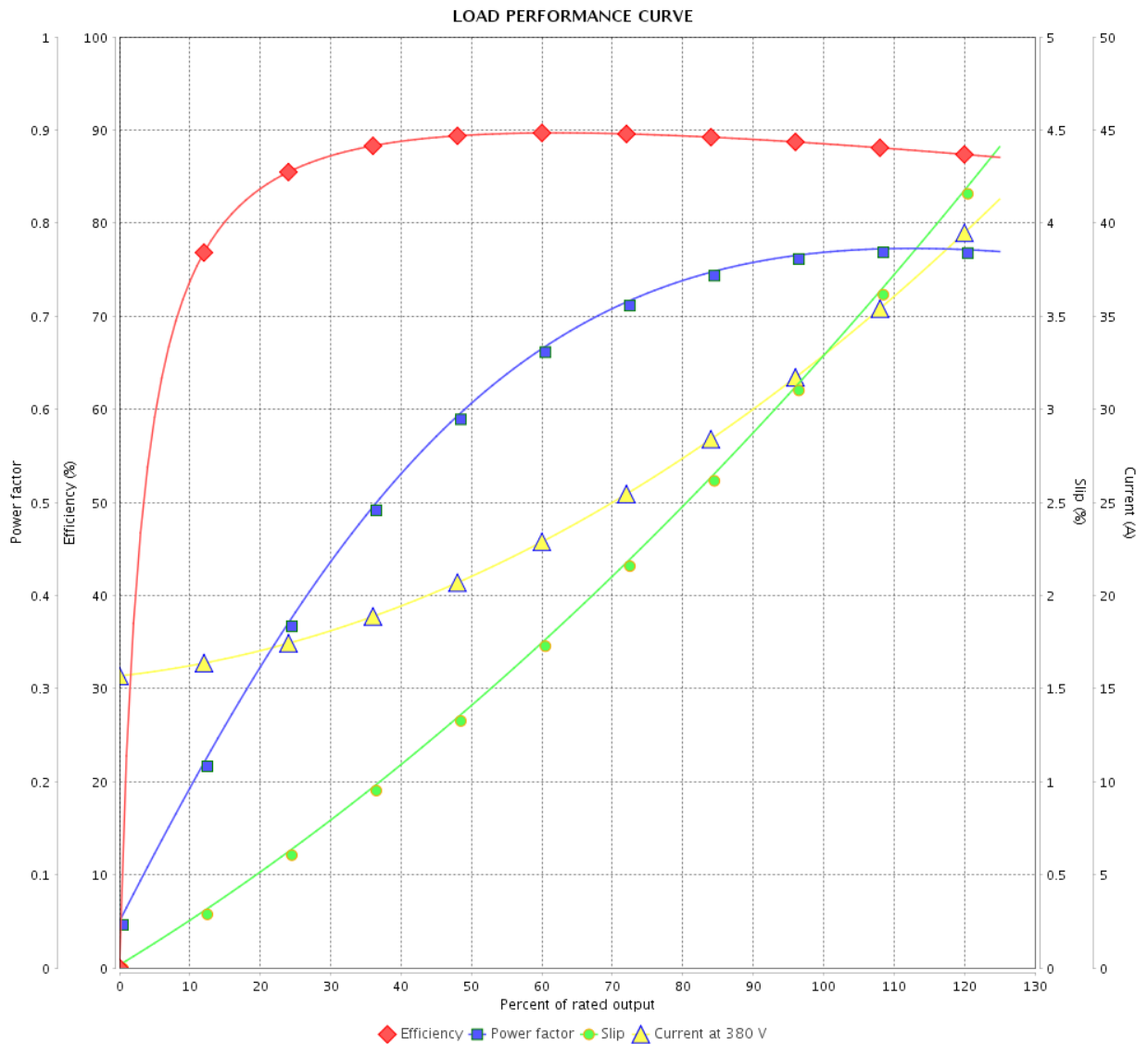


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Performance : 380 V 50 Hz 8P IE2

Rated current : 33.4 A
 LRC : 4.0
 Rated torque : 145 ft.lb
 Locked rotor torque : 140 %
 Breakdown torque : 170 %
 Rated speed : 725 rpm

Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.00
 Temperature rise : 105 K
 Design : B

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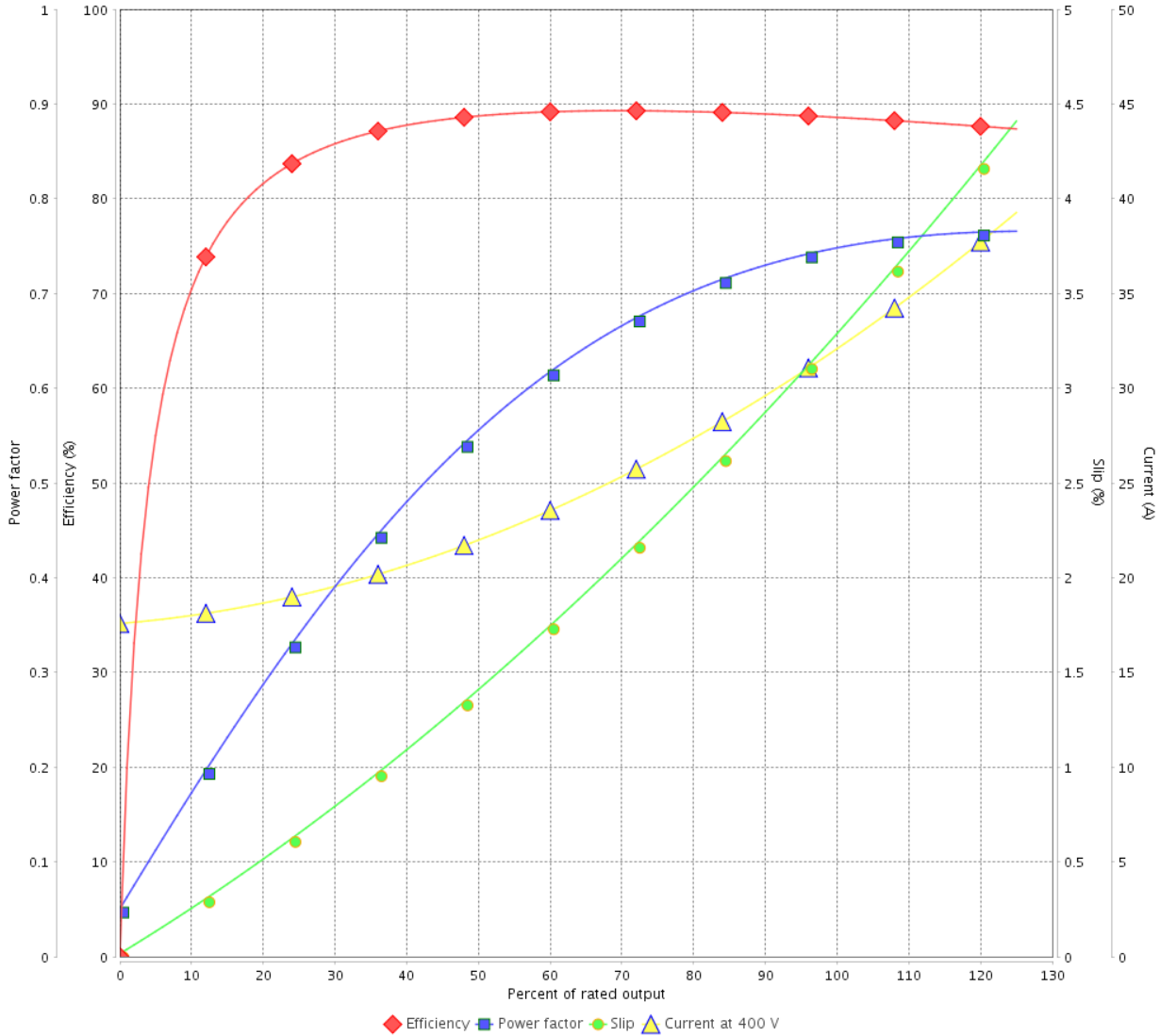
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Performance : 400 V 50 Hz 8P IE2

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 Breakdown torque : 190 %
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Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 105 K
 Design : B

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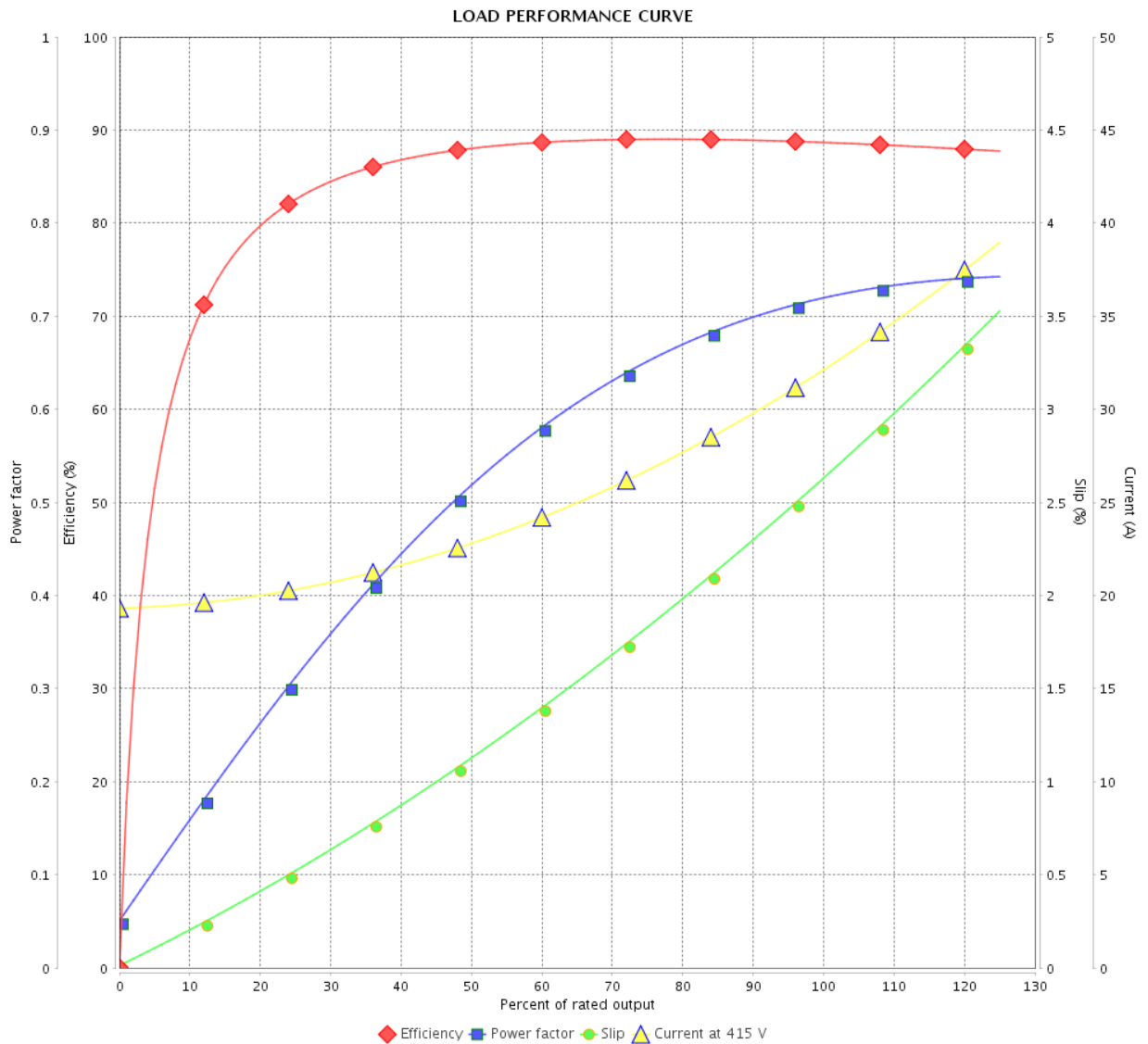


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Rated current	: 28.3 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 5.0	Duty cycle	: Cont.(S1)
Rated torque	: 119 ft.lb	Insulation class	: F
Locked rotor torque	: 190 %	Service factor	: 1.25
Breakdown torque	: 220 %	Temperature rise	: 80 K
Rated speed	: 880 rpm	Design	: B

Heating constant

Cooling constant

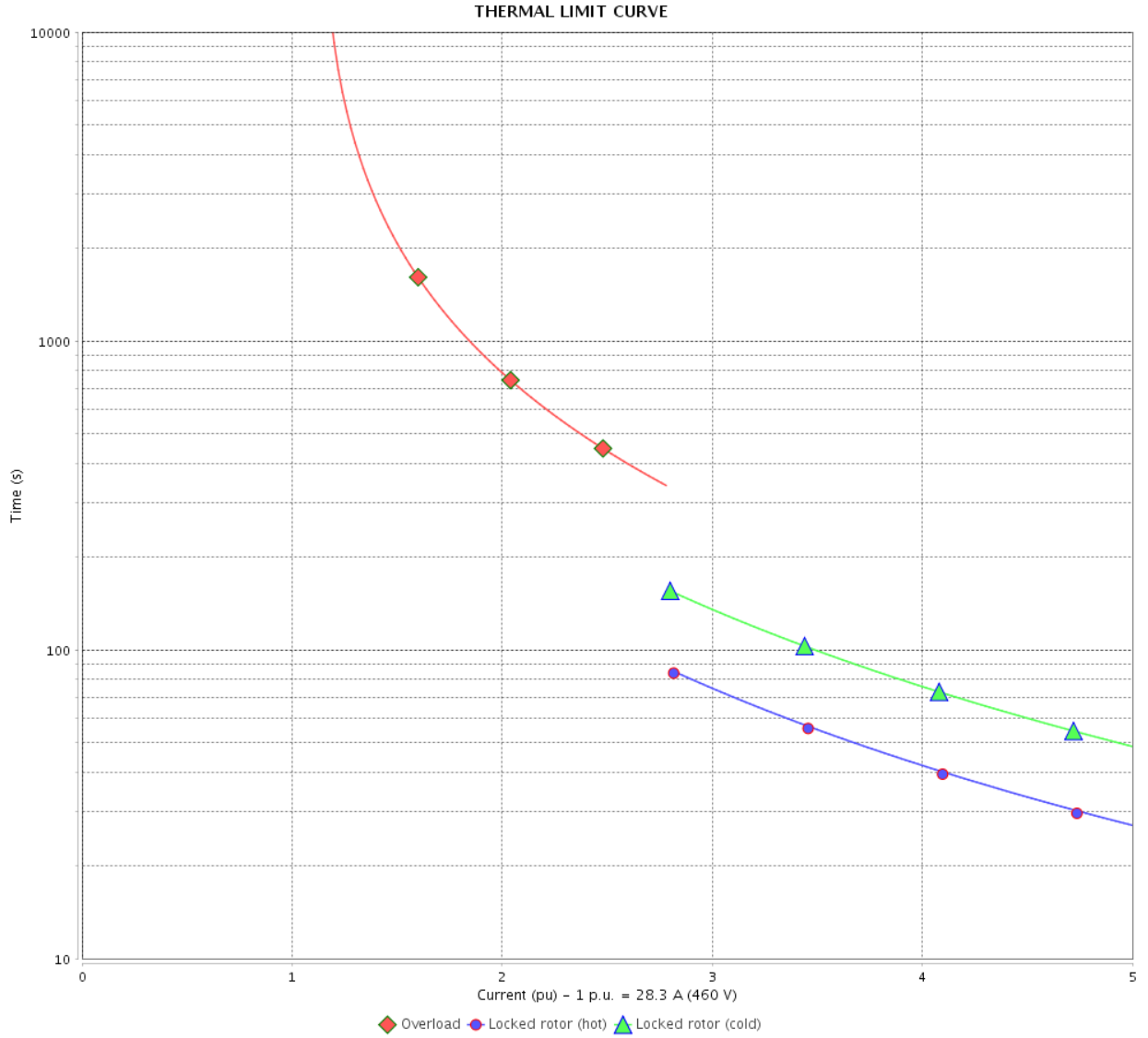
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Rated current	: 26.5 A	Moment of inertia (J)	: 9.37 sq.ft.lb
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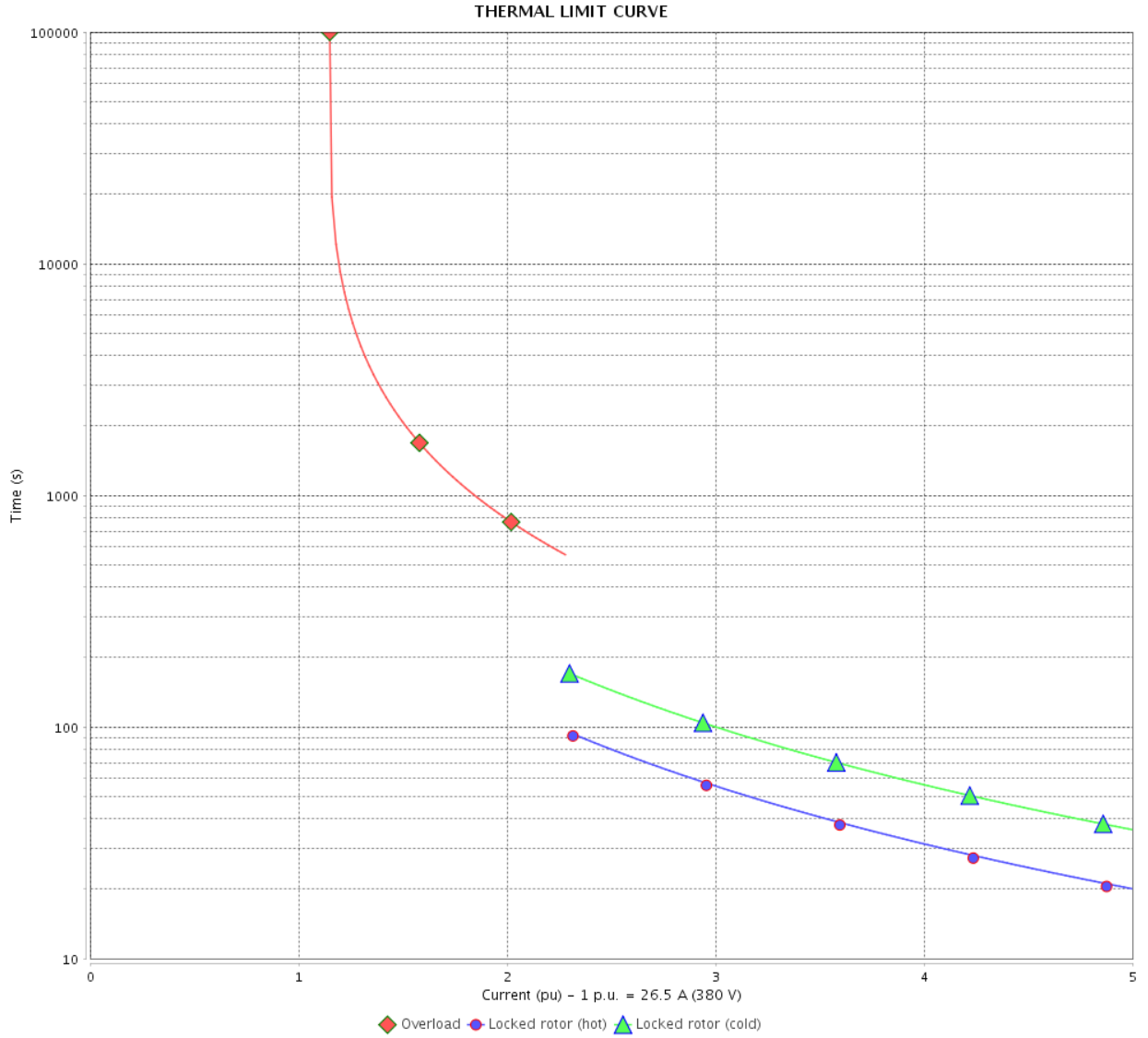
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Performance : 400 V 50 Hz 8P IE3

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LRC	: 5.4	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 210 %	Service factor	: 1.15
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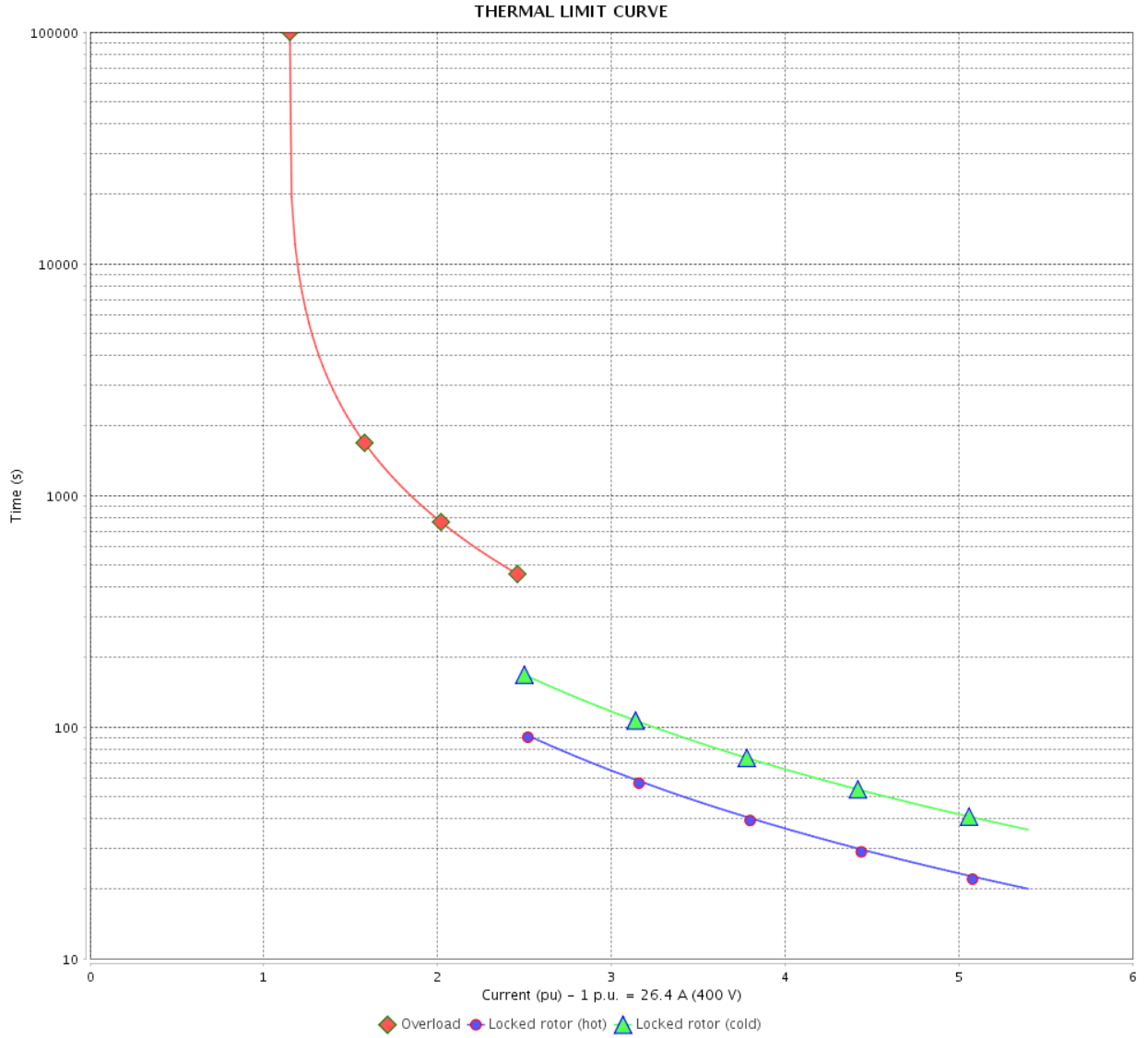
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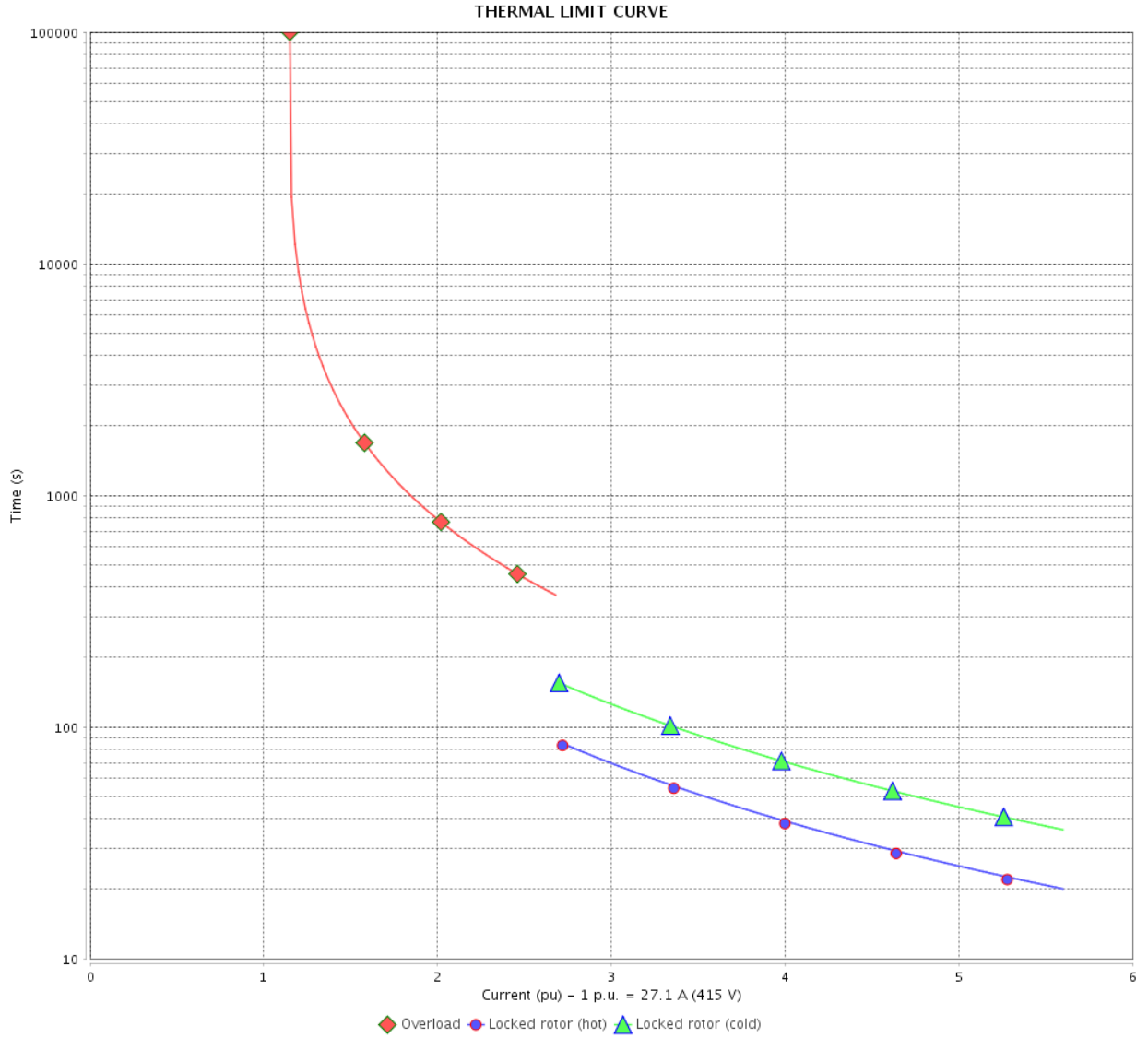
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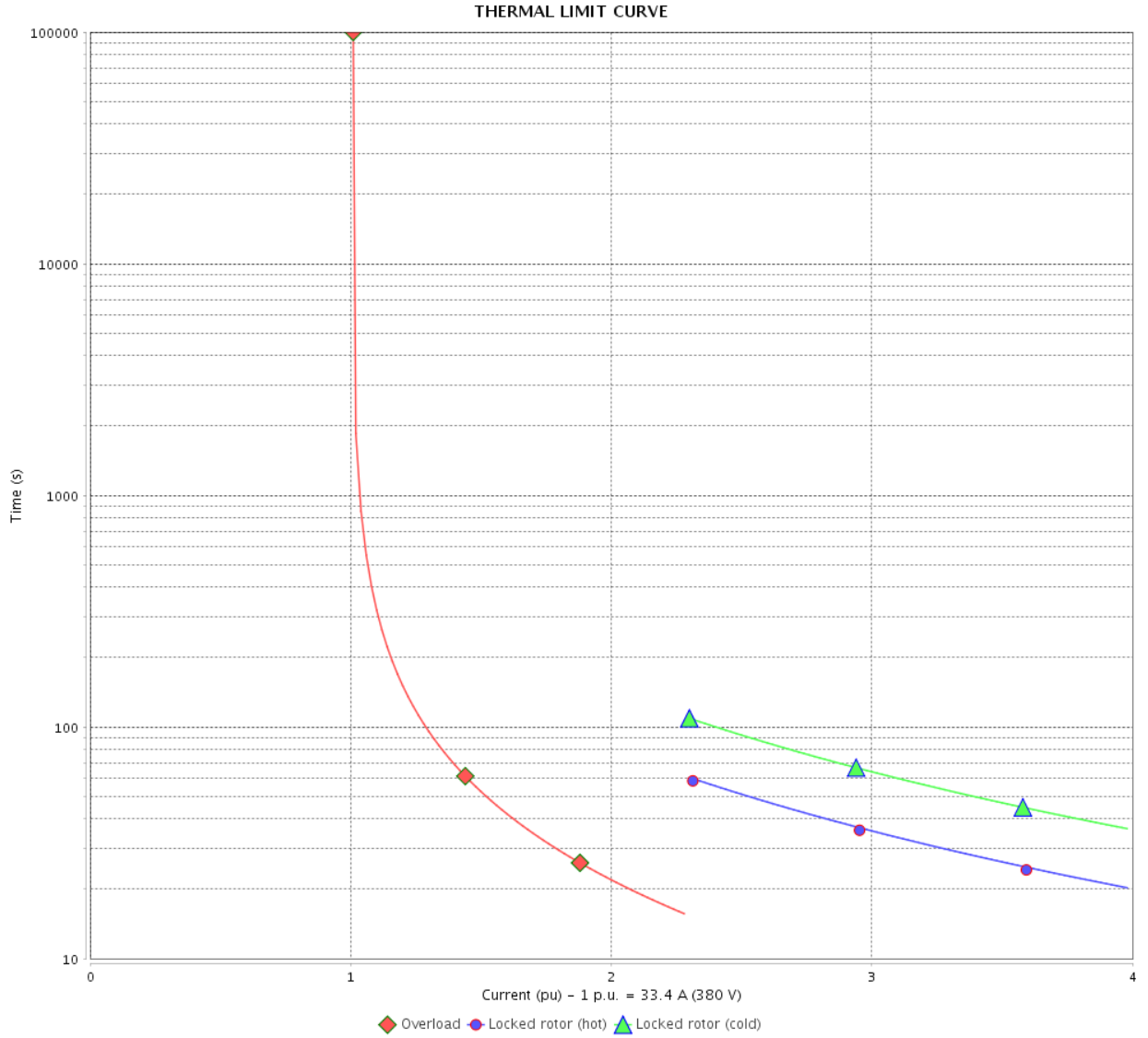
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Heating constant

Cooling constant

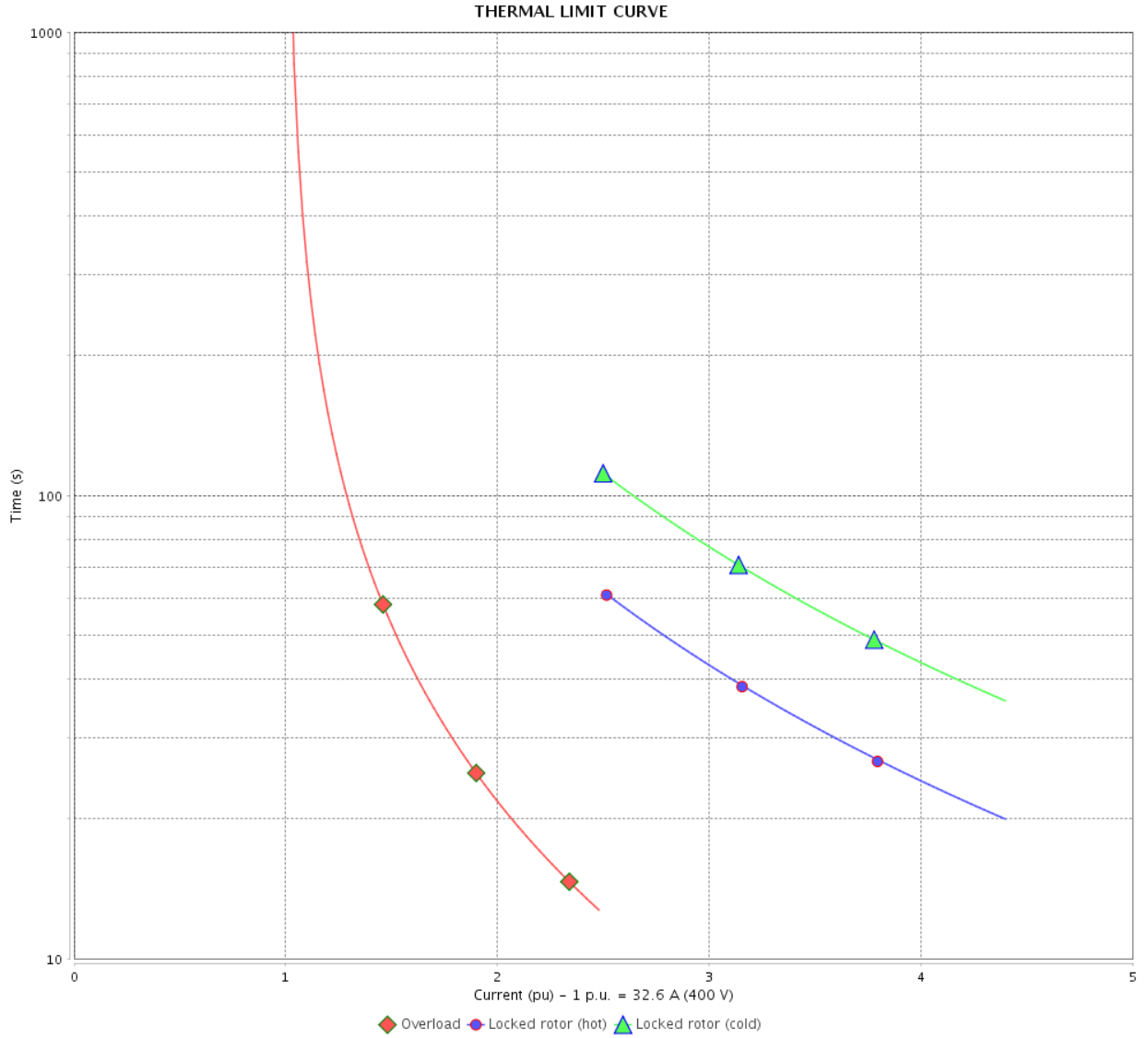
Rev.	Changes Summary	Performed	Checked	Date
Performed by				
Checked by			Page	Revision
Date	14/04/2022		26 / 36	

THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage



Customer : _____



Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		27 / 36		
Date		14/04/2022		

THERMAL LIMIT CURVE



Three Phase Induction Motor - Squirrel Cage

Customer :

Product line : NEMA Premium Efficiency Three-Phase
Product code : 12447724
Catalog # : 02009ST3QIE324T-W22

Performance : 415 V 50 Hz 8P IE2

Rated current	: 32.7 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 4.6	Duty cycle	: Cont.(S1)
Rated torque	: 144 ft.lb	Insulation class	: F
Locked rotor torque	: 180 %	Service factor	: 1.15
Breakdown torque	: 210 %	Temperature rise	: 80 K
Rated speed	: 730 rpm	Design	: B

Heating constant

Cooling constant

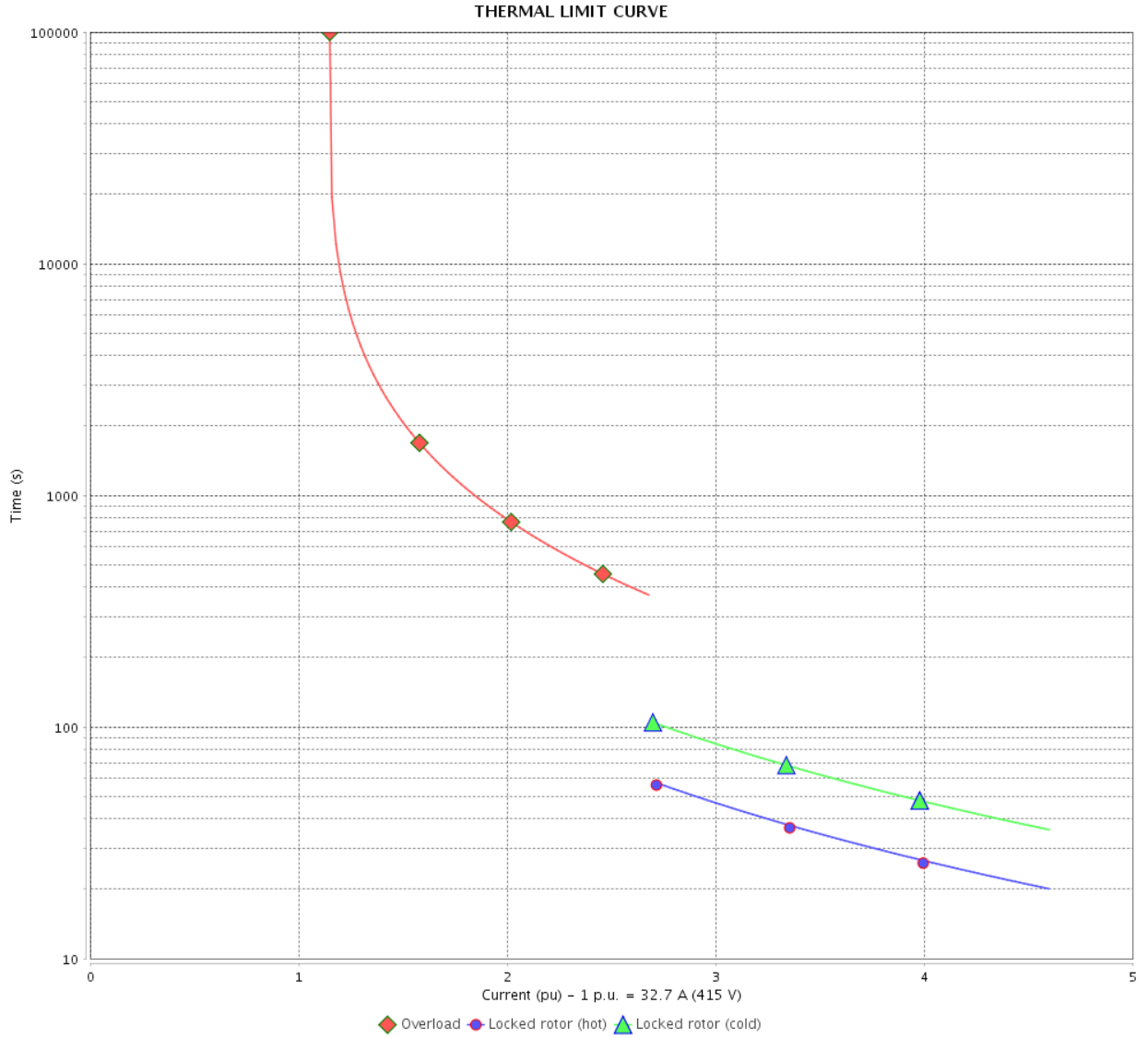
Rev.	Changes Summary	Performed	Checked	Date
Performed by				
Checked by			Page	Revision
Date	14/04/2022		28 / 36	

THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage



Customer : _____



Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		29 / 36		
Date		14/04/2022		

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

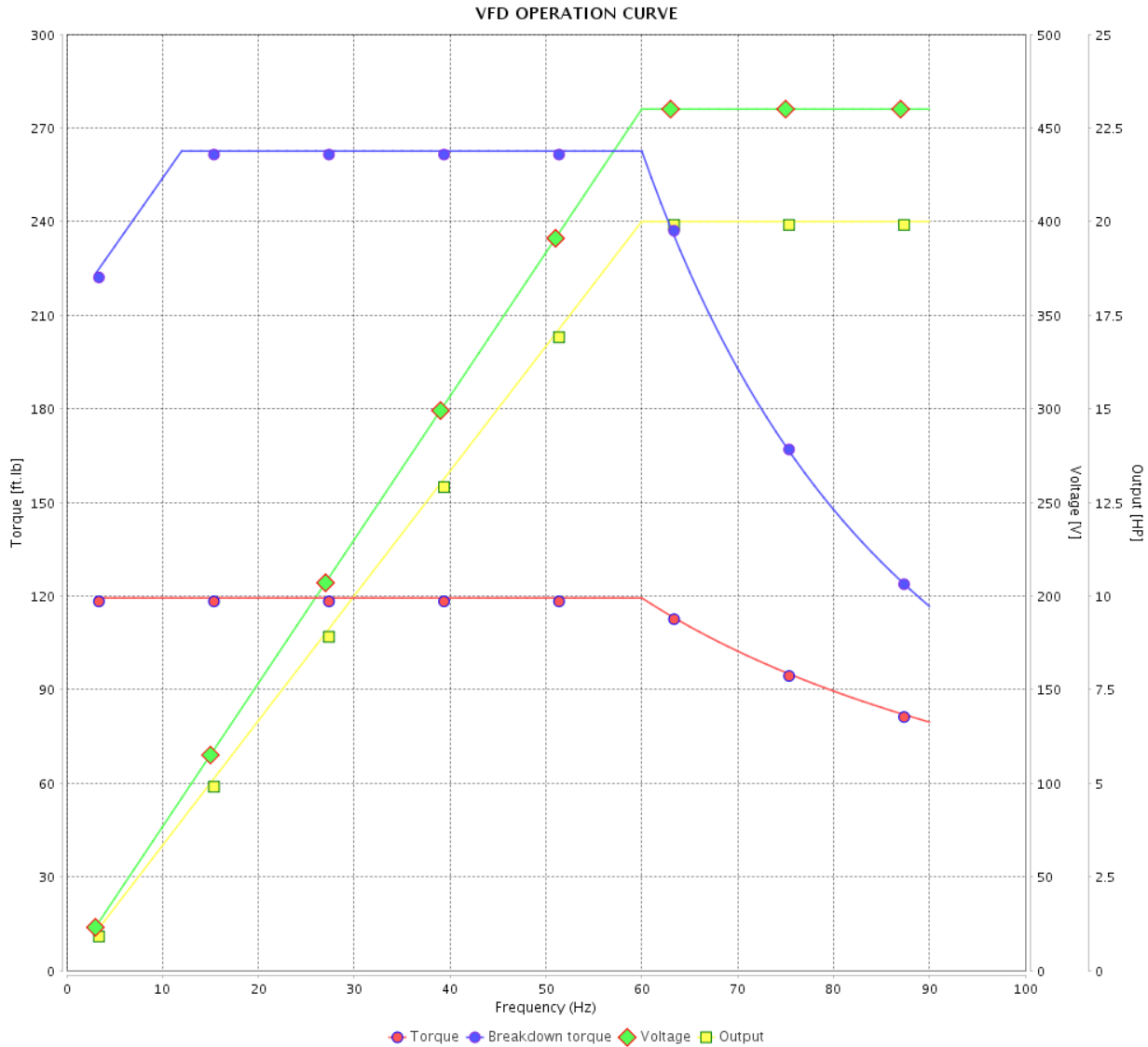


Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 12447724

Catalog # : 02009ST3QIE324T-W22



Performance : 460 V 60 Hz 8P

Rated current : 28.3 A
 LRC : 5.0
 Rated torque : 119 ft.lb
 Locked rotor torque : 190 %
 Breakdown torque : 220 %
 Rated speed : 880 rpm

Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.25
 Temperature rise : 80 K
 Design : B

Rev.	Changes Summary	Performed	Checked	Date
Performed by			Page 30 / 36	Revision
Checked by				
Date	14/04/2022			

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

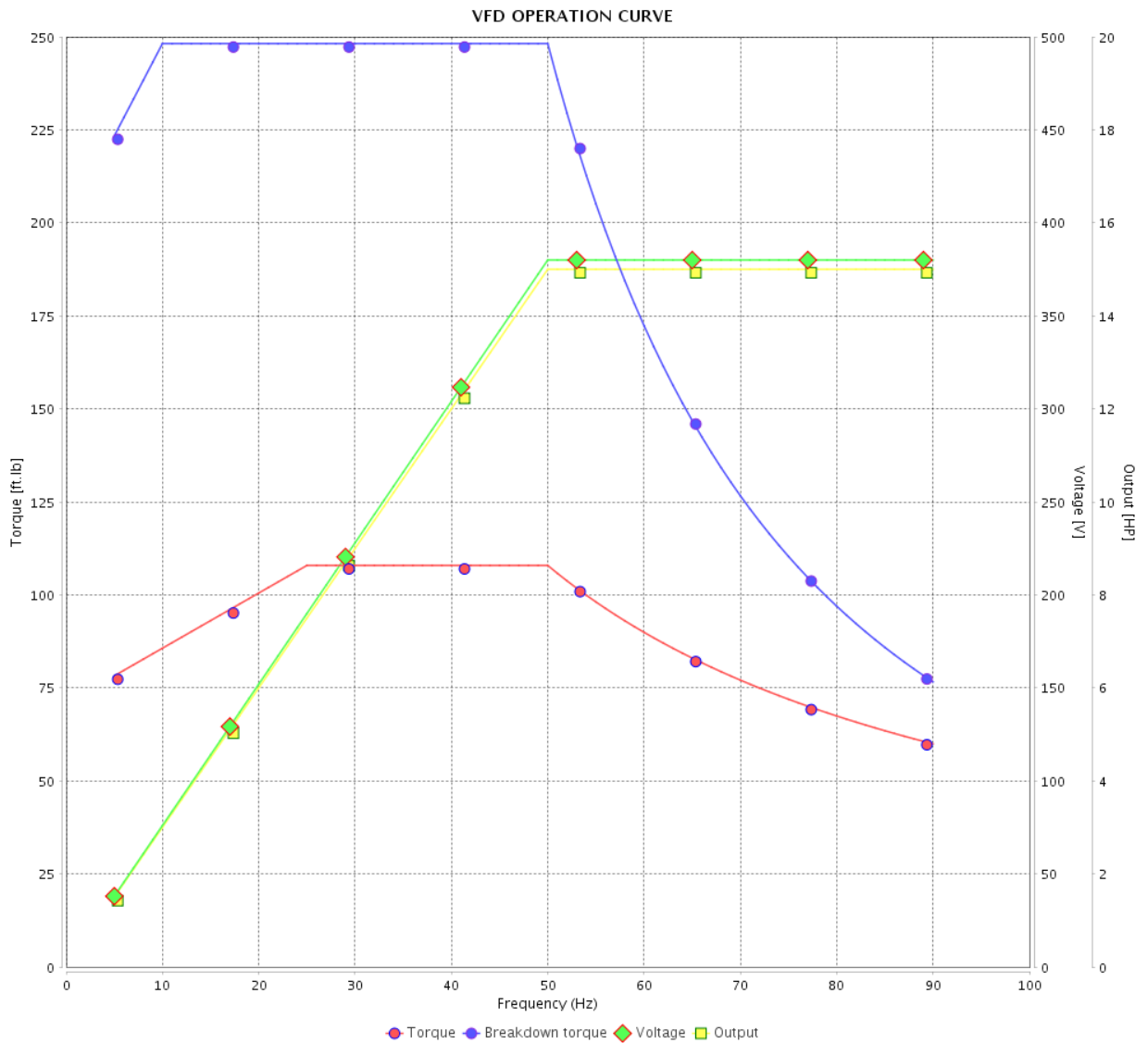


Customer : _____

Product line : NEMA Premium Efficiency Three-Phase

Product code : 12447724

Catalog # : 02009ST3QIE324T-W22



Performance : 380 V 50 Hz 8P IE3

Rated current : 26.5 A
 LRC : 5.0
 Rated torque : 108 ft.lb
 Locked rotor torque : 190 %
 Breakdown torque : 229 %
 Rated speed : 730 rpm

Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.00
 Temperature rise : 80 K
 Design : B

Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		31 / 36		
Date	14/04/2022			

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

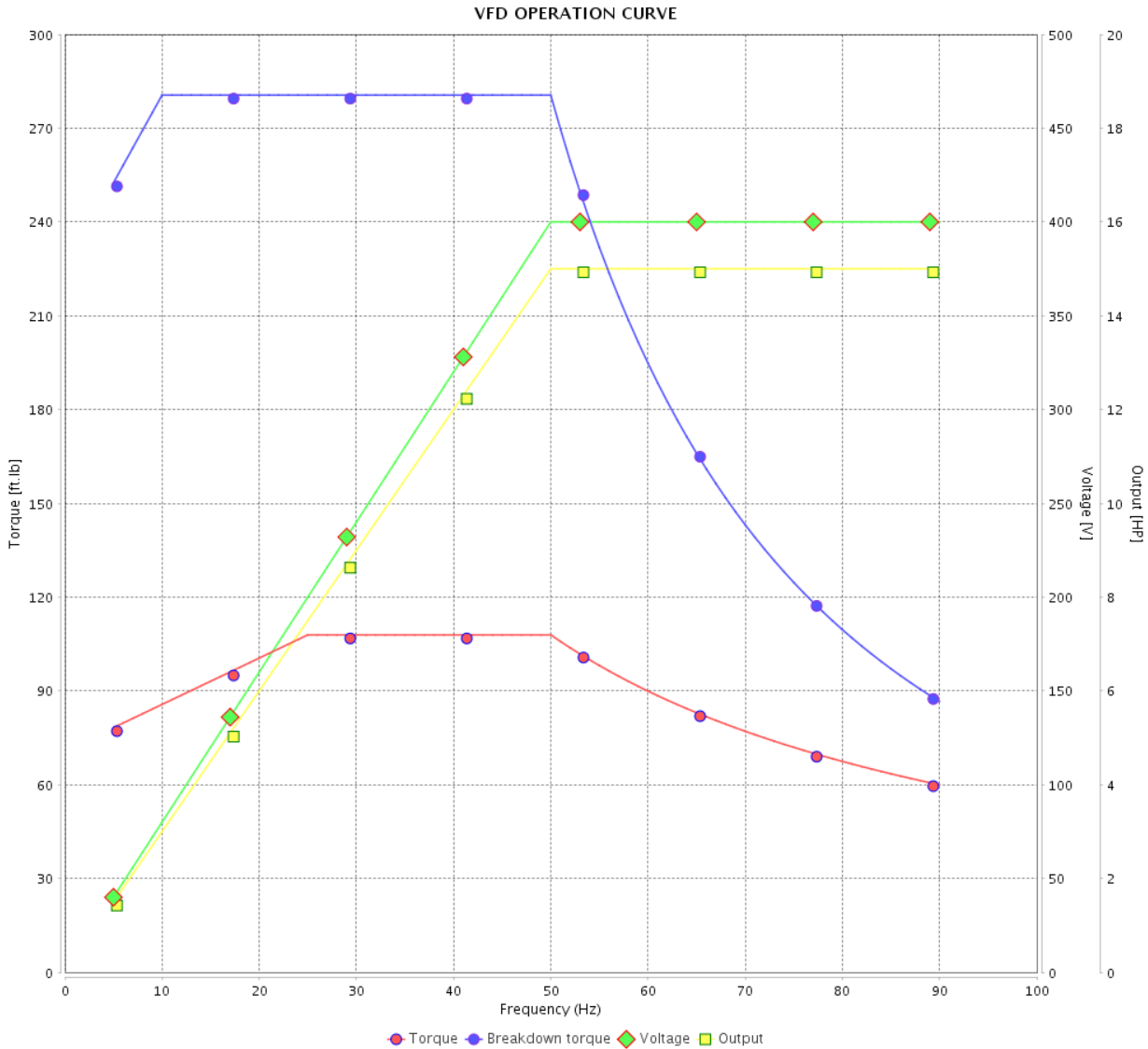


Customer : _____

Product line : NEMA Premium Efficiency Three-Phase

Product code : 12447724

Catalog # : 02009ST3QIE324T-W22



Performance : 400 V 50 Hz 8P IE3

Rated current	: 26.4 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 5.4	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 210 %	Service factor	: 1.15
Breakdown torque	: 260 %	Temperature rise	: 80 K
Rated speed	: 730 rpm	Design	: B

Rev.	Changes Summary	Performed	Checked	Date
Performed by			Page 32 / 36	Revision
Checked by				
Date	14/04/2022			

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

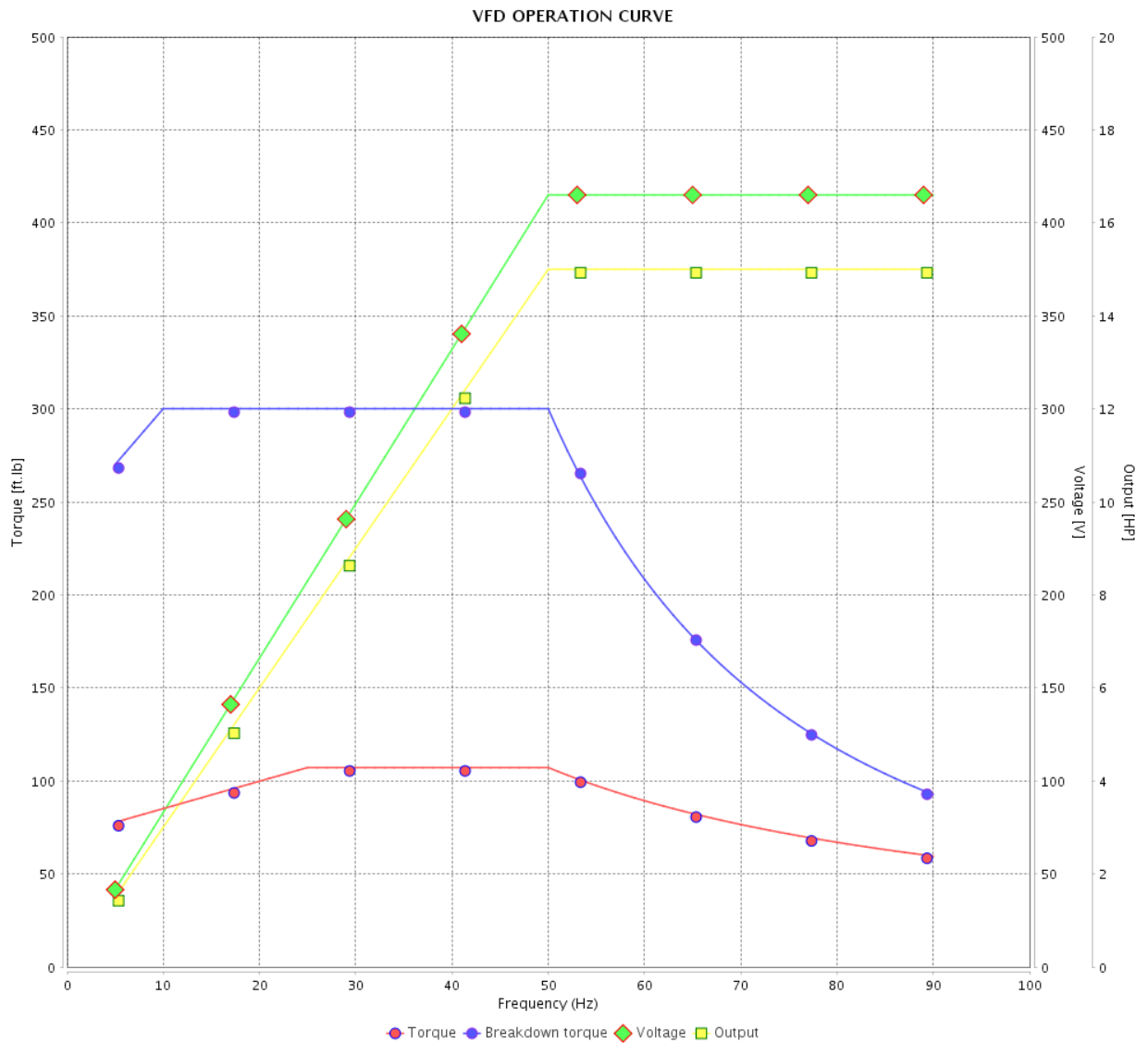


Customer : _____

Product line : NEMA Premium Efficiency Three-Phase

Product code : 12447724

Catalog # : 02009ST3QIE324T-W22



Performance : 415 V 50 Hz 8P IE3

Rated current : 27.1 A
 LRC : 5.6
 Rated torque : 107 ft.lb
 Locked rotor torque : 240 %
 Breakdown torque : 280 %
 Rated speed : 735 rpm

Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : B

Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		33 / 36		
Date		14/04/2022		

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

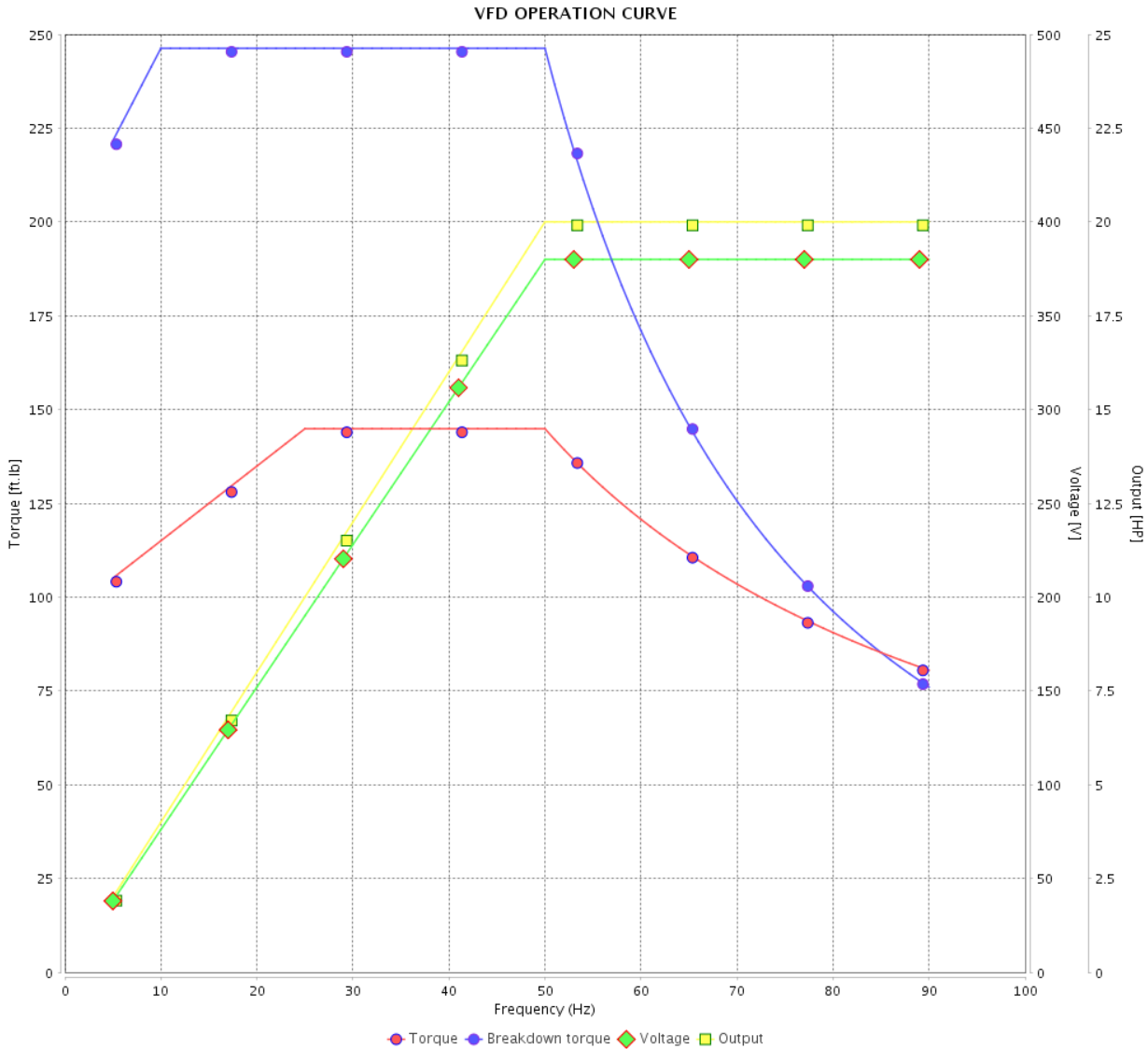


Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 12447724

Catalog # : 02009ST3QIE324T-W22



Performance : 380 V 50 Hz 8P IE2

Rated current	: 33.4 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 4.0	Duty cycle	: Cont.(S1)
Rated torque	: 145 ft.lb	Insulation class	: F
Locked rotor torque	: 140 %	Service factor	: 1.00
Breakdown torque	: 170 %	Temperature rise	: 105 K
Rated speed	: 725 rpm	Design	: B

Rev.	Changes Summary	Performed	Checked	Date
Performed by			Page 34 / 36	Revision
Checked by				
Date	14/04/2022			

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

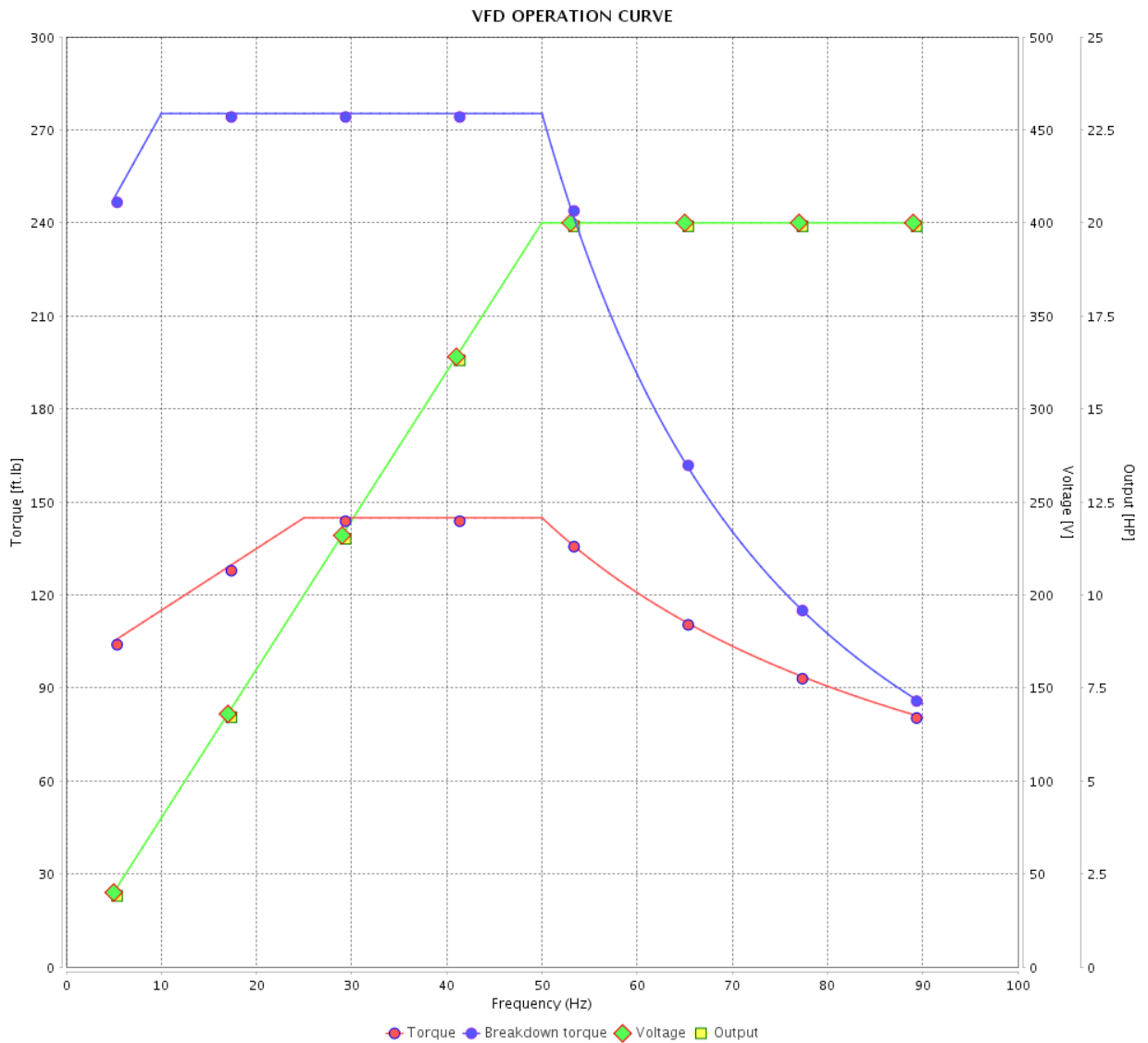


Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 12447724

Catalog # : 02009ST3QIE324T-W22



Performance : 400 V 50 Hz 8P IE2

Rated current : 32.6 A
 LRC : 4.4
 Rated torque : 145 ft.lb
 Locked rotor torque : 160 %
 Breakdown torque : 190 %
 Rated speed : 725 rpm

Moment of inertia (J) : 9.37 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 105 K
 Design : B

Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		35 / 36		
Date		14/04/2022		

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

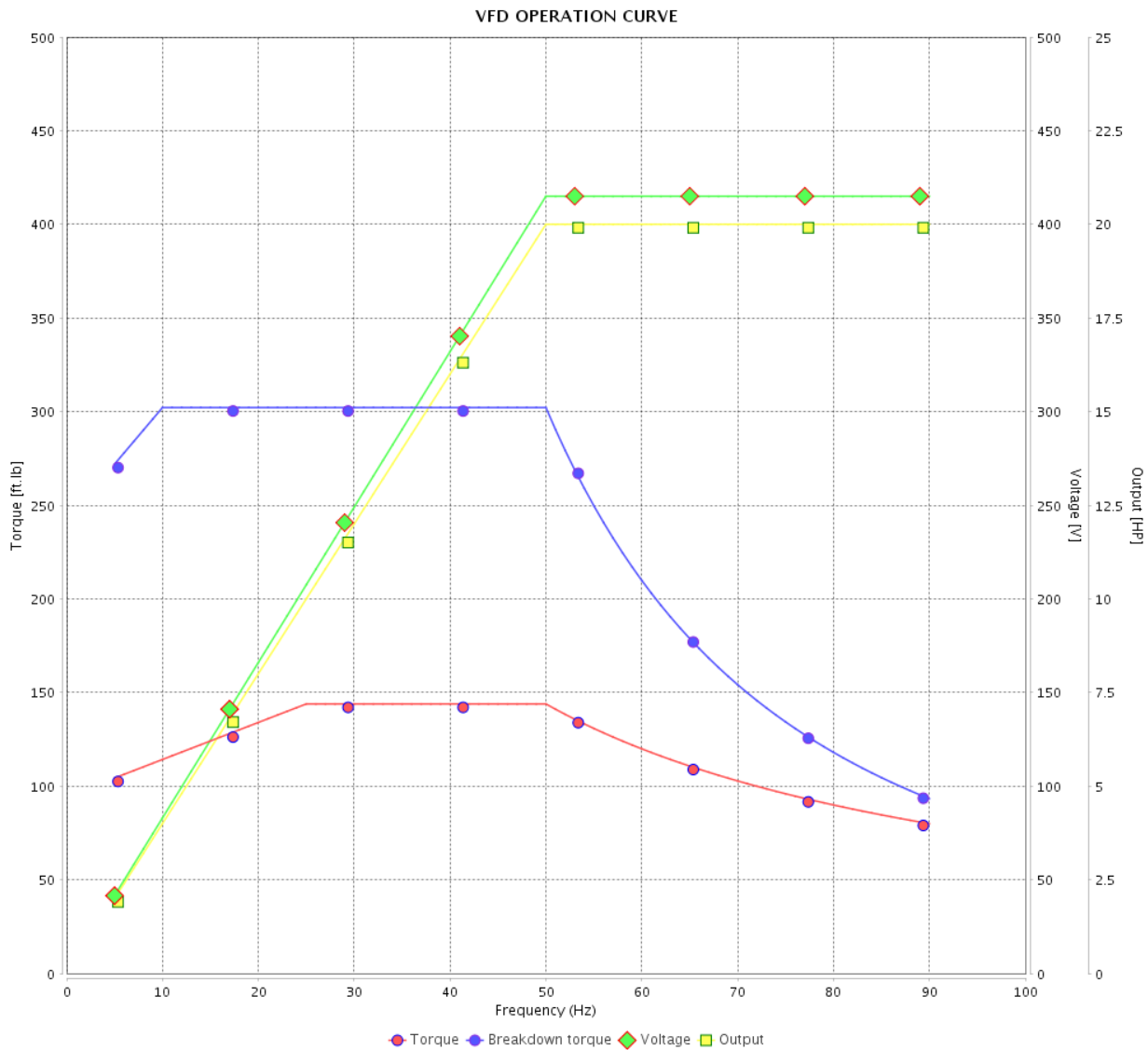


Customer :

Product line : NEMA Premium Efficiency Three-Phase

Product code : 12447724

Catalog # : 02009ST3QIE324T-W22



Performance : 415 V 50 Hz 8P IE2

Rated current	: 32.7 A	Moment of inertia (J)	: 9.37 sq.ft.lb
LRC	: 4.6	Duty cycle	: Cont.(S1)
Rated torque	: 144 ft.lb	Insulation class	: F
Locked rotor torque	: 180 %	Service factor	: 1.15
Breakdown torque	: 210 %	Temperature rise	: 80 K
Rated speed	: 730 rpm	Design	: B

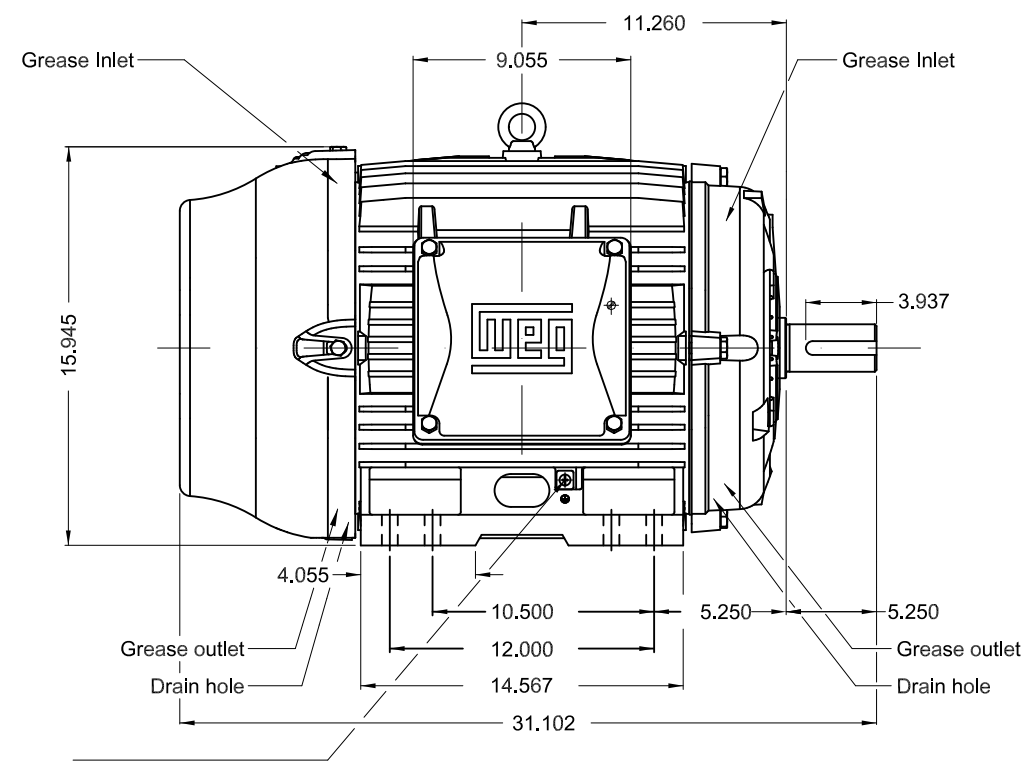
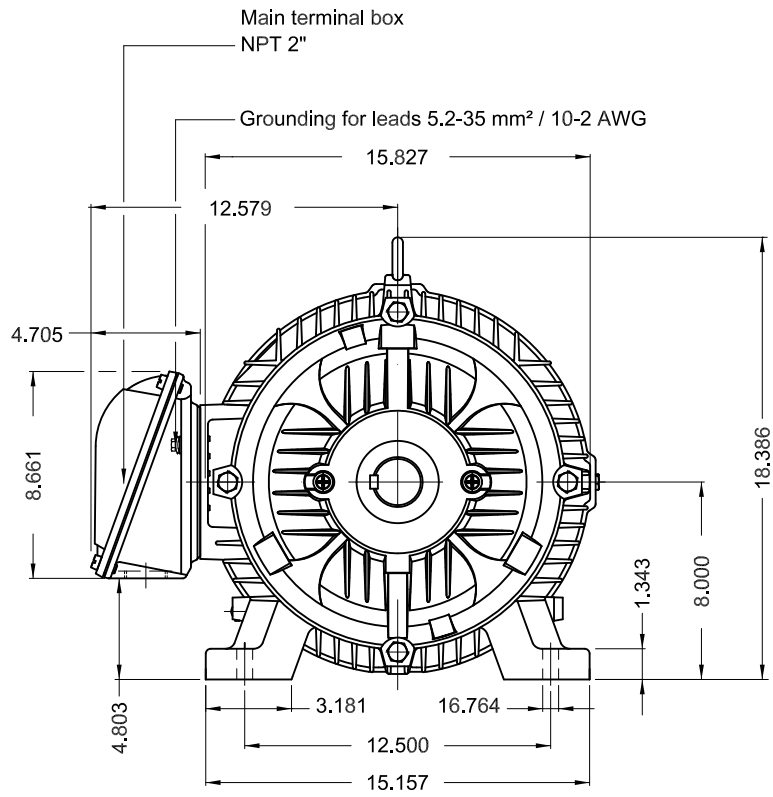
Rev.	Changes Summary	Performed	Checked	Date
Performed by			Page 36 / 36	Revision
Checked by				
Date	14/04/2022			

1 2 3 4 5 6

A

B

C

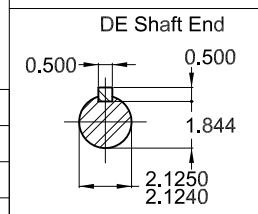


Grounding for leads 5.2-35 mm² / 10-2 AWG

D

E

Without vertical jackscrews
 Color RAL 5009
 Painting plan 202E
 Mounting B3R(D)



20 HP 08 Poles 60 Hz A

ECM	LOC	SUMMARY OF MODIFICATIONS	EXECUTED	CHECKED	RELEASED	DATE	VER
EXECUTED	PIRWBUSER	THREE PH. MOTOR IEEE 841 W22 PREM. EFF.					
CHECKED		FRAME 324/6T IP55 TEFC					
RELEASED							
REL DT.	WMO	Jaragua do Sul	Product Engineering				

PREVIEW
 WDD



SHEET 1 / 1

Dimensions in inches

XME A3



NEMA
Premium
W22



FOR SAFE AREA
Mod.TE1BFOXON
CC029A



Class I, Div 2, Gr A, B, C and D - T3
Class I, Zone 2, IIC - T3
Class II, Div 2, Gr F and G - T4
For use on PWM: Gr. A, B, C, D and F,
VT 1000:1, CT 20:1, 1.00SF - T3A

MODEL 02009ST3QIE324T-W22



Inverter Duty Motor
Severe Duty

MADE IN BRAZIL
12447724

PH3 60Hz Fr. 324/6T 1000m.a.s.l. IP55 TEFC 517lb

V 460

A 28.3

HP 20

kW 15

SF 1.25

SFA 35.4

RPM 880

PF 0.73

AMB 40°C

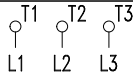
INS cl. F DT80K

NEMA NOM EFF 91.0%

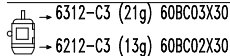
DUTY CONT.

DES B Code G

GUARANT. EFF 89.5%



460V



MOBIL POLYREX EM (20000h)

