DATA SHEET
Three Phase Induction Motor - Squirrel Cage

Customer	: QUANTUM CONTROLS
Product line	: W22 - IE3 Premium Efficiency Multivoltage
Product code	: 15833923

Frame	: 160L	Cooling method	: IC411 - TEFC
Insulation class	: F	Mounting	: B3T
Duty cycle	: S1	Rotation¹	: Both
Ambient temperature	: -20 °C to +40 °C	Starting method	: Direct On Line
Altitude	: 1000 m.a.s.l	Approx. weight³	: 140 kg
Protection degree	: IP55	Moment of inertia (J)	: 0.1534 kgm²
Design	: N		

Output		15 kW	15 kW	15 kW
Poles		4	4	4
Frequency		50 Hz	50 Hz	50 Hz
Rated voltage		380/660 V	400/690 V	415 V
Rated current		29.1/16.8 A	28.3/16.4 A	28.0 A
L. R. Amperes		192/111 A	198/115 A	207 A
LRC		6.6	7.0	7.4
No load current		12.0/6.91 A	13.0/7.54 A	14.0 A
Rated speed		1465 rpm	1470 rpm	1475 rpm
Slip		2.33 %	2.00 %	1.67 %
Rated torque		97.8 Nm	97.5 Nm	97.2 Nm
Locked rotor torque		240 %	270 %	300 %
Pull up torque		200 %	230 %	255 %
Breakdown torque		270 %	300 %	320 %
Service factor		1.00	1.00	1.00
Noise level²		61.0 dB(A)	61.0 dB(A)	61.0 dB(A)
Locked rotor time (hot)		16 s	14 s	12 s
Locked rotor time (cold)		29 s	25 s	22 s
Efficiency (%)	50%	92.1	92.0	91.4
	75%	92.4	92.5	92.3
	100%	92.1	92.3	92.1
Power Factor	50%	0.70	0.66	0.62
	75%	0.80	0.77	0.75
	100%	0.85	0.83	0.81

	Drive end	Non drive end
Bearing type	6309-C3	6209-C3
Lubrication interval	20000 h	20000 h
Lubricant amount	13 g	9 g
Lubricant type	MOBIL POLYREX EM	

Foundation loads	
Max. traction	: 4210 N
Max. compression	: 5583 N
Load type	: -
Load torque	: -
Load inertia (J=GD²/4)	: -

Notes
See notes on page 2.

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 be changed 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 IEC 60034-1.

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Thermal protection

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

Space heater information
Voltage: 110-127/200-240 V
Output: 25-33/25-35 W

Notes

Standards

Specification	: IEC 60034-1	Vibration	: IEC 60034-14
Test	: IEC 60034-2	Tolerance	: IEC 60034-1
Noise	: IEC 60034-9		

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(1) Looking the motor from the shaft end.
(2) Measured at 1m and with tolerance of +3dB(A).
(3) Approximate weight, subject to be changed after manufacturing process.
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THERMAL LIMIT CURVE

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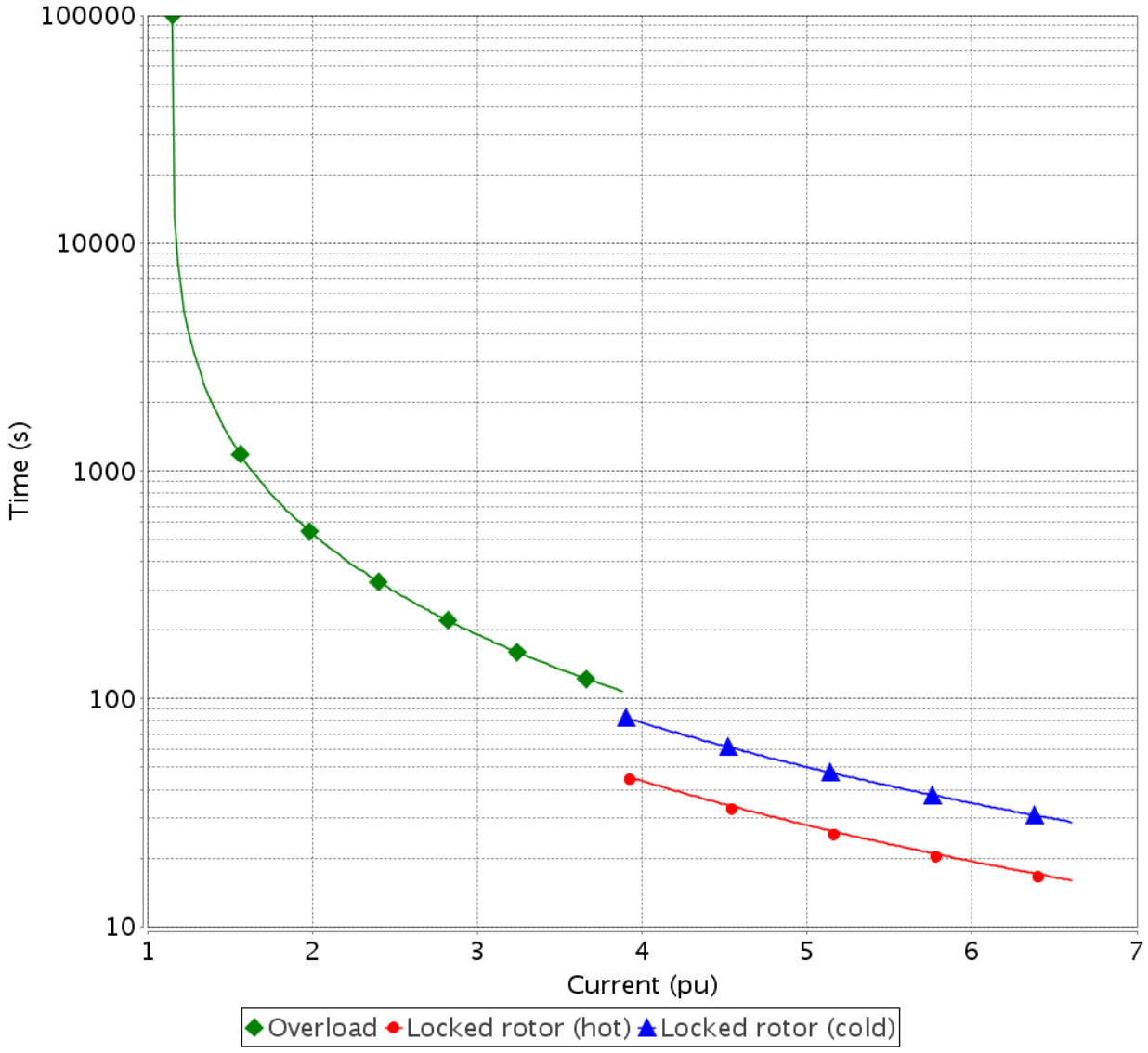

Performance	: 15 kW 380/660 V 50 Hz 4P 160L

Rated current	: 29.1/16.8 A	Moment of inertia (J)	: 0.1534 kgm²
LRC	: 6.6	Duty cycle	: S1
Rated torque	: 97.8 Nm	Insulation class	: F
Locked rotor torque	: 240 %	Service factor	: 1.00
Breakdown torque	: 270 %	Temperature rise	: 80 K
Rated speed	: 1465 rpm	Design	: N
Heating constant	: 25.6 min		
Cooling constant	: 76.8 min		

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LOAD PERFORMANCE CURVE

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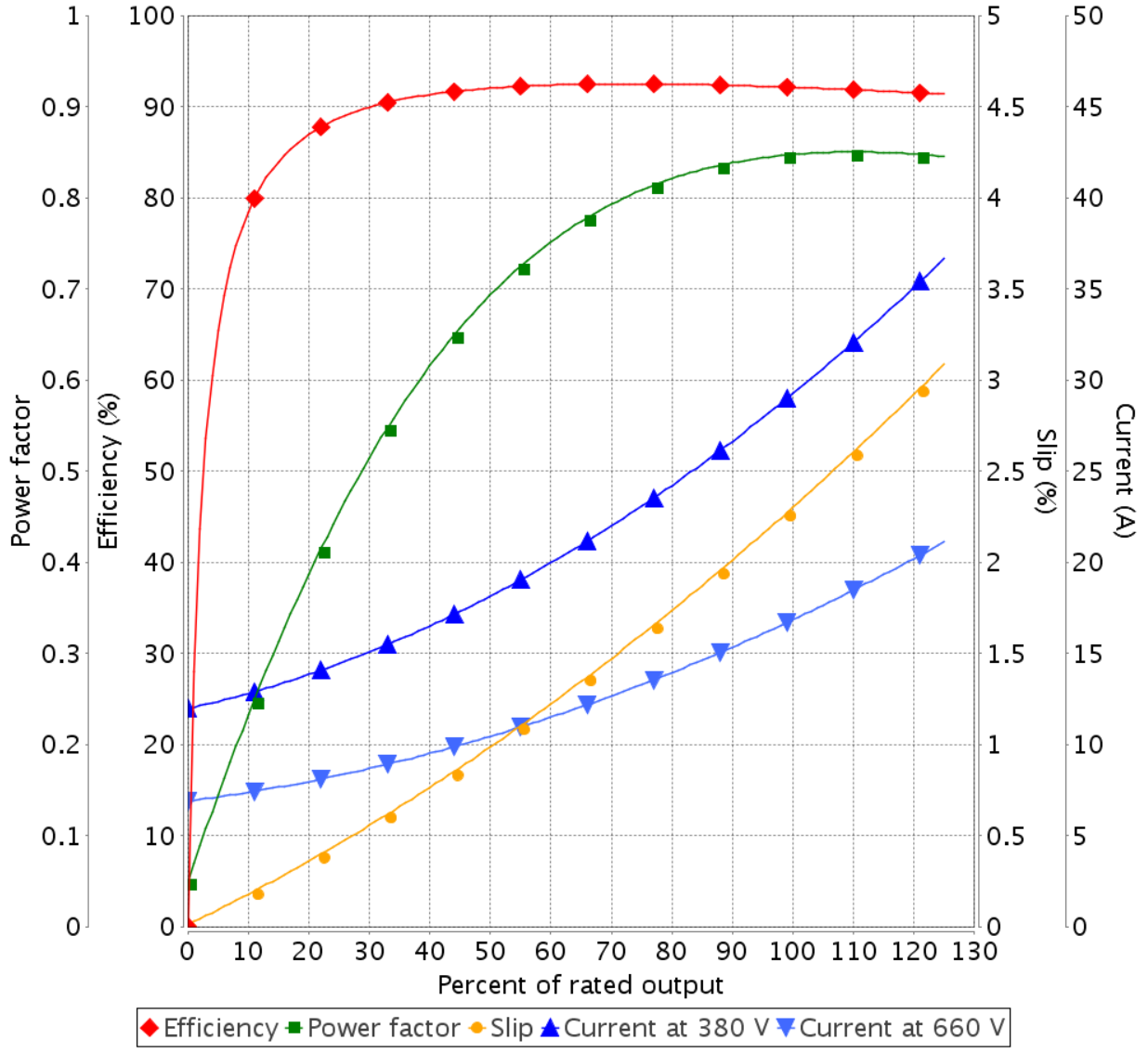

Performance	: 15 kW 380/660 V 50 Hz 4P 160L

Rated current	: 29.1/16.8 A	Moment of inertia (J)	: 0.1534 kgm²
LRC	: 6.6	Duty cycle	: S1
Rated torque	: 97.8 Nm	Insulation class	: F
Locked rotor torque	: 240 %	Service factor	: 1.00
Breakdown torque	: 270 %	Temperature rise	: 80 K
Rated speed	: 1465 rpm	Design	: N

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VFD OPERATION CURVE

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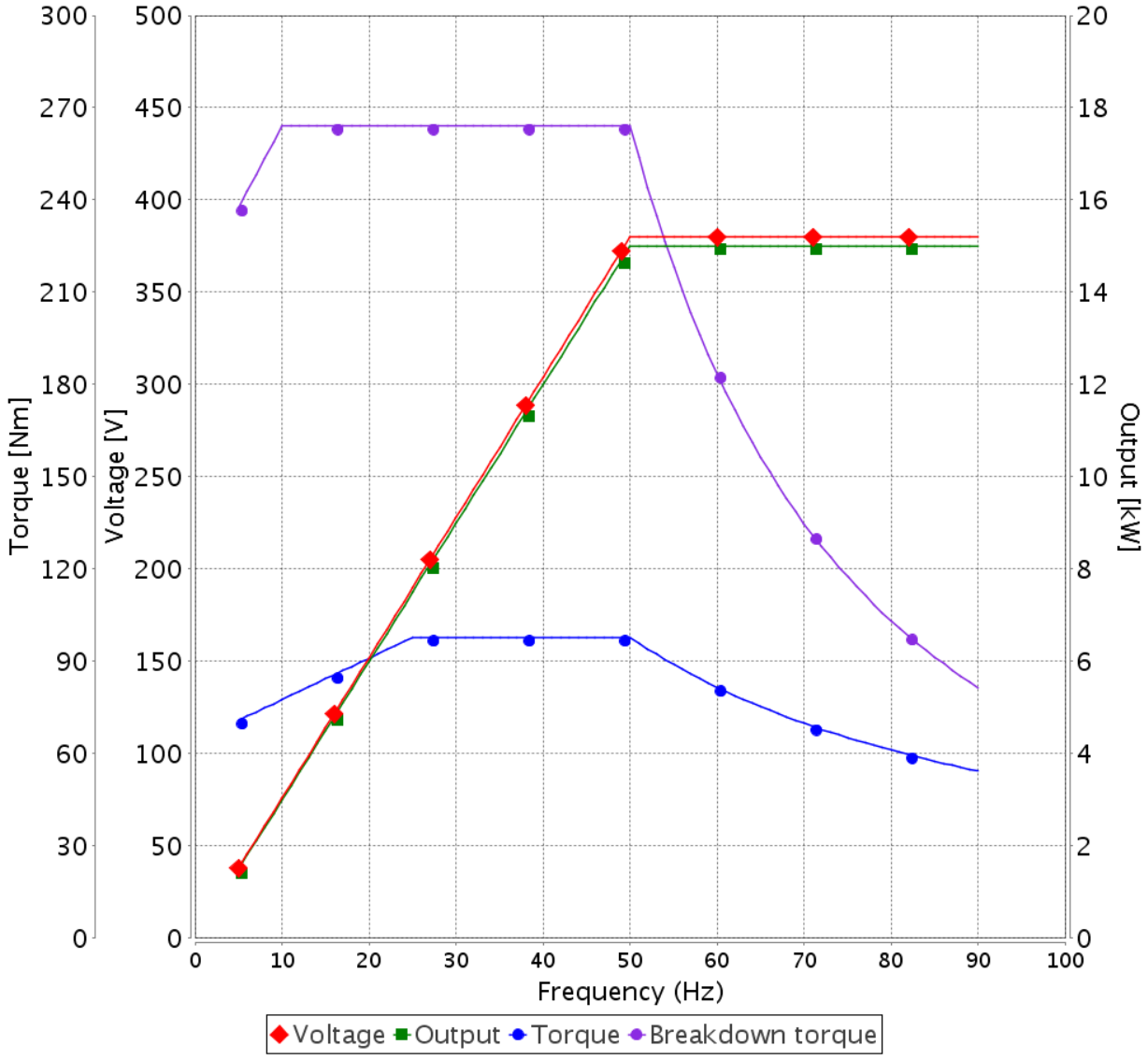

Performance	: 15 kW 380/660 V 50 Hz 4P 160L		
Rated current	: 29.1/16.8 A	Moment of inertia (J)	: 0.1534 kgm²
LRC	: 6.6	Duty cycle	: S1
Rated torque	: 97.8 Nm	Insulation class	: F
Locked rotor torque	: 240 %	Service factor	: 1.00
Breakdown torque	: 270 %	Temperature rise	: 80 K
Rated speed	: 1465 rpm	Design	: N
		Voltage Peak Phase-Phase	= 1600.0
		dV/dt	= 5200.0
		Rise time	= 0.1

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TORQUE AND CURRENT VS SPEED CURVE

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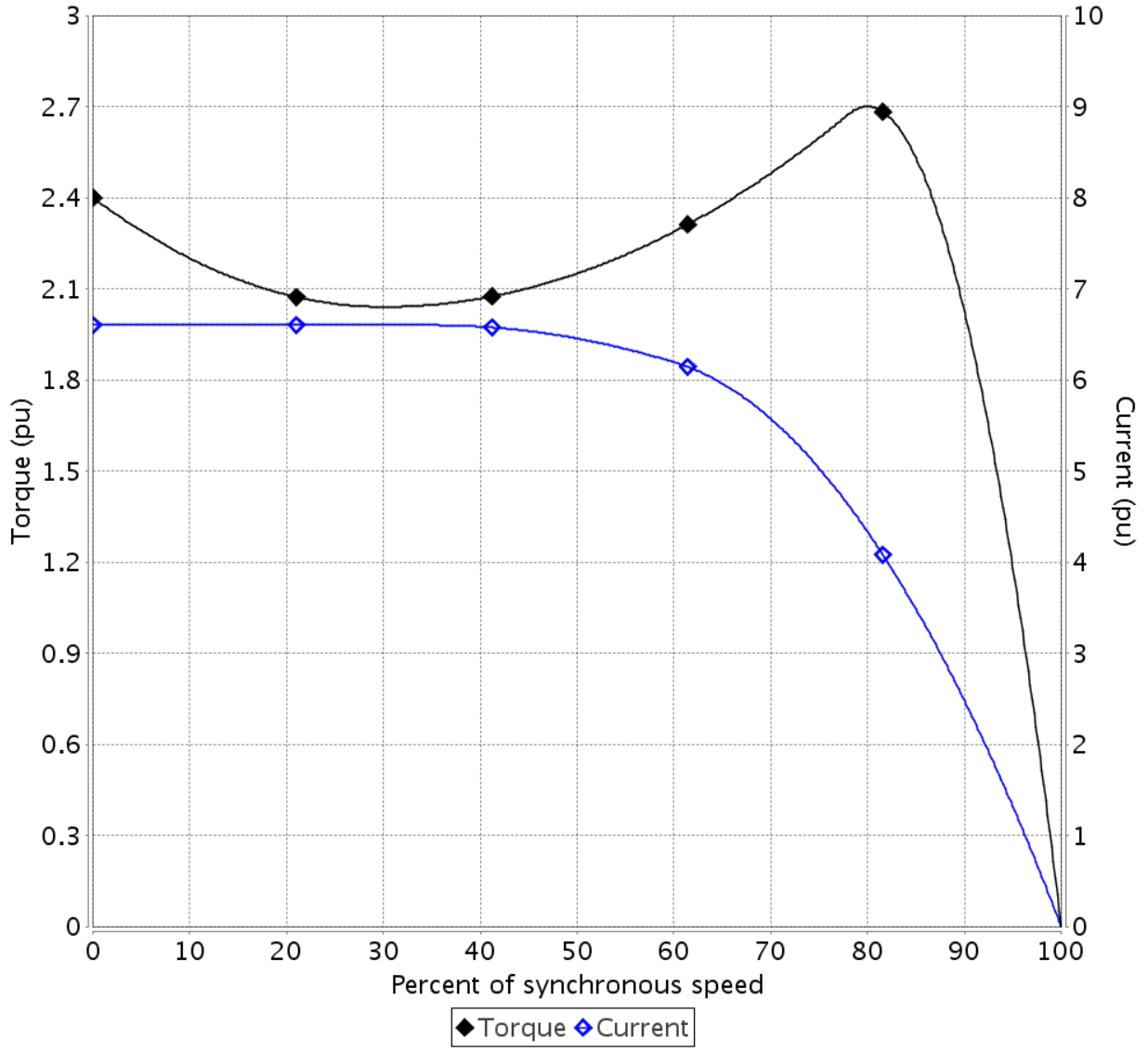

Performance	: 15 kW 380/660 V 50 Hz 4P 160L		
Rated current	: 29.1/16.8 A	Moment of inertia (J)	: 0.1534 kgm²
LRC	: 6.6	Duty cycle	: S1
Rated torque	: 97.8 Nm	Insulation class	: F
Locked rotor torque	: 240 %	Service factor	: 1.00
Breakdown torque	: 270 %	Temperature rise	: 80 K
Rated speed	: 1465 rpm	Design	: N
Locked rotor time 100%	: 16 s (hot) 29 s (cold)		
Load inertia (J=GD²/4)	: 0.1534 kgm²		

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EQUIVALENT CIRCUIT

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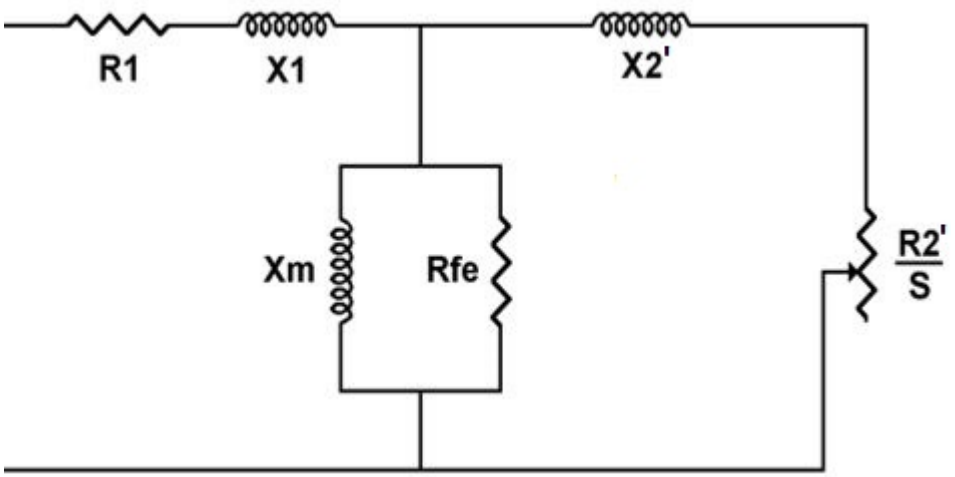

Rated			
R1	0.5406 omhs / 0.0562 p.u.	**X1**	1.4337 omhs / 0.1489 p.u.
R2'	0.3267 omhs / 0.0339 p.u.	**X2'**	2.8113 omhs / 0.2920 p.u.
Rfe	1446.1260 omhs / 150.2203 p.u.	**Xm**	46.6061 omhs / 4.8413 p.u.

Locked rotor			
R1	0.6123 omhs / 0.0636 p.u.	**X1**	1.1211 omhs / 0.1165 p.u.
R2'	0.8797 omhs / 0.0914 p.u.	**X2'**	1.7114 omhs / 0.1778 p.u.
Rfe	1273.6910 omhs / 132.3082 p.u.	**Xm**	53.8458 omhs / 5.5934 p.u.

T"do	0.3720 s	**X/R**	4.1330 p.u.
T"d	0.0219 s	**RS**	0.1318 omhs / 0.0137 p.u.
Ta	0.0130 s	**X"d = Xs**	2.8325 omhs / 0.2942 p.u.
Zbase	9.6267 omhs	**X2(-)**	2.4061 omhs / 0.2499 p.u.

All parameters reflected to stator side.
Per phase values, for T connection.
Resistances at 20.0 °C, reactances at rated voltage and frequency.

R1	: Stator resistance	T"do	: Open circuit AC time constant
R2'	: Rotor resistance	T'd	: Short circuit AC time constant
Rfe	: Core loss resistance	Ta	: Short circuit DC time constant
X1	: Stator leakage reactance	X/R	: X/R ratio
X2'	: Rotor leakage reactance	RS	: Supplementary losses resistance
Xm	: Magnetizing reactance	X"d = Xs	: Subtransient reactance
Zbase	: Base impedance	X2(-)	: Negative sequence reactance

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