DATA SHEET

Three Phase Induction Motor - Squirrel Cage

Customer	:

Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22

Frame	: 284/6T	Cooling method	: IC411 - TEFC
Insulation class	: F	Mounting	: F-1
Duty cycle	: Cont.(S1)	Rotation¹	: Both (CW and CCW)
Ambient temperature	: -20°C to +40°C	Starting method	: Direct On Line
Altitude	: 1000 m.a.s.l.	Approx. weight³	: 438 lb
Protection degree	: IP55	Moment of inertia (J)	: 9.16 sq.ft.lb
Design	: B		

Output [HP]		20	15	15	15	20	20	20
Poles		6	6	6	6	6	6	6
Frequency [Hz]		60	50	50	50	50	50	50
Rated voltage [V]		230/460	380	400	415	380	400	415
Rated current [A]		48.4/24.2	22.0	21.2	20.8	29.9	28.1	27.2
L. R. Amperes [A]		300/150	147	155	156	141	149	158
LRC [A]		6.2x(Code G)	6.7x(Code H)	7.3x(Code J)	7.5x(Code J)	4.7x(Code E)	5.3x(Code F)	5.8x(Code G)
No load current [A]		19.0/9.50	9.40	10.0	10.6	9.40	10.0	10.6
Rated speed [RPM]		1175	980	982	983	965	970	975
Slip [%]		2.08	2.00	1.80	1.70	3.50	3.00	2.50
Rated torque [ft.lb]		89.4	80.4	80.2	80.1	109	108	108
Locked rotor torque [%]		229	229	270	280	170	200	210
Breakdown torque [%]		260	270	290	320	200	220	240
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		28s (cold) 16s (hot)	21s (cold) 12s (hot)	21s (cold) 12s (hot)	21s (cold) 12s (hot)	21s (cold) 12s (hot)	21s (cold) 12s (hot)	21s (cold) 12s (hot)
Noise level²		59.0 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%	91.0	90.0	89.3	89.3	90.2	90.2	90.2
	75%	91.7	90.3	90.3	90.6	90.2	90.2	91.0
	100%	91.7	90.3	90.3	90.8	88.5	89.5	90.2
Power Factor	25%							
	50%	0.70	0.66	0.63	0.60	0.76	0.73	0.70
	75%	0.80	0.79	0.76	0.73	0.83	0.82	0.80
	100%	0.85	0.84	0.83	0.81	0.86	0.86	0.85

		Drive end	Non drive end
Bearing type	:	6311 C3	6211 C3
Sealing	:	V'Ring	V'Ring
Lubrication interval	:	20000 h	20000 h
Lubricant amount	:	18 g	11 g
Lubricant type	:	Mobil Polyrex EM	

Foundation loads

Max. traction : 908 lb

Max. compression : 1347 lb

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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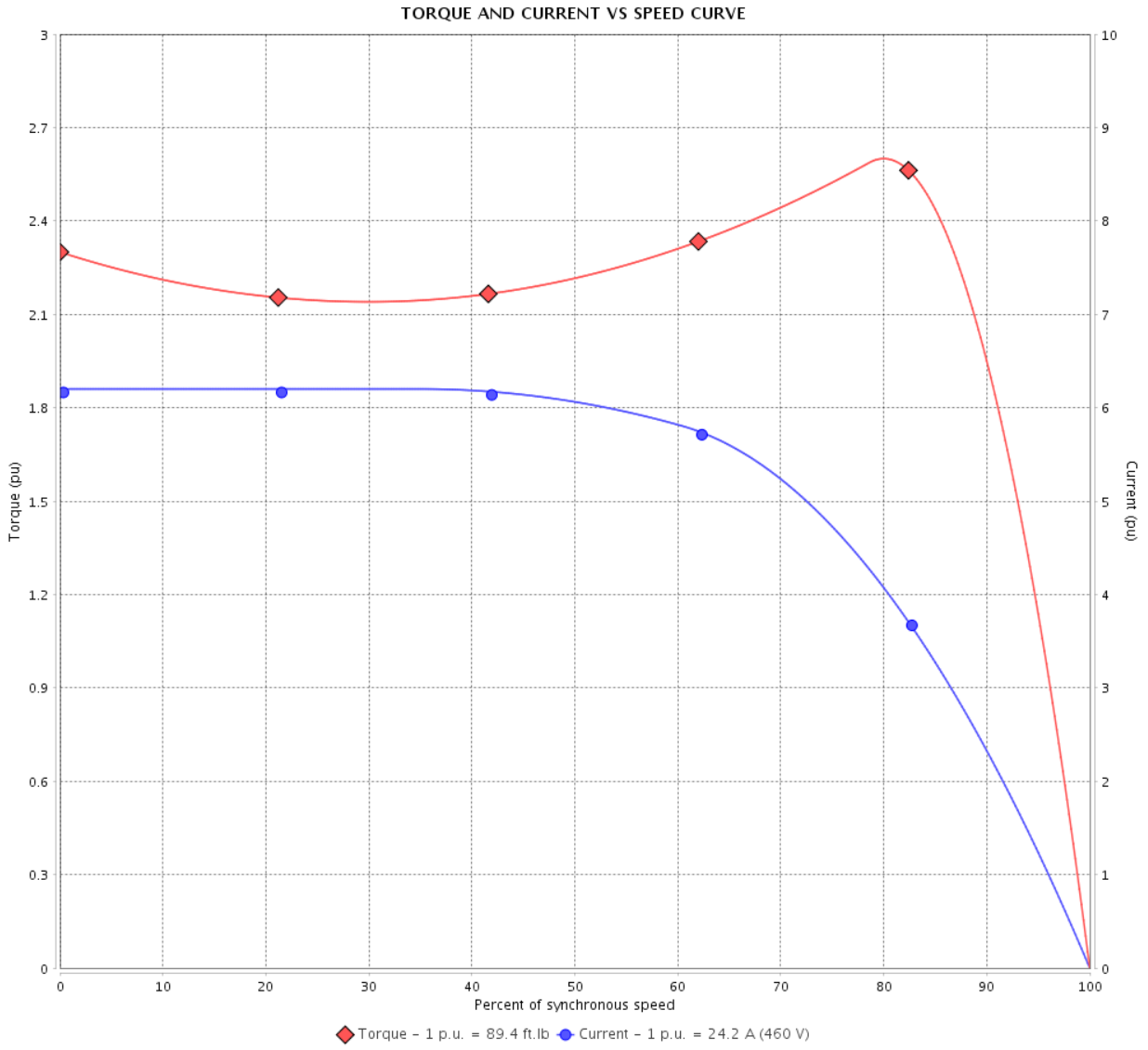
TORQUE AND CURRENT VS SPEED CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:

Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22



Performance	: 230/460 V 60 Hz 6P

Rated current	: 48.4/24.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 6.2	Duty cycle	: Cont.(S1)
Rated torque	: 89.4 ft.lb	Insulation class	: F
Locked rotor torque	: 229 %	Service factor	: 1.25
Breakdown torque	: 260 %	Temperature rise	: 80 K
Rated speed	: 1175 rpm	Design	: B

Locked rotor time	: 28s (cold) 16s (hot)

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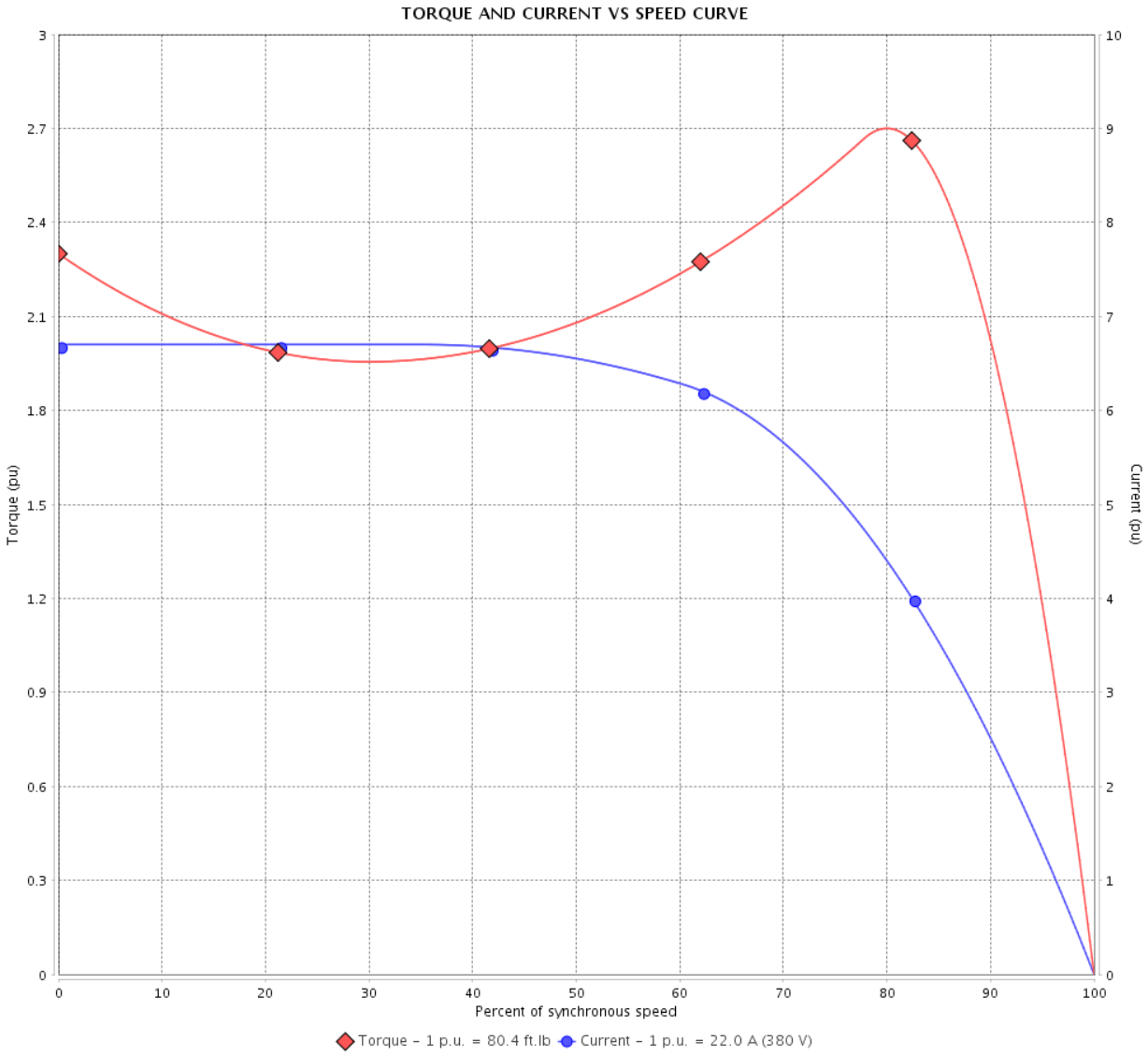

Performance	: 380 V 50 Hz 6P IE3

Rated current	: 22.0 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 6.7	Duty cycle	: Cont.(S1)
Rated torque	: 80.4 ft.lb	Insulation class	: F
Locked rotor torque	: 229 %	Service factor	: 1.00
Breakdown torque	: 270 %	Temperature rise	: 80 K
Rated speed	: 980 rpm	Design	: B

Locked rotor time	: 21s (cold) 12s (hot)

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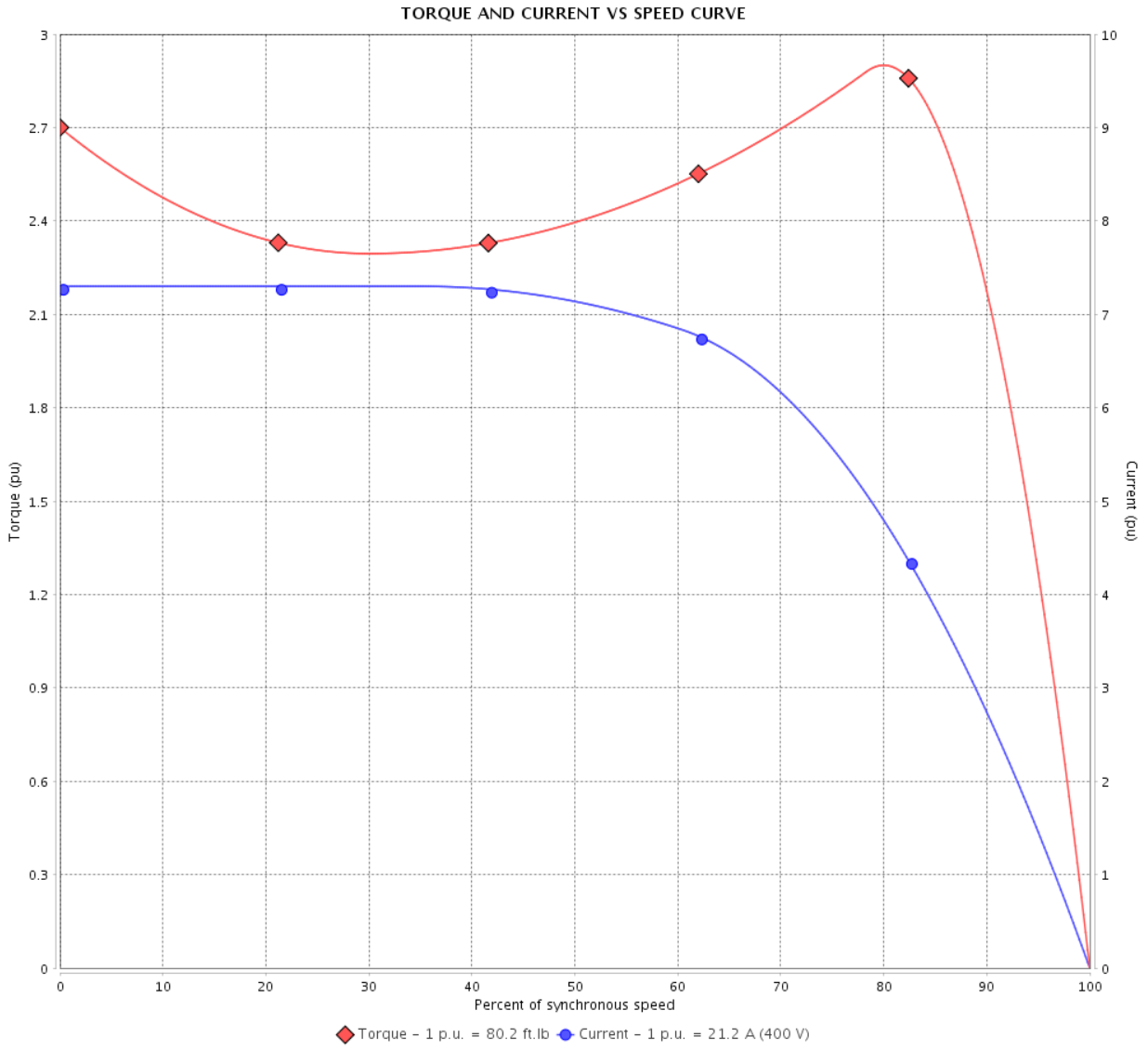

Performance	: 400 V 50 Hz 6P IE3

Rated current	: 21.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 7.3	Duty cycle	: Cont.(S1)
Rated torque	: 80.2 ft.lb	Insulation class	: F
Locked rotor torque	: 270 %	Service factor	: 1.15
Breakdown torque	: 290 %	Temperature rise	: 80 K
Rated speed	: 982 rpm	Design	: B

Locked rotor time	: 21s (cold) 12s (hot)

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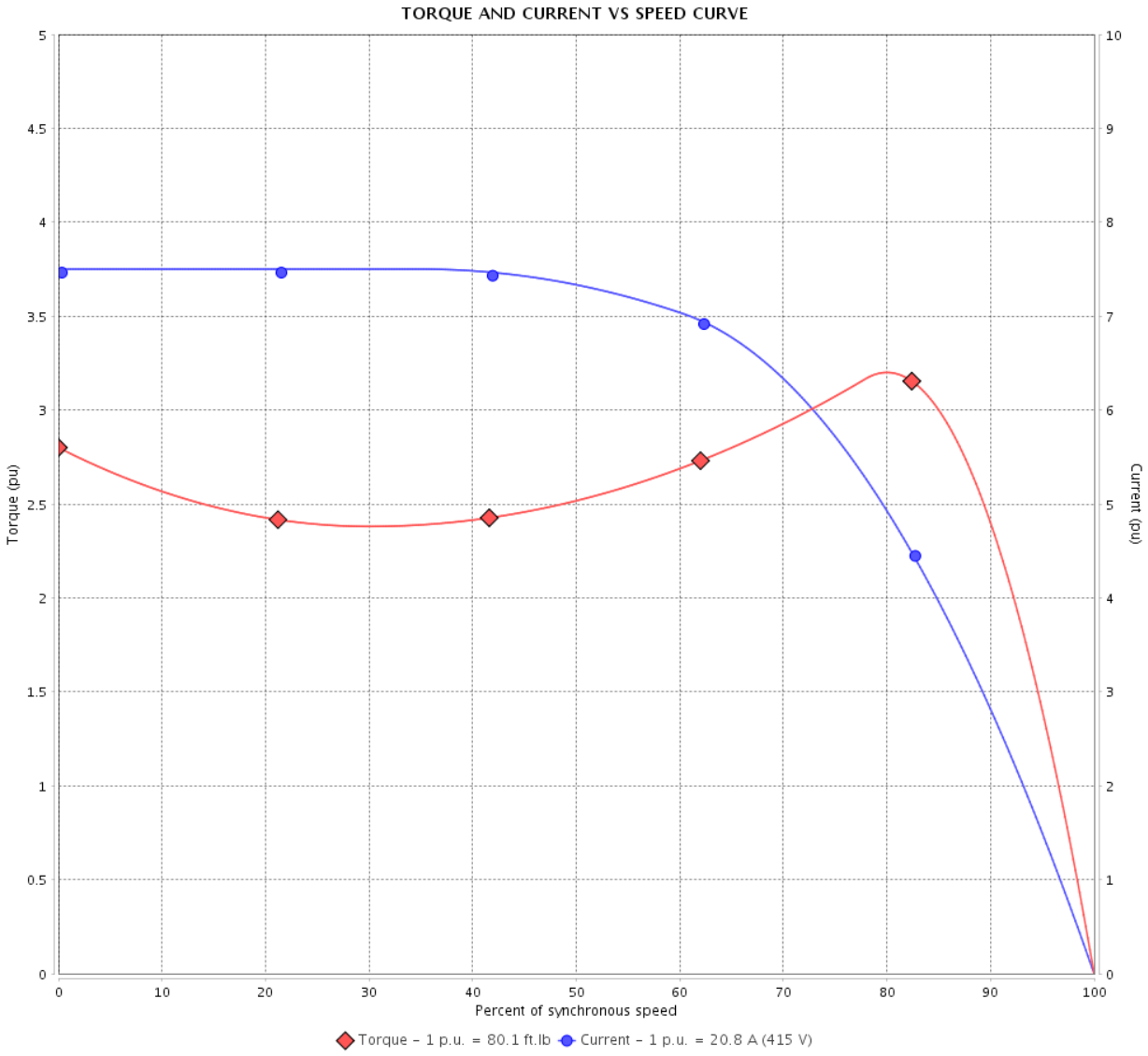

Performance	: 415 V 50 Hz 6P IE3

Rated current	: 20.8 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 7.5	Duty cycle	: Cont.(S1)
Rated torque	: 80.1 ft.lb	Insulation class	: F
Locked rotor torque	: 280 %	Service factor	: 1.15
Breakdown torque	: 320 %	Temperature rise	: 80 K
Rated speed	: 983 rpm	Design	: B

Locked rotor time	: 21s (cold) 12s (hot)

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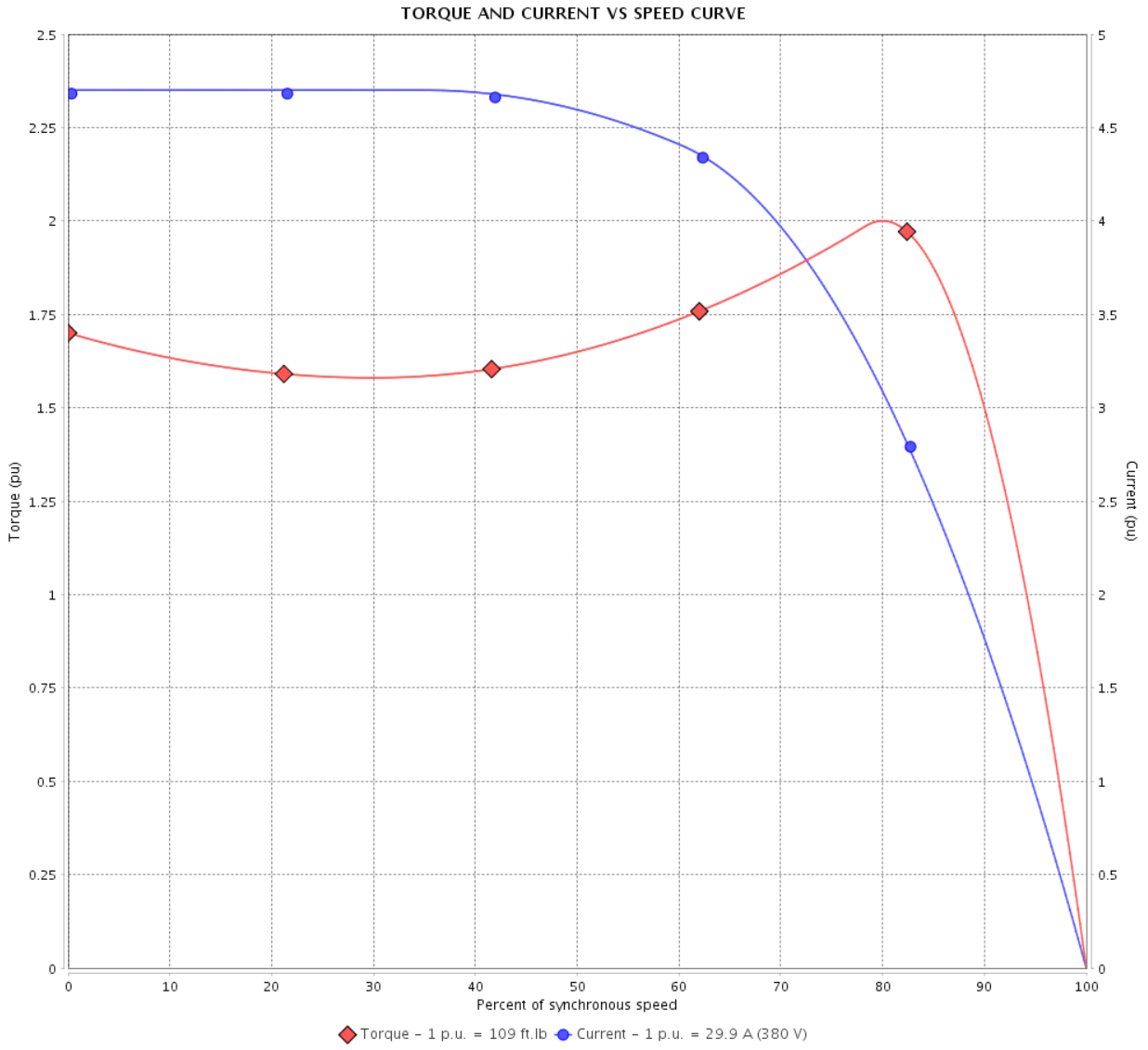

Performance	: 380 V 50 Hz 6P IE1

Rated current	: 29.9 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 4.7	Duty cycle	: Cont.(S1)
Rated torque	: 109 ft.lb	Insulation class	: F
Locked rotor torque	: 170 %	Service factor	: 1.00
Breakdown torque	: 200 %	Temperature rise	: 105 K
Rated speed	: 965 rpm	Design	: B

Locked rotor time	: 21s (cold) 12s (hot)

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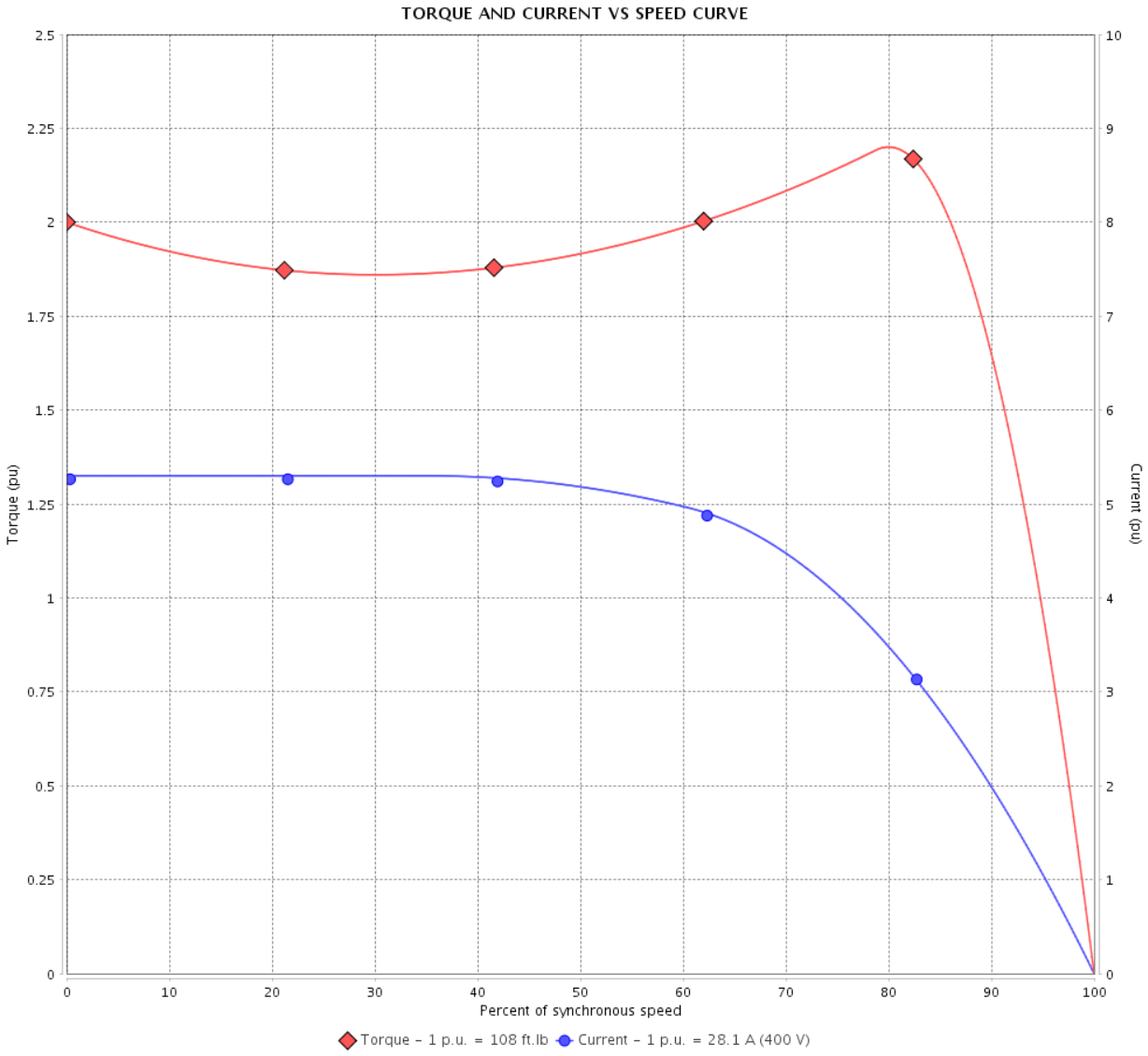

Performance	: 400 V 50 Hz 6P IE1

Rated current	: 28.1 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 5.3	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 200 %	Service factor	: 1.15
Breakdown torque	: 220 %	Temperature rise	: 105 K
Rated speed	: 970 rpm	Design	: B

Locked rotor time	: 21s (cold) 12s (hot)

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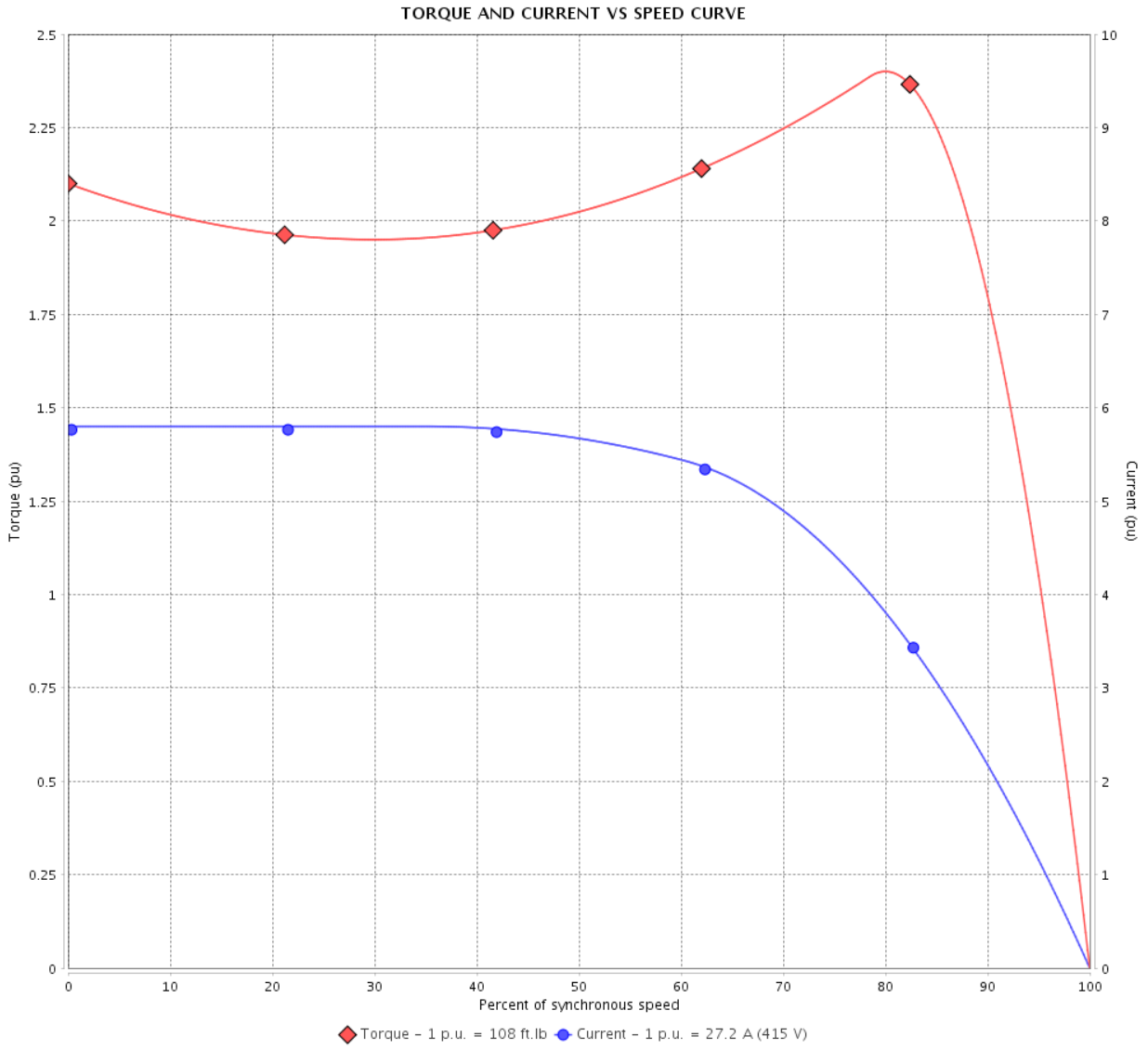

Performance	: 415 V 50 Hz 6P IE2

Rated current	: 27.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 5.8	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 210 %	Service factor	: 1.15
Breakdown torque	: 240 %	Temperature rise	: 80 K
Rated speed	: 975 rpm	Design	: B

Locked rotor time	: 21s (cold) 12s (hot)

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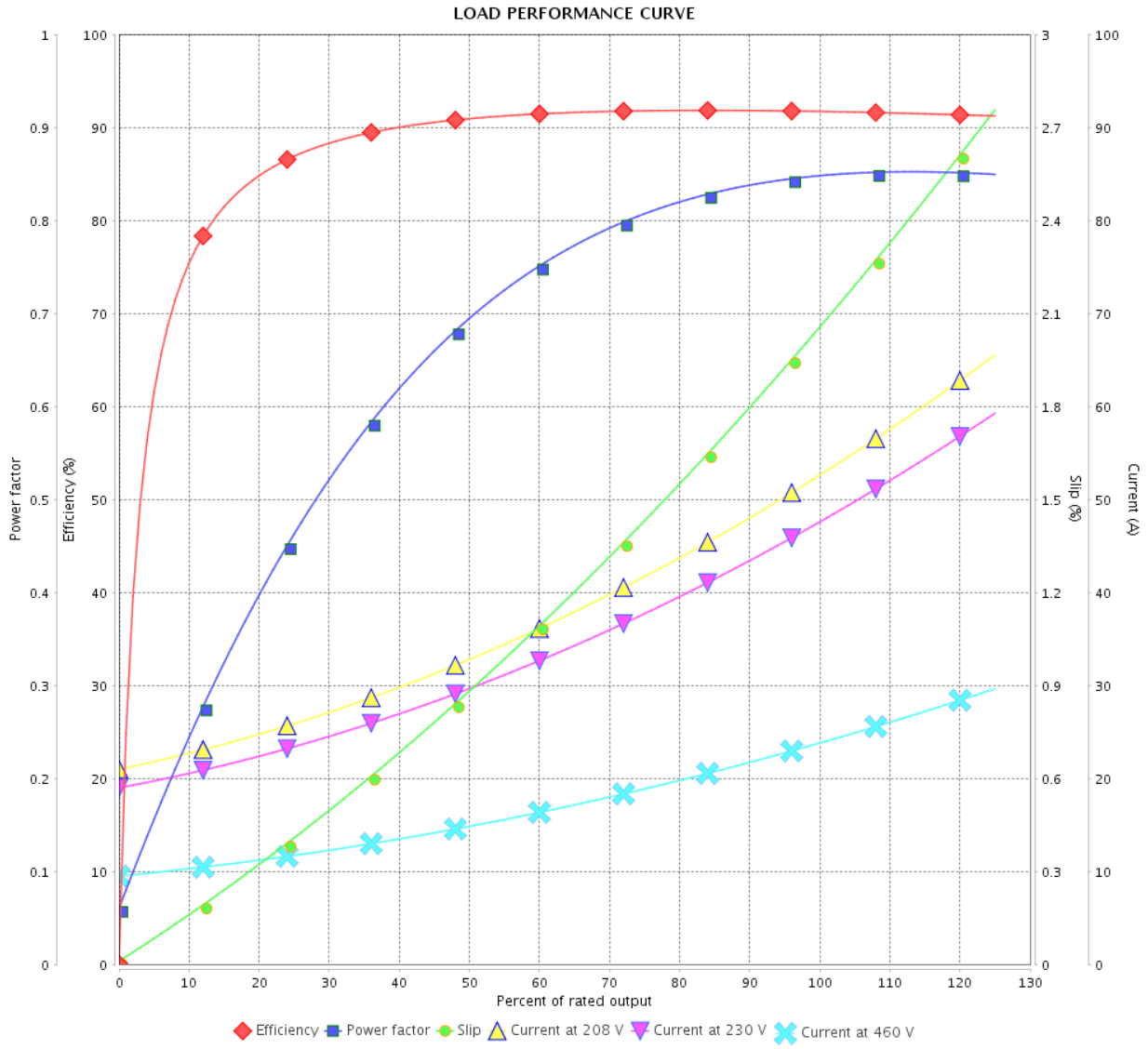

Performance	: 230/460 V 60 Hz 6P		
Rated current	: 48.4/24.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 6.2	Duty cycle	: Cont.(S1)
Rated torque	: 89.4 ft.lb	Insulation class	: F
Locked rotor torque	: 229 %	Service factor	: 1.25
Breakdown torque	: 260 %	Temperature rise	: 80 K
Rated speed	: 1175 rpm	Design	: B

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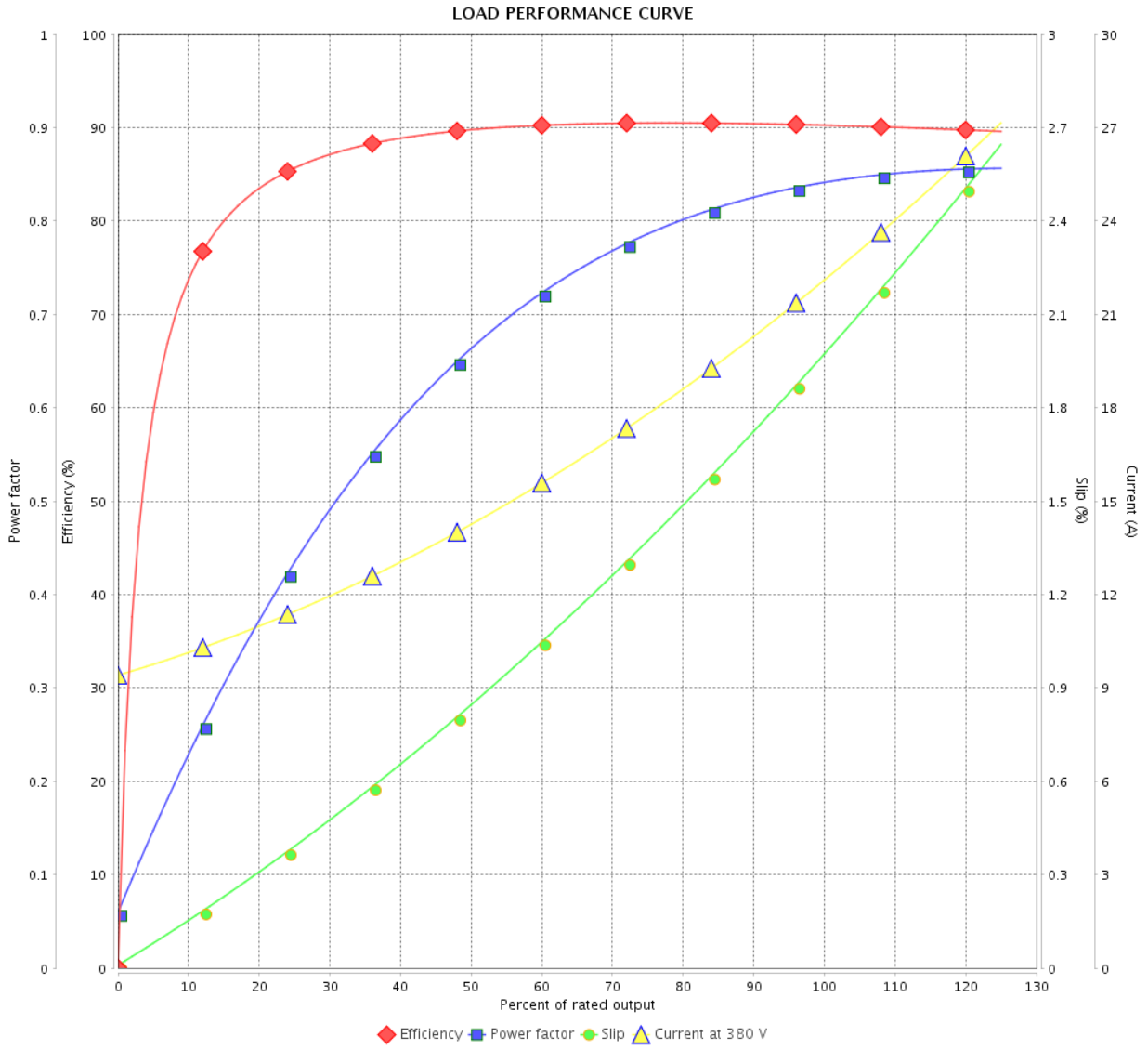

Performance	: 380 V 50 Hz 6P IE3

Rated current	: 22.0 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 6.7	Duty cycle	: Cont.(S1)
Rated torque	: 80.4 ft.lb	Insulation class	: F
Locked rotor torque	: 229 %	Service factor	: 1.00
Breakdown torque	: 270 %	Temperature rise	: 80 K
Rated speed	: 980 rpm	Design	: B

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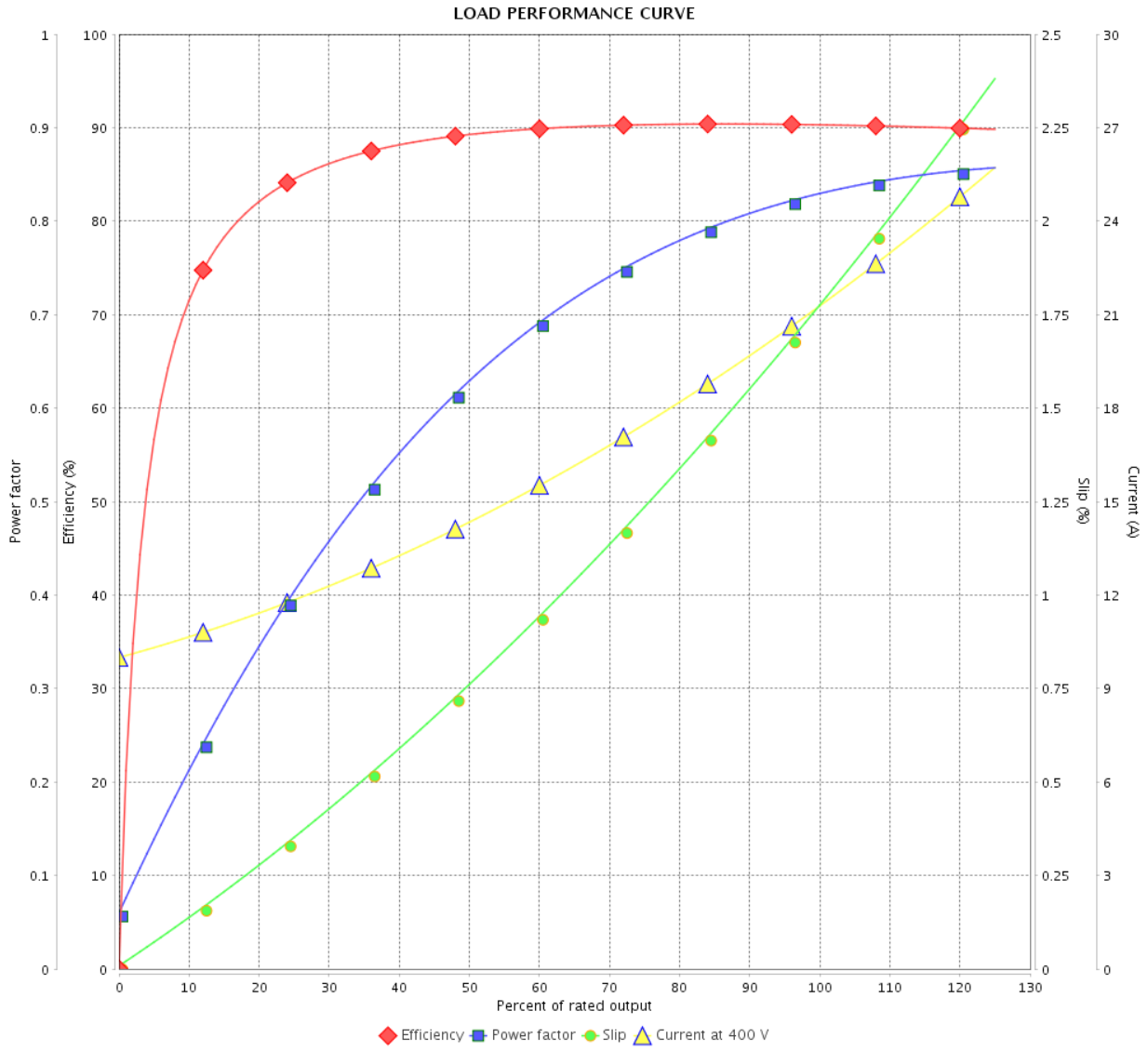

Performance	: 400 V 50 Hz 6P IE3

Rated current	: 21.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 7.3	Duty cycle	: Cont.(S1)
Rated torque	: 80.2 ft.lb	Insulation class	: F
Locked rotor torque	: 270 %	Service factor	: 1.15
Breakdown torque	: 290 %	Temperature rise	: 80 K
Rated speed	: 982 rpm	Design	: B

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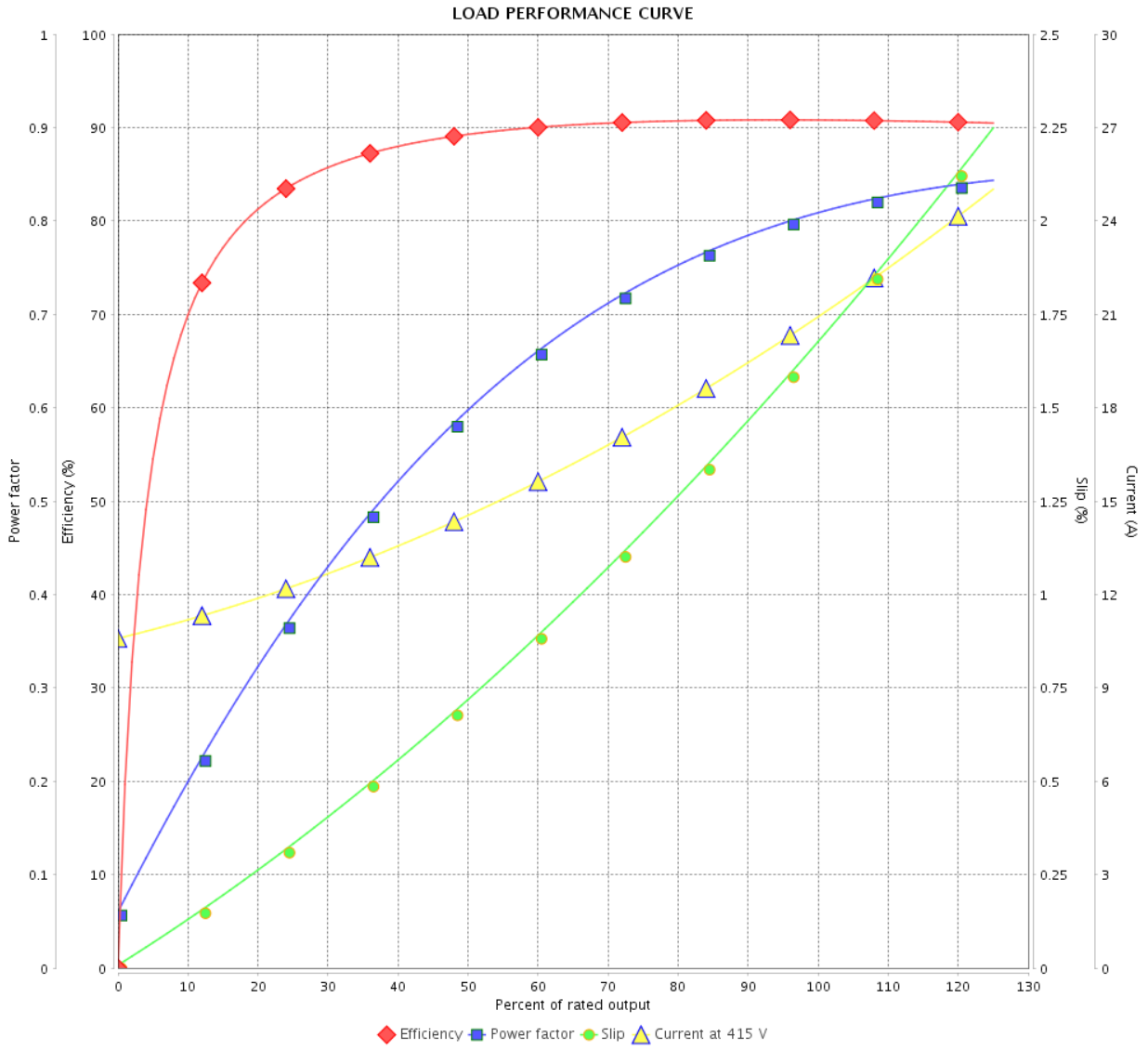

Performance	: 415 V 50 Hz 6P IE3

Rated current	: 20.8 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 7.5	Duty cycle	: Cont.(S1)
Rated torque	: 80.1 ft.lb	Insulation class	: F
Locked rotor torque	: 280 %	Service factor	: 1.15
Breakdown torque	: 320 %	Temperature rise	: 80 K
Rated speed	: 983 rpm	Design	: B

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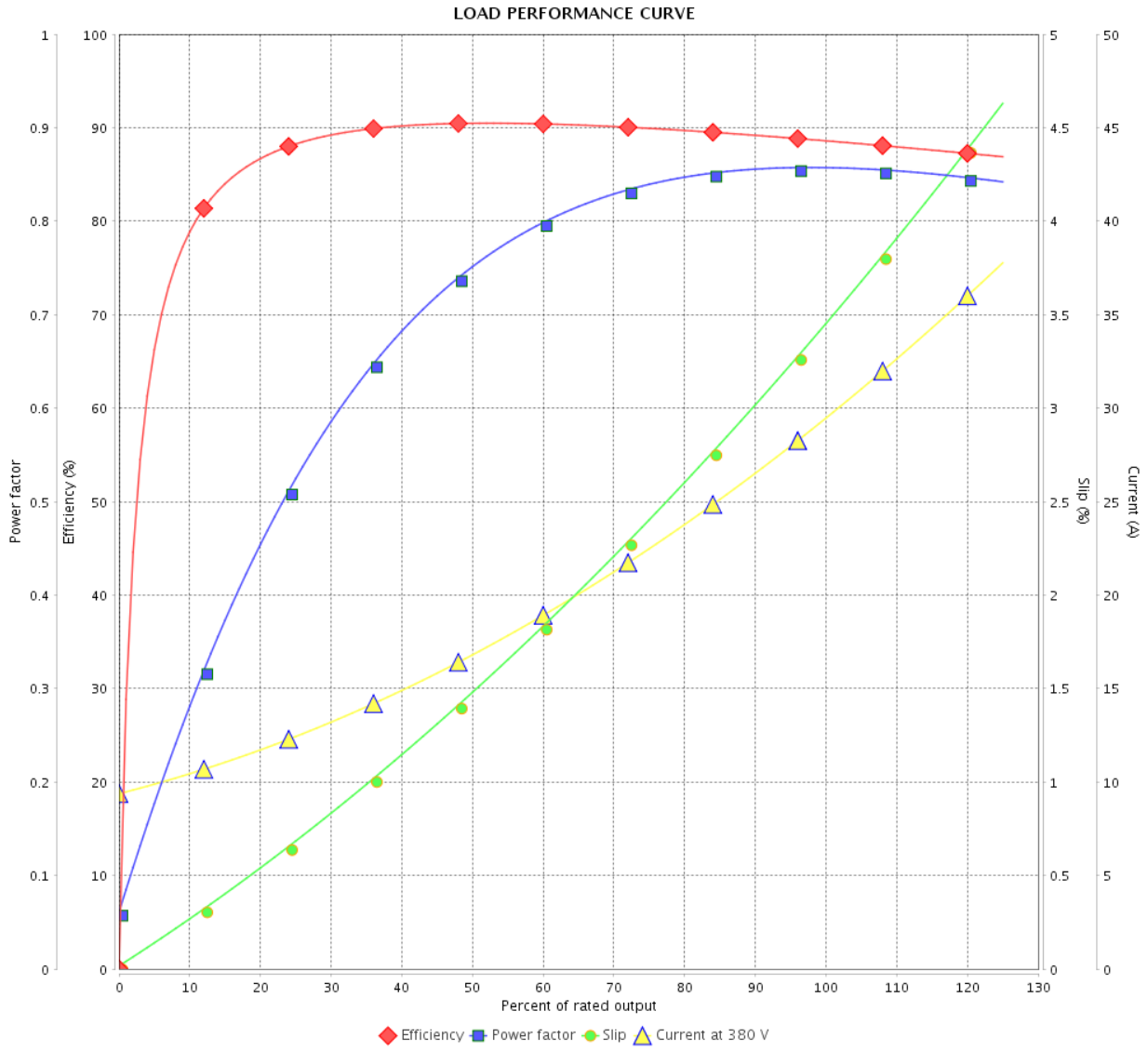

Performance	: 380 V 50 Hz 6P IE1

Rated current	: 29.9 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 4.7	Duty cycle	: Cont.(S1)
Rated torque	: 109 ft.lb	Insulation class	: F
Locked rotor torque	: 170 %	Service factor	: 1.00
Breakdown torque	: 200 %	Temperature rise	: 105 K
Rated speed	: 965 rpm	Design	: B

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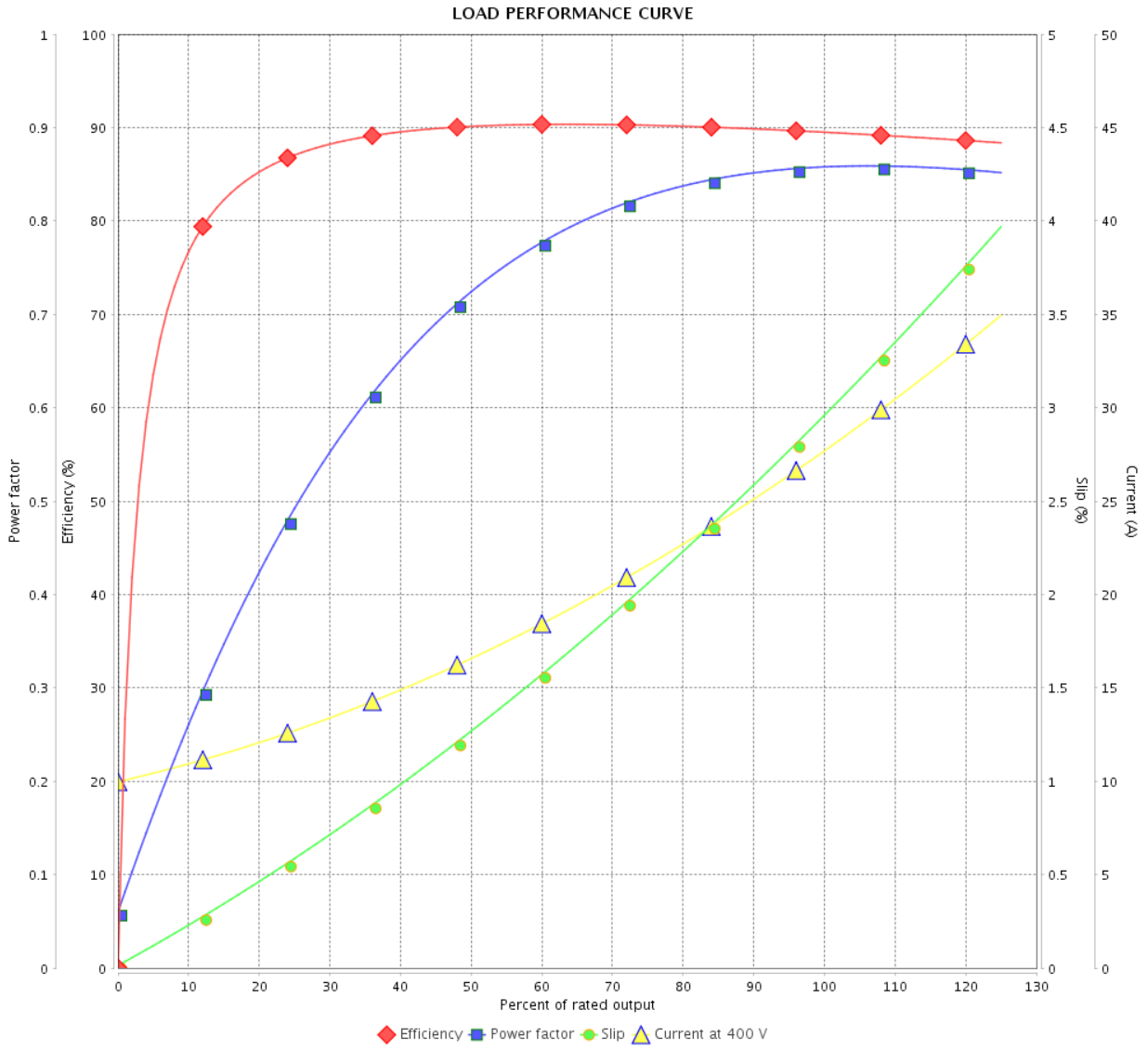

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LRC	: 5.3	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
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Breakdown torque	: 220 %	Temperature rise	: 105 K
Rated speed	: 970 rpm	Design	: B

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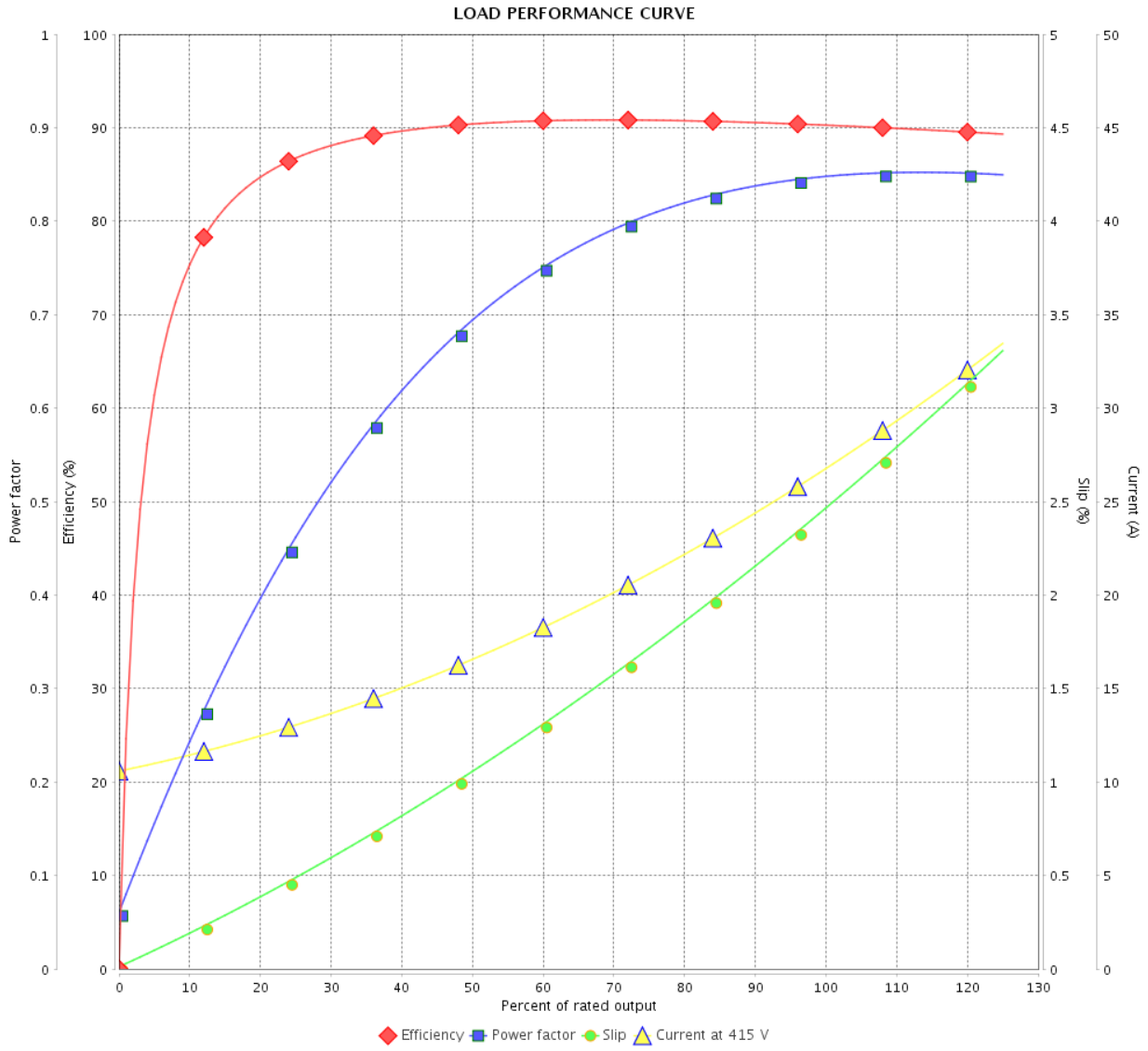

Performance	: 415 V 50 Hz 6P IE2		
Rated current	: 27.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 5.8	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 210 %	Service factor	: 1.15
Breakdown torque	: 240 %	Temperature rise	: 80 K
Rated speed	: 975 rpm	Design	: B

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THERMAL LIMIT CURVE

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LRC	: 6.2	Duty cycle	: Cont.(S1)
Rated torque	: 89.4 ft.lb	Insulation class	: F
Locked rotor torque	: 229 %	Service factor	: 1.25
Breakdown torque	: 260 %	Temperature rise	: 80 K
Rated speed	: 1175 rpm	Design	: B
Heating constant			
Cooling constant			

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THERMAL LIMIT CURVE

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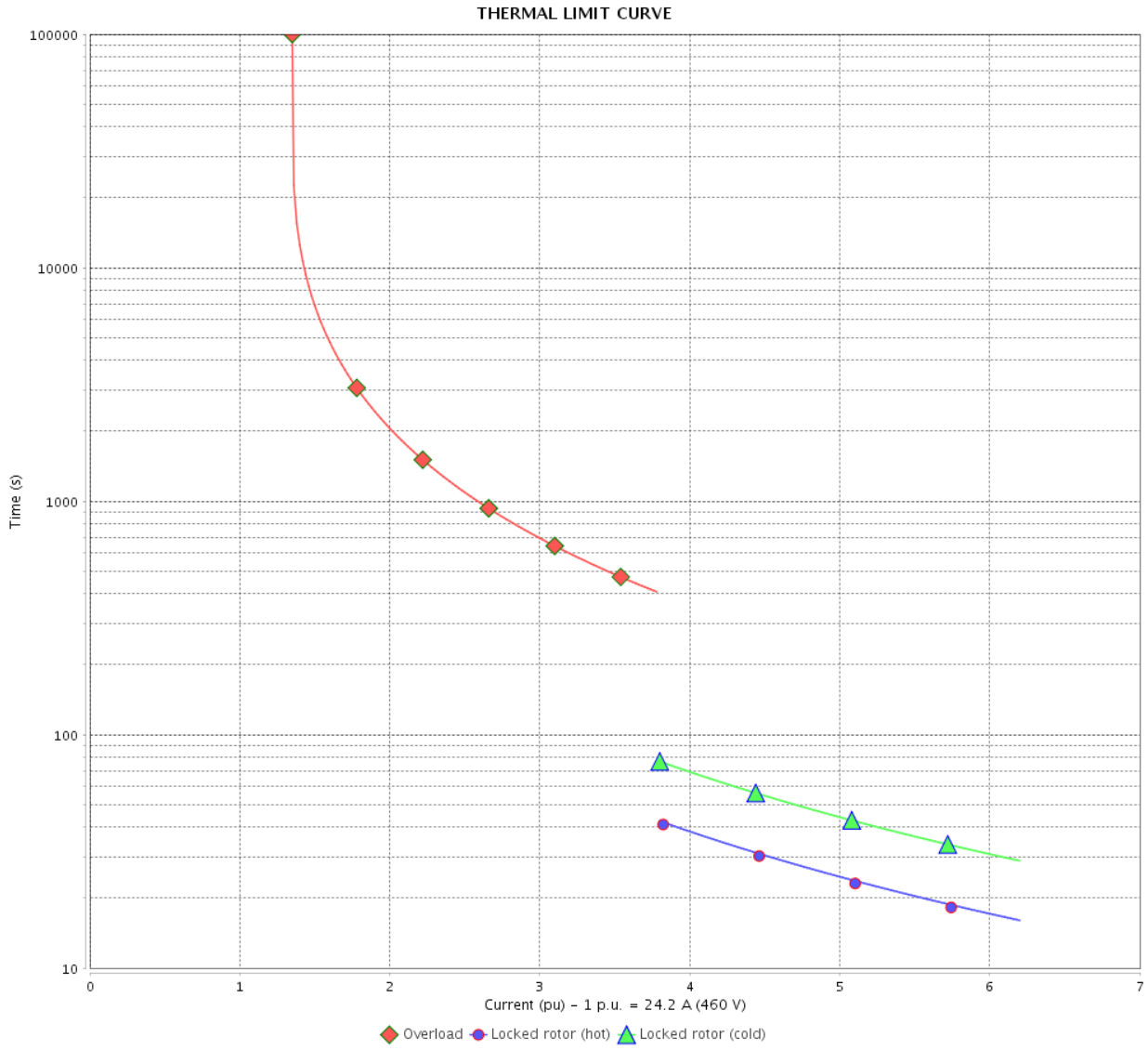

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Performance	: 380 V 50 Hz 6P IE3

Rated current	: 22.0 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 6.7	Duty cycle	: Cont.(S1)
Rated torque	: 80.4 ft.lb	Insulation class	: F
Locked rotor torque	: 229 %	Service factor	: 1.00
Breakdown torque	: 270 %	Temperature rise	: 80 K
Rated speed	: 980 rpm	Design	: B
Heating constant			
Cooling constant			

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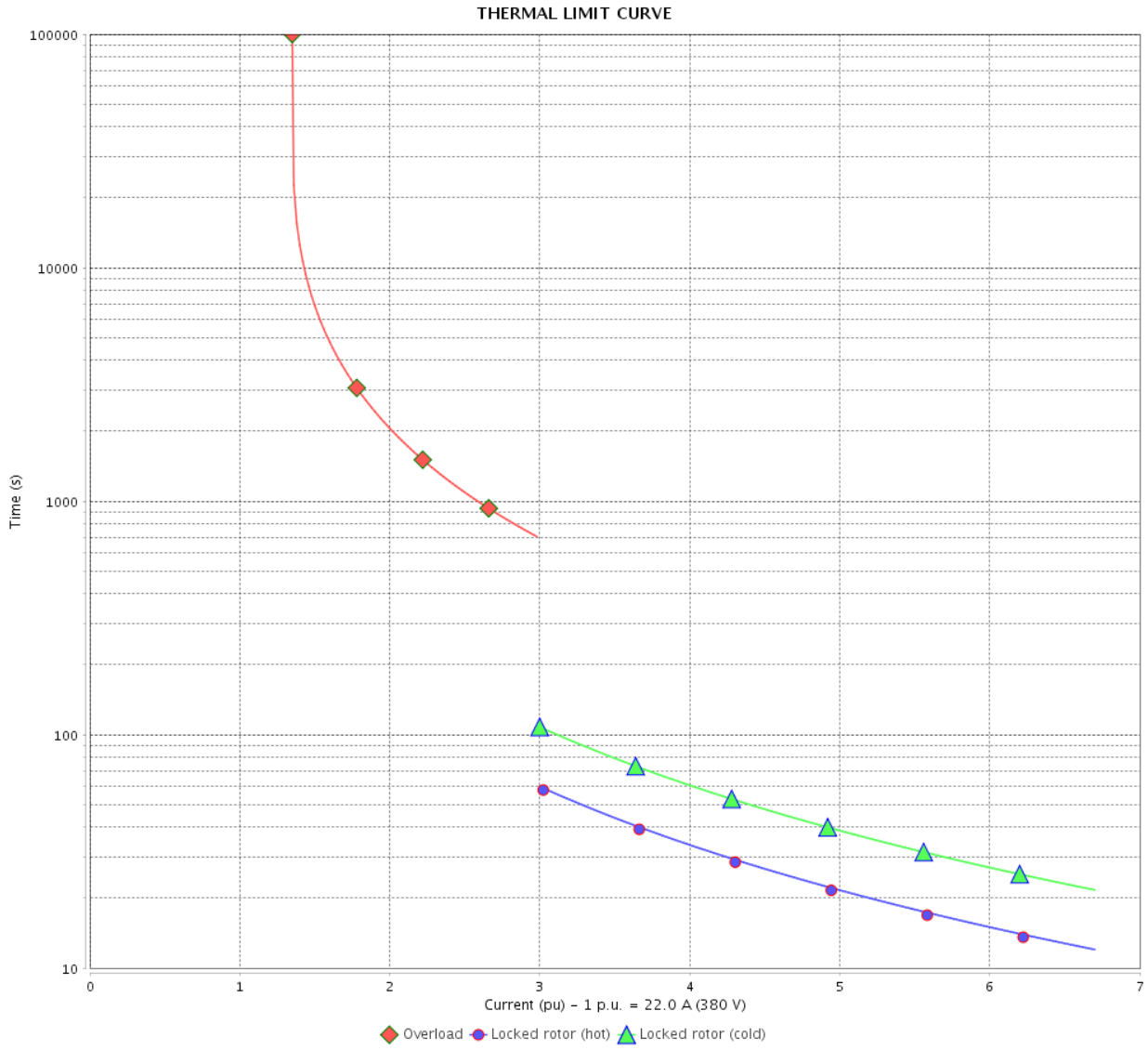

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Performance	: 400 V 50 Hz 6P IE3

Rated current	: 21.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 7.3	Duty cycle	: Cont.(S1)
Rated torque	: 80.2 ft.lb	Insulation class	: F
Locked rotor torque	: 270 %	Service factor	: 1.15
Breakdown torque	: 290 %	Temperature rise	: 80 K
Rated speed	: 982 rpm	Design	: B

Heating constant	
Cooling constant	

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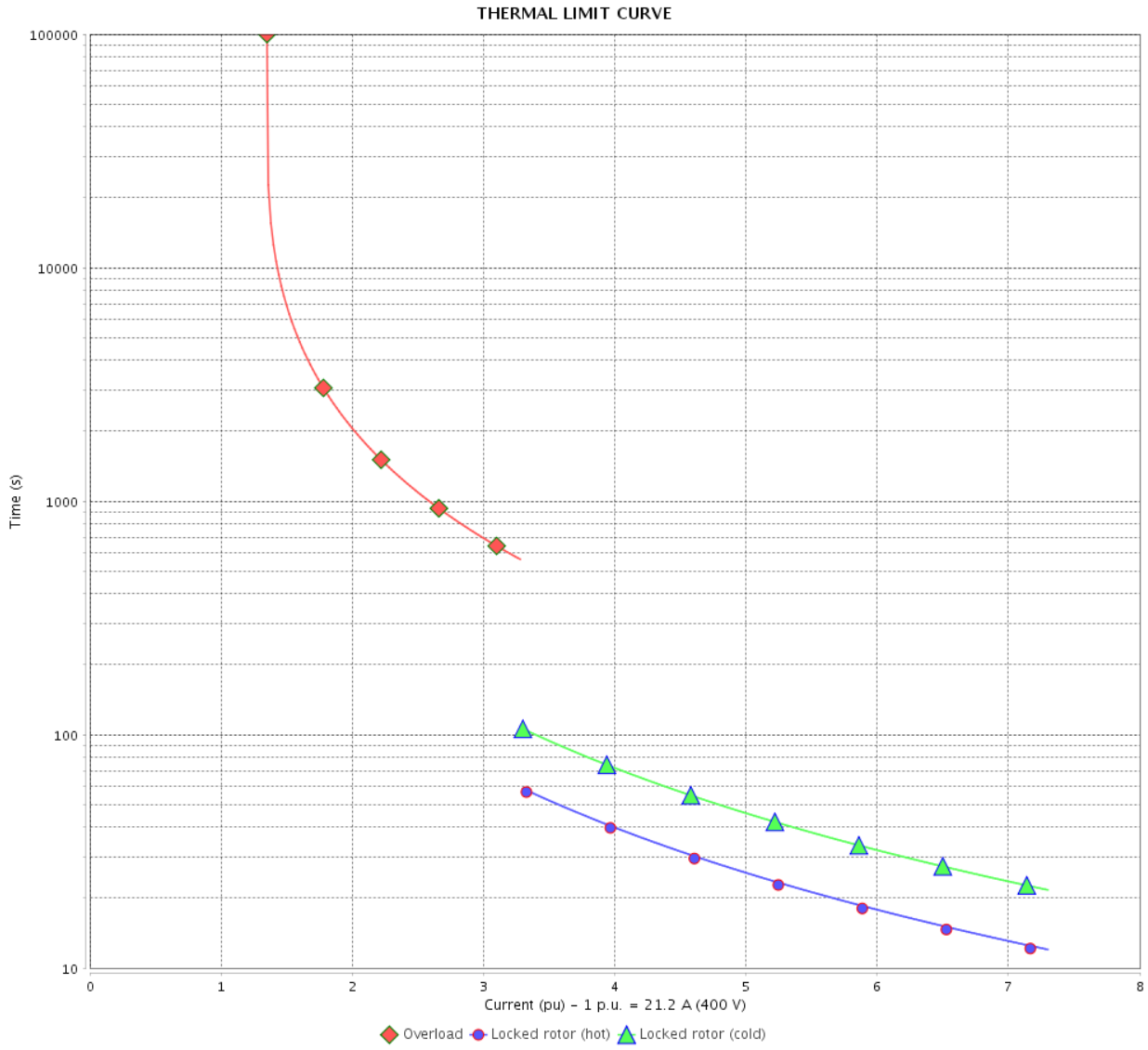

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		Catalog # :	02012ET3E286T-W22

Performance	: 415 V 50 Hz 6P IE3		
Rated current	: 20.8 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 7.5	Duty cycle	: Cont.(S1)
Rated torque	: 80.1 ft.lb	Insulation class	: F
Locked rotor torque	: 280 %	Service factor	: 1.15
Breakdown torque	: 320 %	Temperature rise	: 80 K
Rated speed	: 983 rpm	Design	: B
Heating constant			
Cooling constant			

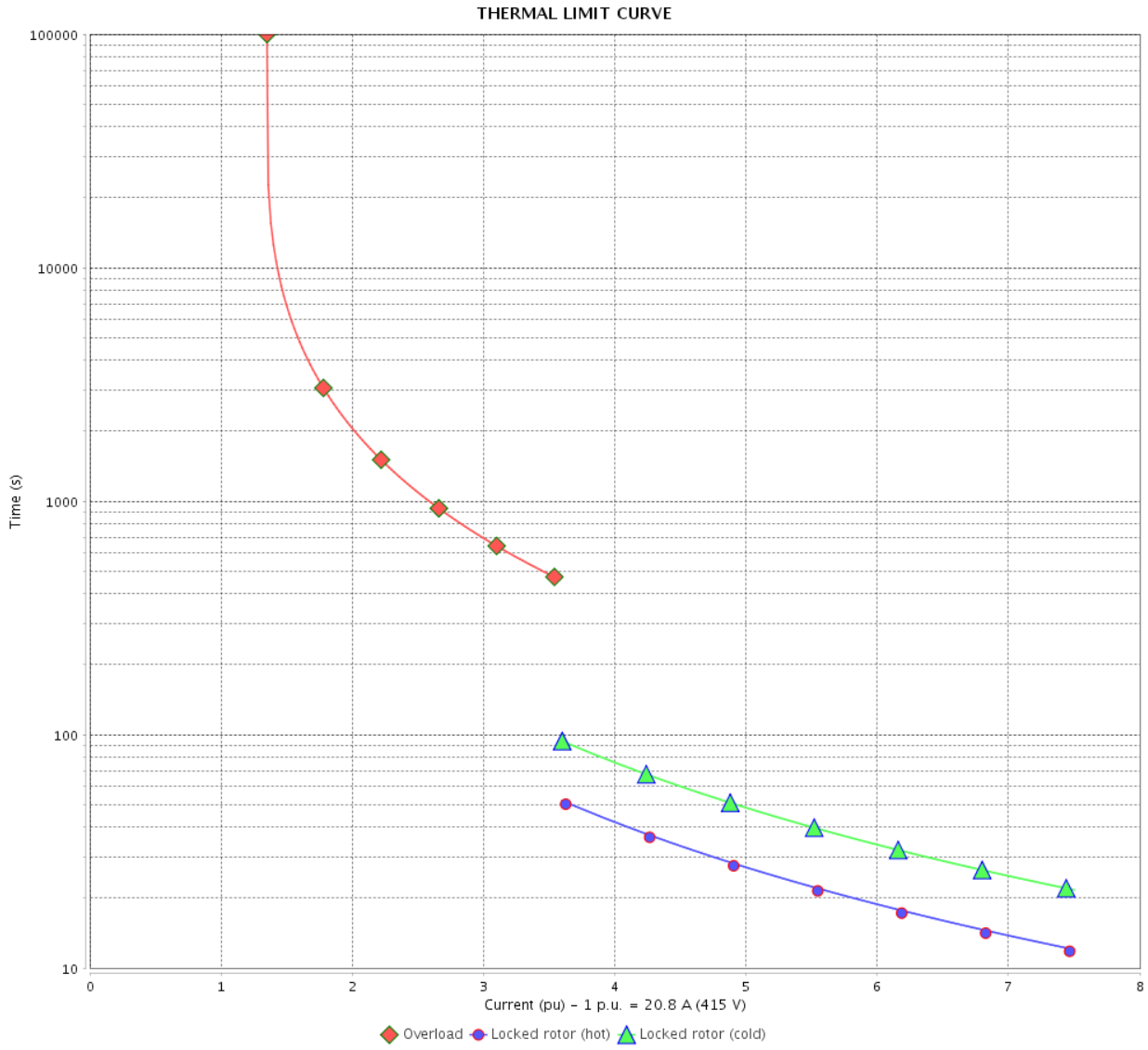
Rev.	Changes Summary	Performed	Checked	Date

Performed by				
Checked by			Page	Revision
Date	14/04/2022		22 / 36	

THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage

Customer :



Rev.	Changes Summary	Performed	Checked	Date

Performed by				
Checked by			Page	Revision
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THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:		
Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22

Performance	: 380 V 50 Hz 6P IE1

Rated current	: 29.9 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 4.7	Duty cycle	: Cont.(S1)
Rated torque	: 109 ft.lb	Insulation class	: F
Locked rotor torque	: 170 %	Service factor	: 1.00
Breakdown torque	: 200 %	Temperature rise	: 105 K
Rated speed	: 965 rpm	Design	: B

Heating constant	
Cooling constant	

Rev.	Changes Summary	Performed	Checked	Date

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Checked by			Page	Revision
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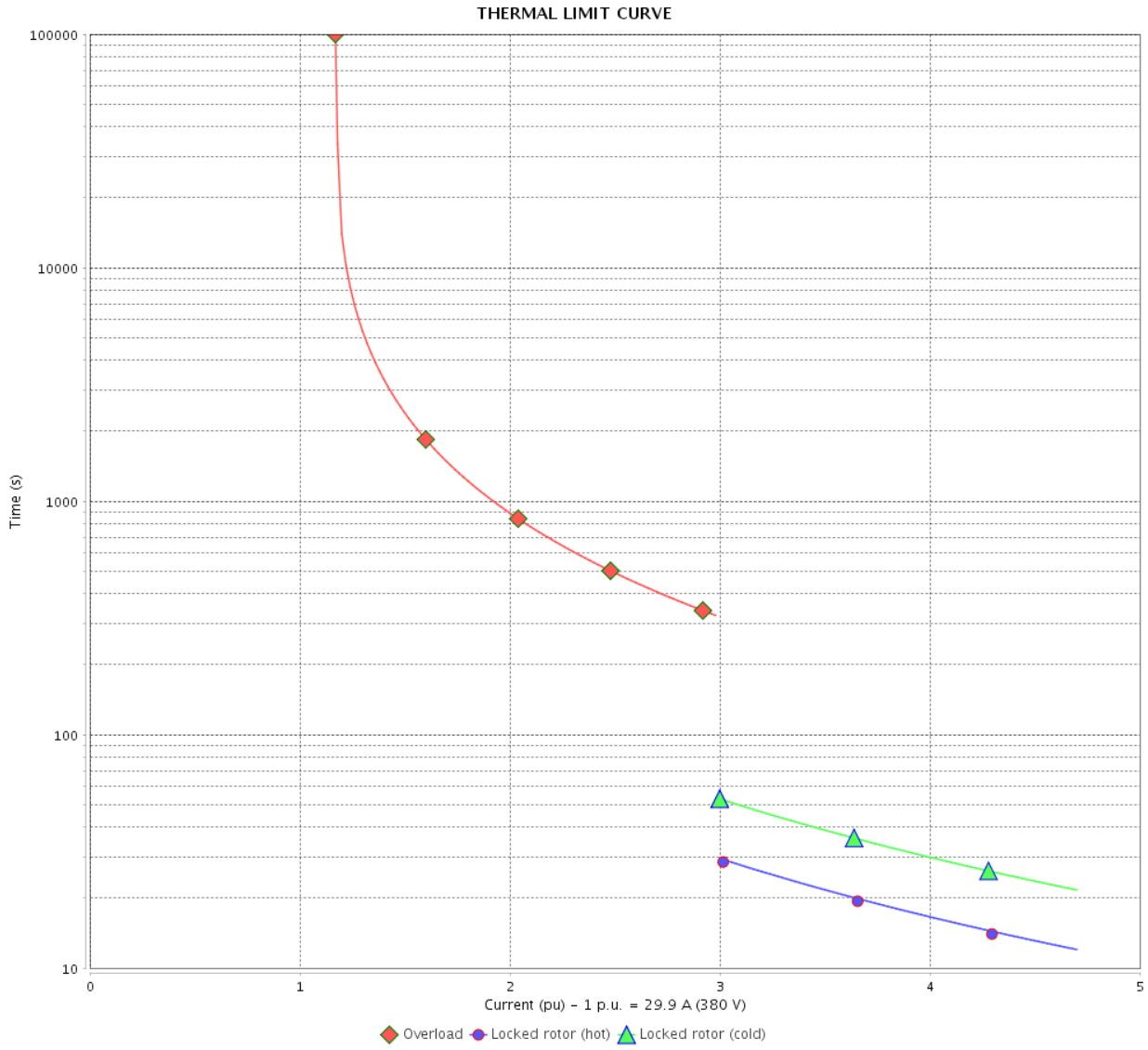
THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage

Customer :



Rev.	Changes Summary	Performed	Checked	Date

Performed by				
Checked by			Page	Revision
Date	14/04/2022		25 / 36	

THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:		
Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22

Performance	: 400 V 50 Hz 6P IE1

Rated current	: 28.1 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 5.3	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 200 %	Service factor	: 1.15
Breakdown torque	: 220 %	Temperature rise	: 105 K
Rated speed	: 970 rpm	Design	: B
Heating constant			
Cooling constant			

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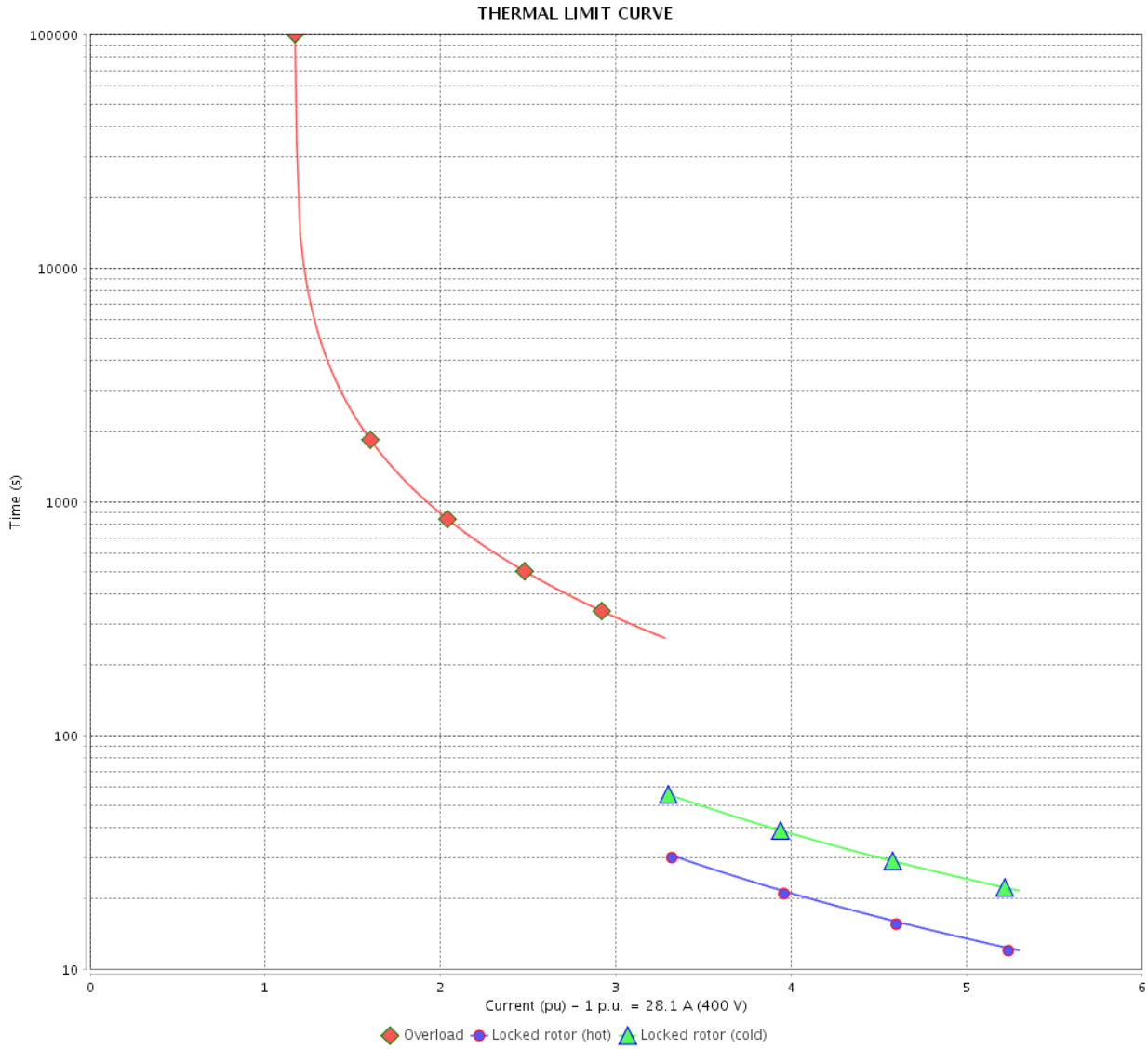
THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage

Customer :



Rev.	Changes Summary	Performed	Checked	Date

Performed by				
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THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:		
Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22

Performance	: 415 V 50 Hz 6P IE2		
Rated current	: 27.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 5.8	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 210 %	Service factor	: 1.15
Breakdown torque	: 240 %	Temperature rise	: 80 K
Rated speed	: 975 rpm	Design	: B
Heating constant			
Cooling constant			

Rev.	Changes Summary	Performed	Checked	Date

Performed by				
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THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage

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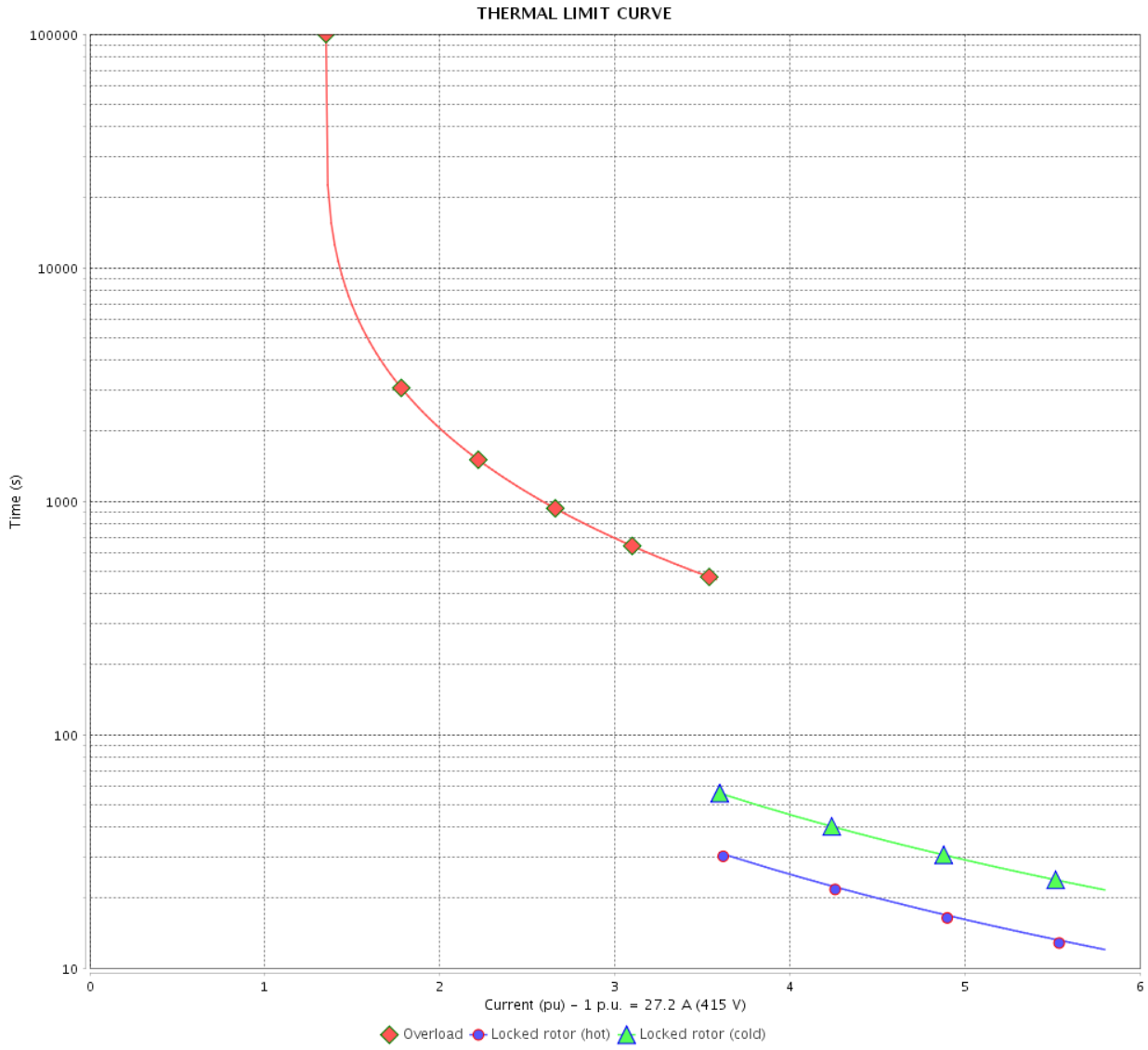

Rev.	Changes Summary	Performed	Checked	Date

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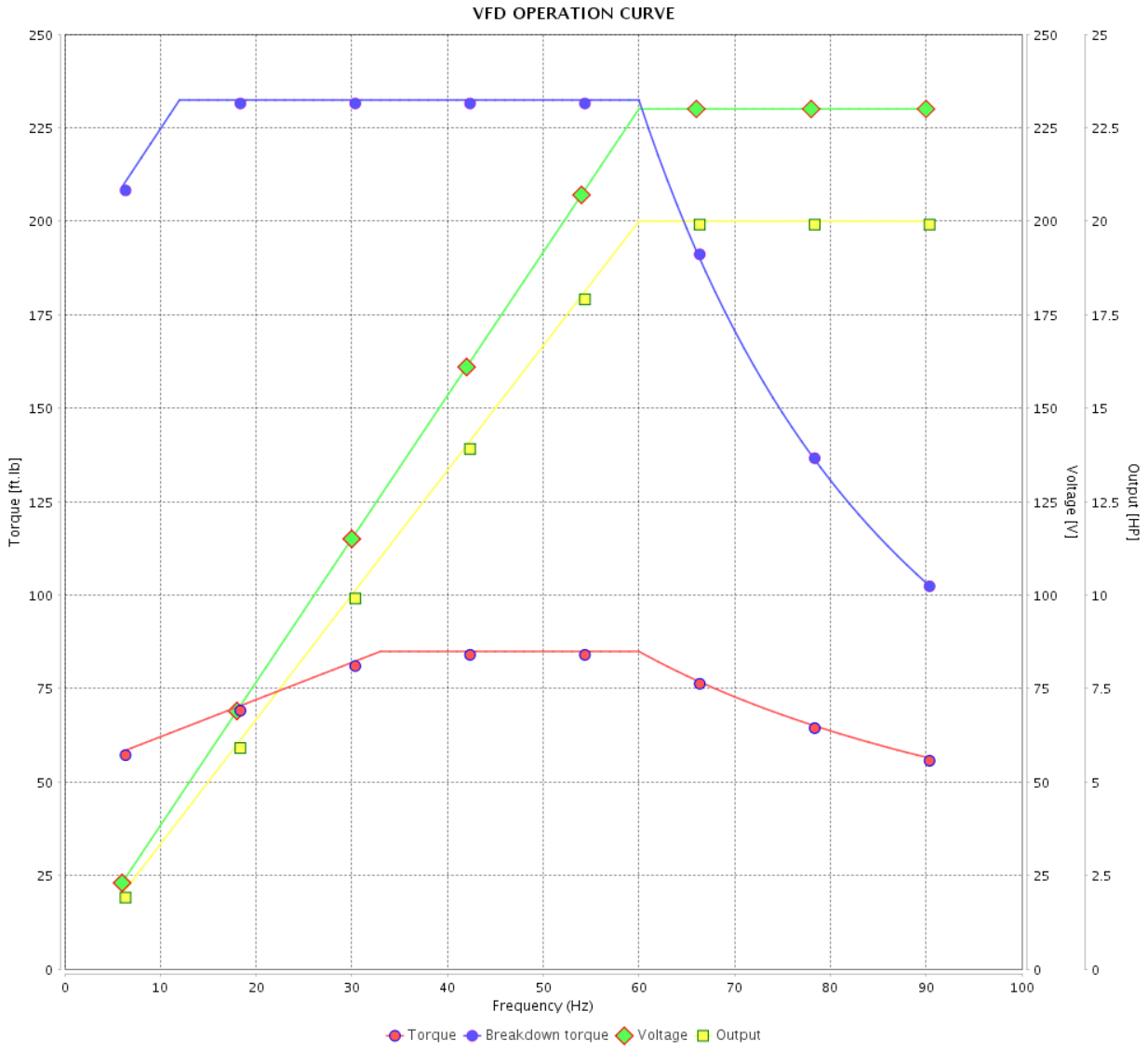
VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:		
Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22



Performance	: 230/460 V 60 Hz 6P		
Rated current	: 48.4/24.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 6.2	Duty cycle	: Cont.(S1)
Rated torque	: 89.4 ft.lb	Insulation class	: F
Locked rotor torque	: 229 %	Service factor	: 1.25
Breakdown torque	: 260 %	Temperature rise	: 80 K
Rated speed	: 1175 rpm	Design	: B

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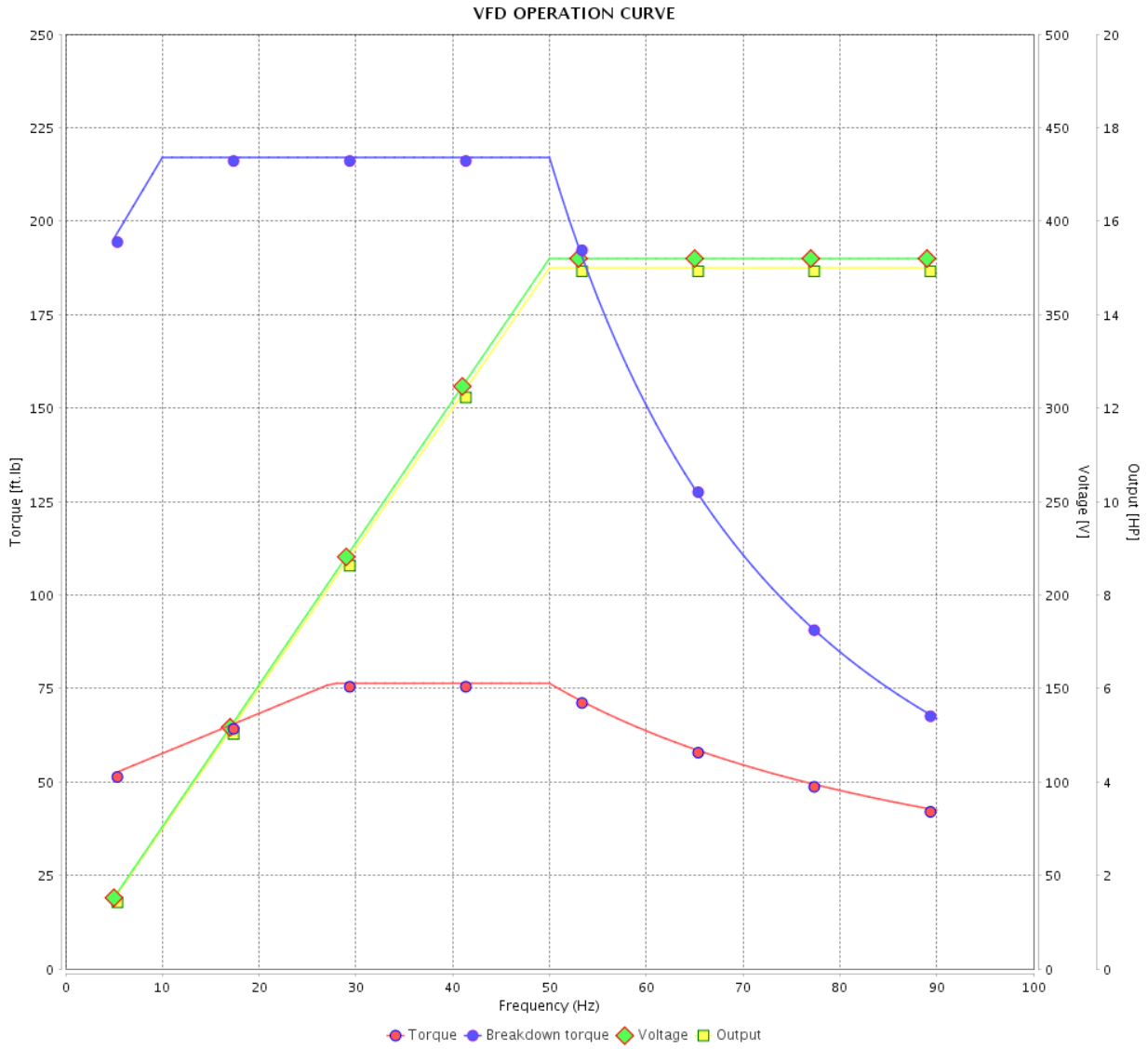
VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:		
Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22



Performance	: 380 V 50 Hz 6P IE3		
Rated current	: 22.0 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 6.7	Duty cycle	: Cont.(S1)
Rated torque	: 80.4 ft.lb	Insulation class	: F
Locked rotor torque	: 229 %	Service factor	: 1.00
Breakdown torque	: 270 %	Temperature rise	: 80 K
Rated speed	: 980 rpm	Design	: B

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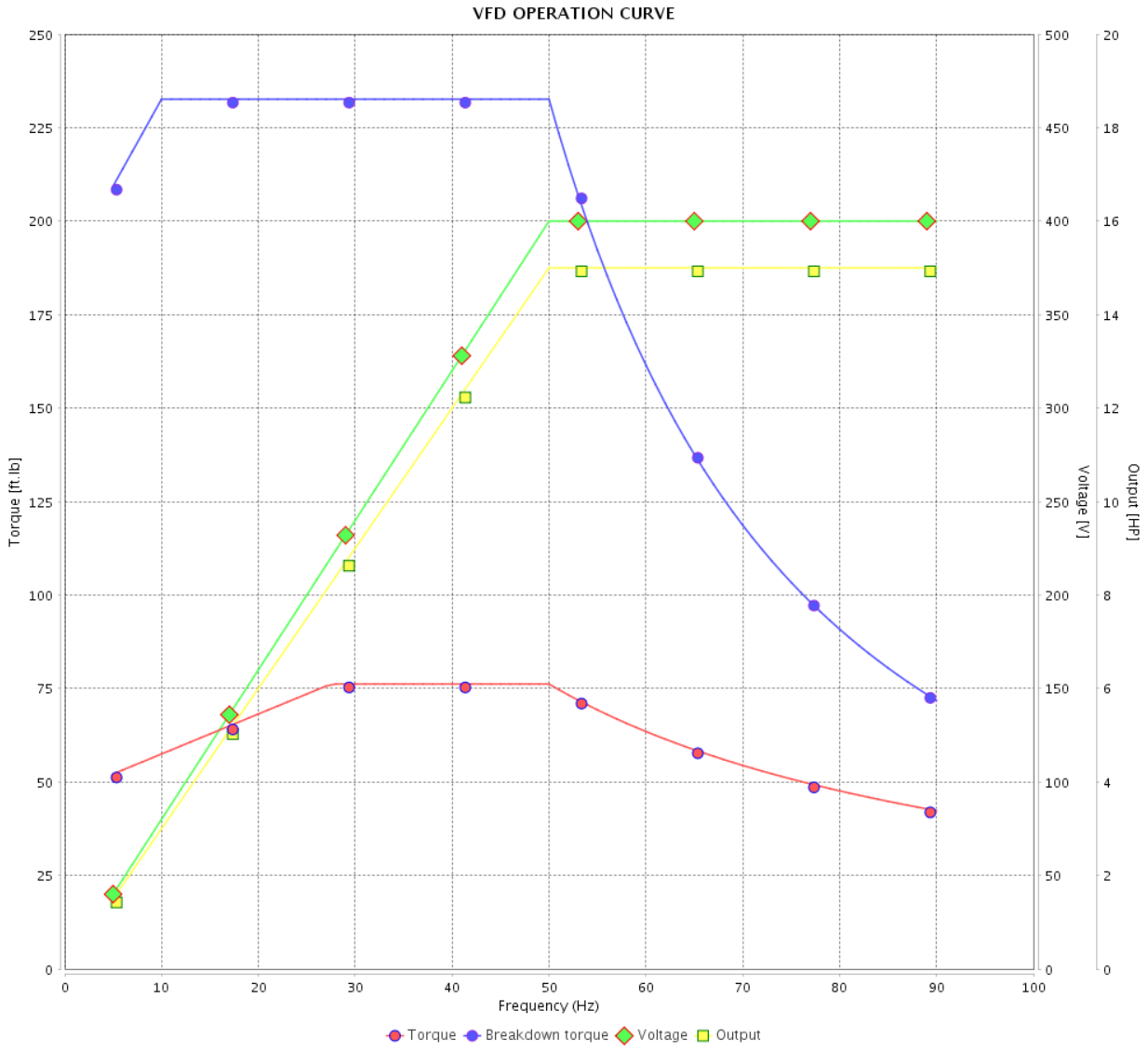
VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:

Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22



Performance	: 400 V 50 Hz 6P IE3

Rated current	: 21.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 7.3	Duty cycle	: Cont.(S1)
Rated torque	: 80.2 ft.lb	Insulation class	: F
Locked rotor torque	: 270 %	Service factor	: 1.15
Breakdown torque	: 290 %	Temperature rise	: 80 K
Rated speed	: 982 rpm	Design	: B

Rev.	Changes Summary	Performed	Checked	Date

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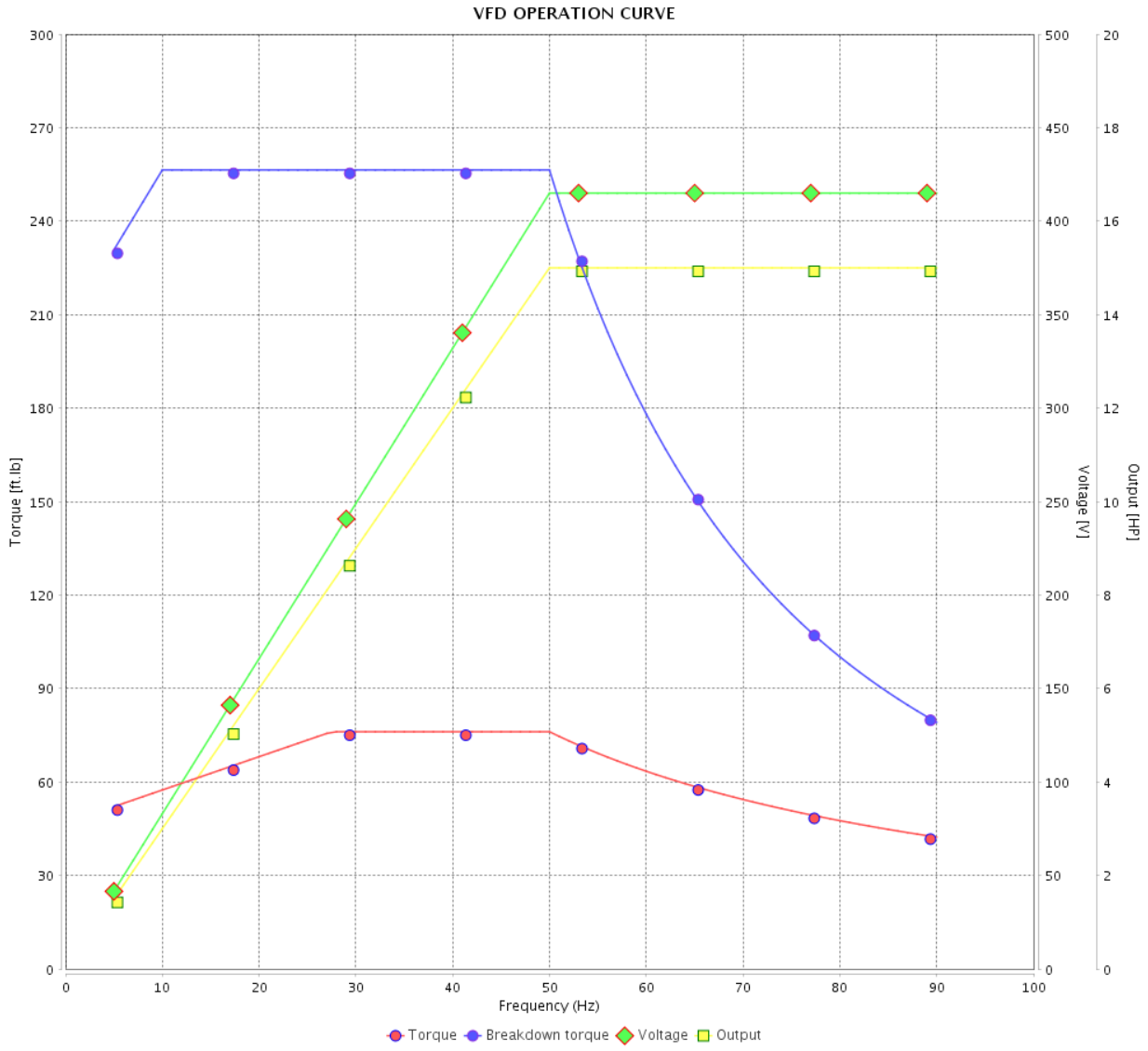
VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:

Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22



Performance	: 415 V 50 Hz 6P IE3		
Rated current	: 20.8 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 7.5	Duty cycle	: Cont.(S1)
Rated torque	: 80.1 ft.lb	Insulation class	: F
Locked rotor torque	: 280 %	Service factor	: 1.15
Breakdown torque	: 320 %	Temperature rise	: 80 K
Rated speed	: 983 rpm	Design	: B

Rev.	Changes Summary	Performed	Checked	Date

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Checked by			Page	Revision
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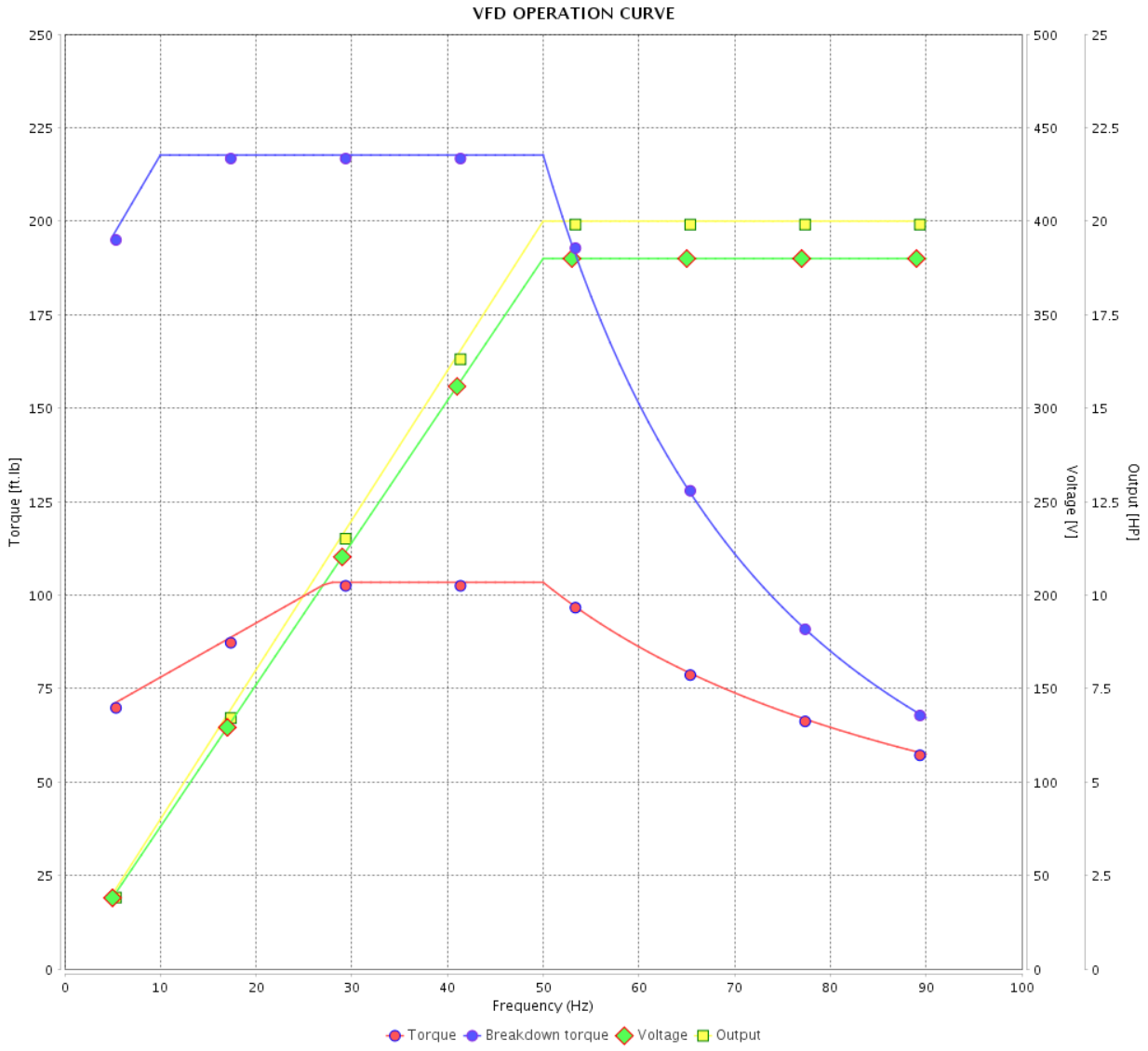
VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:

Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22



Performance	: 380 V 50 Hz 6P IE1

Rated current	: 29.9 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 4.7	Duty cycle	: Cont.(S1)
Rated torque	: 109 ft.lb	Insulation class	: F
Locked rotor torque	: 170 %	Service factor	: 1.00
Breakdown torque	: 200 %	Temperature rise	: 105 K
Rated speed	: 965 rpm	Design	: B

Rev.	Changes Summary	Performed	Checked	Date

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Checked by			Page	Revision
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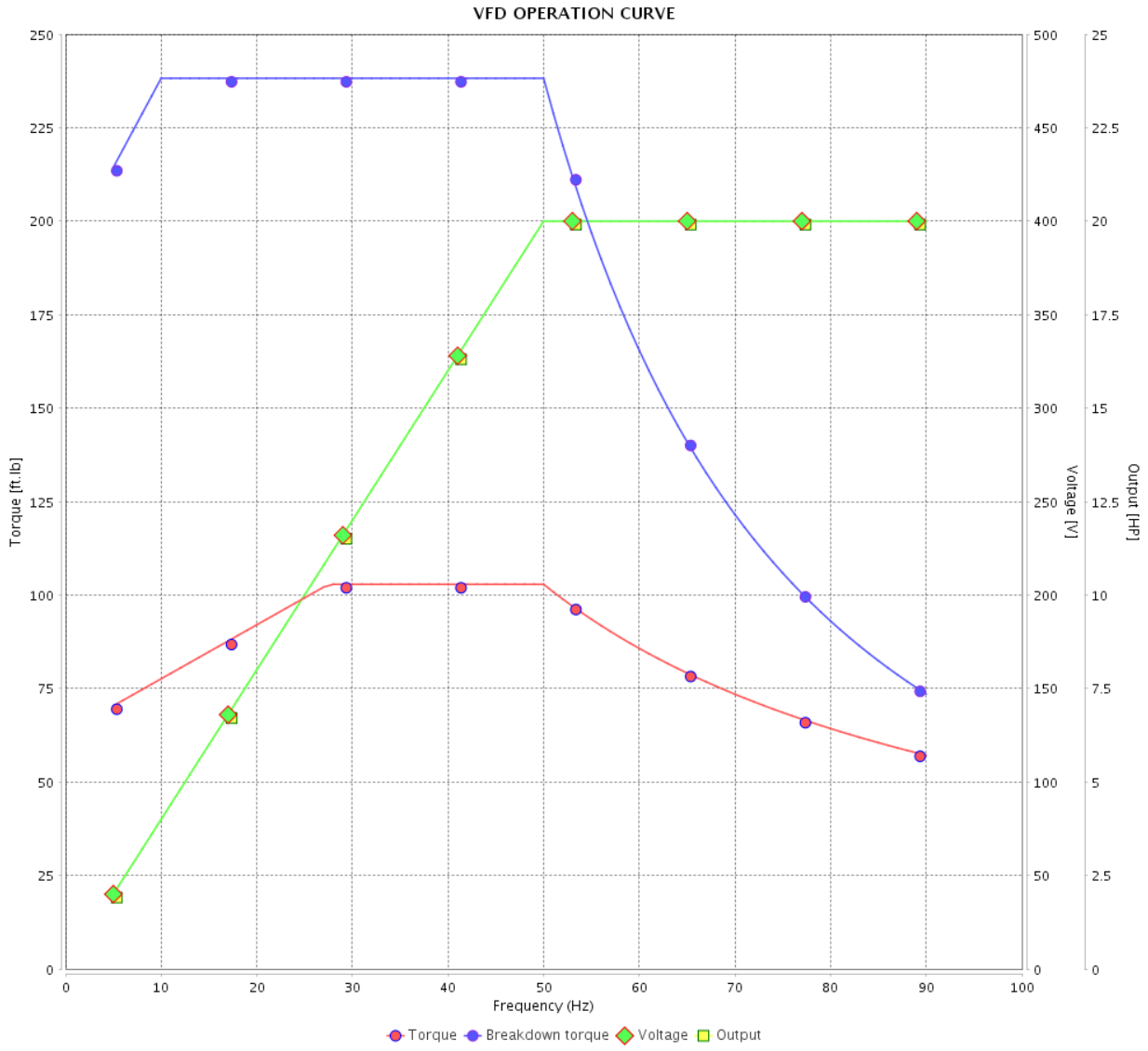
VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:		
Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22



Performance	: 400 V 50 Hz 6P IE1		
Rated current	: 28.1 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 5.3	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 200 %	Service factor	: 1.15
Breakdown torque	: 220 %	Temperature rise	: 105 K
Rated speed	: 970 rpm	Design	: B

Rev.	Changes Summary	Performed	Checked	Date

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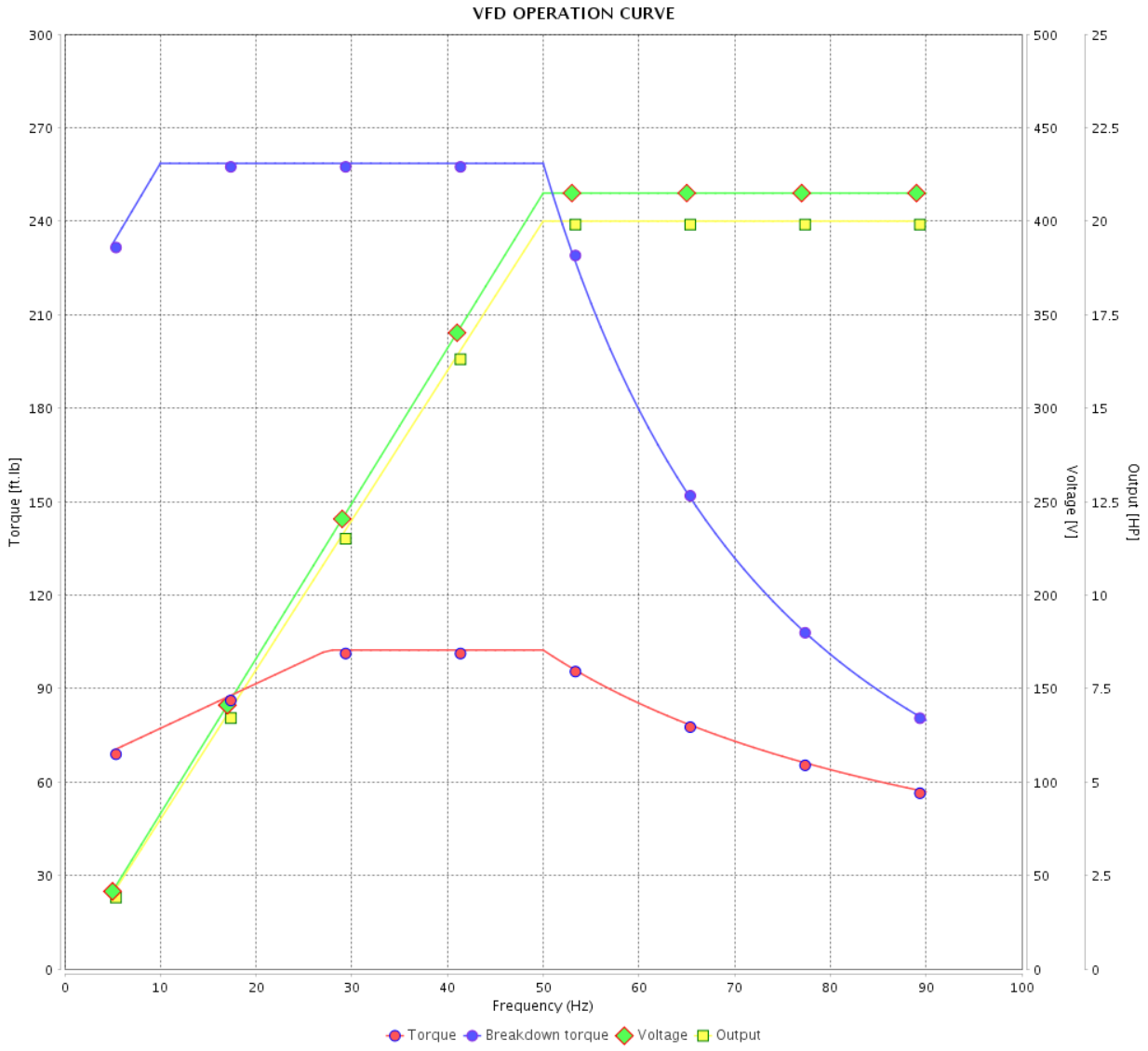
VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

Customer	:

Product line	: NEMA Premium Efficiency Three-Phase	Product code :	11441772
		Catalog # :	02012ET3E286T-W22



Performance	: 415 V 50 Hz 6P IE2

Rated current	: 27.2 A	Moment of inertia (J)	: 9.16 sq.ft.lb
LRC	: 5.8	Duty cycle	: Cont.(S1)
Rated torque	: 108 ft.lb	Insulation class	: F
Locked rotor torque	: 210 %	Service factor	: 1.15
Breakdown torque	: 240 %	Temperature rise	: 80 K
Rated speed	: 975 rpm	Design	: B

Rev.	Changes Summary	Performed	Checked	Date

Performed by				
Checked by			Page	Revision
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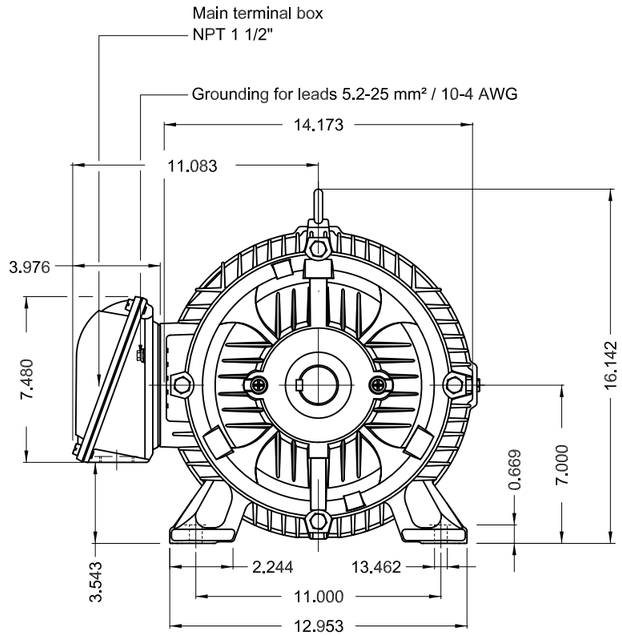
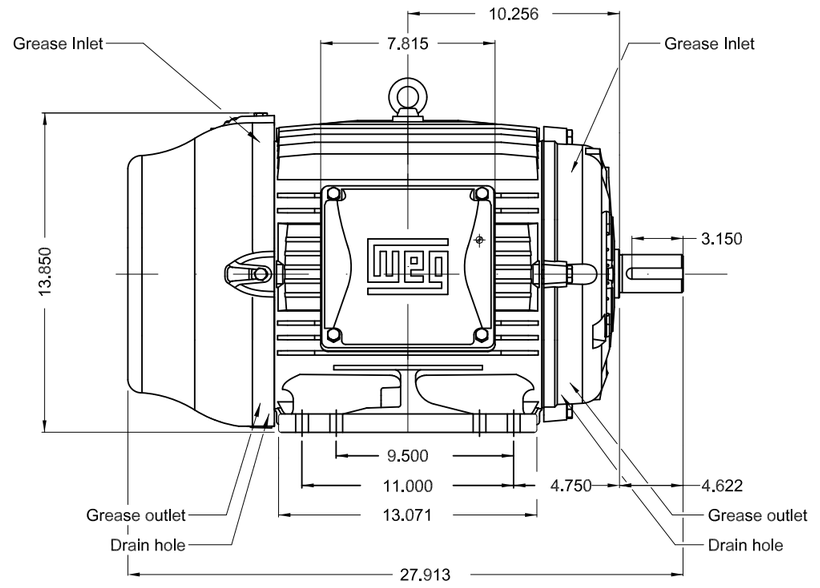
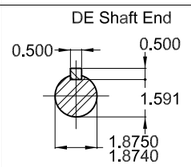






Without vertical jackscrews
Color RAL 5009
Painting plan 203A
Mounting B3R(D)

20 HP 06 Poles 60 Hz | A

ECM	LOC	SUMMARY OF MODIFICATIONS	EXECUTED	CHECKED	RELEASED	DATE	VER

EXECUTED	PIRWBUSER	THREE PH. MOTOR W22 PREM. EFF.	PREVIEW
CHECKED		FRAME 284/6T IP55 TEFC	WDD
RELEASED			
REL DT.		WMO Jaragua do Sul Product Engineering	SHEET 1 / 1

Dimensions in inches
XME A3

NEMA Premium W22

3PT9 LISTED C US

FOR SAFE AREA
Mod.TE1BF0XON
CC029A

C US Energy Verified

For use on 60Hz
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 02012ET3E286T-W22

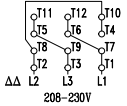
MADE IN BRAZIL
11441772

Inverter Duty Motor
Severe Duty

PH3 60Hz Fr. 284/6T 1000m.a.s.l.		IP55 TEFC 438lb	
V 230/460		A 48.4/24.2	
HP 20		kW 15	
SF 1.25		SFA 60.5/30.3	
RPM 1175		PF 0.85	
AMB 40°C		INS cl. F DT80K	NEMA NOM EFF 91.7%
DUTY CONT.		DES B Code G	

USABLE @208V 53.5A SF 1.15 SFA 61.5

20HP 15kW 50Hz 380V 29.9A 965RPM SF 1.00 EFF 88.5% (IE1)



→ 6311-C3 (18g)

→ 6211-C3 (11g)

MOBIL POLYREX EM (20000h)