

MAX-PM™

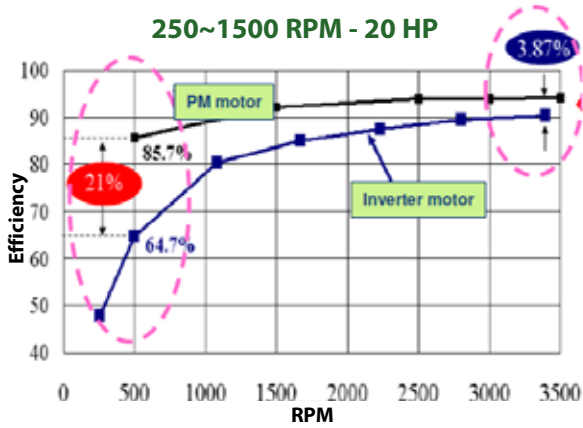
Permanent Magnet AC Motors



TECO   **Westinghouse**

FEATURES

TECO-Westinghouse MAX-PM™ Permanent Magnet motors have been specifically designed for industry applications which require higher system efficiencies. MAX-PM™ motors have significantly greater efficiency performance at low speed and higher levels of efficiencies than comparable induction motors.



Significantly High Efficiency Performance

Superior energy and cost efficiency

30 HP, Exhaust Fan Operation 24 hr/day	Energy Consumption (kWh)	Electricity Charges (\$)
Premium Efficiency Induction Motor	178,880	\$17,172
Beyond Premium Efficiency MAX-PM™	164,160	\$15,759
Annual Energy Cost Saving	14,720	\$1,413

	Induction Motor w/ Drive	Induction Motor w/o Drive
Initial expense for adopting MAX-PM™	\$1,200	\$2,200
ROI	0.85	1.56



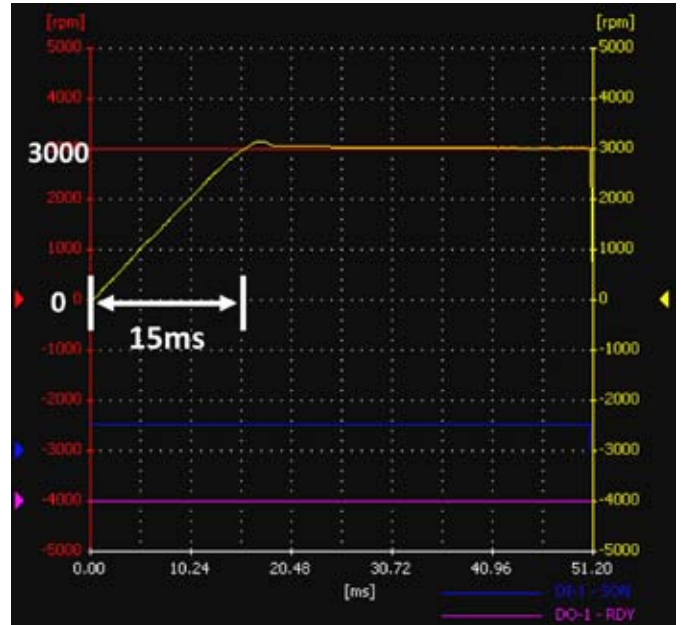
Noise Level Reduction

10dBA lower than comparable induction motors
(IM: 85 dBA vs. PM: 75 dBA)

High Speed Response

MAX-PM™ motors have smaller rotor inertia than induction motors.

- Faster dynamic performance
- For a 10 HP motor, it only takes 15ms to speed up to 3000 RPM



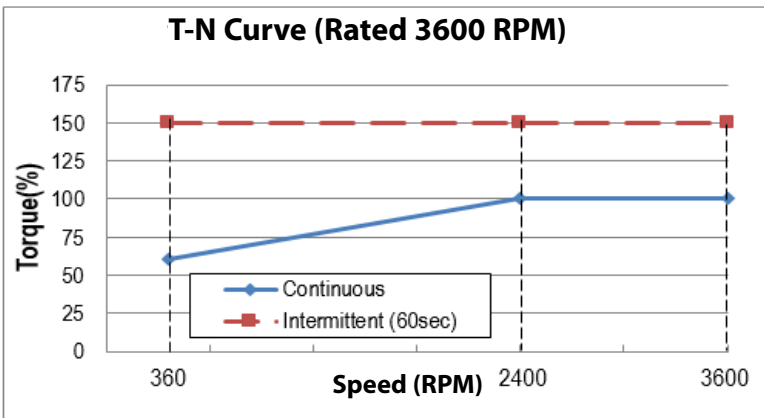
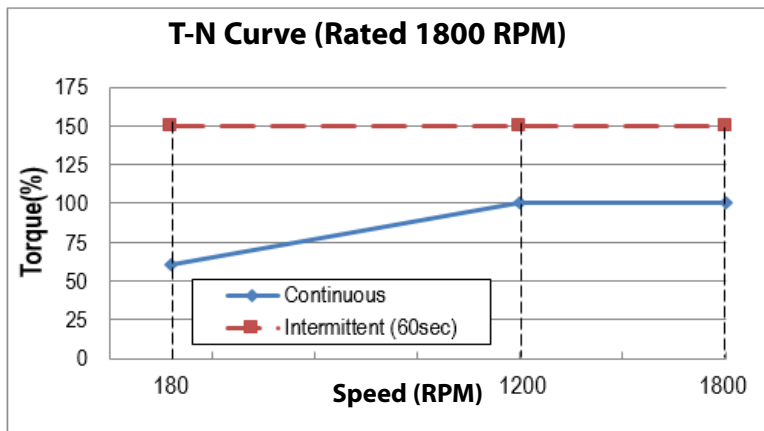
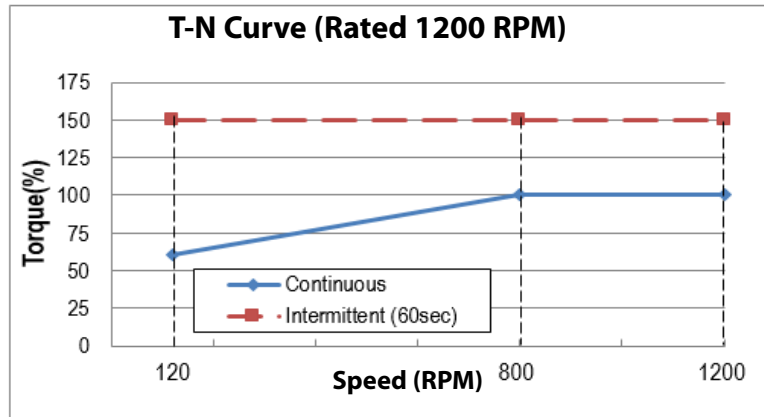
MAX-PM™ motors pair well with E510 IP20 AC inverters for improved system efficiencies.

- 3/60 Hz/230V: 0.5 - 40 HP (0.5 - 3 HP available in Single or 3 phase)
- 3/60 Hz/460V: 1 - 75 HP
- Dedicated safety input
- NEMA 1 standard for all models
- Built-in keypad speed pot
- Speed search capability for PM control
- Extended monitoring diagnostics
- Remote mountable keypad
- Pairs well with the permanent magnet motor



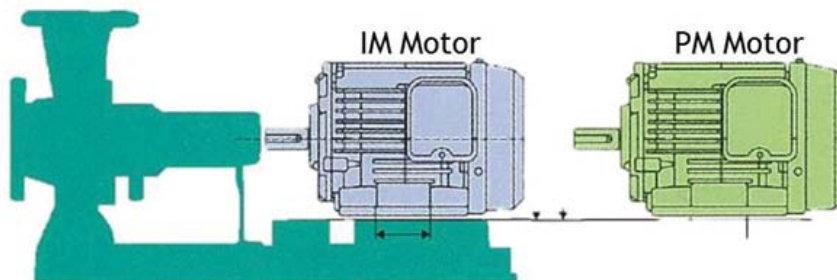
High Torque - Low Speed

Torque profile remains 60% of rated torque at 10:1



143T – 286T NEMA Frames

Drop-in design. Same footprint as NEMA frames but lighter than equivalent IM (up to 40%).



SPECIFICATIONS

	ITEM	STANDARD SPECIFICATION
SPECIFICATION	Voltage	460V
	Output Range	1 HP - 30 HP
	RPM	Rated 1200, 1800, 3600 RPM
	Frame Size	143T~286T
	Time Duty	Continuous, Service Factor 1.0 (S1)
	Protection Enclosure	Totally Enclosed (IP55)
	Mounting	Horizontal Foot Mounting F-1 (IM 1001)
	Cooling Method	Frame-Surface Cooled with a Fan (IC 411)
APPLICATION	Power Condition	Voltage: $\pm 10\%$, Frequency: $\pm 5\%$, and $\pm 10\%$ of Combined Voltage and Frequency, but Frequency Variation Does Not Exceed $\pm 5\%$
	Starting Method	Controlled by Permanent Magnet Synchronous Motor Inverter
	Direction of Rotation	Bi-Directional
	Drive Method	Direct Coupling Service
	Environment Conditions	Place: Shadow, Non-Hazardous Ambient Temperature: $-20^{\circ}\text{C}\sim 40^{\circ}\text{C}$ Relative Humidity: Less than 90% RH (Non-Condensation) Altitude: Less than 3,300 ft
CONSTRUCTION	Frame	High Grade Cast Iron with 2 Drain Holes at Bottom
	End Bracket	High Grade Cast Iron
	External Fan	Plastic
	Fan Cover	Pressed Steel
	Shaft	Carbon Steel, Cylindrical Single Extension with Keyseat and Key
	Bearing	Grease Pre-Packed, Shielded Rolling Bearings
	Lubricant	Mineral Oil, Li-Base Grease (MULTEMP SRL)
	Shaft Flinger	V-Ring on Both Ends
	Terminal Box	Pressed Steel, Larger Size, Can be Set 90° Apart, with Clearance Hole Cable Entrance, F-1 & F-2 Interchangeable
	Stator Insulation	Class F Insulation System
	Rotor Structure	Permanent Magnet NdFeB
	Painting System	Phenolic Rust Proof Base Plus Lacquer Surface Finished
	Color	Green (Munsell 10GY 5/12)
PERFORMANCE	Temperature Rise	Not to Exceed 80°C for 1.0 Service Factor by Resistance Method.
	Over Torque	150% Rated Torque for 60 Seconds

PERFORMANCE DATA

OUTPUT		RPM	FRAME SIZE	TORQUE		CURRENT		EFFICIENCY (%)
kw	HP			RATED (lb-ft)	MAX. (lb-ft)	RATED (A _{rms})	MAX. (A _{rms})	
.75	1	1200	145T	4.4	6.6	1.5	2.3	82.7
		1800	143T	2.9	4.4	1.5	2.3	85.7
		3600	143T	1.5	2.2	1.5	2.3	83.5
1.1	1.5	1200	182T	6.5	9.7	2.2	3.3	84.5
		1800	145T	4.3	6.5	2.3	3.5	87.2
		3600	143T	2.2	3.2	2.2	3.3	85.2
1.5	2	1200	184T	8.8	13.2	2.9	4.4	85.9
		1800	145T	5.9	8.8	3.0	4.5	88.2
		3600	145T	2.9	4.4	3.0	4.5	86.5
2.2	3	1200	213T	12.9	19.4	4.4	6.6	87.4
		1800	182T	8.6	12.9	4.5	6.8	89.5
		3600	182T	4.3	6.5	4.4	6.6	88.0
3.7	5	1200	215T	21.7	32.6	7.0	10.5	89.3
		1800	184T	14.5	21.7	7.0	10.5	90.9
		3600	184T	7.2	10.9	7.1	10.7	89.7
5.5	7.5	1200	254T	32.3	48.4	10.2	15.3	90.5
		1800	213T	21.5	32.3	10.4	15.6	91.9
		3600	213T	10.8	16.1	11.0	16.5	90.9
7.5	10	1200	256T	44.0	66.0	14.5	21.8	91.3
		1800	215T	29.3	44.0	14.5	21.8	92.6
		3600	215T	14.7	22.0	14.0	21.0	91.7
11	15	1200	284T	64.6	96.8	20.0	30.0	92.3
		1800	254T	43.0	64.6	20.0	30.0	93.3
		3600	254T	21.5	32.3	20.0	30.0	92.6
15	20	1200	286T	88.0	132.1	27.5	41.3	92.9
		1800	256T	58.7	88.0	28.0	42.0	93.9
		3600	256T	29.3	44.0	28.0	42.0	93.3
18.5	25	1800	284T	72.4	108.6	33.0	49.5	94.2
		3600	284TS	36.2	54.3	33.5	50.3	93.7
22	30	1800	286T	86.1	129.1	39.5	59.3	94.5
		3600	286TS	43.0	64.6	39.5	59.3	94.0

Notes:

1. Efficiency, speed and torque are the same for other voltages. Current values and induced voltage constant vary inversely with voltage.
2. All data subject to change without notice.



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