

DATA SHEET

Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15834980

Frame	: 180L	Cooling method	: IC411 - TEFC
Insulation class	: F	Mounting	: B3T
Duty cycle	: S1	Rotation ¹	: Both
Ambient temperature	: -20 °C to +40 °C	Starting method	: Direct On Line
Altitude	: 1000 m.a.s.l	Approx. weight ⁹	: 208 kg
Protection degree	: IP55	Moment of inertia (J)	: 0.2097 kgm ²
Design	: N		

Output	22 kW	22 kW	22 kW
Poles	4	4	4
Frequency	50 Hz	50 Hz	50 Hz
Rated voltage	380/660 V	400/690 V	415 V
Rated current	42.3/24.4 A	41.0/23.8 A	40.6 A
L. R. Amperes	309/178 A	316/183 A	329 A
LRC	7.3	7.7	8.1
No load current	16.4/9.44 A	18.1/10.5 A	19.5 A
Rated speed	1470 rpm	1475 rpm	1475 rpm
Slip	2.00 %	1.67 %	1.67 %
Rated torque	143 Nm	143 Nm	143 Nm
Locked rotor torque	300 %	330 %	360 %
Pull up torque	255 %	280 %	305 %
Breakdown torque	310 %	340 %	370 %
Service factor	1.00	1.00	1.00
Noise level ²	61.0 dB(A)	61.0 dB(A)	61.0 dB(A)
Locked rotor time (hot)	11 s	11 s	11 s
Locked rotor time (cold)	20 s	20 s	20 s
Efficiency (%)	50%	92.5	91.9
	75%	92.8	92.8
	100%	93.0	93.0
Power Factor	50%	0.70	0.62
	75%	0.81	0.74
	100%	0.85	0.81

Bearing type	Drive end	Non drive end	Foundation loads
	6311-C3	6211-C3	
Lubrication interval	20000 h	20000 h	Max. compression : 8580 N
Lubricant amount	18 g	11 g	Load type :-
Lubricant type	MOBIL POLYREX EM		Load torque :-
			Load inertia (J=GD ² /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.

Rev.	Changes Summary		Rev.	Checked	Date
Performed by	dang			1230920724	
Checked by	AUTOMATICO			Page	Rev.
Date	11/11/2021			1 / 7	0

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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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Rev.	Changes Summary		Rev.	Checked	Date
Performed by	dang			1230920724	
Checked by	AUTOMATICO			Page	Rev.
Date	11/11/2021			2 / 7	0

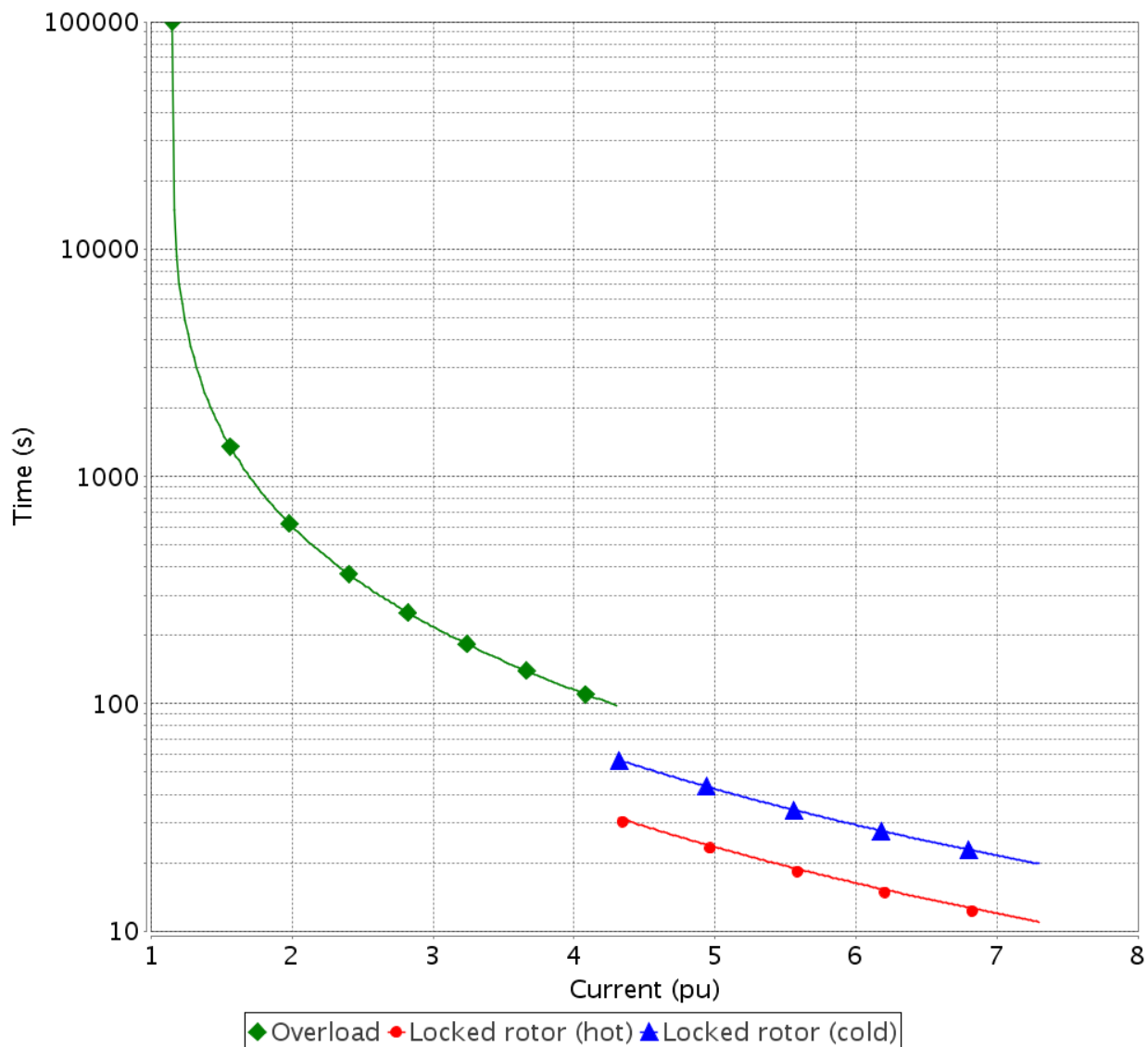
THERMAL LIMIT CURVE

Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15834980



Performance : 22 kW 380/660 V 50 Hz 4P 180L

Rated current	: 42.3/24.4 A	Moment of inertia (J)	: 0.2097 kgm ²
LRC	: 7.3	Duty cycle	: S1
Rated torque	: 143 Nm	Insulation class	: F
Locked rotor torque	: 300 %	Service factor	: 1.00
Breakdown torque	: 310 %	Temperature rise	: 80 K
Rated speed	: 1470 rpm	Design	: N
Heating constant	: 29.2 min		
Cooling constant	: 87.6 min		

Rev.	Changes Summary		Rev.	Checked	Date
Performed by	dang				
Checked by				Page	Rev.
Date	11/11/2021			3 / 7	0

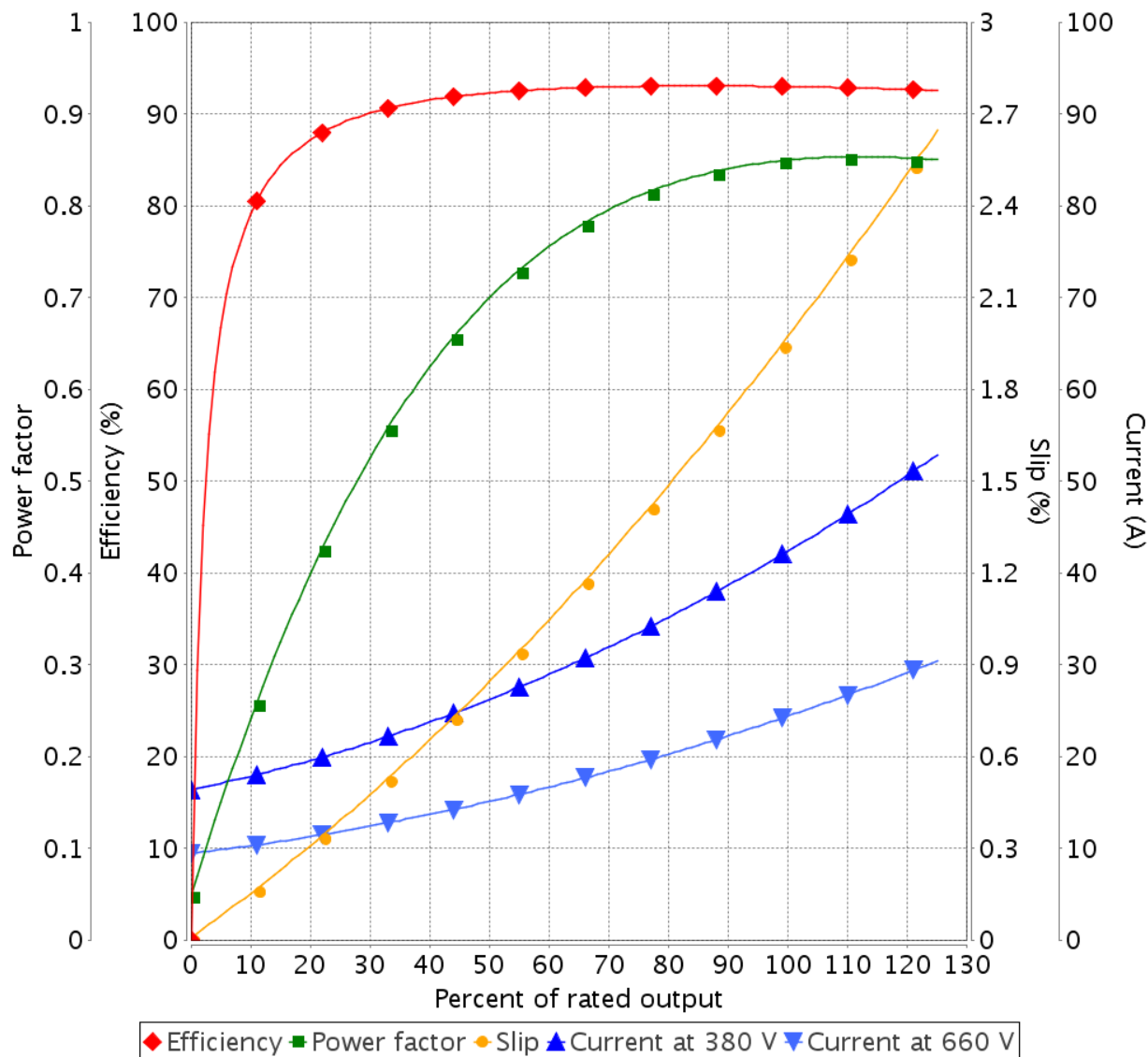
LOAD PERFORMANCE CURVE

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Rated torque	: 143 Nm	Insulation class	: F
Locked rotor torque	: 300 %	Service factor	: 1.00
Breakdown torque	: 310 %	Temperature rise	: 80 K
Rated speed	: 1470 rpm	Design	: N

Rev.	Changes Summary		Rev.	Checked	Date
Performed by	dang			Page	Rev.
Checked by				4 / 7	0
Date	11/11/2021				

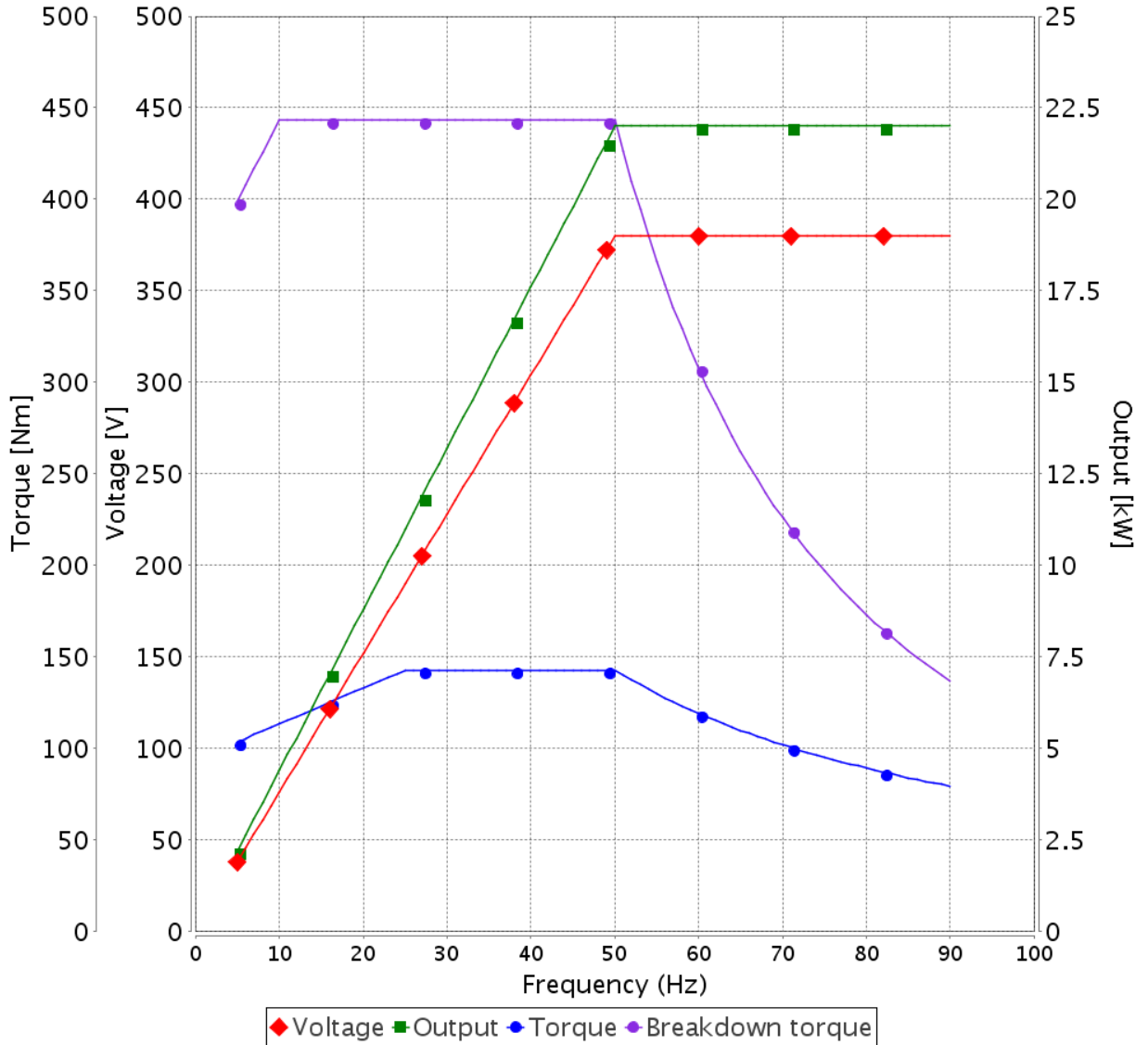
VFD OPERATION CURVE

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Rated current : 42.3/24.4 A
 LRC : 7.3
 Rated torque : 143 Nm
 Locked rotor torque : 300 %
 Breakdown torque : 310 %
 Rated speed : 1470 rpm

Moment of inertia (J) : 0.2097 kgm²
 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

Rev.	Changes Summary		Rev.	Checked	Date
Performed by	dang			Page	Rev.
Checked by				5 / 7	0
Date	11/11/2021				

TORQUE AND CURRENT VS SPEED CURVE

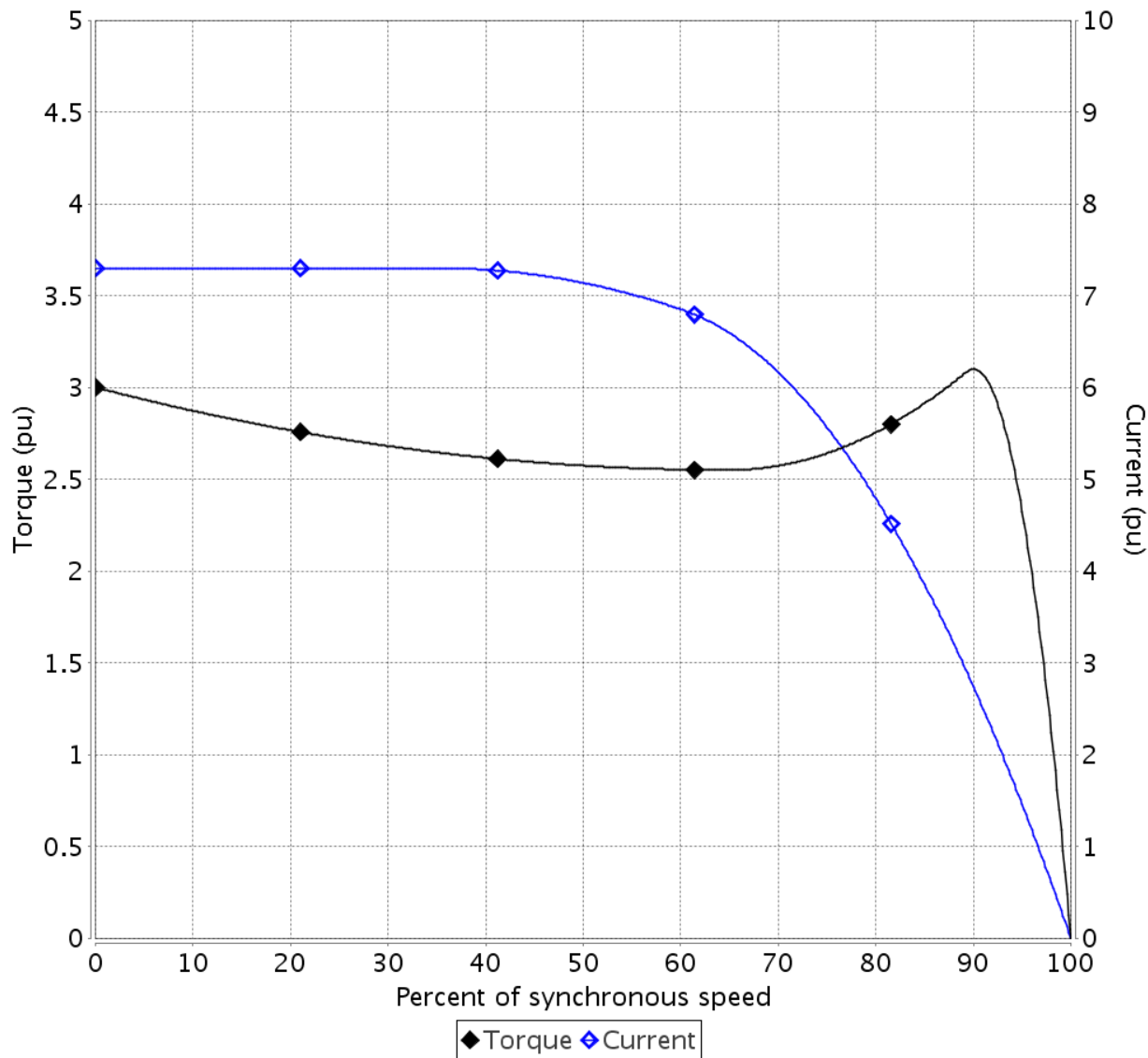
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Performance : 22 kW 380/660 V 50 Hz 4P 180L

Rated current : 42.3/24.4 A

LRC : 7.3

Rated torque : 143 Nm

Locked rotor torque : 300 %

Breakdown torque : 310 %

Rated speed : 1470 rpm

Moment of inertia (J) : 0.2097 kgm²

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=GD²/4) : 0.2097 kgm²

Rev.	Changes Summary		Rev.	Checked	Date
Performed by	dang		1230920724		
Checked by	AUTOMATICO		Page	Rev.	
Date	11/11/2021		6 / 7	0	

EQUIVALENT CIRCUIT

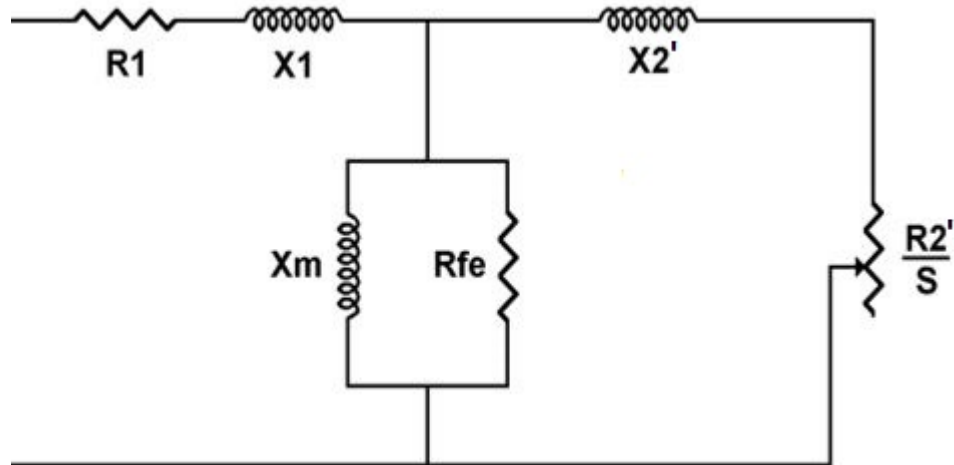
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Rated			
R1	0.2624 omhs / 0.0400 p.u.	X1	0.9576 omhs / 0.1459 p.u.
R2'	0.2206 omhs / 0.0336 p.u.	X2'	1.7698 omhs / 0.2696 p.u.
Rfe	936.3536 omhs / 142.6585 p.u.	Xm	32.4530 omhs / 4.9444 p.u.

Locked rotor			
R1	0.2984 omhs / 0.0455 p.u.	X1	0.6949 omhs / 0.1059 p.u.
R2'	0.6080 omhs / 0.0926 p.u.	X2'	0.9864 omhs / 0.1503 p.u.
Rfe	797.1899 omhs / 121.4562 p.u.	Xm	37.9023 omhs / 5.7746 p.u.

T''do	0.3710 s	X/R	4.1520 p.u.
T''d	0.0187 s	RS	0.1034 omhs / 0.0158 p.u.
Ta	0.0132 s	X''d = Xs	1.6814 omhs / 0.2562 p.u.
Zbase	6.5636 omhs	X2(-)	1.3880 omhs / 0.2115 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

Rev.	Changes Summary		Rev.	Checked	Date
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Checked by				Page	Rev.
Date	11/11/2021			7 / 7	0