

Monarch Cast Iron Severe Duty Motors

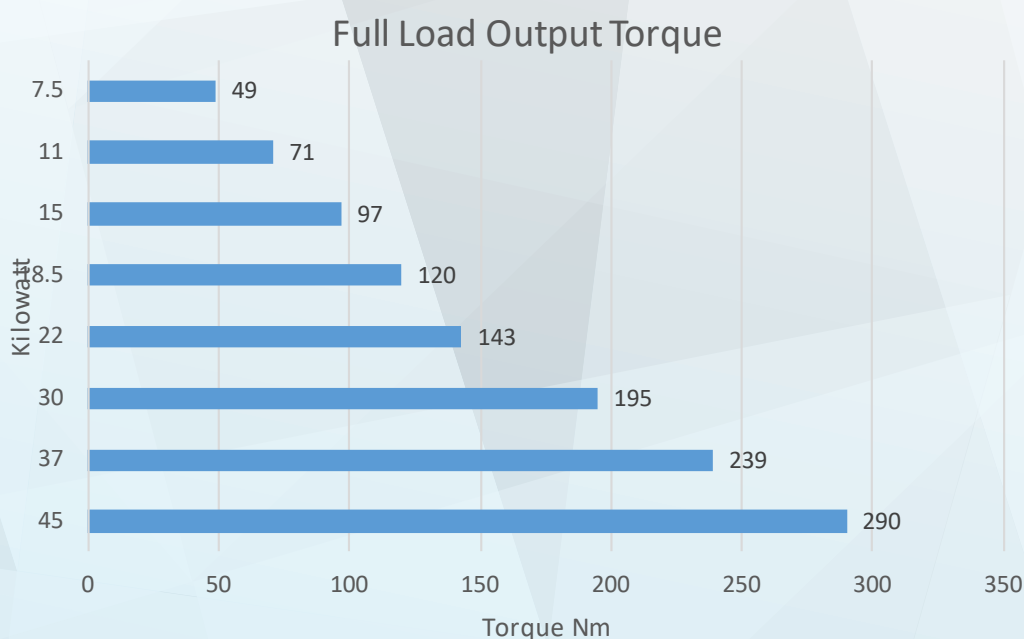
MONARCH CAST IRON SEVERE DUTY MOTORS

For the Tough Jobs MONARCH SEVERE DUTY motors offer that extra degree of performance with H class Insulation and IP66 protection.

MONARCH GX - Three Phase Induction Motors are a range of high quality, Totally Enclosed Fan Cooled (TEFC), Squirrel Cage Induction motors, designed, manufactured and tested to the latest International and Australian Standards.

FEATURES

- Metric frame motor to AS1359,
- 0.55kW to 500kW
- Totally Enclosed Fan Cooled (IC411)
- Meets AS1359.5 Minimum Efficiency
- Performance Standard, table B2
- 380~415 Volts 3 Phase 50 Hz (other supplies on request)
- Class F insulation with a Class B temperature rise
- Continuous rated, duty type S1
- Cast Iron construction with top mounted terminal box
- IP rating: 66, porous drain plugs, Steefa seals



Monarch Cast Iron Severe Duty Motors



MONARCH GX - Three Phase Induction Motors are a range of high quality, Totally Enclosed Fan Cooled (TEFC), Squirrel Cage Induction motors, designed, manufactured and tested to the latest International and Australian Standards.

There are two main motor types -

Types	Enclosure	Insulation Class	Shaft seals
Standard	IP55	F	"V" ring
Severe Duty	IP66	H	Steffa

Standards

- Designed and Manufactured to IEC34, IEC72, AS1359 with Quality Assurance to ISO9001.
- Frame sizes are generally to CENELEC HD231 and AS1359 as detailed in "Performance Data" on page 3.

MEPS (Minimum Efficiency Performance Standard)

- All motors meet or exceed the requirements of Australian Standard AS1359.5-2004 Minimum Energy Performance Standards – Table B2.

Electric Supply

- Motors are designed for 380 – 415 Volt 3 phase 50 Hz and are also suitable for 440 – 480 Volt 60 Hz supply systems.
- Motors 3 kW and below are 380 - 415 Volt 50 Hz STAR connected and may also be reconnected to 240 Volt 3 phase 50 Hz DELTA configuration for use with single phase inverters.
- Motors 4 kW and larger are 380 – 415 Volt 50 Hz DELTA connected.

Cooling System

- Cooling is TEFC IC411 to AS1359.106.
- Fan cover is heavy gauge pressed steel.
- Cooling fan is polypropylene up to frame size D280 and is metal on frames D315 and larger.

Mounting

Motors are available in the following mountings

- Foot mounted IM1001 (B3)
- Foot and Flange mounted IM2001 (B35)
- Flange mounted IM3001 (B5)
- Foot and C Face mounted IM2101 (B34)
- C Face mounted IM3601 (B14)

Above IM nominations are those for horizontal mounting with other mounting orientations (ie. vertical etc.) available on request.

Duty Rating

- All motors are continuously maximum rated type S1.

Ambient

- Motors are designed to operate in ambient conditions of -20°C to +40°C as standard. Operation in adverse ambient conditions should be referred to TECO.

Altitude

- Designed for operation at an altitude not exceeding 1000 metres above sea level (refer to TECO sales offices for higher altitudes).

Performance

- Motors are designed to meet the performance requirements of Design N as per AS1359.41.

Motor Construction

- Cast Iron frame with integrally cast feet and cast iron end shields.
- Castings are machined to close tolerances for accurate alignment and minimum vibration.

Stator and Windings

- High grade insulated cold rolled electro magnetic steel laminations.
- Windings are designed with a temperature rise of class B for long motor life and thermal reserve for abnormal conditions.
- Windings are random wound double enamelled copper wire, impregnated with a solventless resin and are tropic proof rated as standard.

Winding Protection

- Frame sizes D160 and larger are fitted with PTC thermistor protection (P140) within the windings (one per phase) with the leads terminated in the main terminal box.

Rotor Construction

- High grade insulated cold rolled electro magnetic steel laminations.
- Rotor cage is pressure die cast high conductivity aluminium with waffer blades and balance supports integrally cast onto the rotor endrings.
- The rotor is pressed and keyed on to the high tensile steel shaft.

Bearing and Lubrication System

- Motors up to and including frame sizes D225 and all 2 pole motors have a Ball / Ball bearing combination.
- Four pole and slower speeds in motor frame sizes D250 and larger have a Roller / Ball bearing combination for heavy-duty belt drive applications.
- Motor frame sizes D80 to D160 have greased for life sealed bearings.
- Motor frame sizes D180 and larger have a Grease Relief system that enables motor to be re-greased during operation.

Balance

- All rotors are dynamically balanced with a half key to Class N, according to AS1359.50.

Terminal Box

- Terminal box is top mounted on motor frame with all metal to metal joints provided with neoprene gaskets.
- Base – Lid surfaces are machined and fitted with one-piece neoprene gasket providing terminal boxes with an IP66 rating.
- Terminal box can be rotated in 90° steps through 360° for alternate cable entry orientations.

Rating Plate

- A stainless steel rating plate containing all details as specified in AS1359.4 including bearing sizes is fitted to all motors.

Finish

- All castings are mechanically cleaned and de-greased.
- Cast Iron components are primed internally and externally with an epoxy oxide red primer.
- Two finish coats of matt acrylic resin are applied providing a high corrosion protected surface. Finish colour TEAL T63 (standard), Blue Jade T2 (Severe Duty), colours are to AS2700.

Inverter Duty

- Motors are suitable for Inverter duty, subject to torque and speed limitations and correct installation of motor and drive.

Two Speed Motors

- Available ex stock are a variety of two-speed motors for variable torque applications (Centrifugal pump / Fan).

Pole configurations

Poles	2 / 4	4 / 8	4 / 6	6 / 8
Winding	Tapped	Tapped	Dual	Dual

- Output powers, performance and frame sizes on request.

Testing

- In addition to a full program of tests during manufacture each motor is subjected to routine tests to AS1359 prior to despatch.

Options

Some available options as follows:

- IP56, IP65 & IP66 enclosure
- Smoke Spill to AS1668.1:1998, 300°C for 0.5 hours (Class H) or 200°C for 2 hours (Class F).
- Anti-condensation heaters
- Thermistor protection (on motor frames <D160)
- Resistance temperature detectors (RTD's)
- Auxiliary terminal boxes for Thermistor / heater terminations
- Multi-speed motors, 2 speed motors are ex stock
- Airstream rated IC418
- Brake Motors
- Special paint systems / colours
- Stainless steel fasteners
- Double / non standard shaft extensions
- Insulated bearing
- Shaft earth brush
- Encoder / Tacho, Force ventilation
- Others on request

Not to be used for installation purposes without referring to TECO Australia Pty. Ltd.
Design, data and dimensions are subject to change without notice

Monarch Cast Iron Severe Duty Motors



Performance Data 50 Hz

Rated Output kW	Frame Size	Speed RPM	Efficiency %			Power Factor Cos p.u.			Current		Torque			Noise Level dB(A) no load 1metre	Moment of Inertia WR ² in kgm ²	Approx. net weight IM1001 kg
			1/1	3/4	1/2	1/1	3/4	1/2	Nameplate Full Load @ 415Volt Amps I _N	Starting I _{st} I _N	Full load I _N Nm	Starting I _{st} T _N	Break-down I _b T _N			

2 pole

0.75	80	2845	80.5%	81.5%	79.4%	0.83	0.75	0.62	1.56	6.8	2.51	2.20	2.30	59	0.0010	18
1.1	80	2840	82.2%	84.8%	83.4%	0.83	0.76	0.64	2.25	7.2	3.68	2.20	2.30	59	0.0013	20
1.5	90S	2840	84.1%	85.2%	83.5%	0.85	0.79	0.69	2.92	7.5	4.96	2.20	2.30	64	0.0020	25
2.2	90L	2825	85.6%	86.8%	86.0%	0.85	0.81	0.71	4.20	7.6	7.28	2.20	2.30	64	0.0026	29
3	100L	2880	86.7%	88.2%	88.0%	0.87	0.86	0.78	5.53	8.1	9.96	2.20	2.30	68	0.0042	39
4	112M	2880	87.6%	87.4%	86.7%	0.88	0.85	0.76	7.22	8.3	13.1	2.20	2.30	69	0.0058	50
5.5	132S	2915	88.5%	89.8%	89.0%	0.88	0.85	0.77	9.8	8.3	18.0	2.20	2.30	72	0.0128	69
7.5	132S	2915	89.5%	90.1%	89.2%	0.88	0.86	0.80	13.2	7.7	24.6	2.20	2.30	72	0.0151	75
11	160M	2940	90.6%	90.9%	90.3%	0.89	0.88	0.83	19.0	7.5	35.7	2.20	2.30	78	0.0489	120
15	160M	2935	91.3%	91.6%	90.9%	0.89	0.88	0.84	25.6	7.5	48.8	2.20	2.30	78	0.0559	128
18.5	160L	2940	91.8%	91.6%	91.0%	0.89	0.89	0.84	31.5	7.5	60.1	2.20	2.30	78	0.0648	142
22	180M	2950	92.2%	92.0%	91.0%	0.90	0.89	0.84	36.9	7.5	71.6	2.20	2.30	81	0.0808	176
30	200L	2955	92.9%	92.6%	91.8%	0.90	0.90	0.86	49.9	7.5	96.9	2.00	2.30	84	0.163	250
37	200L	2955	93.3%	93.0%	92.3%	0.90	0.89	0.85	61.3	7.5	120	2.00	2.30	84	0.172	258
45	225M	2970	93.7%	93.8%	93.2%	0.90	0.89	0.86	74.2	7.5	145	2.00	2.30	84	0.302	336

4 pole

0.55	80	1395	80.7%	80.8%	78.2%	0.75	0.65	0.53	1.26	6.5	3.67	2.20	2.20	50	0.0016	20
0.75	80	1400	82.2%	82.2%	79.3%	0.75	0.66	0.53	1.70	6.6	5.00	2.20	2.20	50	0.0020	21
1.1	90S	1390	83.8%	83.8%	81.9%	0.77	0.67	0.55	2.37	6.8	7.31	2.30	2.30	53	0.0030	26
1.5	90L	1390	85.0%	85.4%	83.5%	0.77	0.68	0.55	3.19	7.0	9.96	2.30	2.30	53	0.0038	31
2.2	100L	1425	86.4%	86.1%	84.3%	0.81	0.73	0.61	4.38	7.4	14.5	2.30	2.30	56	0.0077	40
3	100L	1430	87.4%	87.0%	84.5%	0.81	0.71	0.59	5.90	7.4	19.8	2.30	2.30	56	0.0093	44
4	112M	1440	88.3%	88.0%	86.0%	0.82	0.72	0.59	7.68	7.5	26.3	2.30	2.30	57	0.0128	58
5.5	132S	1450	89.2%	89.4%	88.2%	0.83	0.77	0.68	10.3	7.8	36.1	2.30	2.30	63	0.0285	70
7.5	132M	1450	90.1%	90.4%	89.4%	0.84	0.78	0.68	13.8	7.4	49.2	2.30	2.30	63	0.0366	90
10	132M	1460	90.1%	91.1%	90.9%	0.84	0.77	0.66	18.4	7.4	60.3	2.30	2.30	67	0.0394	94
11	160M	1465	91.0%	91.7%	91.2%	0.85	0.80	0.71	19.8	7.0	71.8	2.20	2.30	67	0.0771	122
15	160L	1460	91.8%	92.1%	91.8%	0.85	0.80	0.72	26.7	7.0	97.6	2.20	2.30	67	0.101	146
18.5	180M	1470	92.2%	92.0%	91.6%	0.86	0.85	0.77	32.5	7.5	120	2.20	2.30	68	0.152	179
22	180L	1470	92.6%	92.6%	91.8%	0.86	0.85	0.77	38.5	7.8	143	2.20	2.30	68	0.187	206
30	200L	1475	93.2%	93.5%	93.0%	0.86	0.84	0.78	52.1	7.2	195	2.20	2.30	71	0.285	255
37	225S	1480	93.6%	93.8%	93.2%	0.87	0.84	0.79	63.2	7.4	239	2.00	2.30	73	0.473	305
45	225M	1480	93.9%	93.9%	93.6%	0.87	0.85	0.80	76.6	7.4	290	2.20	2.30	73	0.554	342

Notes:

- 1) Output at 415V is also suitable for 380 Volt and 400 Volt operation. For 380 Volt I_N x 1.092. For 400 Volt I_N x 1.375.
- 2) Performance data is subject to AS1359.101 tolerances.
- 3) Noise level is the typical Mean Sound Pressure Level on no load at one metre and is subject to tolerance.
- 4) Frame sizes to AS1359.3001997 Western European allocations from CENELEC HD 231 apart from motors with suffix of* on frame size.
- 5) Suffix of * have frame sizes to AS1359.30-1997 Australia / British allocations.
- 6) Performance data for larger size motors on application.

Monarch Cast Iron Severe Duty Motors



Performance Data 50 Hz

Rated Output kW	Frame Size	Speed RPM	Efficiency %			Power Factor Cos p.u.			Current		Torque			Noise Level dB(A) no load 1metre	Moment of Inertia WR ² in kgm ²	Approx. net weight IM1001 kg
			1/1	3/4	1/2	1/1	3/4	1/2	Nameplate Full Load @ 415Volt Amps I _N	Starting I _{st} I _N	Full load I _N Nm	Starting I _{st} T _N	Break-down I _b T _N			

6 pole

0.55	80	885	65.0%	68.5%	65.7%	0.71	0.61	0.47	1.66	4.7	5.91	1.90	2.10	46	0.0026	21
0.75	90S	920	77.7%	78.8%	75.7%	0.72	0.59	0.47	1.87	5.9	7.56	2.00	2.10	49	0.0038	23
1.1	90L	920	79.9%	82.0%	79.2%	0.73	0.63	0.51	2.62	5.9	11.1	2.00	2.10	49	0.0053	31
1.5	100L	945	81.5%	81.3%	78.7%	0.75	0.62	0.50	3.41	6.0	15.0	2.00	2.10	53	0.0107	38
2.2	112M	950	83.4%	84.3%	83.0%	0.76	0.67	0.56	4.83	6.5	22.0	2.00	2.10	57	0.0151	52
3	132S	960	84.9%	86.0%	83.9%	0.76	0.67	0.55	6.47	6.8	29.6	2.10	2.10	61	0.0318	67
4	132M	965	86.1%	88.3%	87.7%	0.76	0.69	0.56	8.50	6.9	39.4	2.10	2.10	61	0.0394	78
5.5	132M	965	87.4%	87.7%	86.2%	0.77	0.66	0.55	11.4	7.1	54.2	2.10	2.10	61	0.0494	87
7.5	160M	965	88.5%	89.9%	89.5%	0.78	0.74	0.64	15.1	6.7	74.1	2.10	2.10	65	0.0964	118
11	160L	965	89.8%	90.5%	89.9%	0.79	0.71	0.60	21.6	6.9	108	2.00	2.10	65	0.127	140
15	180L	975	90.7%	90.4%	88.8%	0.81	0.79	0.70	28.4	7.2	146	2.00	2.10	65	0.201	185
18.5	200L	980	91.3%	91.1%	90.6%	0.81	0.78	0.72	34.8	7.2	180	2.10	2.10	68	0.325	242
22	200L	980	91.8%	91.9%	91.3%	0.83	0.80	0.74	40.2	7.5	214	2.10	2.10	68	0.371	258
30	225M	985	92.5%	92.9%	92.2%	0.84	0.81	0.73	53.7	7.1	291	2.10	2.10	68	0.533	303
37	250M	990	93.0%	92.7%	91.8%	0.85	0.83	0.75	65.2	7.0	358	2.10	2.10	70	0.877	395
45	280S	990	93.5%	93.7%	92.6%	0.86	0.83	0.75	78.1	7.0	434	2.10	2.00	72	1.85	567

8 pole

0.55	90L	700	73.5%	74.4%	71.3%	0.61	0.51	0.39	1.71	4.0	7.50	1.80	2.00	48	0.0053	31
0.75	100L	700	73.5%	75.7%	72.8%	0.67	0.58	0.44	2.12	4.0	10.2	1.80	2.00	51	0.0078	33
1.1	100L	700	76.3%	79.1%	76.9%	0.69	0.59	0.45	2.91	5.0	15.0	1.80	2.00	51	0.0107	38
1.5	112M	705	78.4%	80.8%	79.4%	0.69	0.61	0.47	3.86	5.0	20.5	1.80	2.00	53	0.0162	52
2.2	132S	710	80.9%	82.9%	81.8%	0.71	0.65	0.51	5.33	6.0	29.5	1.80	2.00	53	0.0331	67
3	132M	710	82.7%	84.4%	83.1%	0.71	0.62	0.49	7.10	5.5	40.0	2.00	2.00	56	0.0440	80
4	160M	715	84.2%	88.0%	87.5%	0.73	0.69	0.60	9.05	6.0	54.6	1.90	2.10	60	0.0771	105
5.5	160M	715	85.8%	88.4%	87.8%	0.74	0.70	0.58	12.0	6.0	73.3	2.00	2.00	60	0.0989	113
7.5	160L	715	87.2%	88.6%	87.9%	0.75	0.71	0.59	16.0	6.0	99.9	2.00	2.00	60	0.131	139
11	180L	730	88.8%	89.0%	88.6%	0.76	0.72	0.62	22.7	6.6	144	2.00	2.00	62	0.214	184
15	200L	730	90.0%	90.3%	89.5%	0.76	0.74	0.63	30.5	6.6	197	2.00	2.00	65	0.401	260
18.5	225S	735	90.7%	90.7%	89.8%	0.76	0.69	0.57	37.3	6.6	241	1.90	2.00	65	0.529	275
22	225M	735	91.2%	91.6%	90.7%	0.78	0.72	0.61	43.0	6.6	287	1.90	2.00	65	0.626	309
30	250M	740	92.1%	91.8%	90.7%	0.79	0.71	0.60	57.4	6.6	388	1.90	2.00	67	0.914	401
37	280S	741	92.7%	92.6%	91.3%	0.78	0.74	0.64	71.2	6.6	477	1.90	2.00	68	1.85	567
45	280M	742	93.2%	93.6%	92.5%	0.79	0.76	0.66	84.5	6.6	499	1.90	2.00	68	2.22	651

Notes:

- Output at 415V is also suitable for 380 Volt and 400 Volt operation. For 380 Volt I_N x 1.092. For 400 Volt I_N x 1.375
- Performance data is subject to AS1359.101 tolerances.
- Noise level is the typical Mean Sound Pressure Level on no load at one metre an is subject to tolerance.
- Frame sizes to AS1359.3001997 Western European allocations from CENELEC HD 231 apart from motors with suffix of* on frame size.
- Suffix of * have frame sizes to AS1359.30-1997 Australia / British allocations.
- Performance data for larger size motors on application.



Email: flowandindustrial@hmagrp.com

Tel: +61 (0)3 8720 6770

Fax: +61 (0)3 8720 6779

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