

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15832631

Frame	: 250S/M	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>	: 500 kg
Protection degree	: IP55	Moment of inertia (J)	: 0.5132 kgm <sup>2</sup>
Design	: N		

Output	75 kW	75 kW	75 kW
Poles	2	2	2
Frequency	50 Hz	50 Hz	50 Hz
Rated voltage	380/660 V	400/690 V	415 V
Rated current	134/77.2 A	128/74.2 A	125 A
L. R. Amperes	1059/609 A	1088/631 A	1125 A
LRC	7.9	8.5	9.0
No load current	29.5/17.0 A	32.0/18.6 A	34.1 A
Rated speed	2960 rpm	2965 rpm	2965 rpm
Slip	1.33 %	1.17 %	1.17 %
Rated torque	242 Nm	242 Nm	242 Nm
Locked rotor torque	280 %	300 %	320 %
Pull up torque	235 %	255 %	270 %
Breakdown torque	290 %	320 %	350 %
Service factor	1.00	1.00	1.00
Noise level <sup>2</sup>	74.0 dB(A)	74.0 dB(A)	74.0 dB(A)
Locked rotor time (hot)	11 s	11 s	11 s
Locked rotor time (cold)	20 s	20 s	20 s
Efficiency (%)	50%	94.0	94.0
	75%	94.5	94.6
	100%	94.7	94.9
Power Factor	50%	0.84	0.80
	75%	0.88	0.86
	100%	0.90	0.88

Bearing type	Drive end	Non drive end	Foundation loads
	6314-C3	6314-C3	
Lubrication interval	5000 h	5000 h	Max. compression : 10786 N
Lubricant amount	27 g	27 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: 46-62/46-66 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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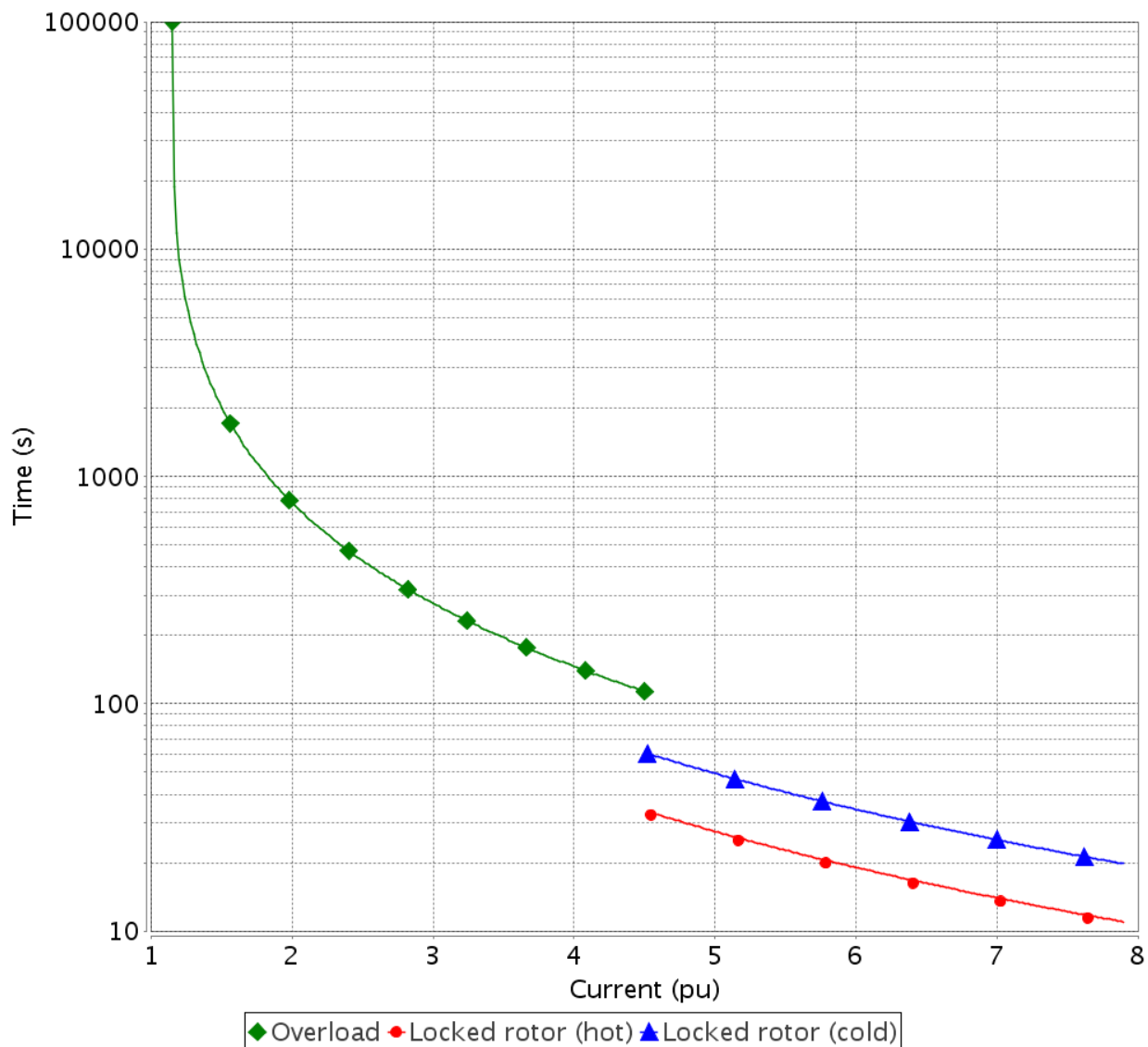
# THERMAL LIMIT CURVE

## Three Phase Induction Motor - Squirrel Cage



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Performance : 75 kW 380/660 V 50 Hz 2P 250S/M

Rated current	: 134/77.2 A	Moment of inertia (J)	: 0.5132 kgm <sup>2</sup>
LRC	: 7.9	Duty cycle	: S1
Rated torque	: 242 Nm	Insulation class	: F
Locked rotor torque	: 280 %	Service factor	: 1.00
Breakdown torque	: 290 %	Temperature rise	: 80 K
Rated speed	: 2960 rpm	Design	: N
Heating constant	: 37.0 min		
Cooling constant	: 111.0 min		

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# LOAD PERFORMANCE CURVE

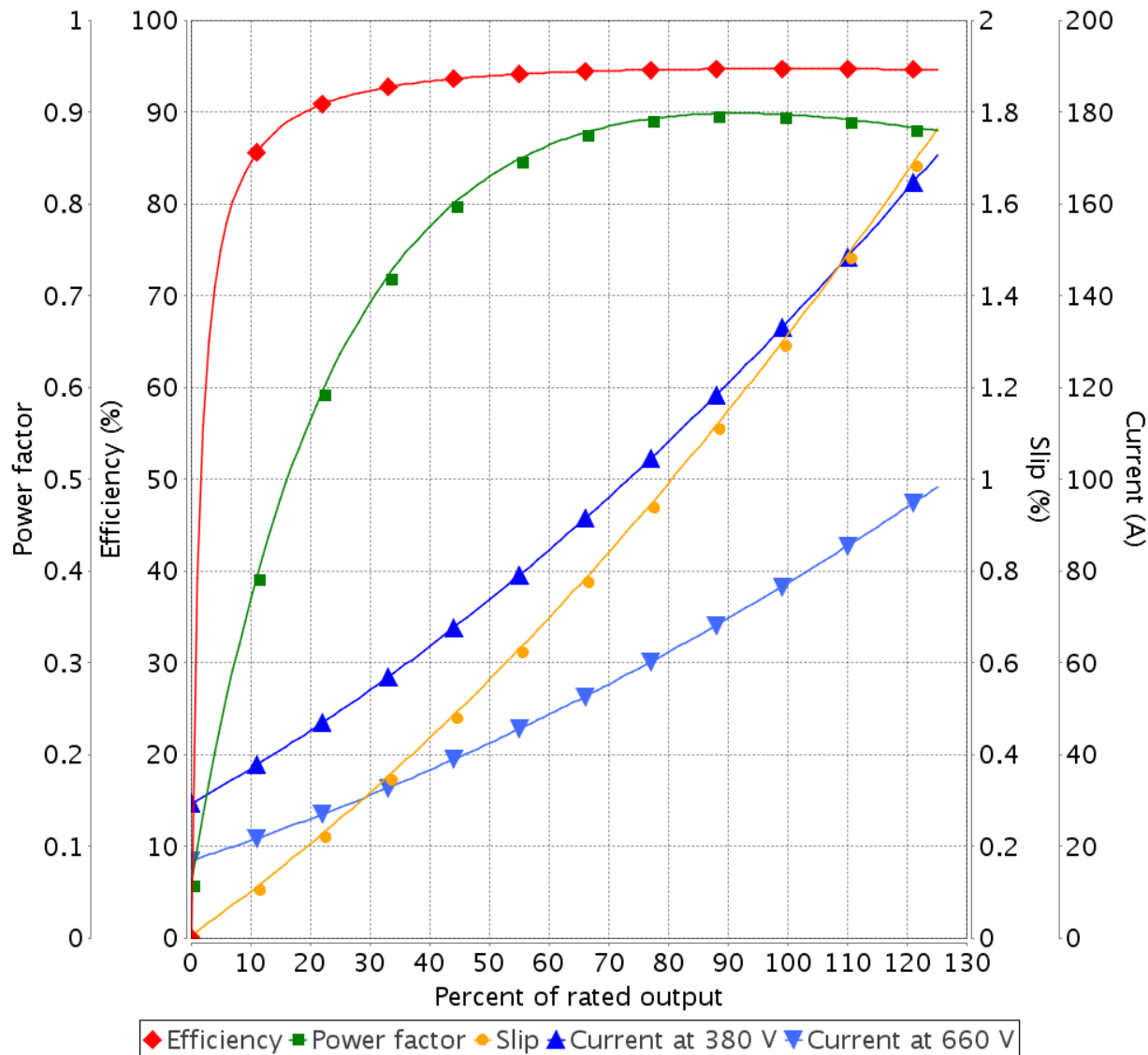
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 LRC : 7.9  
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 Locked rotor torque : 280 %  
 Breakdown torque : 290 %  
 Rated speed : 2960 rpm

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 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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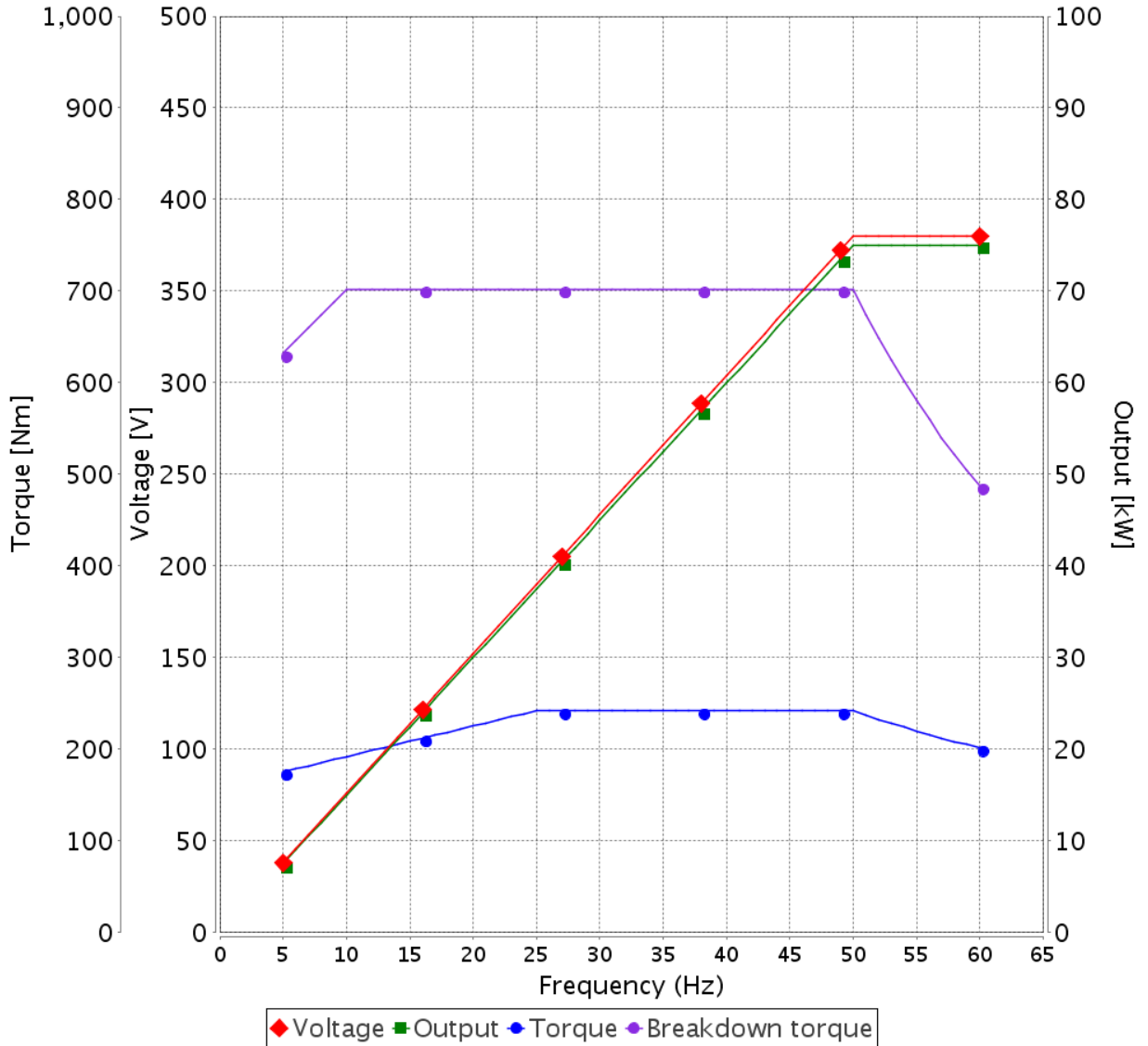
# VFD OPERATION CURVE

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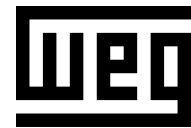
Rated current	: 134/77.2 A	Moment of inertia (J)	: 0.5132 kgm <sup>2</sup>
LRC	: 7.9	Duty cycle	: S1
Rated torque	: 242 Nm	Insulation class	: F
Locked rotor torque	: 280 %	Service factor	: 1.00
Breakdown torque	: 290 %	Temperature rise	: 80 K
Rated speed	: 2960 rpm	Design	: N

Voltage Peak Phase-Phase	= 1600.0
dV/dt	= 5200.0
Rise time	= 0.1

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# TORQUE AND CURRENT VS SPEED CURVE

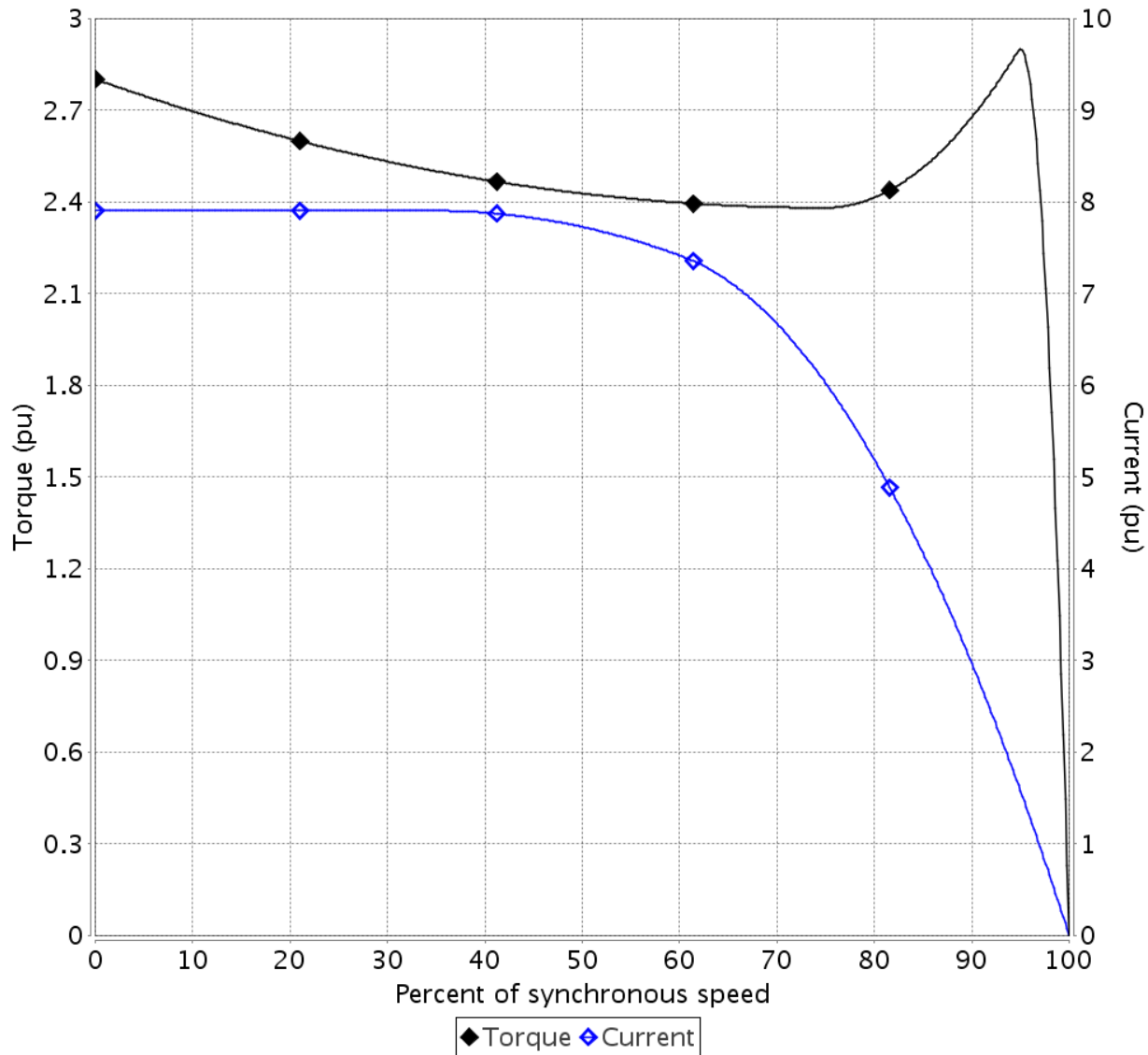
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LRC	: 7.9	Duty cycle	: S1
Rated torque	: 242 Nm	Insulation class	: F
Locked rotor torque	: 280 %	Service factor	: 1.00
Breakdown torque	: 290 %	Temperature rise	: 80 K
Rated speed	: 2960 rpm	Design	: N

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

Load inertia (J=GD<sup>2</sup>/4) : 0.5132 kgm<sup>2</sup>

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# EQUIVALENT CIRCUIT

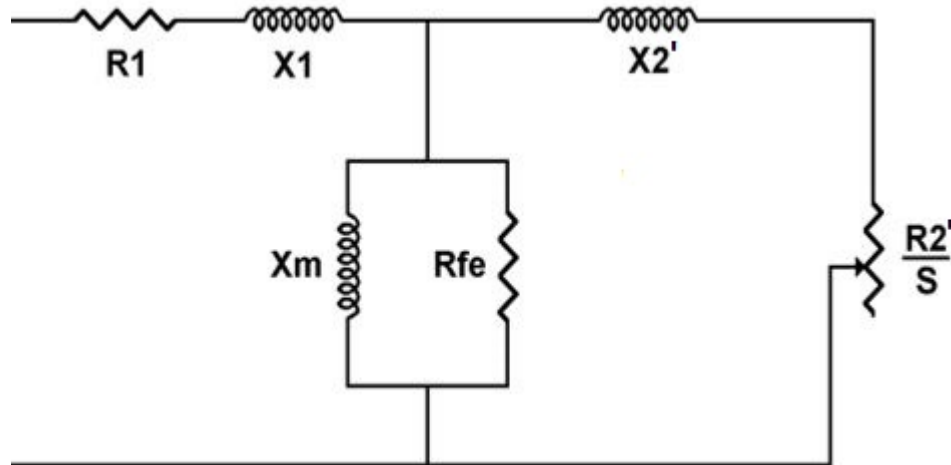
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Rated			
<b>R1</b>	0.0609 omhs / 0.0316 p.u.	<b>X1</b>	0.3930 omhs / 0.2041 p.u.
<b>R2'</b>	0.0462 omhs / 0.0240 p.u.	<b>X2'</b>	0.5385 omhs / 0.2797 p.u.
<b>Rfe</b>	571.4441 omhs / 296.8078 p.u.	<b>Xm</b>	18.2456 omhs / 9.4768 p.u.

Locked rotor			
<b>R1</b>	0.0682 omhs / 0.0354 p.u.	<b>X1</b>	0.3209 omhs / 0.1667 p.u.
<b>R2'</b>	0.1523 omhs / 0.0791 p.u.	<b>X2'</b>	0.2494 omhs / 0.1295 p.u.
<b>Rfe</b>	470.1736 omhs / 244.2080 p.u.	<b>Xm</b>	22.1354 omhs / 11.4971 p.u.

<b>T"do</b>	0.9333 s	<b>X/R</b>	6.9261 p.u.
<b>T"d</b>	0.0286 s	<b>RS</b>	0.0334 omhs / 0.0173 p.u.
<b>Ta</b>	0.0168 s	<b>X"d = Xs</b>	0.5703 omhs / 0.2962 p.u.
<b>Zbase</b>	1.9253 omhs	<b>X2(-)</b>	0.3515 omhs / 0.1826 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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