

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15833895

Frame	: 200L	Cooling method	: IC411 - TEFC
Insulation class	: F	Mounting	: B3T
Duty cycle	: S1	Rotation <sup>1</sup>	: Both
Ambient temperature	: -20 °C to +40 °C	Starting method	: Direct On Line
Altitude	: 1000 m.a.s.l	Approx. weight <sup>3</sup>	: 228 kg
Protection degree	: IP55	Moment of inertia (J)	: 0.3202 kgm <sup>2</sup>
Design	: N		

Output	30 kW	30 kW	30 kW
Poles	4	4	4
Frequency	50 Hz	50 Hz	50 Hz
Rated voltage	380/660 V	400/690 V	415 V
Rated current	58.0/33.4 A	57.1/33.1 A	56.4 A
L. R. Amperes	423/244 A	428/248 A	440 A
LRC	7.3	7.5	7.8
No load current	24.5/14.1 A	27.0/15.7 A	30.0 A
Rated speed	1475 rpm	1480 rpm	1480 rpm
Slip	1.67 %	1.33 %	1.33 %
Rated torque	194 Nm	194 Nm	194 Nm
Locked rotor torque	250 %	280 %	300 %
Pull up torque	210 %	235 %	255 %
Breakdown torque	280 %	310 %	340 %
Service factor	1.00	1.00	1.00
Noise level <sup>2</sup>	63.0 dB(A)	63.0 dB(A)	63.0 dB(A)
Locked rotor time (hot)	11 s	10 s	9 s
Locked rotor time (cold)	20 s	18 s	16 s
Efficiency (%)	50%	93.4	92.3
	75%	93.6	93.3
	100%	93.6	93.6
Power Factor	50%	0.68	0.59
	75%	0.79	0.72
	100%	0.84	0.79

Bearing type	Drive end	Non drive end	Foundation loads
	6312-C3	6212-C3	
Lubrication interval	20000 h	20000 h	Max. compression : 9401 N
Lubricant amount	21 g	13 g	Load type :-
Lubricant type	MOBIL POLYREX EM		Load torque :-
			Load inertia (J=GD <sup>2</sup> /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: 32-43/32-46 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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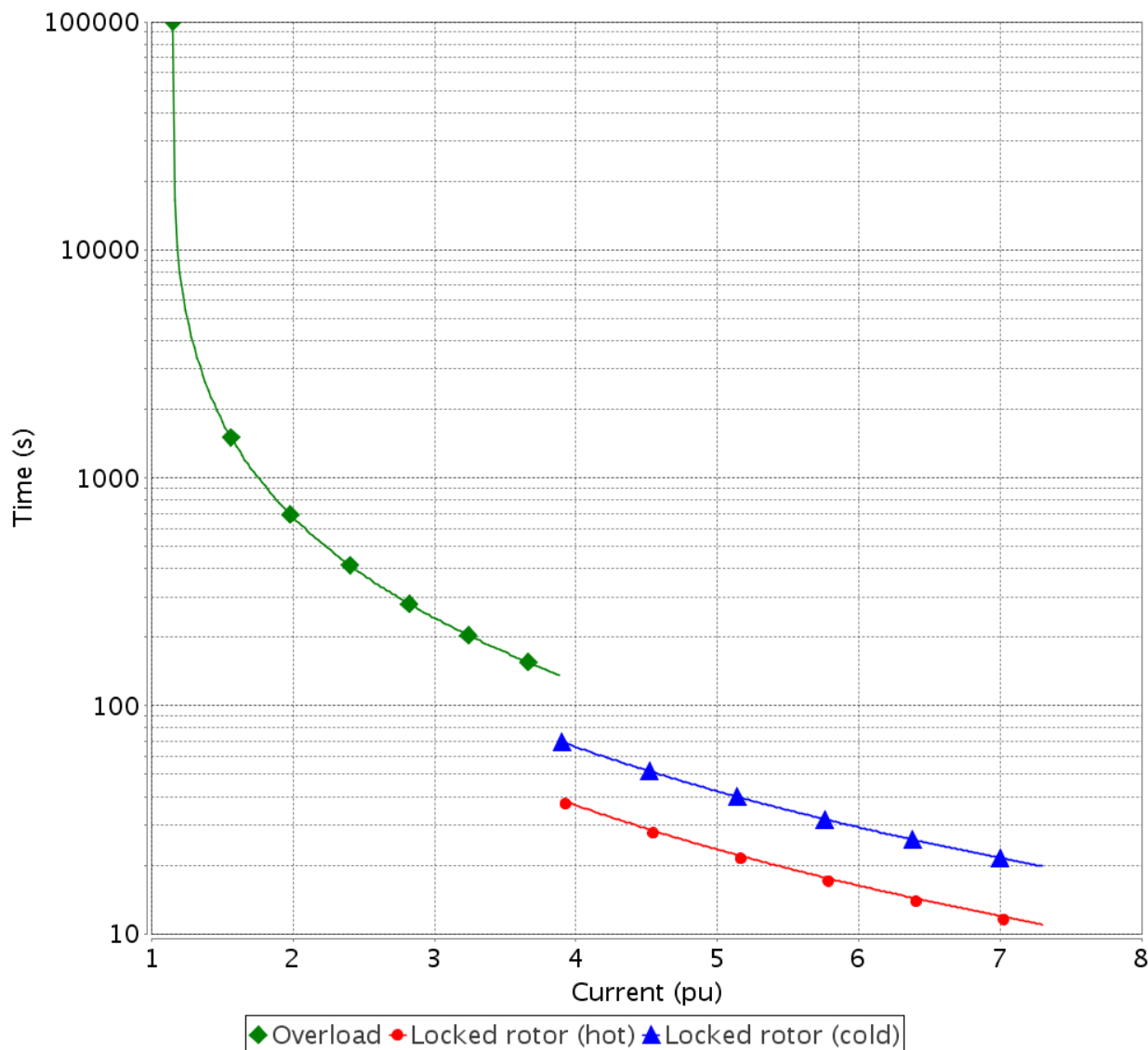
# THERMAL LIMIT CURVE

## Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15833895



Performance : 30 kW 380/660 V 50 Hz 4P 200L

Rated current	: 58.0/33.4 A	Moment of inertia (J)	: 0.3202 kgm <sup>2</sup>
LRC	: 7.3	Duty cycle	: S1
Rated torque	: 194 Nm	Insulation class	: F
Locked rotor torque	: 250 %	Service factor	: 1.00
Breakdown torque	: 280 %	Temperature rise	: 80 K
Rated speed	: 1475 rpm	Design	: N
Heating constant	: 32.5 min		
Cooling constant	: 97.5 min		

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# LOAD PERFORMANCE CURVE

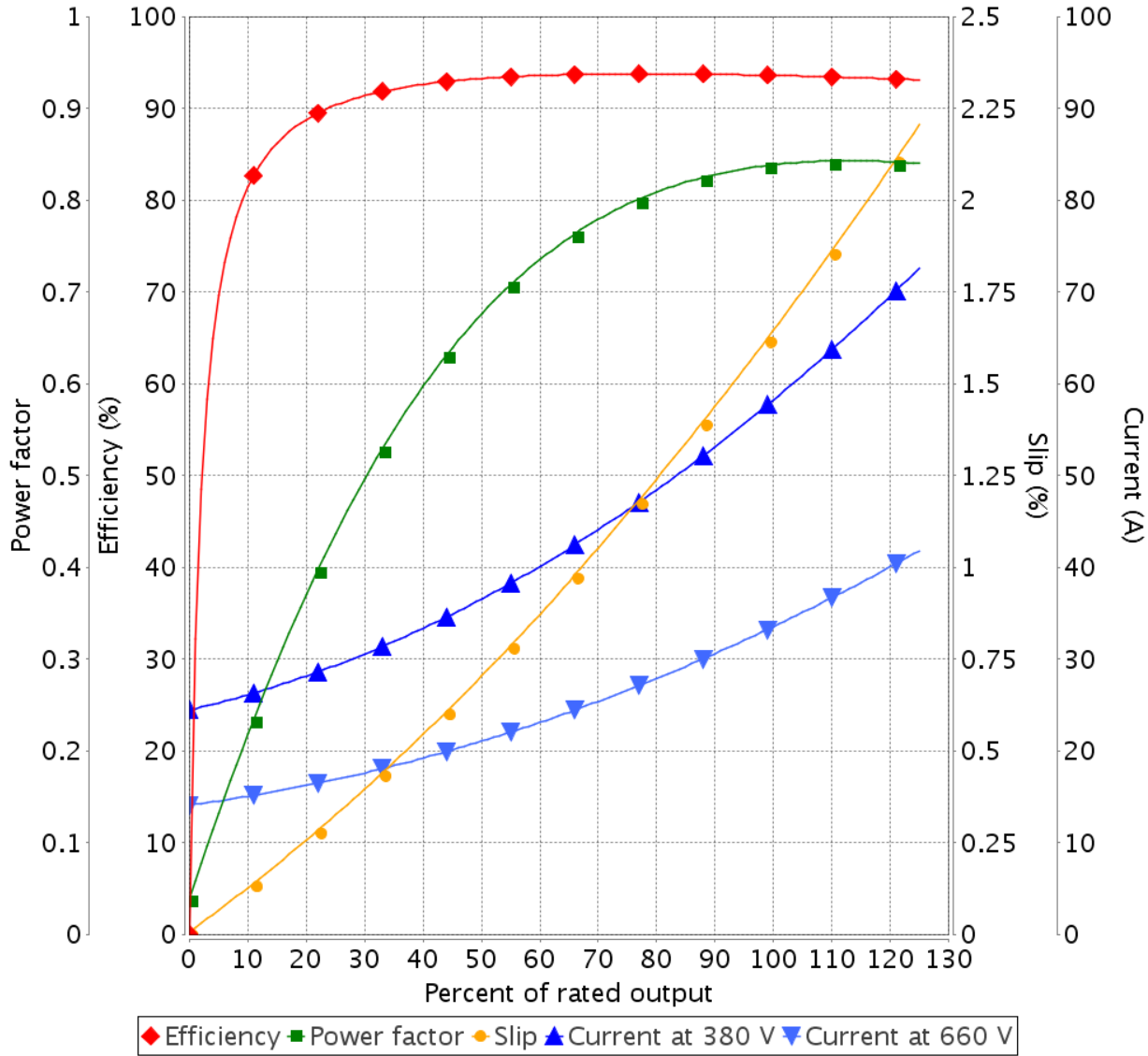
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 LRC : 7.3  
 Rated torque : 194 Nm  
 Locked rotor torque : 250 %  
 Breakdown torque : 280 %  
 Rated speed : 1475 rpm

Moment of inertia (J) : 0.3202 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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# VFD OPERATION CURVE

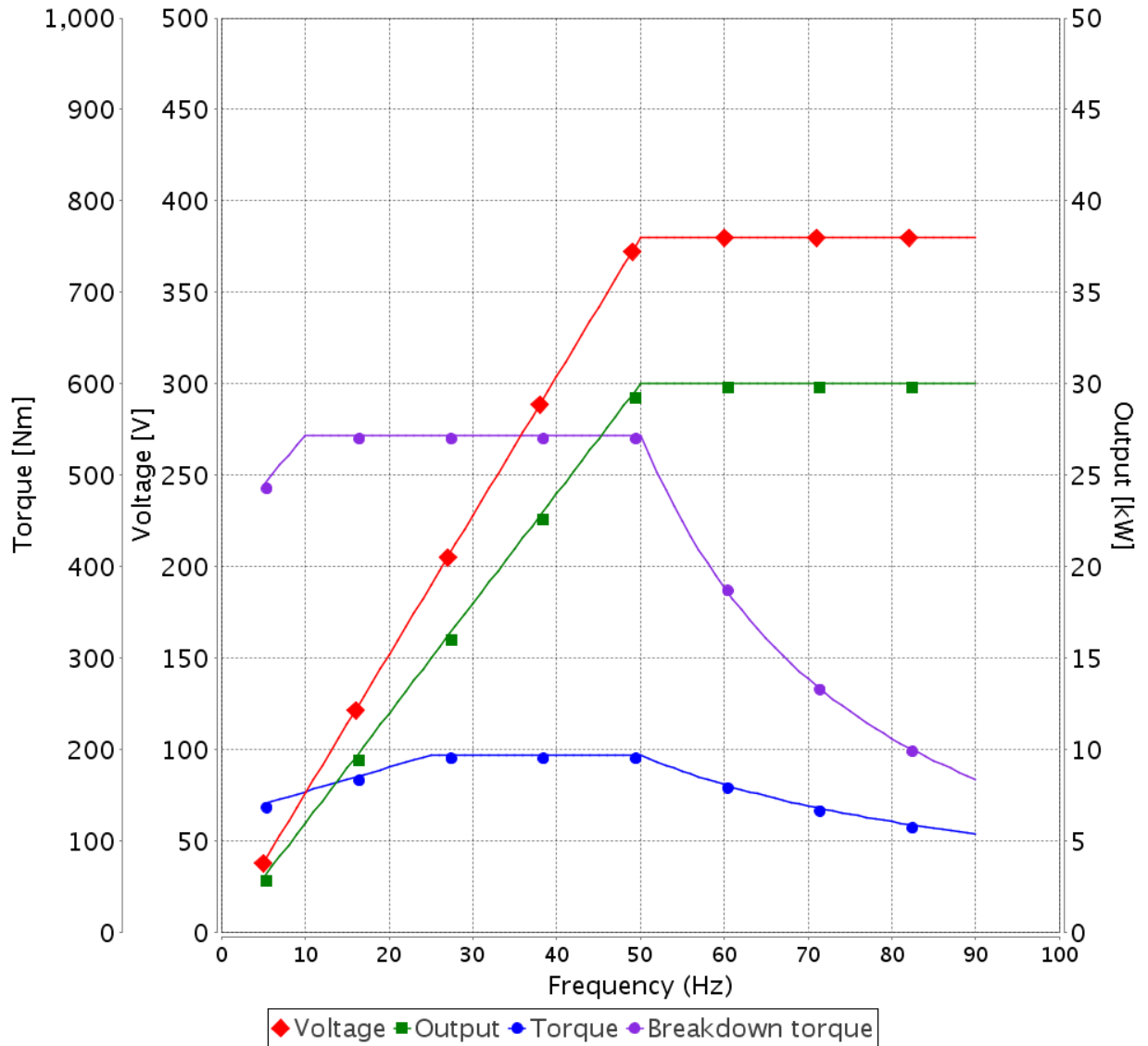
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 LRC : 7.3  
 Rated torque : 194 Nm  
 Locked rotor torque : 250 %  
 Breakdown torque : 280 %  
 Rated speed : 1475 rpm

Moment of inertia (J) : 0.3202 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 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

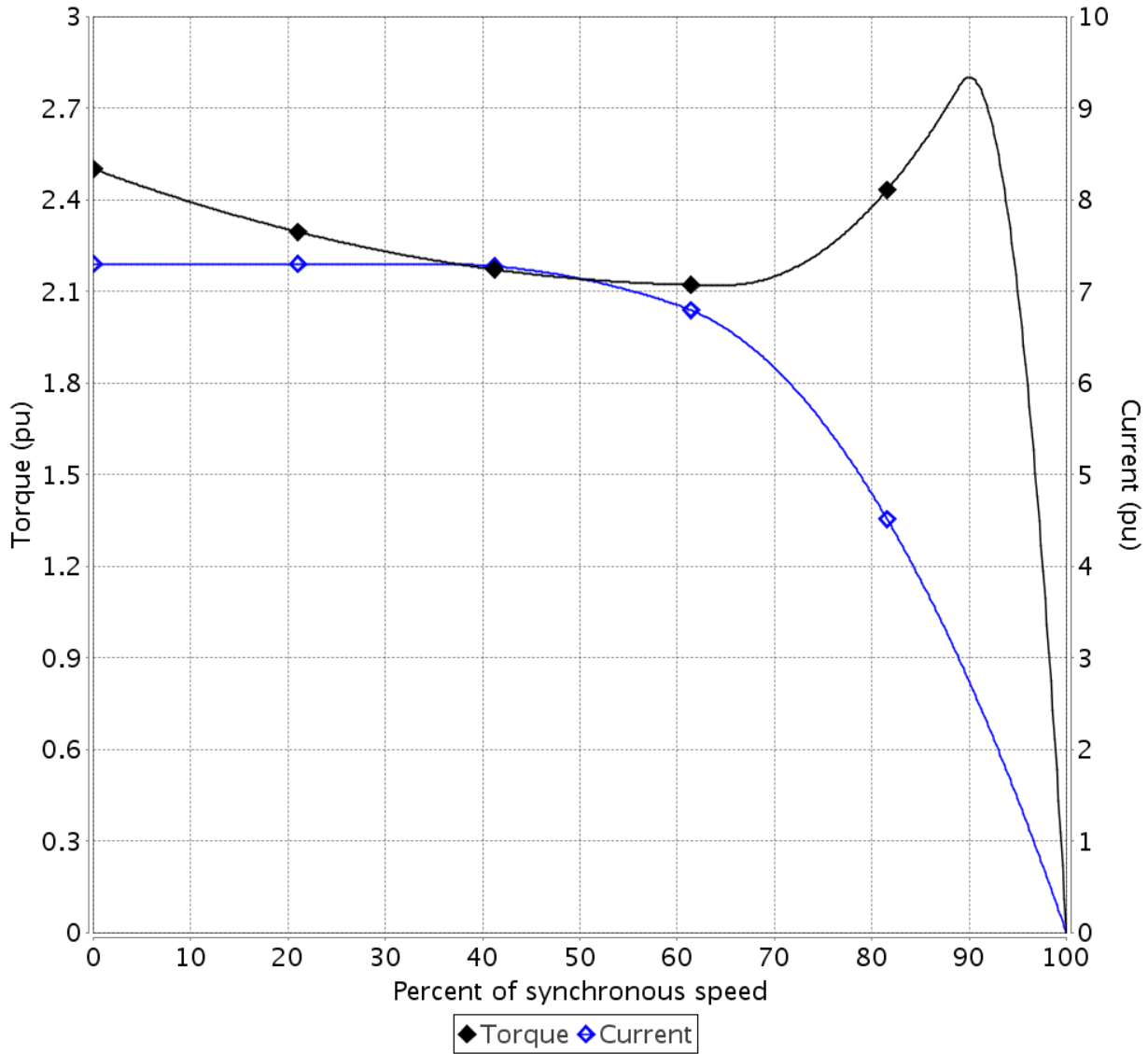
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Performance : 30 kW 380/660 V 50 Hz 4P 200L

Rated current : 58.0/33.4 A

LRC : 7.3

Rated torque : 194 Nm

Locked rotor torque : 250 %

Breakdown torque : 280 %

Rated speed : 1475 rpm

Moment of inertia (J) : 0.3202 kgm<sup>2</sup>

Duty cycle : S1

Insulation class : F

Service factor : 1.00

Temperature rise : 80 K

Design : N

Locked rotor time 100% : 11 s (hot) 20 s (cold)

Load inertia (J=GD<sup>2</sup>/4) : 0.3202 kgm<sup>2</sup>

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# EQUIVALENT CIRCUIT

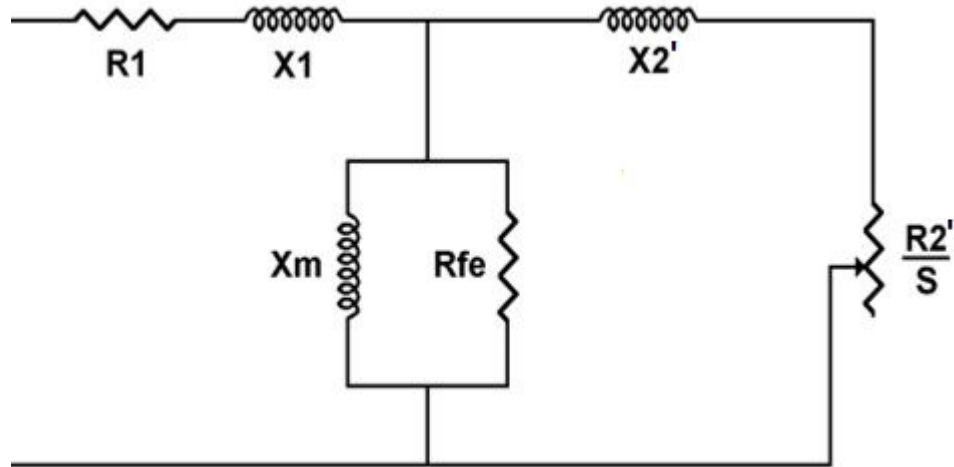
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Rated			
<b>R1</b>	0.2487 omhs / 0.0517 p.u.	<b>X1</b>	0.6940 omhs / 0.1442 p.u.
<b>R2'</b>	0.1141 omhs / 0.0237 p.u.	<b>X2'</b>	1.3023 omhs / 0.2706 p.u.
<b>Rfe</b>	849.5945 omhs / 176.5098 p.u.	<b>Xm</b>	22.2936 omhs / 4.6317 p.u.

Locked rotor			
<b>R1</b>	0.2997 omhs / 0.0623 p.u.	<b>X1</b>	0.5361 omhs / 0.1114 p.u.
<b>R2'</b>	0.3819 omhs / 0.0793 p.u.	<b>X2'</b>	0.7049 omhs / 0.1464 p.u.
<b>Rfe</b>	665.6000 omhs / 138.2835 p.u.	<b>Xm</b>	26.1653 omhs / 5.4360 p.u.

<b>T''do</b>	0.4764 s	<b>X/R</b>	3.4389 p.u.
<b>T''d</b>	0.0257 s	<b>RS</b>	0.0536 omhs / 0.0111 p.u.
<b>Ta</b>	0.0109 s	<b>X''d = Xs</b>	1.2409 omhs / 0.2578 p.u.
<b>Zbase</b>	4.8133 omhs	<b>X2(-)</b>	0.9926 omhs / 0.2062 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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