

DATA SHEET

Three Phase Induction Motor - Squirrel Cage



Customer							
Product line	: W40 NEMA Premium Efficiency Three-Phase	Product code	: 13593624				
		Catalog #	: 45036OT3G447/9TS-W40				
Frame	: 447/9TS	Cooling method	: IC01 - ODP				
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	: 2127 lb				
Protection degree	: IP23	Moment of inertia (J)	: 43.6 sq.ft.lb				
Design	: A						
Output [HP]	450	350	350	350	400	400	400
Poles	2	2	2	2	2	2	2
Frequency [Hz]	60	50	50	50	50	50	50
Rated voltage [V]	460	380	400	415	380	400	415
Rated current [A]	478	458	435	424	529	502	490
L. R. Amperes [A]	3250	3023	3219	3392	3068	3263	3430
LRC [A]	6.8x(Code G)	6.6x(Code G)	7.4x(Code H)	8.0x(Code H)	5.8x(Code F)	6.5x(Code G)	7.0x(Code G)
No load current [A]	105	95.0	105	115	95.0	105	115
Rated speed [RPM]	3565	2965	2965	2975	2960	2963	2970
Slip [%]	0.97	1.17	1.17	0.83	1.33	1.23	1.00
Rated torque [ft.lb]	663	620	620	618	710	709	707
Locked rotor torque [%]	180	180	210	229	160	180	200
Breakdown torque [%]	250	240	260	270	210	229	240
Service factor	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Temperature rise	80 K	80 K	80 K	80 K	80 K	80 K	80 K
Locked rotor time	25s (cold) 14s (hot)	25s (cold) 14s (hot)	25s (cold) 14s (hot)	25s (cold) 14s (hot)	25s (cold) 14s (hot)	25s (cold) 14s (hot)	25s (cold) 14s (hot)
Noise level ²	87.0 dB(A)	81.0 dB(A)	81.0 dB(A)	81.0 dB(A)	81.0 dB(A)	81.0 dB(A)	81.0 dB(A)
Efficiency (%)	25%	95.7	94.3	94.1	94.0	94.5	94.5
	50%	95.8	94.9	94.7	94.6	95.0	95.0
	75%	96.2	95.3	95.3	95.3	95.4	95.4
	100%	96.2	95.8	95.8	95.8	95.8	95.8
Power Factor	25%	0.63	0.62	0.59	0.55	0.66	0.60
	50%	0.84	0.82	0.81	0.78	0.85	0.82
	75%	0.89	0.88	0.88	0.87	0.89	0.88
	100%	0.90	0.90	0.90	0.89	0.90	0.89
Bearing type	: Drive end 6314 C3	Non drive end 6314 C3	Foundation loads				
Sealing	: Without	Without	Max. traction	: 3461 lb			
	Bearing Seal	Bearing Seal	Max. compression	: 5588 lb			
Lubrication interval	: 14418 h	14418 h					
Lubricant amount	: 27 g	27 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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Thermal protection

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

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TORQUE AND CURRENT VS SPEED CURVE



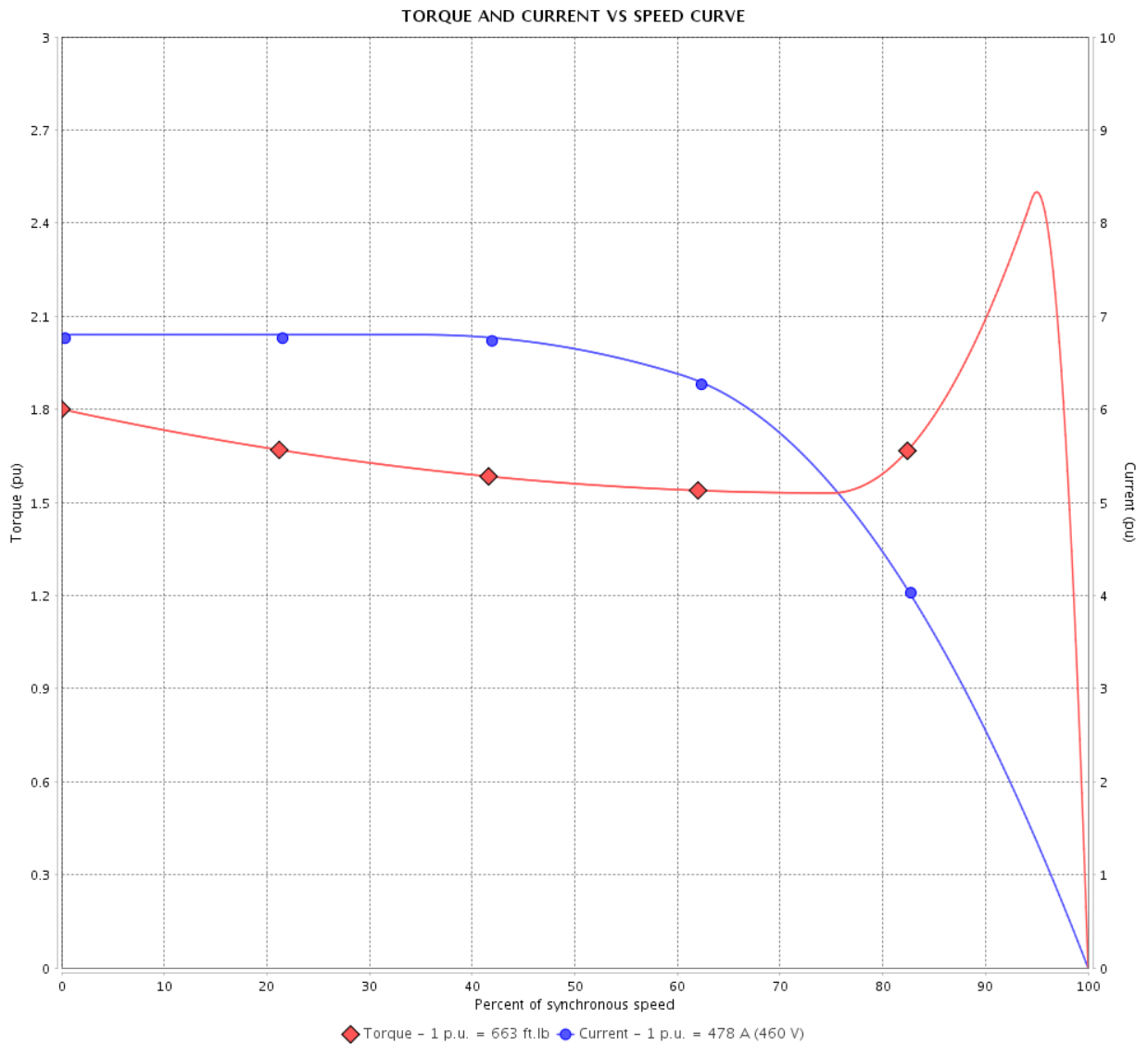
Three Phase Induction Motor - Squirrel Cage

Customer :

Product line : W40 NEMA Premium Efficiency
Three-Phase

Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40



Performance : 460 V 60 Hz 2P

Rated current	: 478 A	Moment of inertia (J)	: 43.6 sq.ft.lb
LRC	: 6.8	Duty cycle	: Cont.(S1)
Rated torque	: 663 ft.lb	Insulation class	: F
Locked rotor torque	: 180 %	Service factor	: 1.15
Breakdown torque	: 250 %	Temperature rise	: 80 K
Rated speed	: 3565 rpm	Design	: A

Locked rotor time : 25s (cold) 14s (hot)

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TORQUE AND CURRENT VS SPEED CURVE

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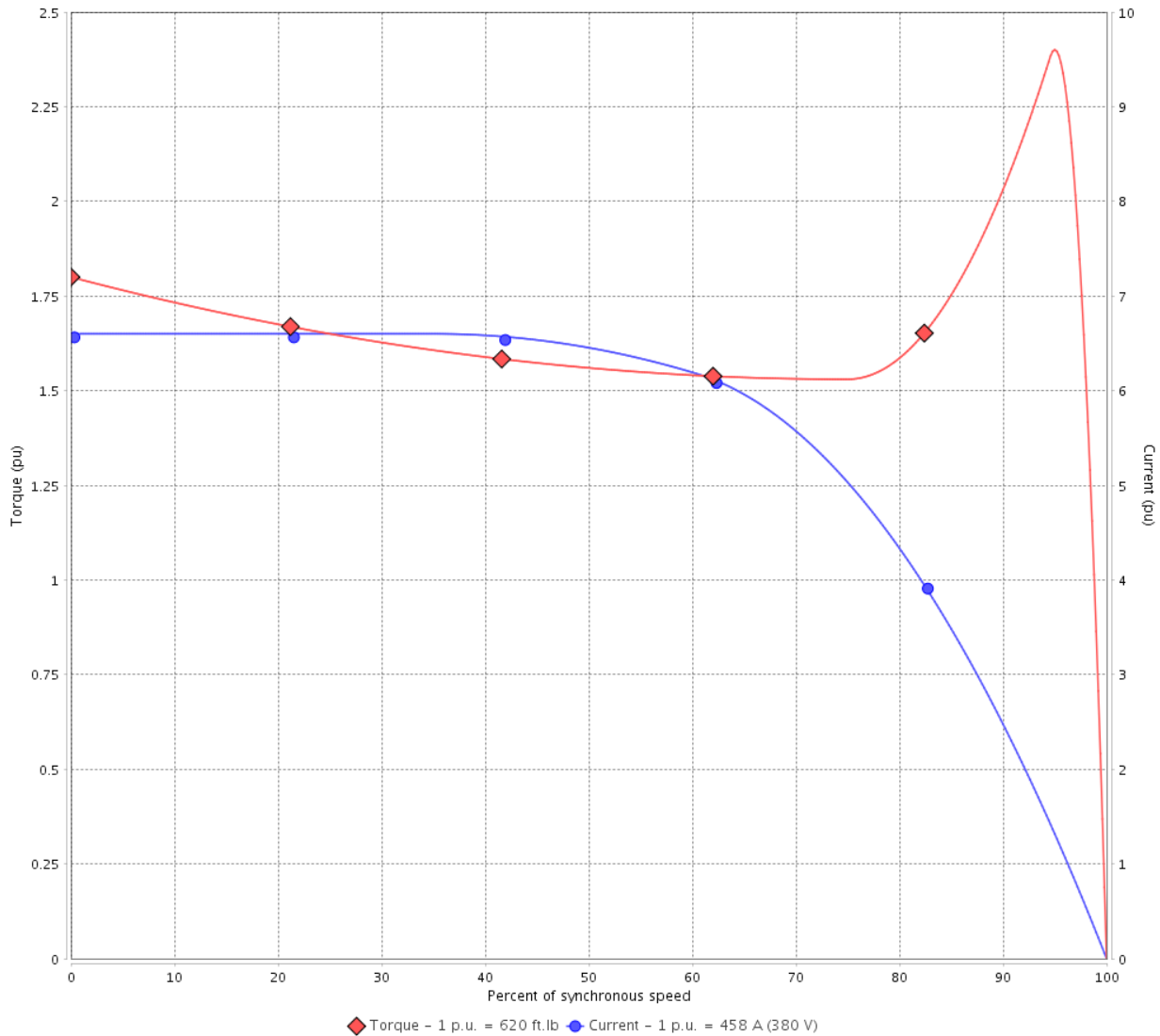
Customer :

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TORQUE AND CURRENT VS SPEED CURVE



Performance : 380 V 50 Hz 2P IE3

Rated current	: 458 A	Moment of inertia (J)	: 43.6 sq.ft.lb
LRC	: 6.6	Duty cycle	: Cont.(S1)
Rated torque	: 620 ft.lb	Insulation class	: F
Locked rotor torque	: 180 %	Service factor	: 1.15
Breakdown torque	: 240 %	Temperature rise	: 80 K
Rated speed	: 2965 rpm	Design	: A

Locked rotor time : 25s (cold) 14s (hot)

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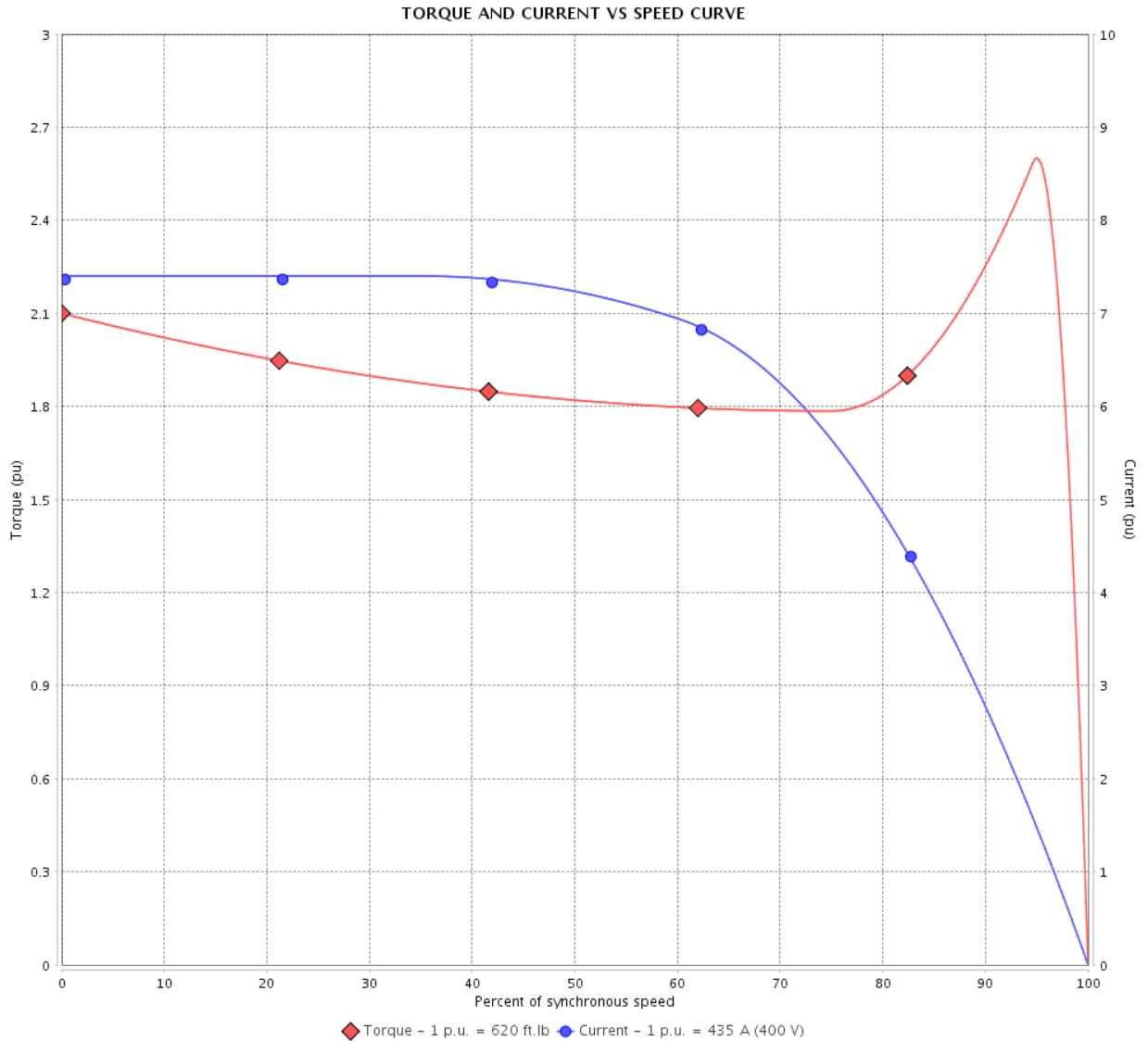
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Customer :

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Three-Phase

Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40



Performance : 400 V 50 Hz 2P IE3

Rated current	: 435 A	Moment of inertia (J)	: 43.6 sq.ft.lb
LRC	: 7.4	Duty cycle	: Cont.(S1)
Rated torque	: 620 ft.lb	Insulation class	: F
Locked rotor torque	: 210 %	Service factor	: 1.15
Breakdown torque	: 260 %	Temperature rise	: 80 K
Rated speed	: 2965 rpm	Design	: A

Locked rotor time : 25s (cold) 14s (hot)

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TORQUE AND CURRENT VS SPEED CURVE

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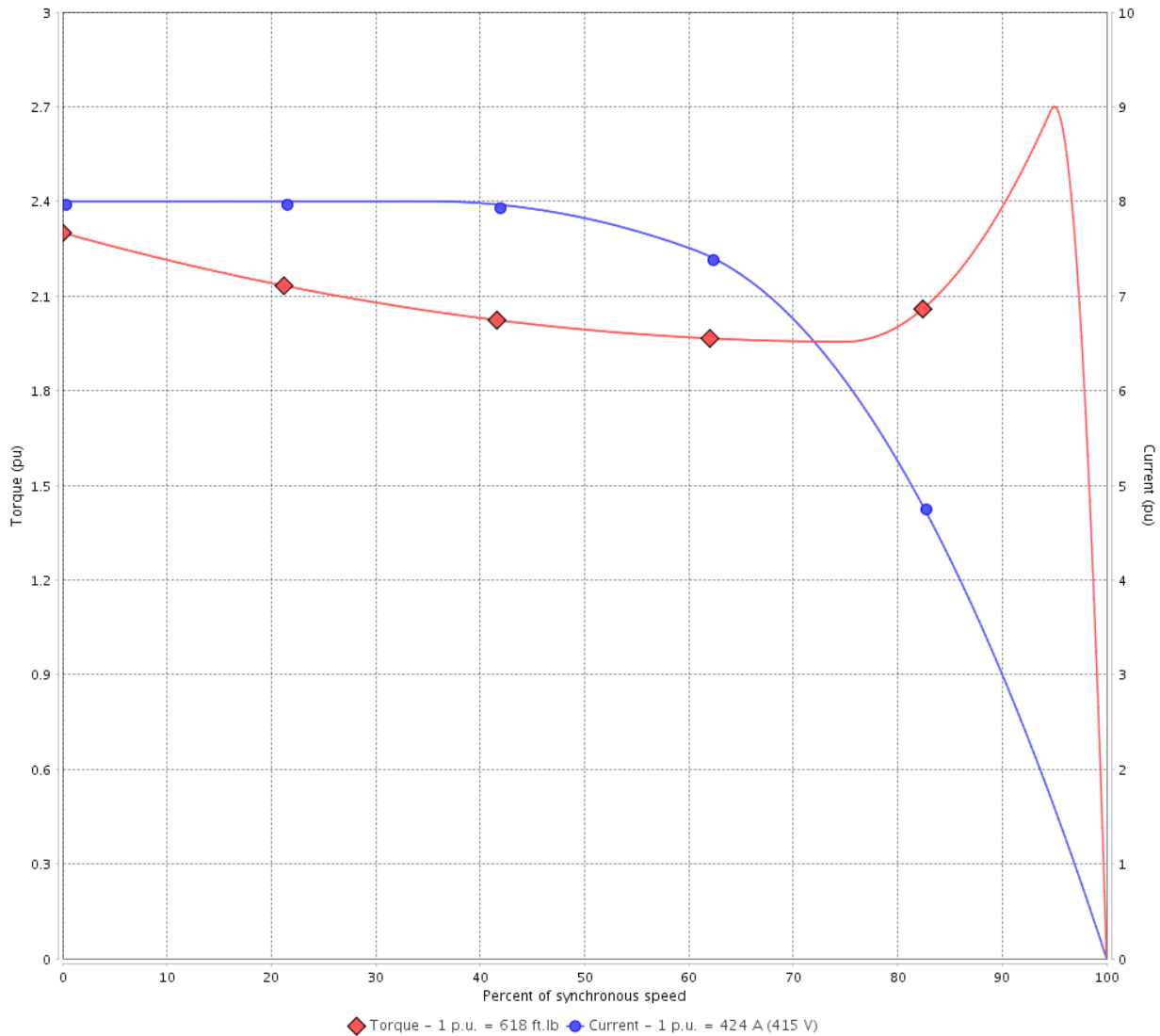
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TORQUE AND CURRENT VS SPEED CURVE



Performance : 415 V 50 Hz 2P IE3

Rated current	: 424 A	Moment of inertia (J)	: 43.6 sq.ft.lb
LRC	: 8.0	Duty cycle	: Cont.(S1)
Rated torque	: 618 ft.lb	Insulation class	: F
Locked rotor torque	: 229 %	Service factor	: 1.15
Breakdown torque	: 270 %	Temperature rise	: 80 K
Rated speed	: 2975 rpm	Design	: A

Locked rotor time : 25s (cold) 14s (hot)

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TORQUE AND CURRENT VS SPEED CURVE



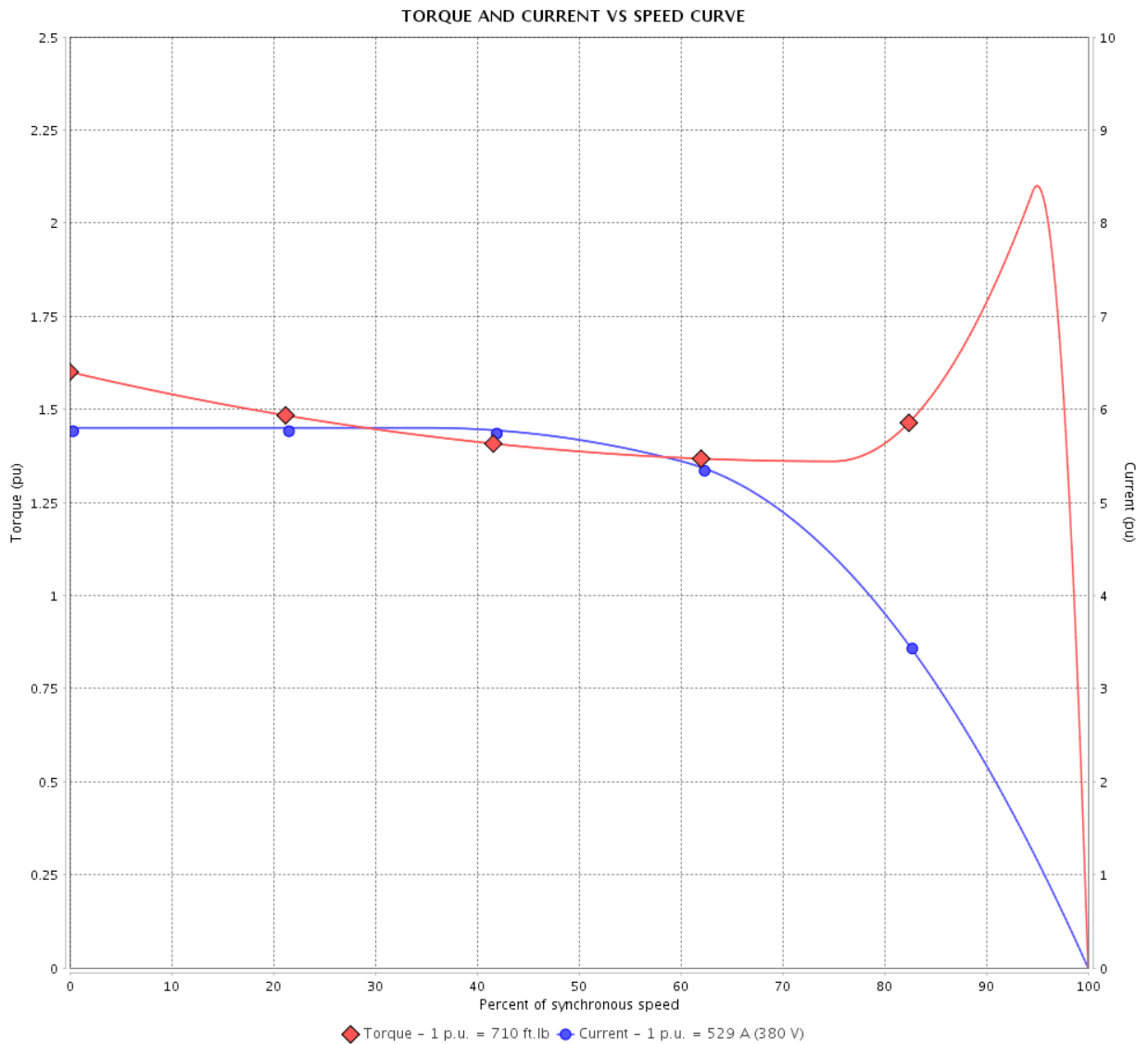
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Performance : 380 V 50 Hz 2P IE3

Rated current	: 529 A	Moment of inertia (J)	: 43.6 sq.ft.lb
LRC	: 5.8	Duty cycle	: Cont.(S1)
Rated torque	: 710 ft.lb	Insulation class	: F
Locked rotor torque	: 160 %	Service factor	: 1.15
Breakdown torque	: 210 %	Temperature rise	: 80 K
Rated speed	: 2960 rpm	Design	: A

Locked rotor time : 25s (cold) 14s (hot)

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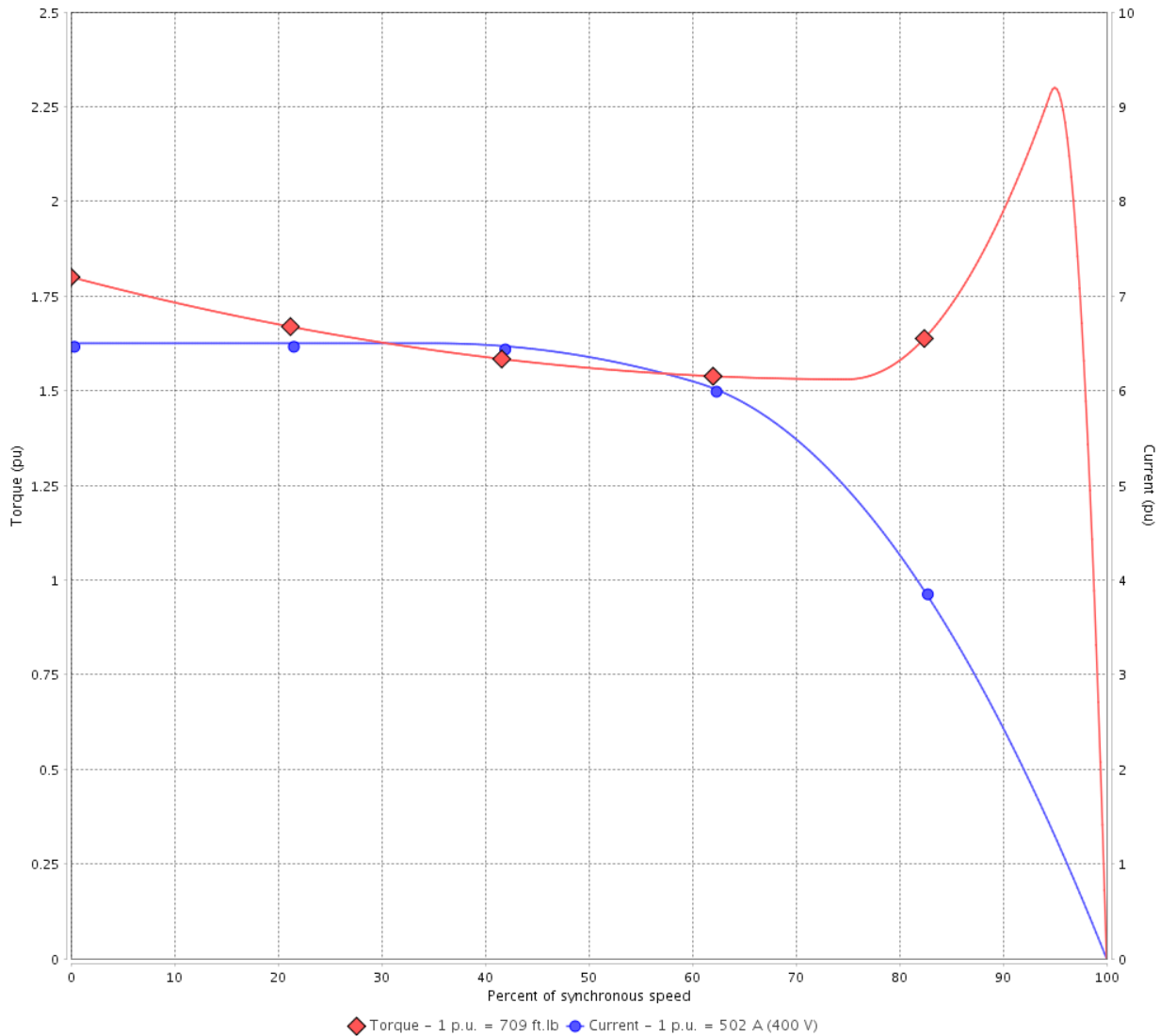
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TORQUE AND CURRENT VS SPEED CURVE



Performance : 400 V 50 Hz 2P IE3

Rated current	: 502 A	Moment of inertia (J)	: 43.6 sq.ft.lb
LRC	: 6.5	Duty cycle	: Cont.(S1)
Rated torque	: 709 ft.lb	Insulation class	: F
Locked rotor torque	: 180 %	Service factor	: 1.15
Breakdown torque	: 229 %	Temperature rise	: 80 K
Rated speed	: 2963 rpm	Design	: A

Locked rotor time : 25s (cold) 14s (hot)

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TORQUE AND CURRENT VS SPEED CURVE



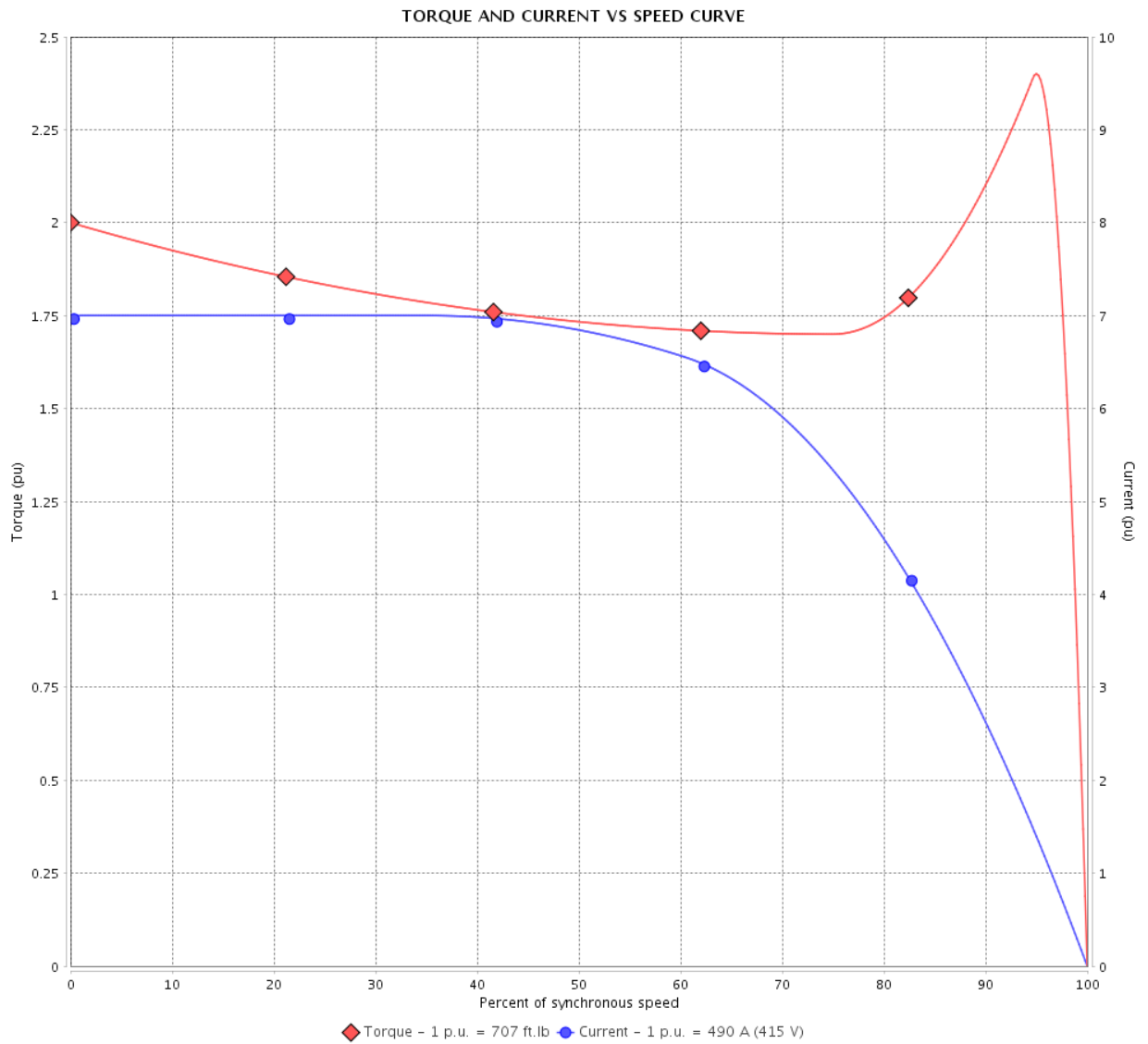
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Performance : 415 V 50 Hz 2P IE3

Rated current	: 490 A	Moment of inertia (J)	: 43.6 sq.ft.lb
LRC	: 7.0	Duty cycle	: Cont.(S1)
Rated torque	: 707 ft.lb	Insulation class	: F
Locked rotor torque	: 200 %	Service factor	: 1.15
Breakdown torque	: 240 %	Temperature rise	: 80 K
Rated speed	: 2970 rpm	Design	: A

Locked rotor time : 25s (cold) 14s (hot)

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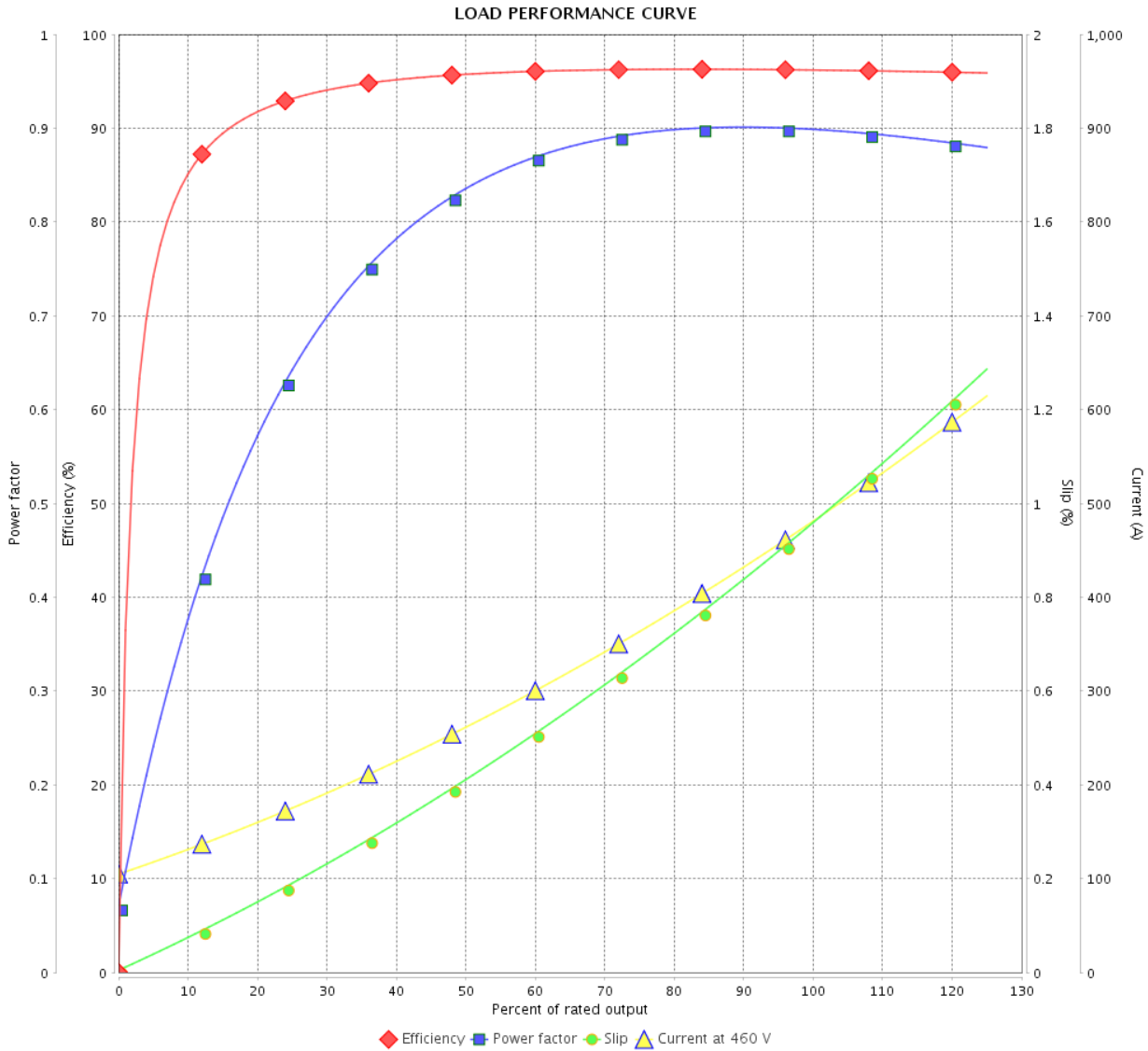


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Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40



Performance : 460 V 60 Hz 2P

Rated current : 478 A
 LRC : 6.8
 Rated torque : 663 ft.lb
 Locked rotor torque : 180 %
 Breakdown torque : 250 %
 Rated speed : 3565 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : A

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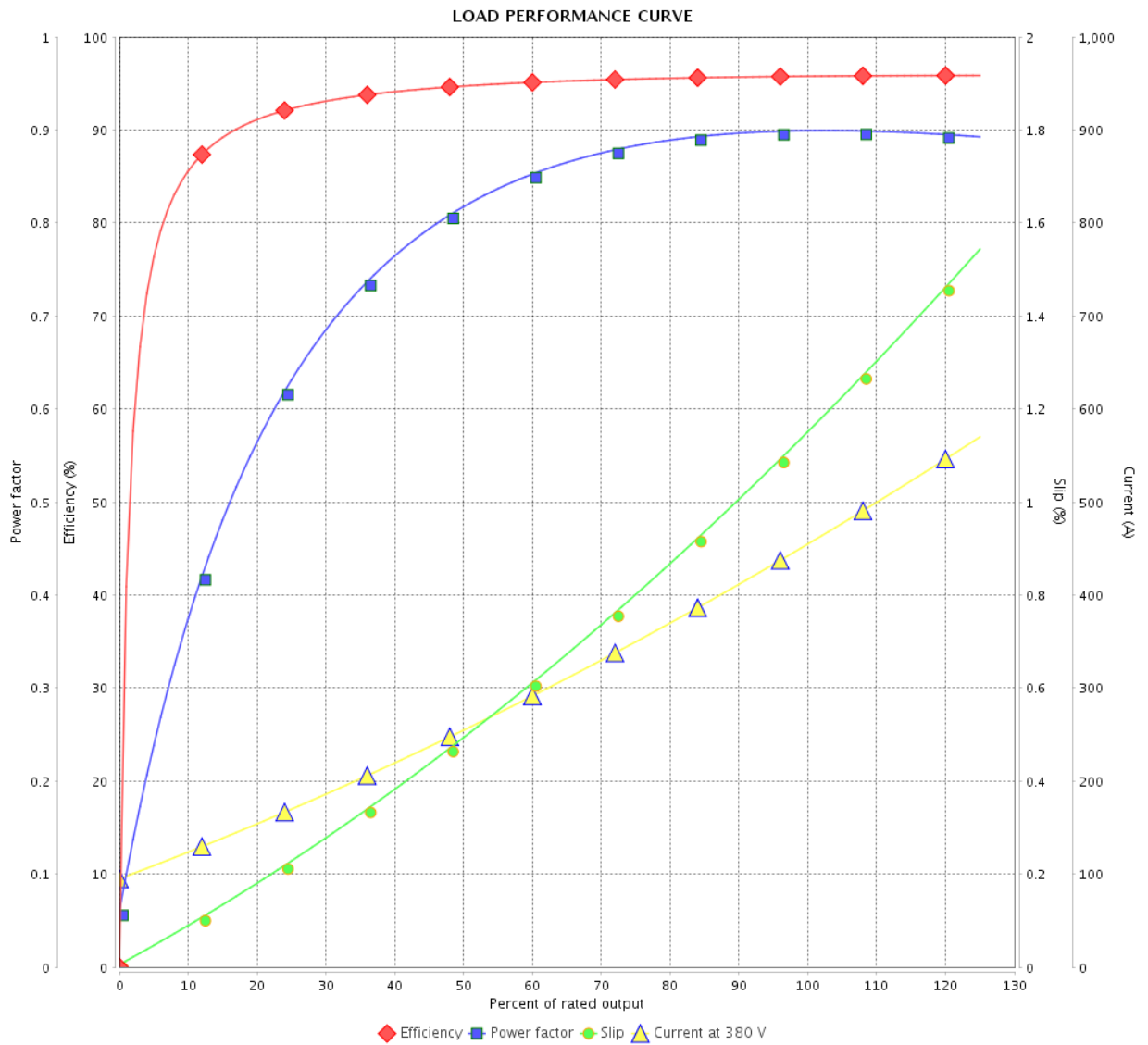


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Performance : 380 V 50 Hz 2P IE3

Rated current : 458 A
 LRC : 6.6
 Rated torque : 620 ft.lb
 Locked rotor torque : 180 %
 Breakdown torque : 240 %
 Rated speed : 2965 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : A

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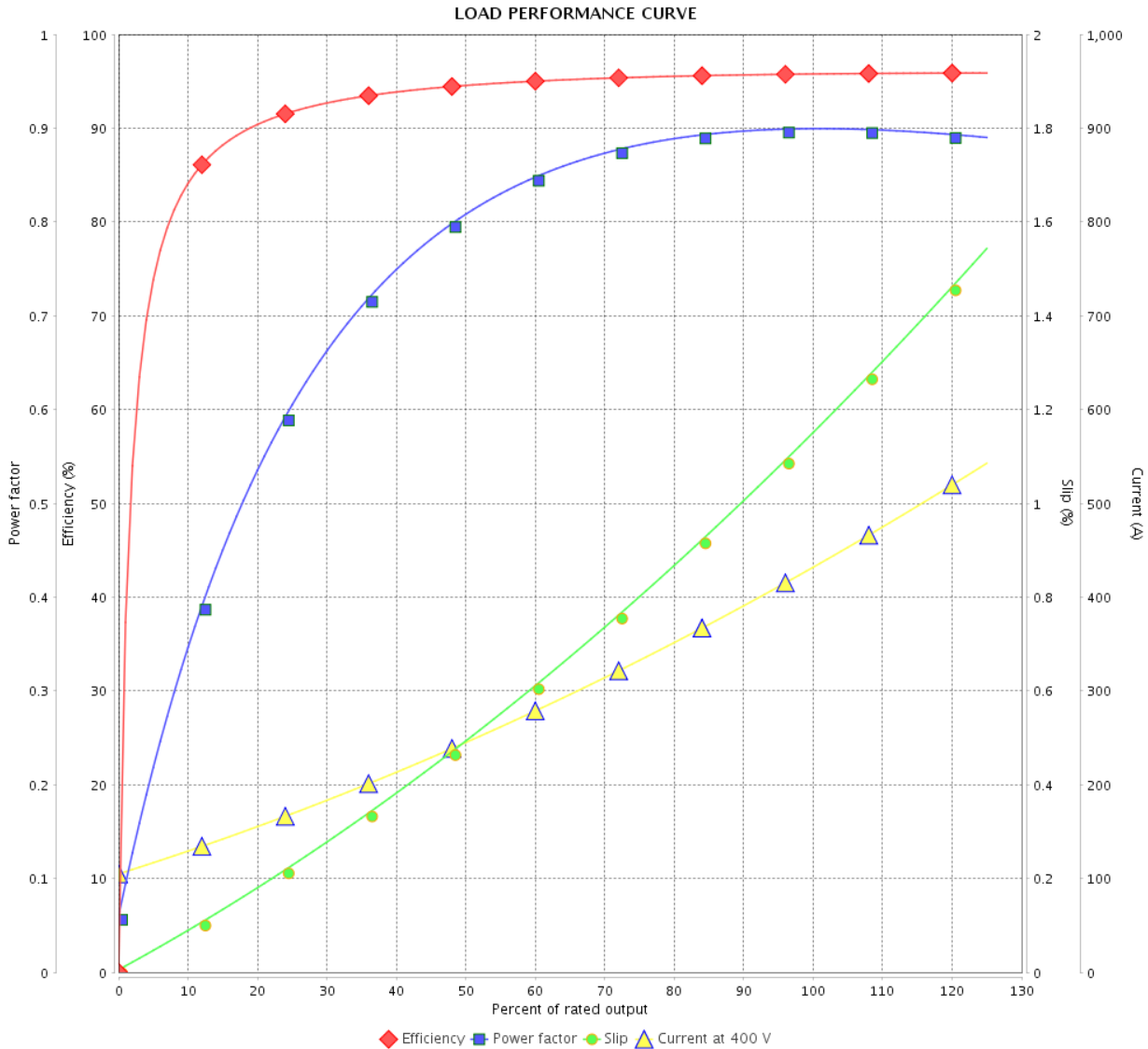


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Performance : 400 V 50 Hz 2P IE3

Rated current : 435 A
 LRC : 7.4
 Rated torque : 620 ft.lb
 Locked rotor torque : 210 %
 Breakdown torque : 260 %
 Rated speed : 2965 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : A

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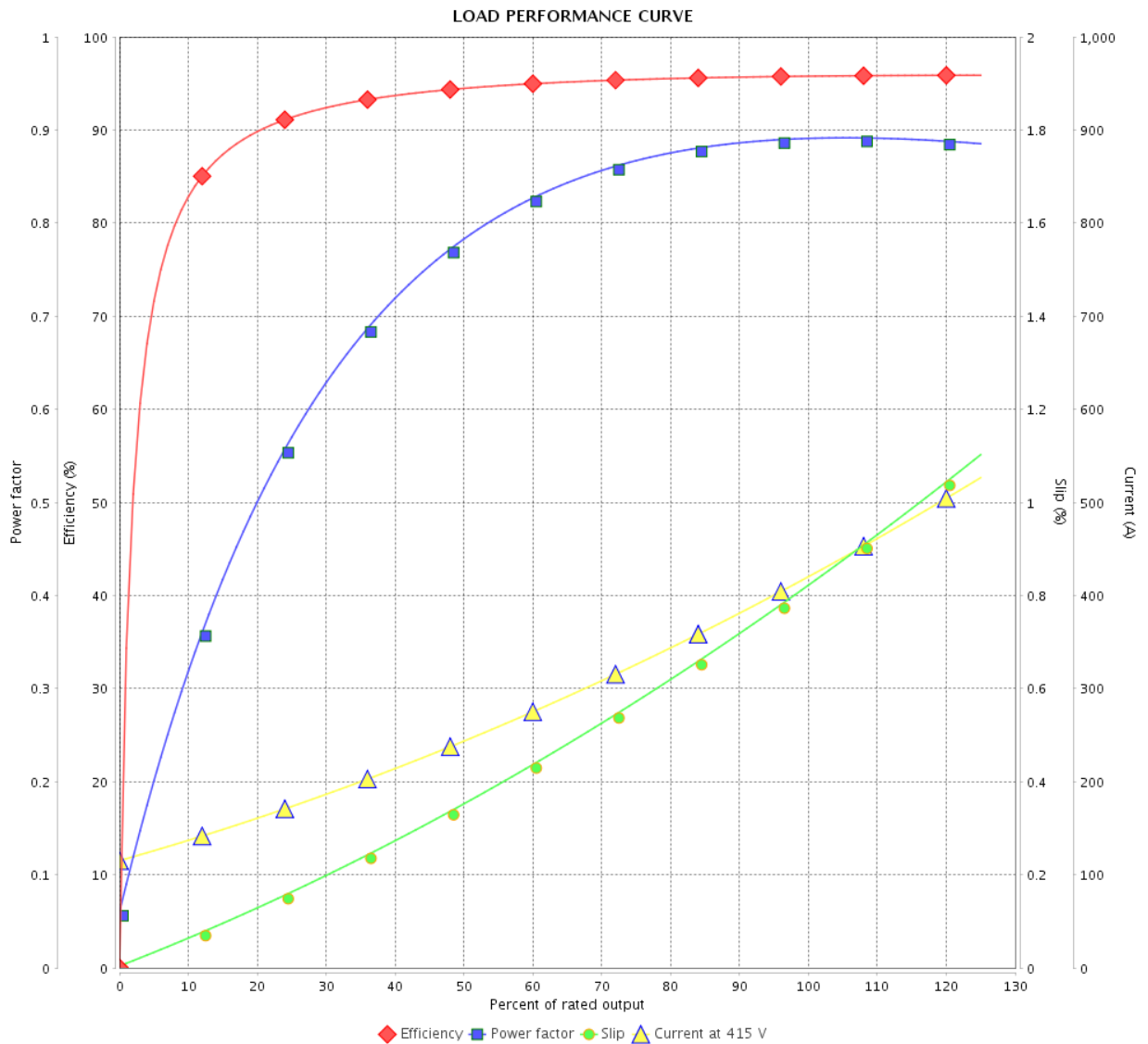


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Performance : 415 V 50 Hz 2P IE3

Rated current : 424 A
 LRC : 8.0
 Rated torque : 618 ft.lb
 Locked rotor torque : 229 %
 Breakdown torque : 270 %
 Rated speed : 2975 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : A

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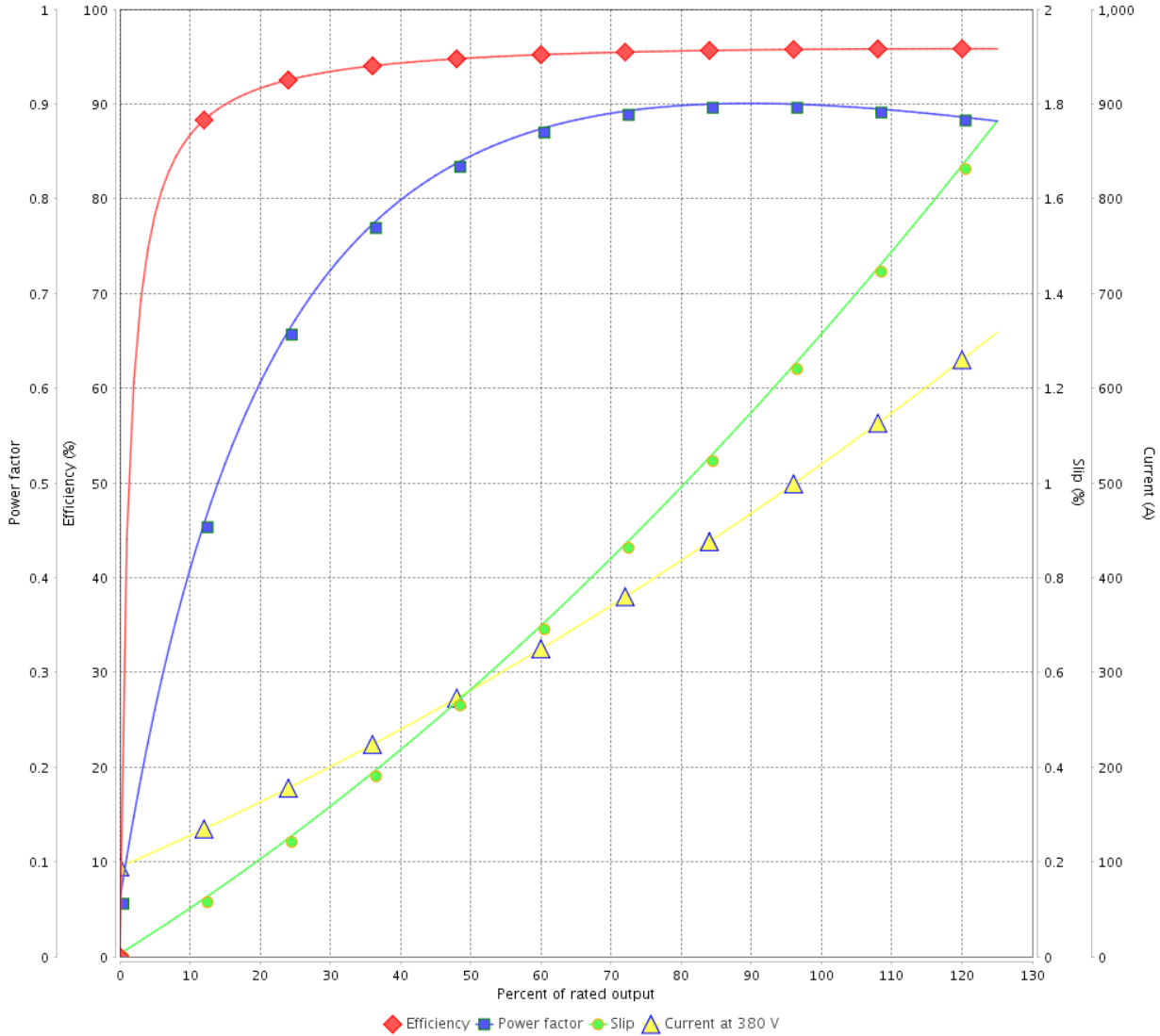
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Performance : 380 V 50 Hz 2P IE3

Rated current : 529 A
 LRC : 5.8
 Rated torque : 710 ft.lb
 Locked rotor torque : 160 %
 Breakdown torque : 210 %
 Rated speed : 2960 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : A

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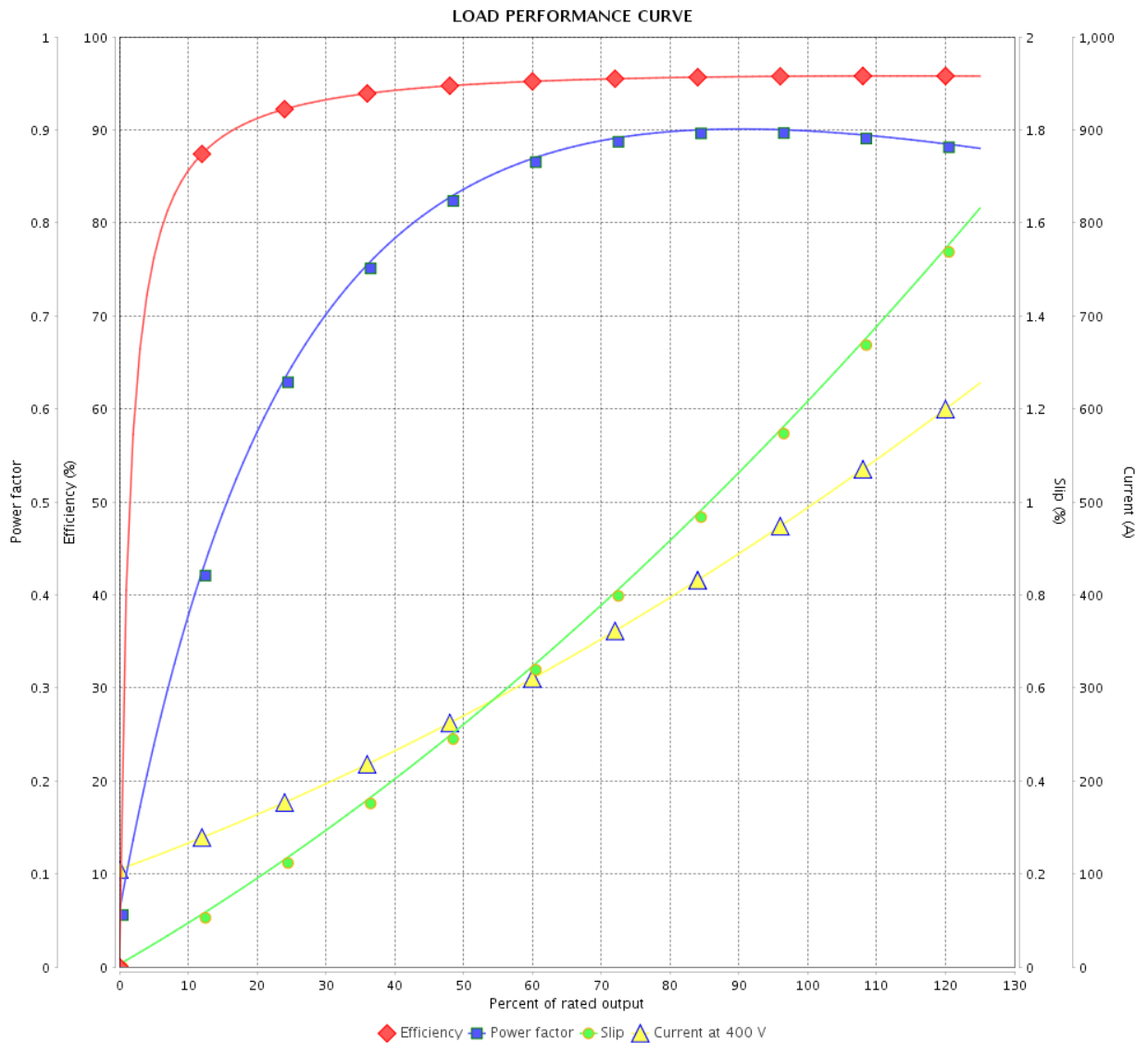


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Catalog # : 45036OT3G447/9TS-W40



Performance : 400 V 50 Hz 2P IE3

Rated current : 502 A
 LRC : 6.5
 Rated torque : 709 ft.lb
 Locked rotor torque : 180 %
 Breakdown torque : 229 %
 Rated speed : 2963 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : A

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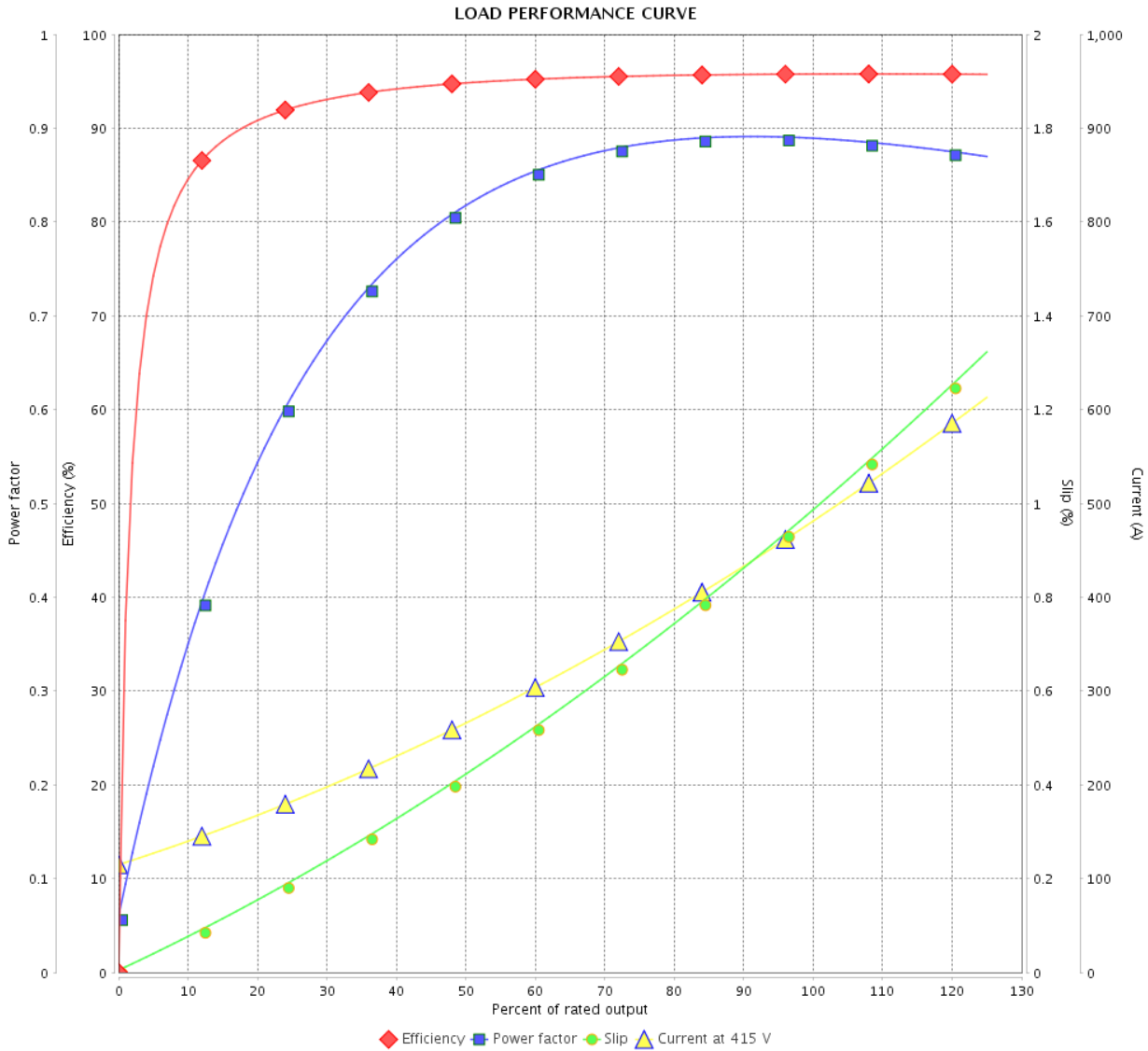


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Performance : 415 V 50 Hz 2P IE3

Rated current : 490 A
 LRC : 7.0
 Rated torque : 707 ft.lb
 Locked rotor torque : 200 %
 Breakdown torque : 240 %
 Rated speed : 2970 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
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Performance : 460 V 60 Hz 2P

Rated current : 478 A
LRC : 6.8
Rated torque : 663 ft.lb
Locked rotor torque : 180 %
Breakdown torque : 250 %
Rated speed : 3565 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
Duty cycle : Cont.(S1)
Insulation class : F
Service factor : 1.15
Temperature rise : 80 K
Design : A

Heating constant

Cooling constant

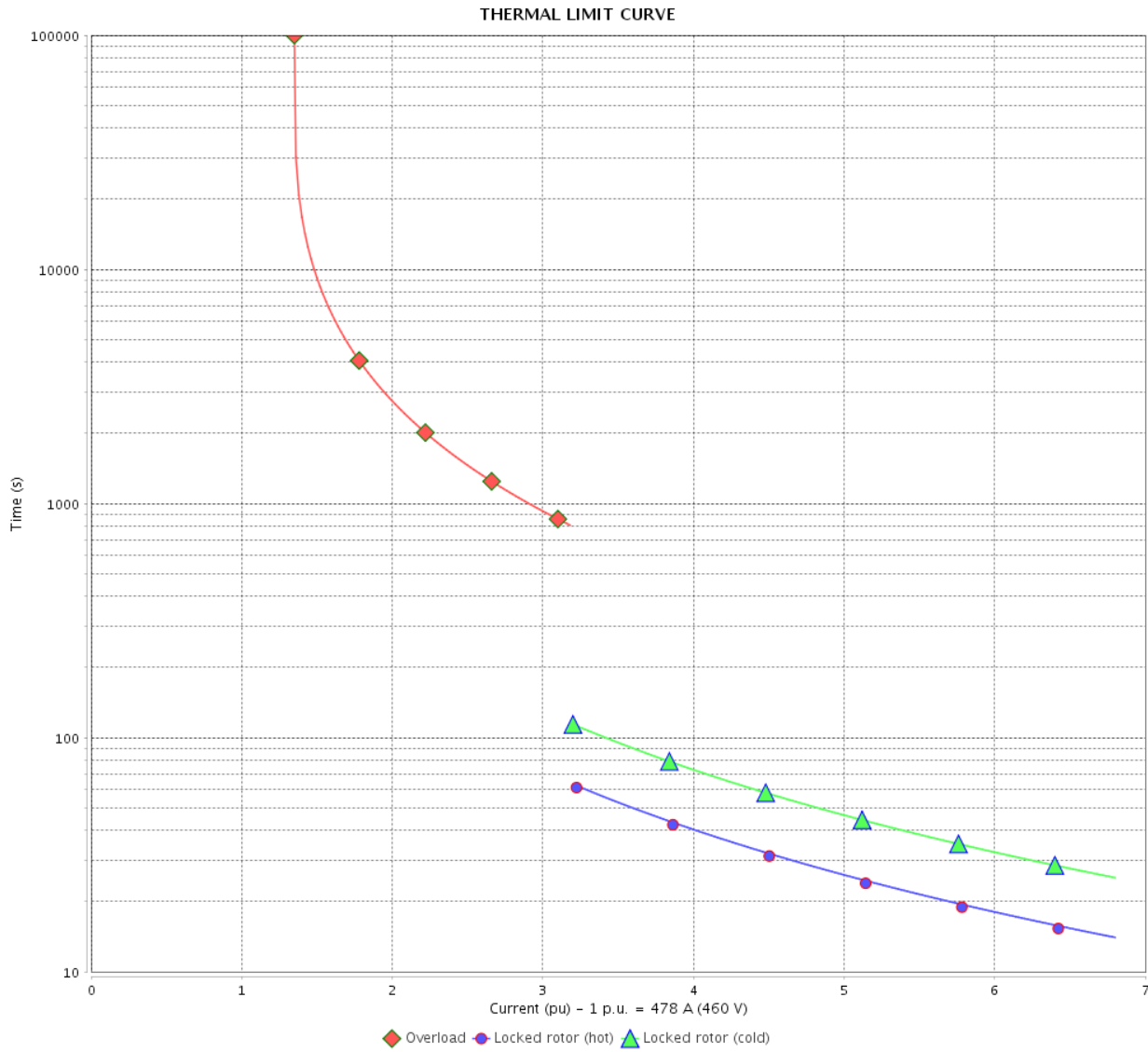
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Performance : 380 V 50 Hz 2P IE3

Rated current : 458 A	Moment of inertia (J) : 43.6 sq.ft.lb
LRC : 6.6	Duty cycle : Cont.(S1)
Rated torque : 620 ft.lb	Insulation class : F
Locked rotor torque : 180 %	Service factor : 1.15
Breakdown torque : 240 %	Temperature rise : 80 K
Rated speed : 2965 rpm	Design : A

Heating constant

Cooling constant

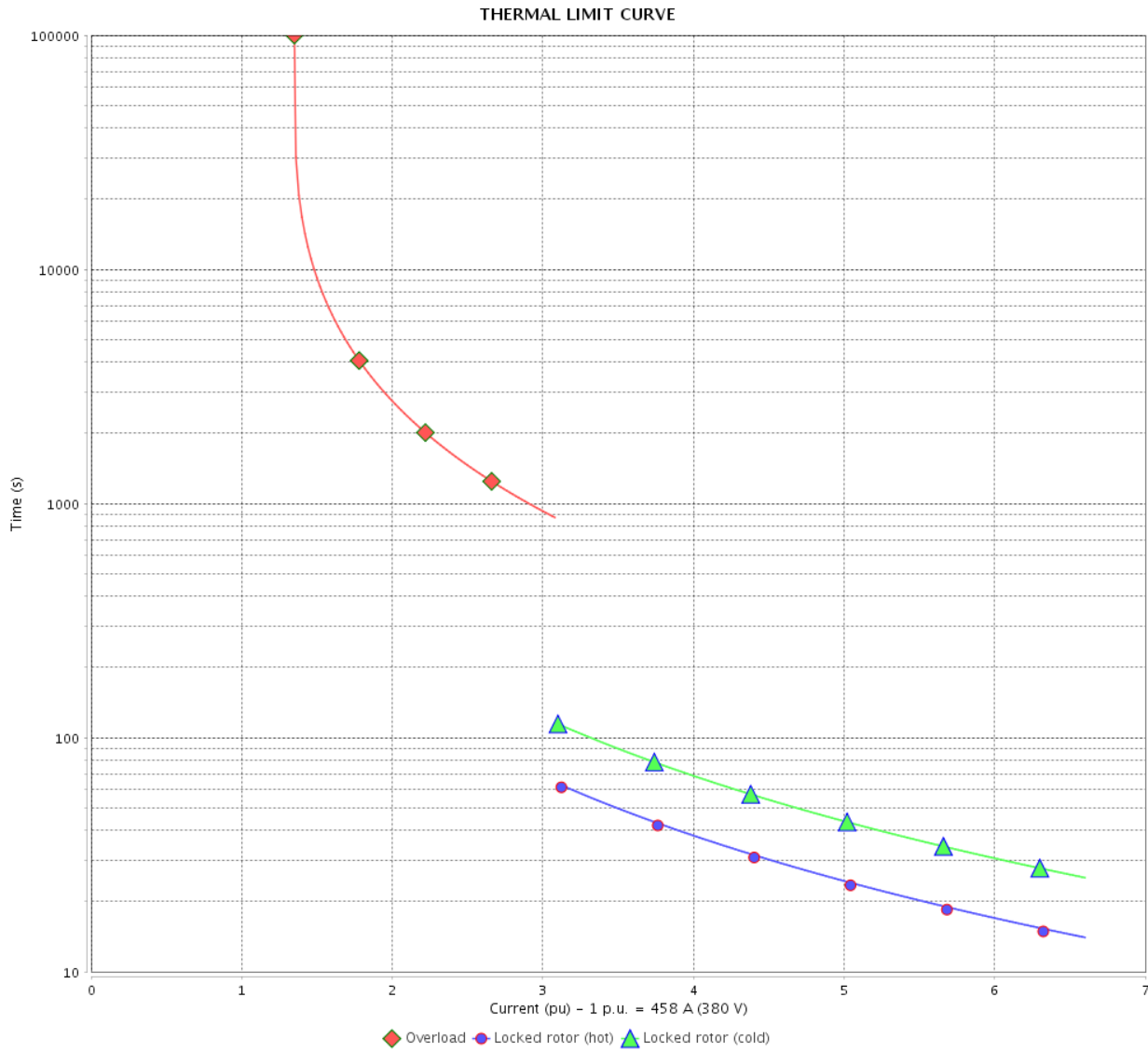
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Performance : 400 V 50 Hz 2P IE3

Rated current : 435 A	Moment of inertia (J) : 43.6 sq.ft.lb
LRC : 7.4	Duty cycle : Cont.(S1)
Rated torque : 620 ft.lb	Insulation class : F
Locked rotor torque : 210 %	Service factor : 1.15
Breakdown torque : 260 %	Temperature rise : 80 K
Rated speed : 2965 rpm	Design : A

Heating constant

Cooling constant

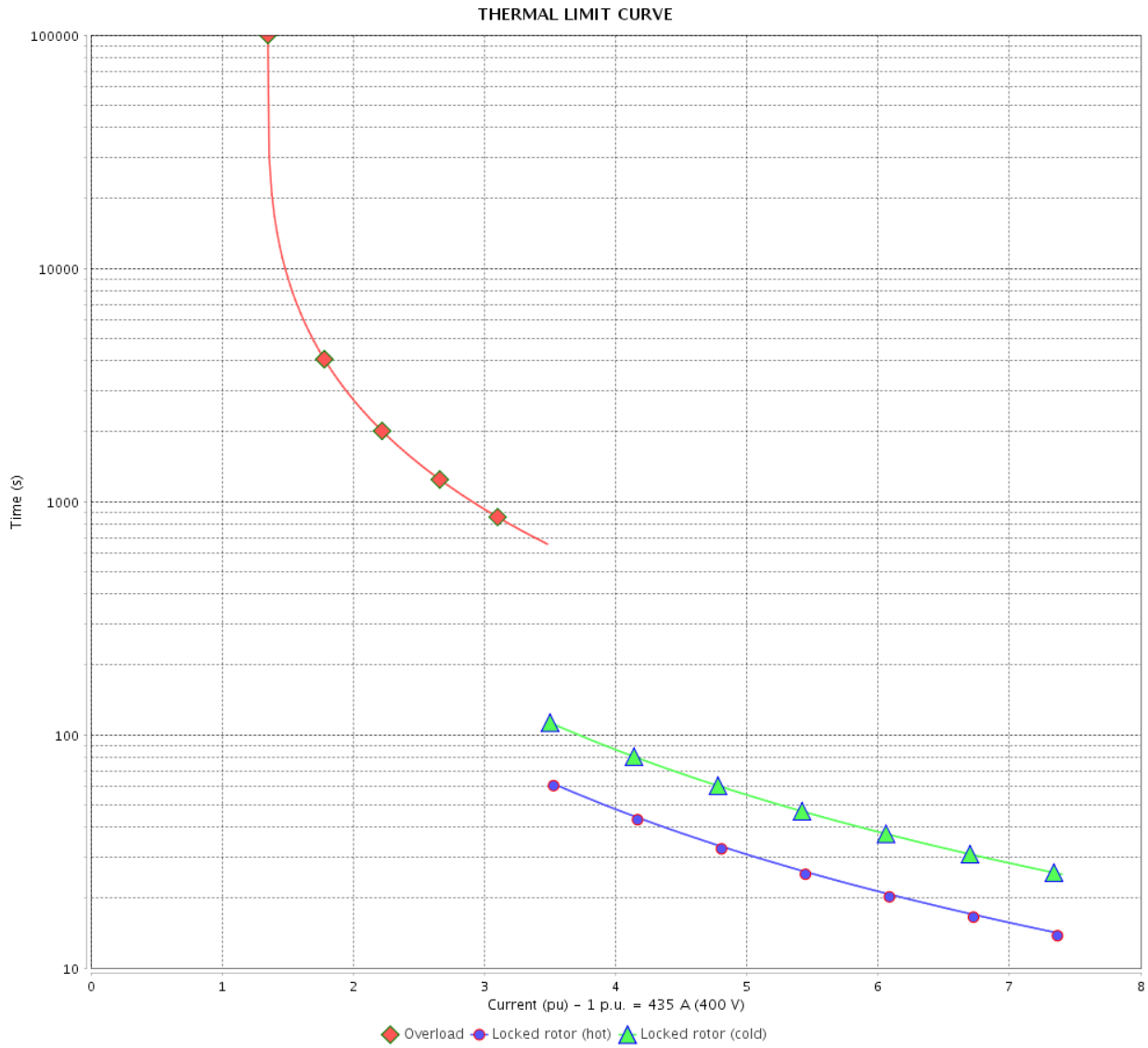
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Heating constant

Cooling constant

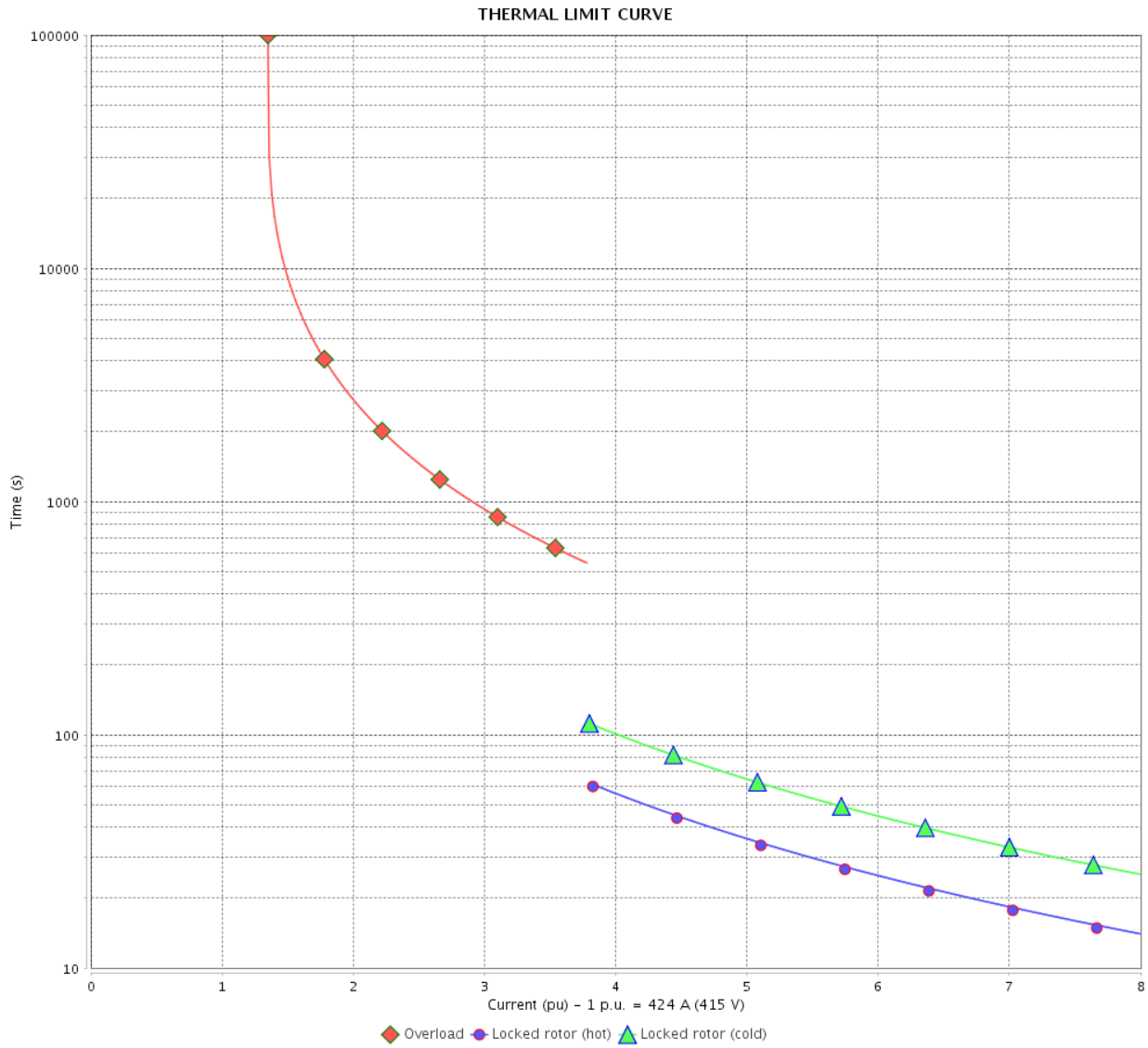
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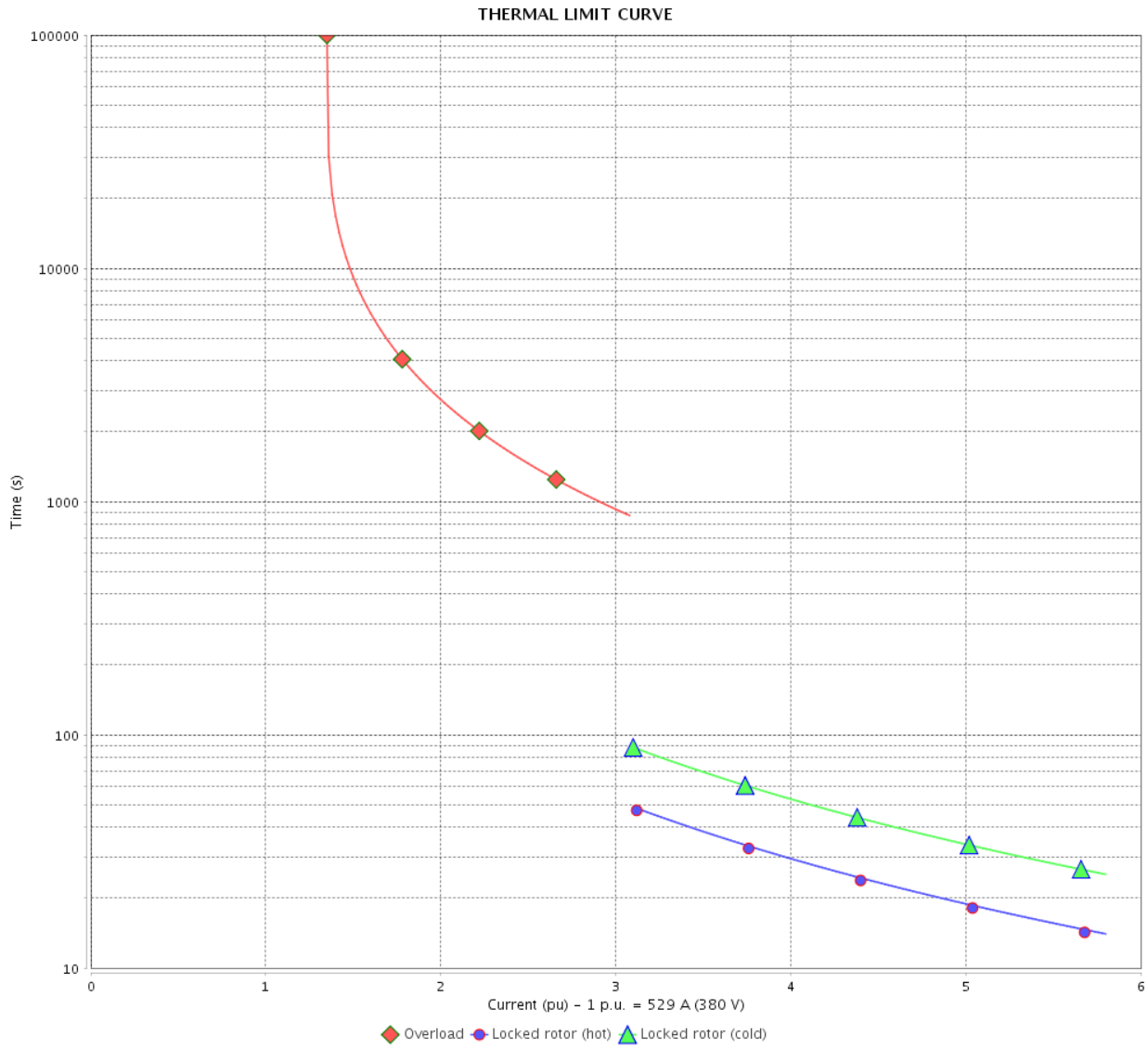
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Breakdown torque : 229 %
Rated speed : 2963 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
Duty cycle : Cont.(S1)
Insulation class : F
Service factor : 1.15
Temperature rise : 80 K
Design : A

Heating constant

Cooling constant

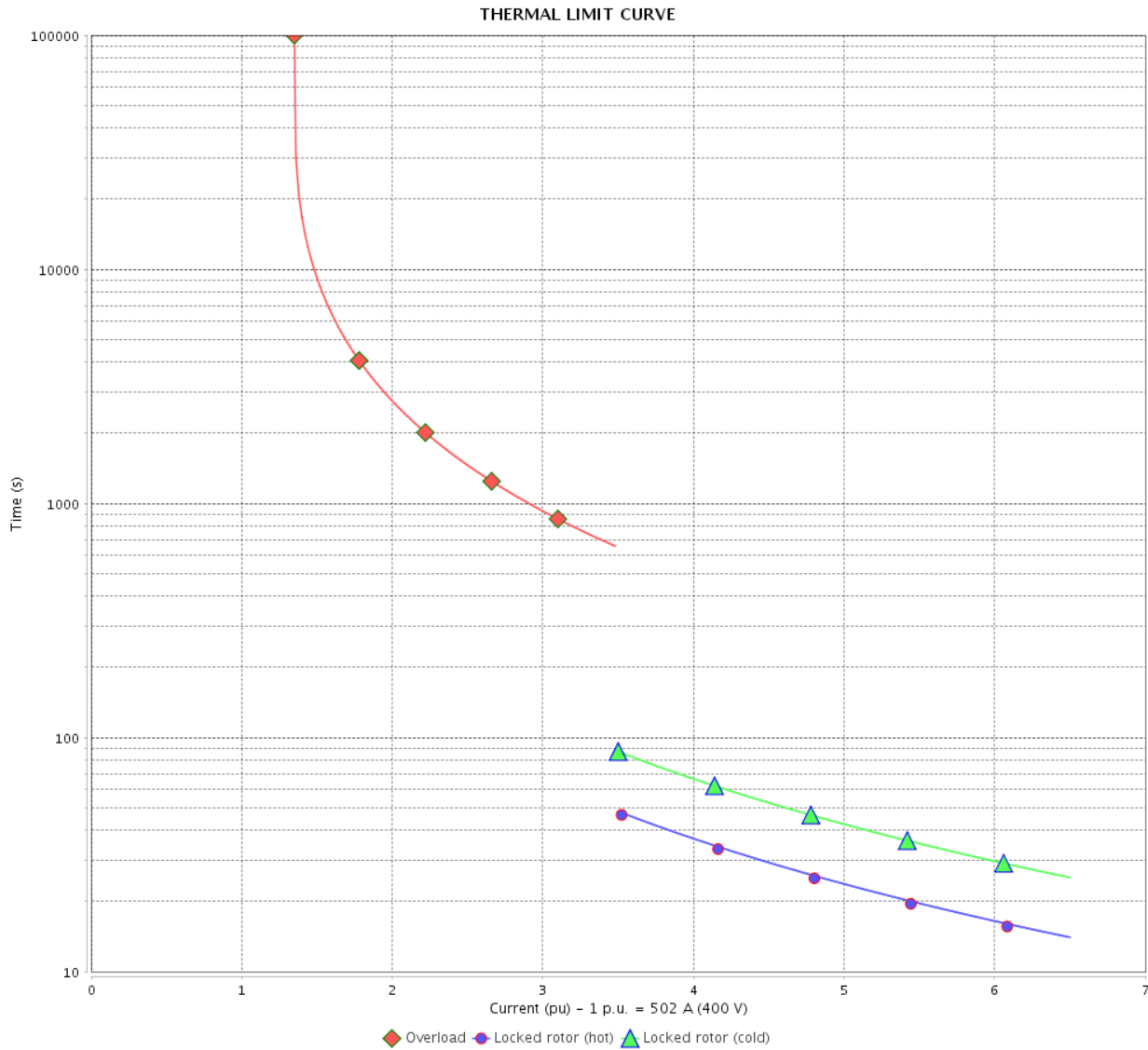
Rev.	Changes Summary	Performed	Checked	Date
Performed by				
Checked by			Page	Revision
Date	13/04/2022		27 / 37	

THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage



Customer : _____



Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		28 / 37		
Date		13/04/2022		

THERMAL LIMIT CURVE



Three Phase Induction Motor - Squirrel Cage

Customer :

Product line : W40 NEMA Premium Efficiency Three-Phase Product code : 13593624
 Catalog # : 45036OT3G447/9TS-W40

Performance : 415 V 50 Hz 2P IE3

Rated current : 490 A	Moment of inertia (J) : 43.6 sq.ft.lb
LRC : 7.0	Duty cycle : Cont.(S1)
Rated torque : 707 ft.lb	Insulation class : F
Locked rotor torque : 200 %	Service factor : 1.15
Breakdown torque : 240 %	Temperature rise : 80 K
Rated speed : 2970 rpm	Design : A

Heating constant

Cooling constant

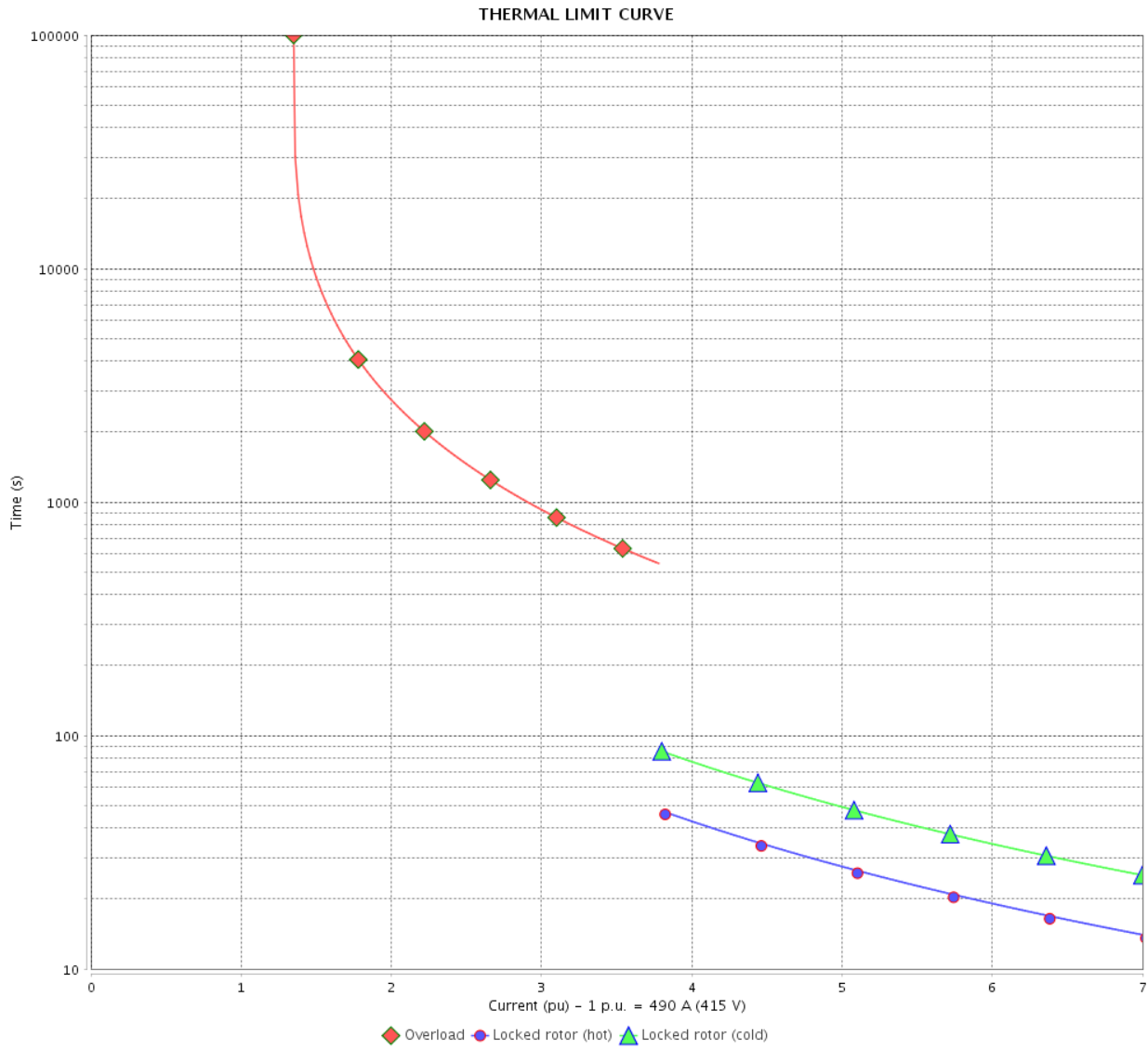
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Checked by				
Date	13/04/2022			

THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage



Customer : _____



Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		30 / 37		
Date		13/04/2022		

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

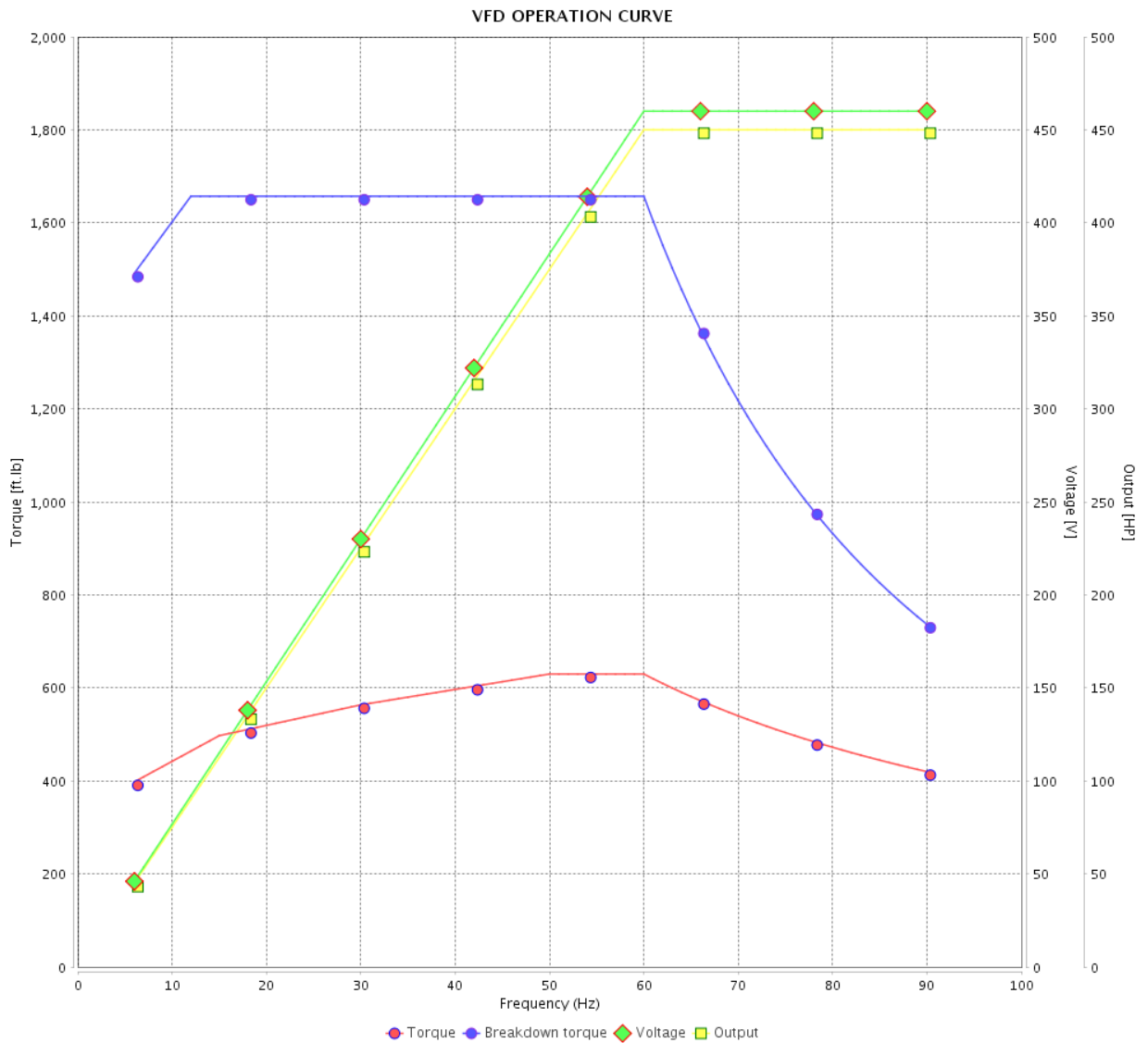


Customer :

Product line : W40 NEMA Premium Efficiency
Three-Phase

Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40



Performance : 460 V 60 Hz 2P

Rated current : 478 A
 LRC : 6.8
 Rated torque : 663 ft.lb
 Locked rotor torque : 180 %
 Breakdown torque : 250 %
 Rated speed : 3565 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : A

Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		31 / 37		
Date		13/04/2022		

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage



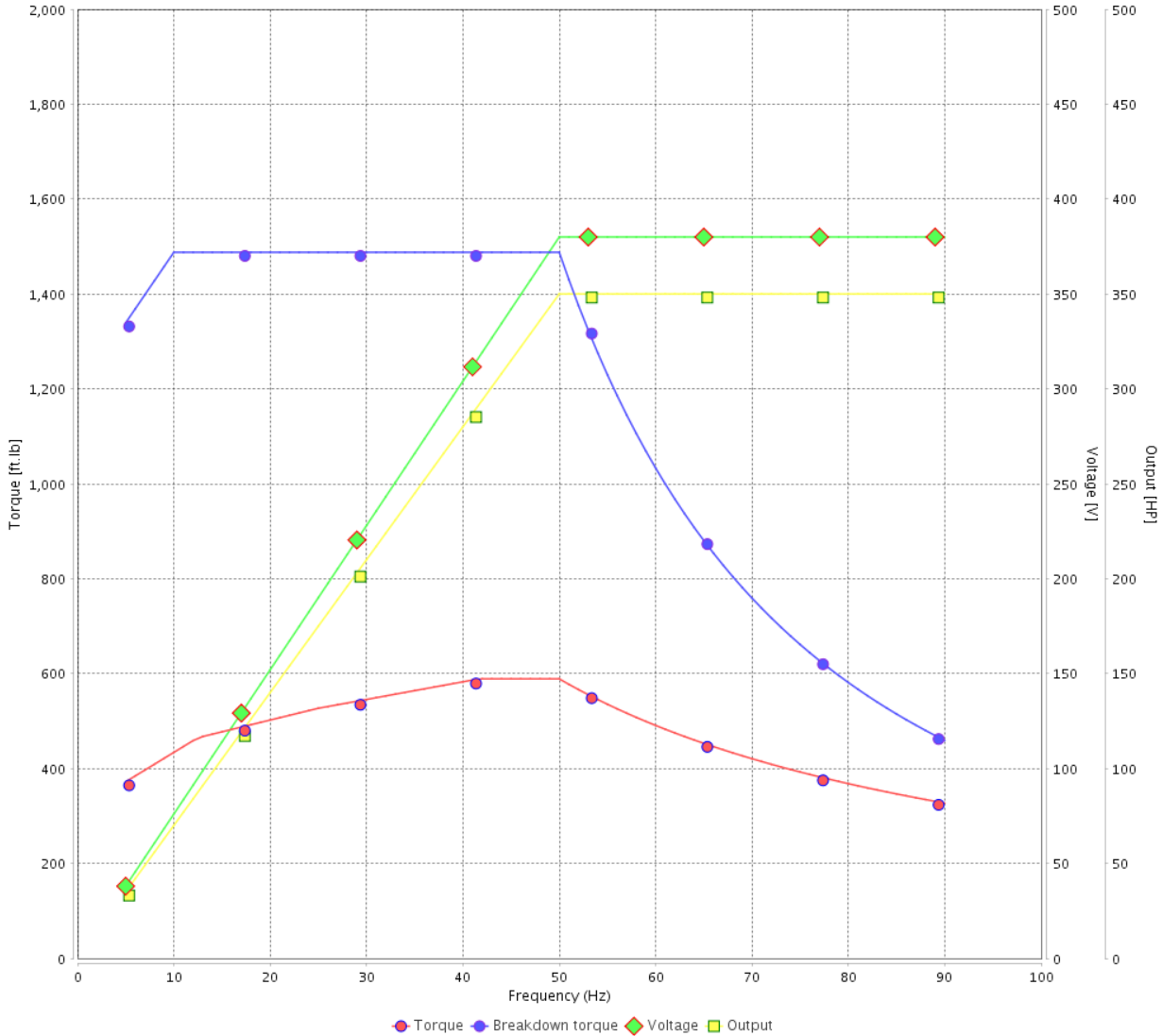
Customer :

Product line : W40 NEMA Premium Efficiency
Three-Phase

Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40

VFD OPERATION CURVE



Performance : 380 V 50 Hz 2P IE3

Rated current : 458 A
LRC : 6.6
Rated torque : 620 ft.lb
Locked rotor torque : 180 %
Breakdown torque : 240 %
Rated speed : 2965 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
Duty cycle : Cont.(S1)
Insulation class : F
Service factor : 1.15
Temperature rise : 80 K
Design : A

Rev.	Changes Summary	Performed	Checked	Date
Performed by			Page 32 / 37	Revision
Checked by				
Date	13/04/2022			

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

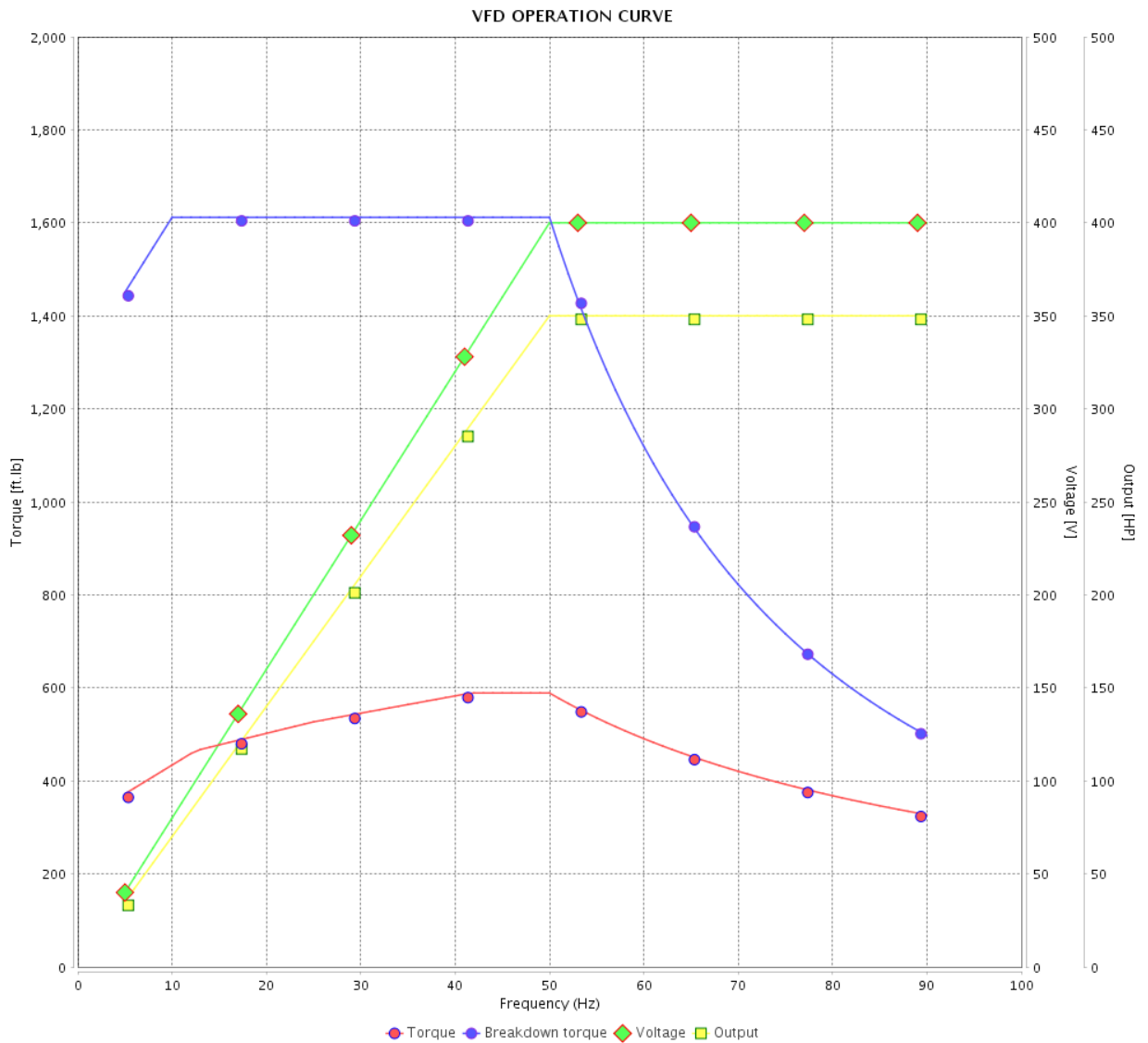


Customer :

Product line : W40 NEMA Premium Efficiency Three-Phase

Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40



Performance : 400 V 50 Hz 2P IE3

Rated current : 435 A
 LRC : 7.4
 Rated torque : 620 ft.lb
 Locked rotor torque : 210 %
 Breakdown torque : 260 %
 Rated speed : 2965 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
 Duty cycle : Cont.(S1)
 Insulation class : F
 Service factor : 1.15
 Temperature rise : 80 K
 Design : A

Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		33 / 37		
Date		13/04/2022		

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

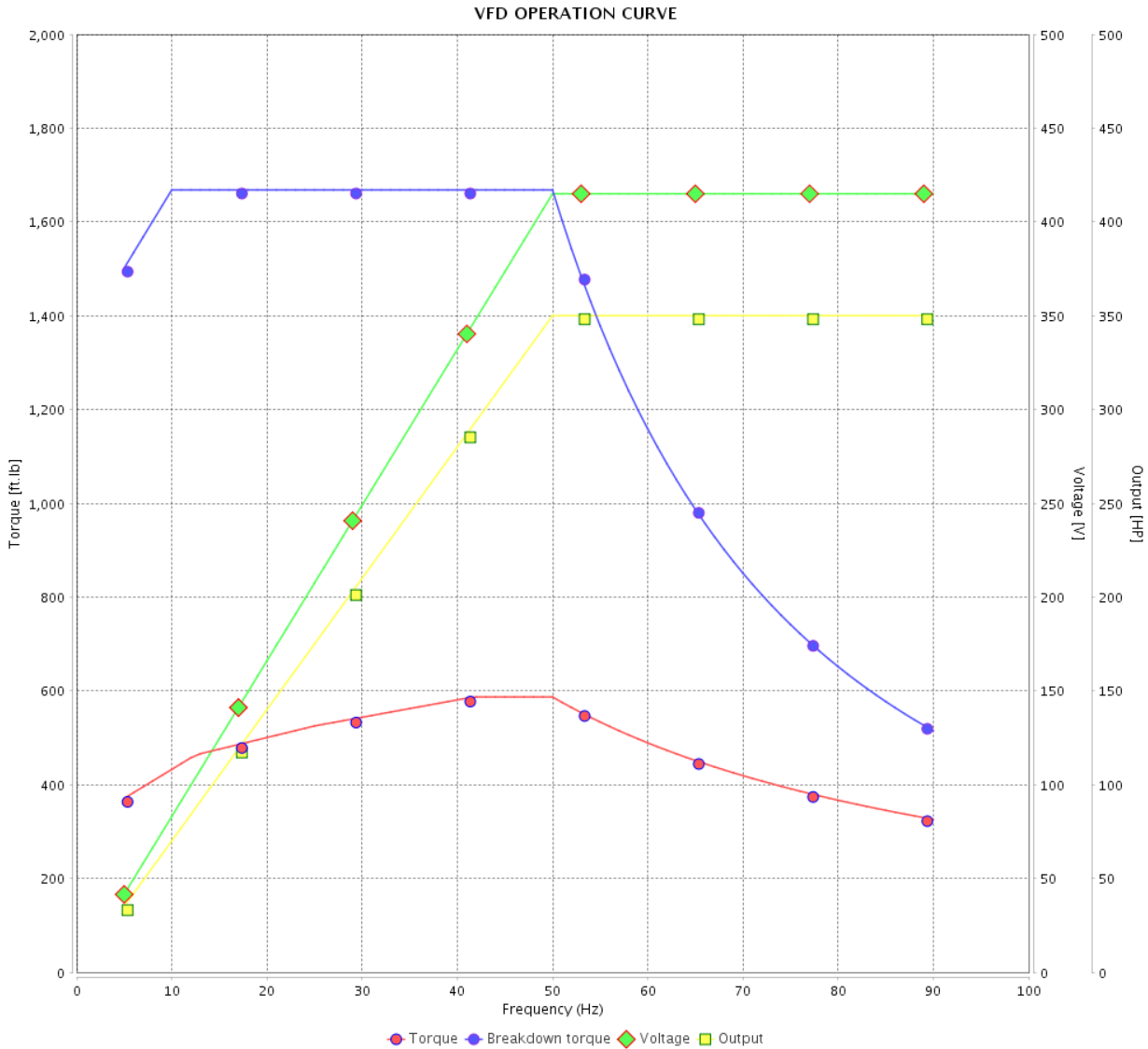


Customer :

Product line : W40 NEMA Premium Efficiency
Three-Phase

Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40



Performance : 415 V 50 Hz 2P IE3

Rated current : 424 A
LRC : 8.0
Rated torque : 618 ft.lb
Locked rotor torque : 229 %
Breakdown torque : 270 %
Rated speed : 2975 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
Duty cycle : Cont.(S1)
Insulation class : F
Service factor : 1.15
Temperature rise : 80 K
Design : A

Rev.	Changes Summary	Performed	Checked	Date
Performed by			Page 34 / 37	Revision
Checked by				
Date	13/04/2022			

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

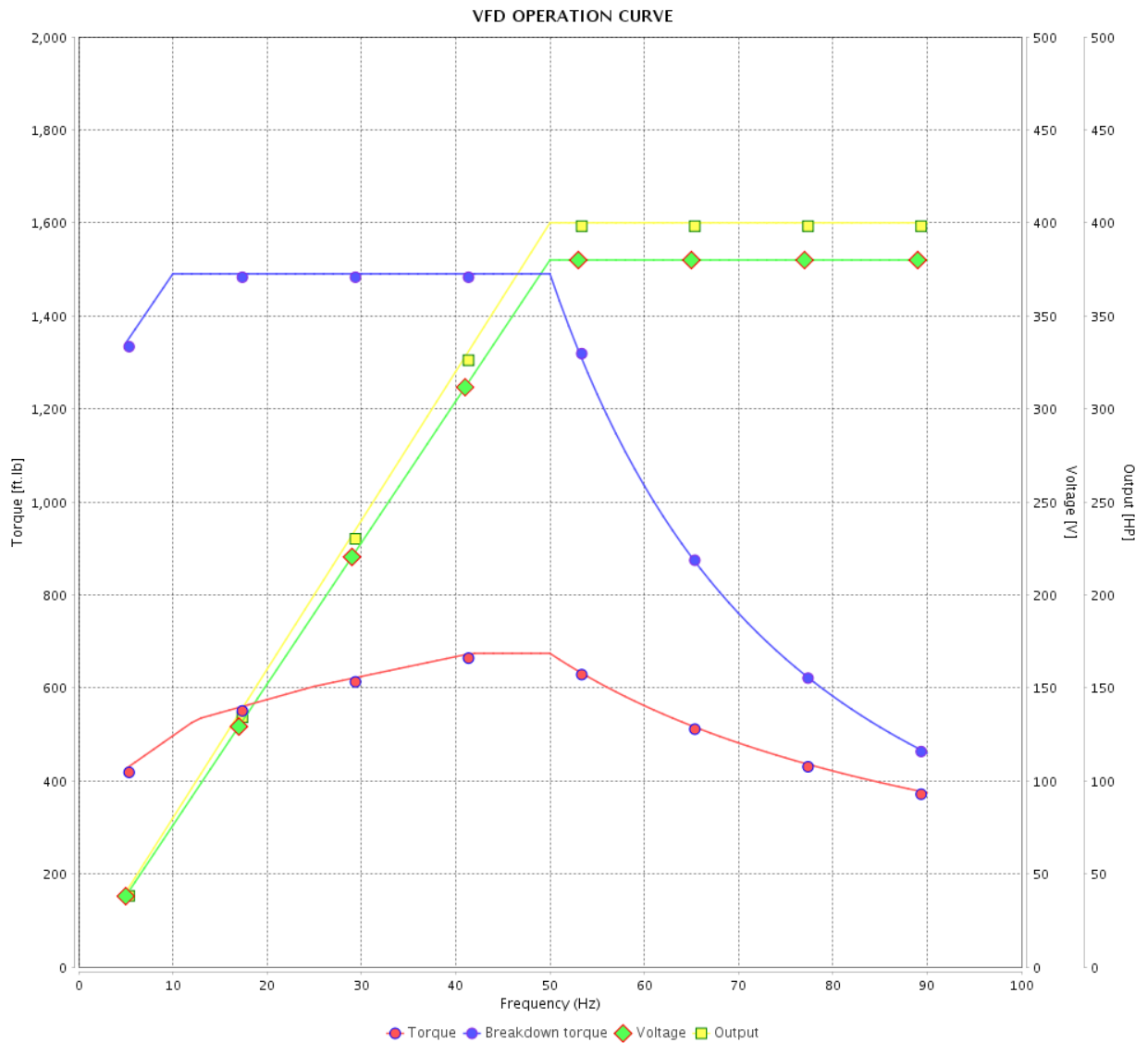


Customer :

Product line : W40 NEMA Premium Efficiency
Three-Phase

Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40



Performance : 380 V 50 Hz 2P IE3

Rated current : 529 A
LRC : 5.8
Rated torque : 710 ft.lb
Locked rotor torque : 160 %
Breakdown torque : 210 %
Rated speed : 2960 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
Duty cycle : Cont.(S1)
Insulation class : F
Service factor : 1.15
Temperature rise : 80 K
Design : A

Rev.	Changes Summary	Performed	Checked	Date
Performed by				Page 35 / 37
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Date	13/04/2022			

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage



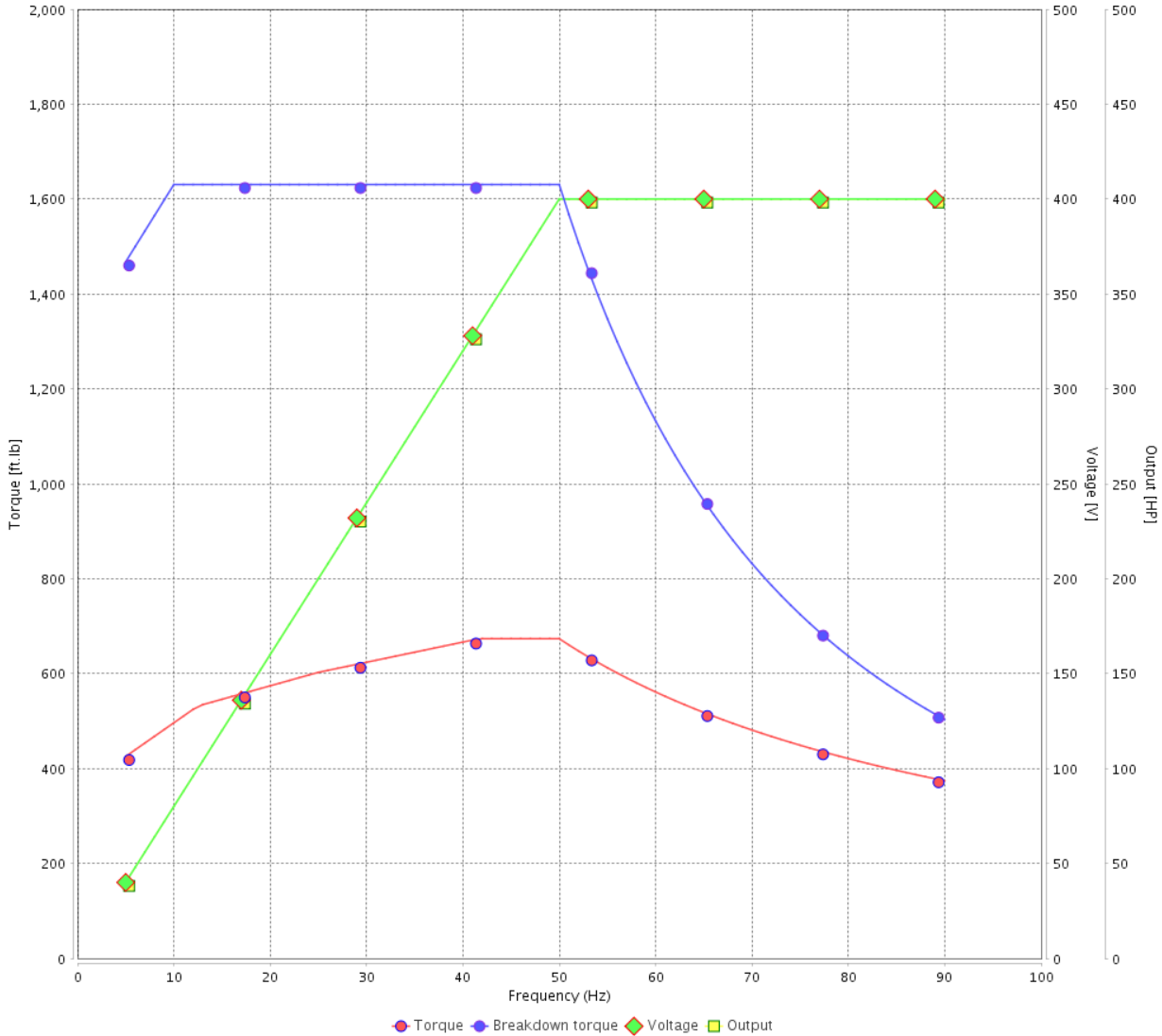
Customer : _____

Product line : W40 NEMA Premium Efficiency
Three-Phase

Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40

VFD OPERATION CURVE



Performance : 400 V 50 Hz 2P IE3

Rated current : 502 A
LRC : 6.5
Rated torque : 709 ft.lb
Locked rotor torque : 180 %
Breakdown torque : 229 %
Rated speed : 2963 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
Duty cycle : Cont.(S1)
Insulation class : F
Service factor : 1.15
Temperature rise : 80 K
Design : A

Rev.	Changes Summary	Performed	Checked	Date
Performed by			Page	Revision
Checked by				
Date				

VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage

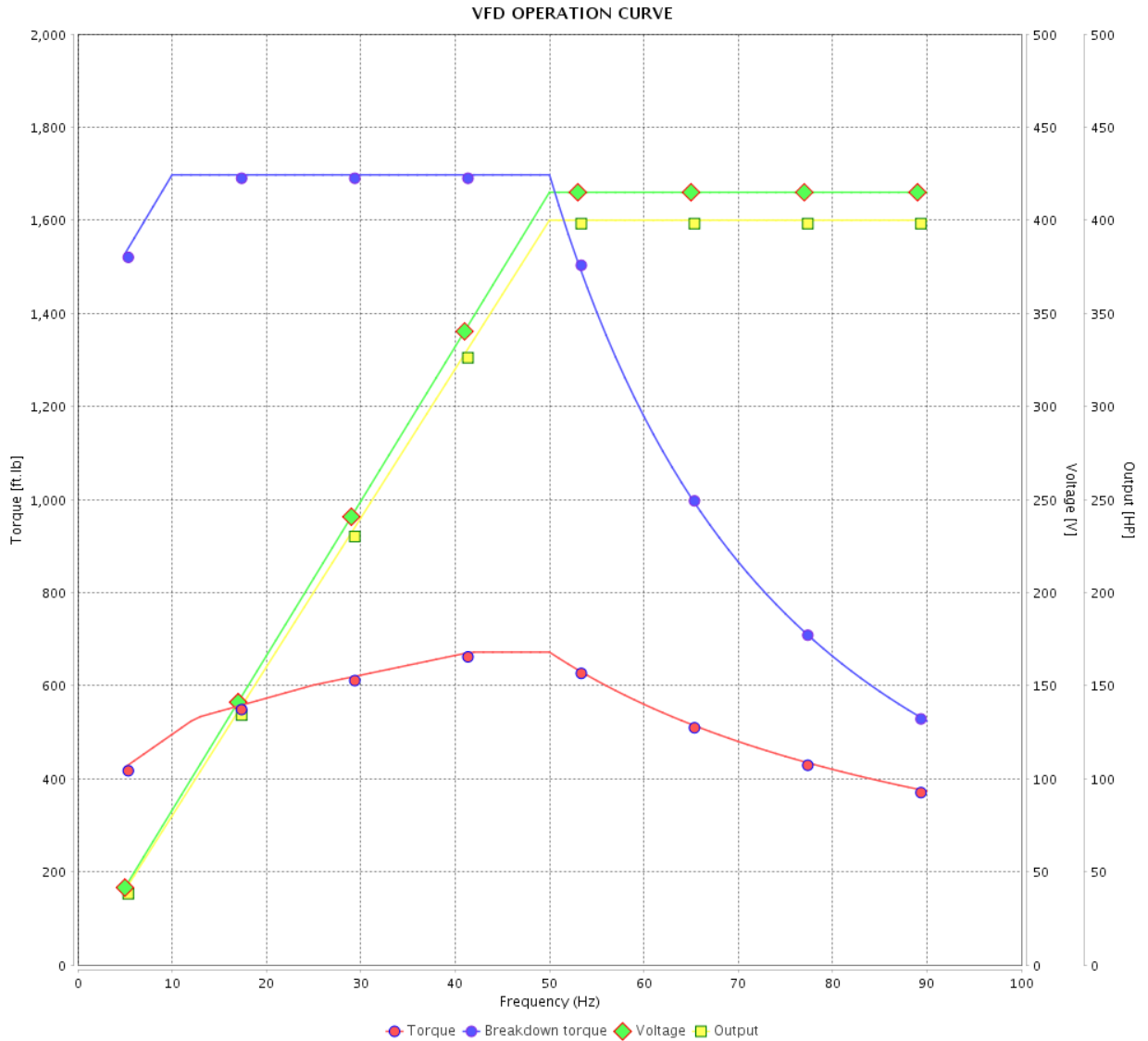


Customer :

Product line : W40 NEMA Premium Efficiency
Three-Phase

Product code : 13593624

Catalog # : 45036OT3G447/9TS-W40

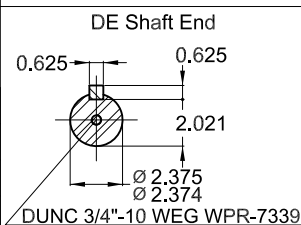
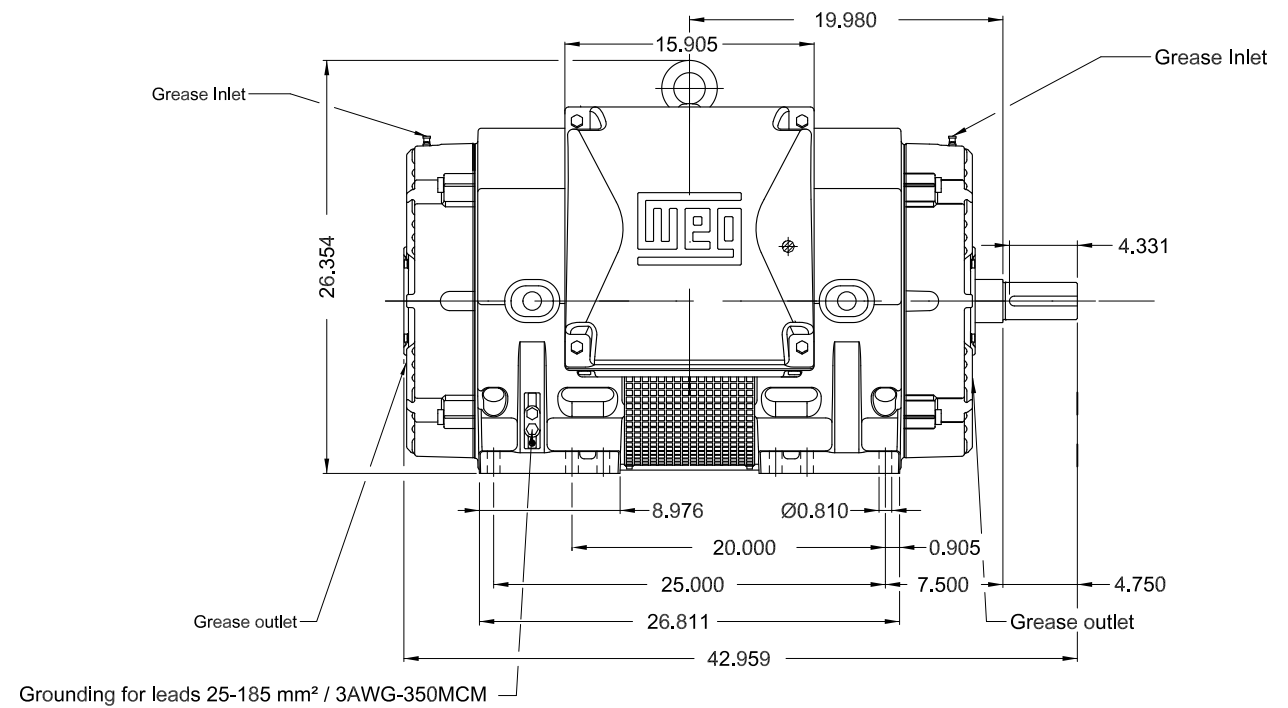
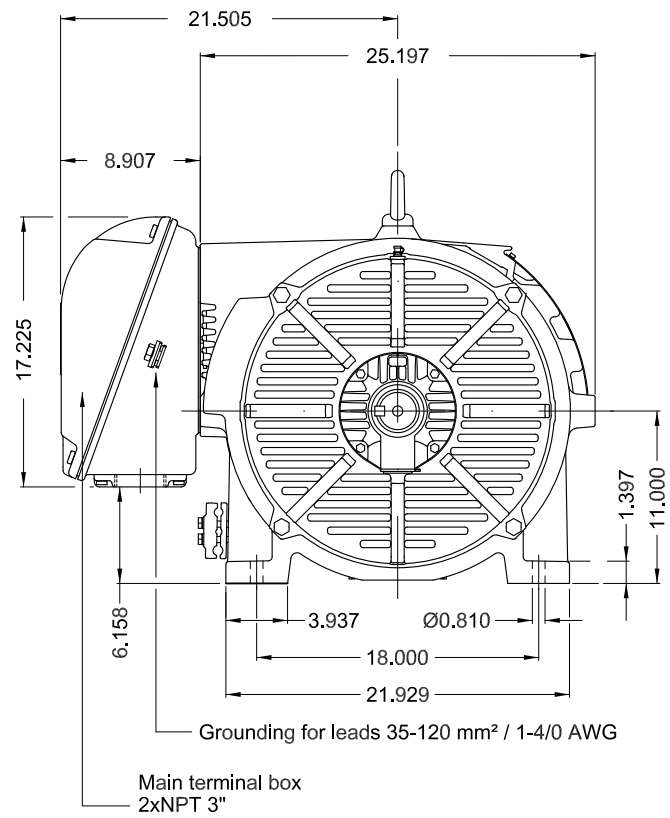


Performance : 415 V 50 Hz 2P IE3

Rated current : 490 A
LRC : 7.0
Rated torque : 707 ft.lb
Locked rotor torque : 200 %
Breakdown torque : 240 %
Rated speed : 2970 rpm

Moment of inertia (J) : 43.6 sq.ft.lb
Duty cycle : Cont.(S1)
Insulation class : F
Service factor : 1.15
Temperature rise : 80 K
Design : A

Rev.	Changes Summary	Performed	Checked	Date
Performed by		Page		Revision
Checked by		37 / 37		
Date		13/04/2022		



Color RAL 5009
 Painting plan 203A
 Mounting NEMA F-1
 Mounting B3R(D)

450 HP 02 Poles 60 Hz

Dimensions in inches

1:12

ECM	LOC	SUMMARY OF MODIFICATIONS	EXECUTED	CHECKED	RELEASED	DATE	VER
EXECUTED	PIRWBUSER	THREE PH. MOTOR W40 PREM. EFF.					
CHECKED		FRAME 447/9TS IP23 ODP					
RELEASED							
REL DT.	WMO	Jaragua do Sul	Product Engineering				

PREVIEW
 WDD



SHEET 1 / 1

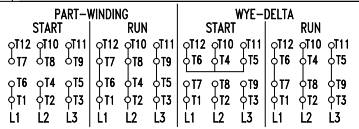
MODEL 450360T3G447/9TS-W40
MADE IN BRAZIL
13593624



MOD.T01#FOXON



PH 3	FR 447/9TS	HP(kW) 450(330)		Hz 60
V 460		A 478		IP23
NEMA NOM EFF		96.2	%	RPM 3565
ENCL ODP	DUTY CONT.		INS. CL. F ΔT 80 K	
PF 0.90		DES A	CODE G	AMB. 40°C
SF 1.15		SFA 550		ALT 1000 m.a.s.l.



 → 6314-C3(27g) MOBIL POLYREX EM
 → 6314-C3(27g) 14418 h

2127 Lbs