

INDUCTION MOTOR



LOW VOLTAGE MOTORS **50 Hz**

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A.C. INDUCTION MOTORS - 50Hz

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A.C. INDUCTION MOTOR

Tormac offers a comprehensive range of A.C. Induction motors in standard and premium efficiency designs for wide range of applications. These motors are synchronous type with constant speed suitable for continuous duty operations. Stator is made of low watt loss steel laminations to deliver high efficiency. Dynamically balanced rotor and high quality bearings ensure vibration and noise free operations. The varnish impregnated windings are made of high-grade enameled copper wire.

Shaft is made of high quality steel, precision ground of ample size for transmitting the rated horsepower. Construction of motor frames and usage of quality materials result in high performance and low temperature rise, thereby increasing the life cycle of the motor. High-grade cast iron / Die-cast Aluminum components machined with close tolerance and high quality, heavy duty bearings are used to ensure better efficiency and longer life. All three phase motors require adequate control systems with necessary protections.

Motors are available with IE1(EFF-2), IE2(EFF-1), IE-3(Premium Efficiency) versions with B3, B5 & B14 mounting dimensions to cater various applications.



Applications

Machine Tools

Blowers and Fans

Air-Conditioners

Compressors

Material Handling Equipments

Cranes and Hoist

Textile Machinery

Cement Plant

Pharmaceutical Machinery

Packaging Machinery

Construction Equipments

Agriculture

Food processing Machinery

Water treatment plants and

General Engineering

GENERAL DATA

Technical Specifications

| Class of Motor | IE 1 | IE 2 | IE 3 |
|-----------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Type | Squirrel Cage Induction Motor | Squirrel Cage Induction Motor | Squirrel Cage Induction Motor |
| Power Range | 0.37-315 kW, 3Ph, 380-415V, 50Hz | 0.75-315kW, 3Ph, 380-415V, 50Hz | 0.75-315kW, 3Ph, 380-415V, 50Hz |
| Pole | 2 Pole/4 Pole (6 Pole on request) | 2 Pole/4 Pole (6 Pole on request) | 2 Pole/4 Pole (6 Pole on request) |
| Speed | 2900 / 1450 rpm | 2900 / 1450 rpm | 2900 / 1450 rpm |
| Insulation Class | "F" | "F" | "F" |
| Protection | IP 44 / IP 55 / IP 68 | IP 55 / IP 68 | IP 55 / IP 68 |
| Duty | Continuous (S1) | Continuous (S1) | Continuous (S1) |
| Ambient Temp. | 45°C | 45°C | 45°C |
| Enclosure | TEFC | TEFC | TEFC |
| Mounting | Foot / Face / Flange | Foot / Face / Flange | Foot / Face / Flange |
| Direction of Rotation | Bi-Directional | Bi-Directional | Bi-Directional |

Materials of Construction

| Motor Parts | Frame Size | Material |
|--------------------|------------|------------------------|
| Stator frame | 56 - 132 | Aluminum alloy |
| | 160 - 355 | Cast iron |
| Endshield | 56 - 90 | Aluminum alloy |
| | 100 - 355 | Cast iron |
| Flanged endshield | 56 - 132 | Aluminum alloy |
| | 160 - 355 | Cast iron |
| Fan cover | 71 - 355 | Mild steel |
| Fan | 71 - 355 | Industrial nylon grade |
| Terminal box (3Ph) | 71 - 132 | Aluminum alloy |
| | 160 - 355 | Mild steel / Cast iron |

Construction Material Of Multistage Surface Motor - Optional

| Motor Parts | Material | Standard |
|--------------|-----------------|----------------------|
| Frame | Cast iron | EN-GJIL-250/EN-JL040 |
| Terminal Box | Cast iron | EN-GJIL-250/EN-JL040 |
| Shaft | Stainless Steel | 420 |
| Bearing | Stainless Steel | 316 |
| Rotor | Aluminum | Aluminum die cast |

NB : Positive Section head required the Surface Pumps with lower NOSH required advantageous.

IE1 EFFICIENCY MOTORS

2 POLE, IE1 - MOTOR (380-415V THREE PHASE)

rpm : 2900

| Power | | Frame Size | FLC Ampere Current (A) | Efficiency ($\eta\%$) | Power Factor (Cos ϕ) | Starting Current Ratio I_A / I_N | Starting Torque Ratio (T_A / T_N) | Tmax Ratio (T_M / T_N) | Weight (kg) |
|-------|------|------------|------------------------|-------------------------|----------------------------|------------------------------------|---------------------------------------|----------------------------|-------------|
| kW | HP | | | | | | | | |
| 0.37 | 0.5 | 71 | 1.0 | 70 | 0.81 | 6.0 | 2.2 | 2.2 | 14 |
| 0.55 | 0.75 | 71 | 1.4 | 73 | 0.82 | 6.0 | 2.2 | 2.2 | 15 |
| 0.75 | 1 | 80 | 1.8 | 75 | 0.83 | 6.0 | 2.2 | 2.2 | 16 |
| 1.1 | 1.5 | 80 | 2.6 | 77 | 0.84 | 7.0 | 2.2 | 2.2 | 17 |
| 1.5 | 2 | 90S | 3.4 | 79 | 0.84 | 7.0 | 2.2 | 2.2 | 22 |
| 2.2 | 3 | 90L | 4.8 | 81 | 0.85 | 7.0 | 2.2 | 2.2 | 25 |
| 3 | 4 | 100L | 6.3 | 83 | 0.87 | 7.0 | 2.2 | 2.2 | 34 |
| 4 | 5.5 | 112M | 8.1 | 85 | 0.88 | 8.0 | 2.2 | 2.2 | 45 |
| 5.5 | 7.5 | 132S | 11 | 86 | 0.88 | 8.0 | 2.2 | 2.2 | 67 |
| 7.5 | 10 | 132S | 15 | 87 | 0.88 | 8.0 | 2.2 | 2.2 | 71 |
| 11 | 15 | 160M | 21.3 | 88 | 0.88 | 8.0 | 2.0 | 2.2 | 107 |
| 15 | 20 | 160M | 28.7 | 89 | 0.89 | 8.0 | 2.0 | 2.2 | 107 |
| 18.5 | 25 | 160L | 34.6 | 90 | 0.9 | 8.0 | 2.0 | 2.2 | 134 |
| 22 | 30 | 180M | 40.9 | 90.5 | 0.9 | 8.0 | 2.0 | 2.2 | 169 |
| 30 | 40 | 200L | 55.4 | 91.2 | 0.9 | 8.0 | 2.0 | 2.2 | 220 |
| 37 | 50 | 200L | 67.7 | 92 | 0.9 | 8.0 | 2.0 | 2.2 | 239 |
| 45 | 60 | 225M | 82.3 | 92.3 | 0.9 | 8.0 | 1.8 | 2.2 | 297 |
| 55 | 75 | 250M | 101 | 92.5 | 0.9 | 7.0 | 1.8 | 2.2 | 377 |
| 75 | 100 | 280S | 134 | 93 | 0.9 | 7.0 | 1.8 | 2.2 | 510 |
| 90 | 125 | 280M | 160 | 93.8 | 0.91 | 7.0 | 1.8 | 2.2 | 577 |
| 110 | 150 | 315S | 195 | 94 | 0.91 | 6.8 | 1.8 | 2.2 | 920 |
| 132 | 180 | 315M | 233 | 94.5 | 0.91 | 6.8 | 1.8 | 2.2 | 970 |
| 160 | 215 | 315L | 279 | 94.6 | 0.92 | 6.8 | 1.8 | 2.2 | 1080 |
| 200 | 270 | 315L | 348 | 94.8 | 0.92 | 6.8 | 1.8 | 2.2 | 1130 |
| 250 | 335 | 355M | 433 | 94.8 | 0.92 | 7.0 | 1.6 | 2.2 | 1850 |
| 315 | 420 | 355L | 544 | 94.8 | 0.92 | 7.0 | 1.6 | 2.2 | 1900 |

IE1 EFFICIENCY MOTORS

4 POLE, IE1 - MOTOR (380-415V THREE PHASE)

rpm : 1450

| Power | | Frame Size | FLC Ampere Current (A) | Efficiency (η%) | Power Factor (CosØ) | Starting Current Ratio I_A / I_N | Starting Torque Ratio (T_A / T_N) | Tmax Ratio (T_M / T_N) | Weight (kg) |
|-------|------|------------|------------------------|-----------------|---------------------|------------------------------------|-------------------------------------|--------------------------|-------------|
| kW | HP | | | | | | | | |
| 0.37 | 0.5 | 71 | 1.12 | 67 | 0.75 | 5.5 | 2.2 | 2.2 | 16 |
| 0.55 | 0.75 | 80 | 1.6 | 71 | 0.75 | 5.5 | 2.2 | 2.2 | 17 |
| 0.75 | 1 | 80 | 2.0 | 73 | 0.77 | 6.0 | 2.2 | 2.2 | 18 |
| 1.1 | 1.5 | 90S | 2.9 | 75 | 0.77 | 6.0 | 2.2 | 2.2 | 23 |
| 1.5 | 2 | 90L | 3.7 | 78 | 0.79 | 6.0 | 2.2 | 2.2 | 27 |
| 2.2 | 3 | 100L | 5.1 | 80 | 0.81 | 7.0 | 2.2 | 2.2 | 35 |
| 3 | 4 | 100L | 6.8 | 82 | 0.82 | 7.0 | 2.2 | 2.2 | 38 |
| 4 | 5.5 | 112M | 8.8 | 84 | 0.82 | 7.0 | 2.2 | 2.2 | 49 |
| 5.5 | 7.5 | 132S | 11.8 | 85 | 0.83 | 7.0 | 2.2 | 2.2 | 67 |
| 7.5 | 10 | 132M | 15.5 | 87 | 0.84 | 7.0 | 2.0 | 2.0 | 80 |
| 11 | 15 | 160M | 22.3 | 88 | 0.85 | 7.0 | 2.0 | 2.2 | 124 |
| 15 | 20 | 160L | 30.1 | 89 | 0.85 | 7.0 | 2.0 | 2.2 | 147 |
| 18.5 | 25 | 180M | 36.4 | 90.5 | 0.85 | 7.5 | 2.2 | 2.2 | 169 |
| 22 | 30 | 180L | 43.1 | 91 | 0.85 | 7.5 | 2.2 | 2.2 | 184 |
| 30 | 40 | 200L | 57.4 | 92 | 0.86 | 7.5 | 2.2 | 2.2 | 241 |
| 37 | 50 | 225S | 69.9 | 92.5 | 0.87 | 7.5 | 2.2 | 2.2 | 300 |
| 45 | 60 | 225M | 84.7 | 92.8 | 0.87 | 7.5 | 2.2 | 2.2 | 322 |
| 55 | 75 | 250M | 103 | 93 | 0.89 | 7.0 | 2.2 | 2.2 | 400 |
| 75 | 100 | 280S | 140 | 93.8 | 0.86 | 7.0 | 2.2 | 2.2 | 546 |
| 90 | 125 | 280M | 167 | 94 | 0.86 | 7.0 | 2.2 | 2.2 | 620 |
| 110 | 150 | 315S | 201 | 94.2 | 0.87 | 6.9 | 2.1 | 2.2 | 921 |
| 132 | 180 | 315M | 240 | 94.5 | 0.87 | 6.9 | 2.1 | 2.2 | 1002 |
| 160 | 215 | 315L | 287 | 94.8 | 0.88 | 6.9 | 2.1 | 2.2 | 1070 |
| 200 | 270 | 315L | 359 | 94.9 | 0.88 | 6.9 | 2.3 | 2.2 | 1170 |
| 250 | 335 | 355M | 443 | 94.9 | 0.88 | 6.9 | 2.3 | 2.2 | 1580 |
| 315 | 420 | 355L | 556 | 94.9 | 0.89 | 6.9 | 2.2 | 2.2 | 1700 |

IE2 EFFICIENCY MOTORS

2 POLE, IE2 MOTOR (380-415V THREE PHASE)

rpm : 2900

| Power | | Frame Size | FLC Ampere Current (A) | | | Efficiency (η%) | Power Factor (CosØ) | Starting Current Ratio I _A / I _N | Starting Torque Ratio (T _A / T _N) | Tmax Ratio (T _M / T _N) | Rated Torque Nm | Weight (kg) |
|-------|-----|------------|------------------------|-------|-------|-----------------|---------------------|--|--|---|-----------------|-------------|
| kW | HP | | 380 | 400 | 415 | | | | | | | |
| 0.75 | 1 | 80 | 1.77 | 1.69 | 1.62 | 77.4 | 0.83 | 5.30 | 2.5 | 3 | 2.49 | 16 |
| 1.1 | 1.5 | 80 | 2.53 | 2.4 | 2.32 | 79.6 | 0.83 | 7.00 | 3.2 | 3.8 | 3.65 | 17 |
| 1.5 | 2 | 90S | 3.34 | 3.17 | 3.06 | 81.3 | 0.84 | 7.10 | 2.7 | 3.5 | 4.96 | 22.5 |
| 2.2 | 3 | 90L | 4.73 | 4.49 | 4.32 | 83.2 | 0.85 | 6.90 | 2.4 | 3 | 7.27 | 25 |
| 3 | 4 | 100L | 6.19 | 5.88 | 5.67 | 84.6 | 0.87 | 8.00 | 3.2 | 4 | 9.91 | 34.5 |
| 4 | 5.5 | 112M | 8.05 | 7.65 | 7.37 | 85.8 | 0.88 | 7.50 | 2.5 | 3 | 13.11 | 45 |
| 5.5 | 7.5 | 132S | 10.9 | 10.4 | 10.0 | 87.0 | 0.88 | 7.50 | 2.7 | 3.5 | 17.88 | 72 |
| 7.5 | 10 | 132S | 14.5 | 13.8 | 13.3 | 88.1 | 0.89 | 7.50 | 2.4 | 3.3 | 24.36 | 80 |
| 11 | 15 | 160M | 21.0 | 20 | 19.2 | 89.4 | 0.89 | 7.60 | 2.2 | 2.9 | 35.85 | 108 |
| 15 | 20 | 160M | 28.4 | 26.9 | 26.0 | 90.3 | 0.89 | 7.60 | 2.3 | 3 | 48.89 | 117 |
| 18.5 | 25 | 160L | 34.7 | 33 | 31.8 | 90.9 | 0.89 | 7.40 | 2.3 | 3.1 | 60.15 | 135 |
| 22 | 30 | 180M | 41.1 | 39.1 | 37.7 | 91.3 | 0.89 | 7.80 | 2.8 | 3.2 | 71.46 | 183 |
| 30 | 40 | 200L | 55.7 | 52.9 | 51.0 | 92.0 | 0.89 | 7.80 | 2.6 | 3 | 97.12 | 227 |
| 37 | 50 | 200L | 68.3 | 64.9 | 62.5 | 92.5 | 0.89 | 7.70 | 2.6 | 3 | 119.78 | 247 |
| 45 | 60 | 225M | 82.7 | 78.6 | 75.7 | 92.9 | 0.89 | 7.50 | 2.4 | 2.6 | 145.19 | 297 |
| 55 | 75 | 250M | 100.7 | 95.7 | 92.2 | 93.2 | 0.89 | 7.10 | 2.3 | 2.8 | 177.15 | 390 |
| 75 | 100 | 280S | 136.5 | 129.7 | 125 | 93.8 | 0.89 | 7.40 | 2.5 | 2.8 | 241.16 | 519 |
| 90 | 125 | 280M | 163.3 | 155.1 | 149.5 | 94.1 | 0.89 | 7.60 | 2.8 | 2.8 | 289.39 | 588 |
| 110 | 150 | 315S | 196.9 | 187.1 | 180.3 | 94.3 | 0.90 | 6.9 | 2.4 | 2.8 | 353.11 | 948 |
| 132 | 180 | 315M | 235.6 | 223.8 | 215.7 | 94.6 | 0.90 | 7.1 | 2.6 | 2.9 | 423.73 | 1009 |
| 160 | 215 | 315L | 281.8 | 267.7 | 258 | 94.8 | 0.91 | 7.1 | 2.5 | 2.9 | 513.61 | 1111 |
| 200 | 270 | 315L | 351.5 | 333.9 | 321.9 | 95 | 0.91 | 6.9 | 2.5 | 2.8 | 642.02 | 1140 |
| 250 | 335 | 355M | 439.4 | 417.4 | 402.3 | 95 | 0.91 | 7.0 | 2.5 | 2.8 | 801.17 | 1938 |
| 315 | 420 | 355L | 553.6 | 525.9 | 506.9 | 95 | 0.91 | 7.0 | 2.5 | 2.9 | 1009.48 | 2342 |

4 POLE, IE2 MOTOR (380-415V THREE PHASE)

rpm : 1450

| Power | | Frame Size | FLC Ampere Current (A) | | | Efficiency (η%) | Power Factor (CosØ) | Starting Current Ratio I _A / I _N | Starting Torque Ratio (T _A / T _N) | Tmax Ratio (T _M / T _N) | Rated Torque Nm | Weight (kg) |
|-------|-----|------------|------------------------|-------|-------|-----------------|---------------------|--|--|---|-----------------|-------------|
| kW | HP | | 380 | 400 | 415 | | | | | | | |
| 0.75 | 1 | 80 | 1.91 | 1.81 | 1.75 | 79.6 | 0.75 | 5 | 2.4 | 2.9 | 5.12 | 18 |
| 1.1 | 1.5 | 90S | 2.74 | 2.6 | 2.51 | 81.4 | 0.75 | 6 | 3 | 3.5 | 7.3 | 22 |
| 1.5 | 2 | 90L | 3.67 | 3.49 | 3.36 | 82.8 | 0.75 | 6.8 | 3.2 | 3.8 | 9.91 | 27 |
| 2.2 | 3 | 100L | 4.9 | 4.65 | 4.48 | 84.3 | 0.81 | 7 | 3 | 3.5 | 14.6 | 35 |
| 3 | 4 | 100L | 6.5 | 6.18 | 5.95 | 85.5 | 0.82 | 7 | 2.6 | 3.3 | 19.9 | 41.5 |
| 4 | 5.5 | 112M | 8.56 | 8.13 | 7.84 | 86.6 | 0.82 | 7.5 | 3.5 | 4 | 26.4 | 49 |
| 5.5 | 7.5 | 132S | 11.6 | 11 | 10.6 | 87.7 | 0.82 | 6.4 | 2.2 | 2.8 | 36.1 | 77 |
| 7.5 | 10 | 132M | 15.5 | 14.7 | 14.2 | 88.7 | 0.83 | 7 | 2.4 | 3 | 49.2 | 87 |
| 11 | 15 | 160M | 21.9 | 20.8 | 20 | 89.8 | 0.85 | 6.9 | 2.5 | 2.9 | 71.9 | 110 |
| 15 | 20 | 160L | 29.2 | 27.8 | 26.8 | 90.6 | 0.86 | 7.5 | 2.5 | 3 | 98.1 | 132 |
| 18.5 | 25 | 180M | 35.8 | 34 | 32.8 | 91.2 | 0.86 | 7.8 | 2.6 | 3.1 | 120.2 | 172 |
| 22 | 30 | 180L | 42.4 | 40.3 | 38.9 | 91.6 | 0.86 | 7.5 | 2.6 | 3.1 | 142.9 | 180 |
| 30 | 40 | 200L | 57.4 | 54.6 | 52.6 | 92.3 | 0.86 | 7.1 | 2.4 | 2.9 | 194.9 | 247 |
| 37 | 50 | 225S | 70.5 | 67 | 64.6 | 92.7 | 0.86 | 7.5 | 2.5 | 2.7 | 238.8 | 297 |
| 45 | 60 | 225M | 85.4 | 81.1 | 78.2 | 93.1 | 0.86 | 7.6 | 2.5 | 2.8 | 290.4 | 322 |
| 55 | 75 | 250M | 103.9 | 98.7 | 95.2 | 93.5 | 0.86 | 7.3 | 2.6 | 2.7 | 354.9 | 413 |
| 75 | 100 | 280S | 137.8 | 130.9 | 126.1 | 94.0 | 0.88 | 7.6 | 2.7 | 2.7 | 484 | 558 |
| 90 | 125 | 280M | 155 | 156.7 | 151 | 94.2 | 0.88 | 7.5 | 2.7 | 2.7 | 580.7 | 632 |
| 110 | 150 | 315S | 201 | 190.9 | 184 | 94.5 | 0.88 | 7.1 | 2.7 | 2.9 | 707.4 | 950 |
| 132 | 180 | 315M | 240.7 | 228.6 | 220.4 | 94.7 | 0.88 | 7.3 | 2.7 | 2.9 | 889 | 1035 |
| 160 | 215 | 315L | 287.8 | 273.4 | 263.5 | 94.9 | 0.89 | 7.4 | 3 | 3.0 | 1029 | 1105 |
| 200 | 270 | 315L | 359 | 341.1 | 328.7 | 95.1 | 0.89 | 7.6 | 3 | 3.0 | 1286 | 1225 |
| 250 | 335 | 355M | 443.8 | 421.6 | 406.4 | 95.1 | 0.90 | 7.5 | 2.8 | 2.9 | 1602 | 1740 |
| 315 | 420 | 355L | 559 | 531.2 | 512 | 95.1 | 0.90 | 7.4 | 2.6 | 2.8 | 2019 | 1900 |

IE3 PREMIUM EFFICIENCY MOTORS

2 POLE, IE3 MOTOR (380-415V THREE PHASE)

rpm : 2900

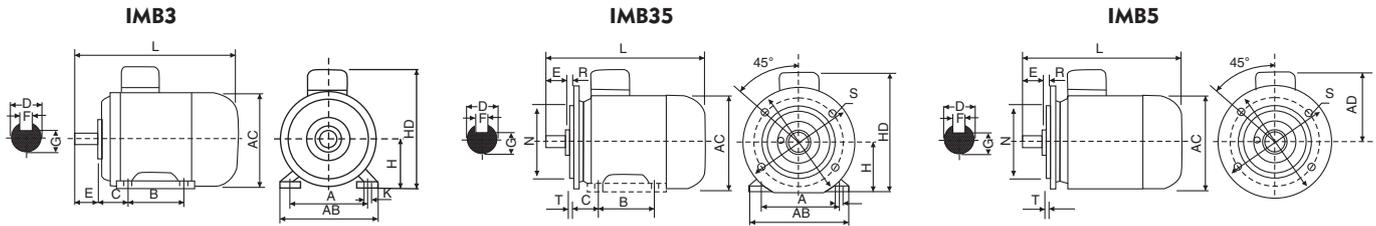
| Power | | Frame Size | FLC Ampere Current (A) | | | Efficiency (η%) | Power Factor (CosØ) | Starting Current Ratio I _s / I _N | Starting Torque Ratio (T _s / T _N) | Tmax Ratio (T _m / T _N) | Rated Torque Nm | Weight (kg) |
|-------|-----|------------|------------------------|------|------|-----------------|---------------------|--|--|---|-----------------|-------------|
| kW | HP | | 380 | 400 | 415 | | | | | | | |
| 0.75 | 1 | 80 | 1.7 | 1.61 | 1.56 | 80.7 | 0.83 | 5.5 | 1.8 | 3.5 | 2.49 | 20 |
| 1.1 | 1.5 | 80 | 2.43 | 2.31 | 2.22 | 82.7 | 0.83 | 7.5 | 2.6 | 3.5 | 3.65 | 21 |
| 1.5 | 2 | 90S | 3.25 | 3.09 | 2.98 | 84.2 | 0.83 | 7.1 | 2.6 | 3.5 | 4.95 | 26 |
| 2.2 | 3 | 90L | 4.57 | 4.34 | 4.19 | 85.9 | 0.85 | 7 | 2 | 3 | 7.26 | 29 |
| 3 | 4 | 100L | 5.94 | 5.64 | 5.44 | 87.1 | 0.88 | 8.6 | 2 | 3.2 | 9.9 | 43 |
| 4 | 5.5 | 112M | 7.83 | 7.44 | 7.17 | 88.1 | 0.88 | 8 | 1.8 | 2.9 | 13.1 | 51 |
| 5.5 | 7.5 | 132S | 10.6 | 10.1 | 9.75 | 89.2 | 0.88 | 7.5 | 2.1 | 2.5 | 17.9 | 76 |
| 7.5 | 10 | 132S | 14.4 | 13.7 | 13.2 | 90.1 | 0.88 | 7.3 | 2 | 3.5 | 24.4 | 84 |
| 11 | 15 | 160M | 20.4 | 19.3 | 18.6 | 91.2 | 0.90 | 7.3 | 2.3 | 2.6 | 35.7 | 128 |
| 15 | 20 | 160M | 27.2 | 25.9 | 24.9 | 91.9 | 0.91 | 7 | 1.9 | 2.3 | 48.6 | 140 |
| 18.5 | 25 | 160L | 34.1 | 32.4 | 31.3 | 92.4 | 0.89 | 7 | 1.6 | 2.5 | 60.1 | 155 |
| 22 | 30 | 180M | 40.1 | 38.1 | 36.7 | 92.7 | 0.90 | 7 | 1.6 | 2.5 | 71.1 | 192 |
| 30 | 40 | 200L | 54.8 | 52.1 | 50.2 | 93.3 | 0.89 | 7 | 1.5 | 2.5 | 96.8 | 246 |
| 37 | 50 | 200L | 65.9 | 62.6 | 60.3 | 93.7 | 0.91 | 7.3 | 1.5 | 2.5 | 119 | 267 |
| 45 | 60 | 225M | 82.5 | 78.4 | 75.5 | 94.0 | 0.88 | 6.8 | 1.6 | 2.5 | 145 | 353 |
| 55 | 75 | 250M | 99.6 | 94.6 | 91.2 | 94.3 | 0.89 | 7.2 | 1.6 | 2.6 | 176.9 | 408 |
| 75 | 100 | 280S | 134 | 127 | 122 | 94.7 | 0.91 | 7.2 | 1.2 | 2 | 240.8 | 548 |
| 90 | 125 | 280M | 162 | 153 | 148 | 95.0 | 0.89 | 7.4 | 1.2 | 2 | 288.9 | 596 |
| 110 | 150 | 315S | 195 | 185 | 179 | 95.2 | 0.90 | 7.3 | 1.2 | 2 | 352.8 | 956 |
| 132 | 175 | 315M | 233 | 222 | 214 | 95.4 | 0.90 | 7.3 | 1.3 | 2.1 | 432.3 | 1017 |
| 160 | 215 | 315L | 283 | 268 | 259 | 95.6 | 0.90 | 6.8 | 1.2 | 2 | 512.8 | 1119 |
| 200 | 270 | 315L | 349 | 331 | 319 | 95.8 | 0.91 | 7.8 | 1.1 | 2 | 640.9 | 1150 |
| 250 | 335 | 355M | 431 | 409 | 394 | 95.8 | 0.92 | 7.9 | 1.1 | 2 | 800.6 | 1948 |
| 315 | 425 | 355L | 543 | 519 | 497 | 95.8 | 0.92 | 7.9 | 1.1 | 2 | 1009 | 2356 |

4 POLE, IE3 MOTOR (380-415V THREE PHASE)

rpm : 1450

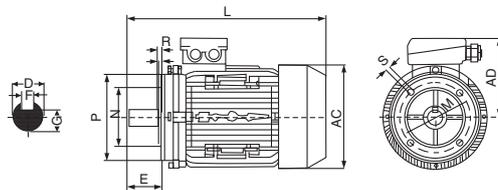
| Power | | Frame Size | FLC Ampere Current (A) | | | Efficiency (η%) | Power Factor (CosØ) | Starting Current Ratio I _s / I _N | Starting Torque Ratio (T _s / T _N) | Tmax Ratio (T _m / T _N) | Rated Torque Nm | Weight (kg) |
|-------|-----|------------|------------------------|------|------|-----------------|---------------------|--|--|---|-----------------|-------------|
| kW | HP | | 380 | 400 | 415 | | | | | | | |
| 0.75 | 1 | 80 | 1.86 | 1.77 | 1.7 | 82.5 | 0.74 | 6 | 2.9 | 3.6 | 5.04 | 22 |
| 1.1 | 1.5 | 90S | 2.68 | 2.55 | 2.46 | 84.1 | 0.74 | 6.5 | 2.7 | 3.8 | 7.27 | 27 |
| 1.5 | 2 | 90L | 3.61 | 3.43 | 3.3 | 85.3 | 0.74 | 6.8 | 3 | 3.6 | 9.91 | 32 |
| 2.2 | 3 | 100L | 4.93 | 4.68 | 4.52 | 86.7 | 0.78 | 7.2 | 2.5 | 3.5 | 14.6 | 44 |
| 3 | 4 | 100L | 6.66 | 6.32 | 6.09 | 87.7 | 0.78 | 7.2 | 2.6 | 3.5 | 20 | 49 |
| 4 | 5.5 | 112M | 8.56 | 8.14 | 7.84 | 88.6 | 0.80 | 7 | 2.3 | 3.2 | 26.5 | 56 |
| 5.5 | 7.5 | 132S | 11.6 | 11.1 | 10.7 | 89.6 | 0.80 | 7.1 | 2.7 | 3.5 | 36 | 81 |
| 7.5 | 10 | 132M | 15.3 | 14.6 | 14 | 90.4 | 0.82 | 7.2 | 2.7 | 3.8 | 49.1 | 91 |
| 11 | 15 | 160M | 22.3 | 21.2 | 20.4 | 91.4 | 0.82 | 6.8 | 1.9 | 2.3 | 71.7 | 141 |
| 15 | 20 | 160L | 30.1 | 28.6 | 27.6 | 92.1 | 0.82 | 6.8 | 1.8 | 2.4 | 97.8 | 151 |
| 18.5 | 25 | 180M | 36.1 | 34.3 | 33.1 | 92.6 | 0.84 | 6.9 | 1.8 | 2.5 | 120.2 | 190 |
| 22 | 30 | 180L | 42.3 | 40.2 | 38.7 | 93.0 | 0.85 | 7 | 1.8 | 2.5 | 142.9 | 205 |
| 30 | 40 | 200L | 56.5 | 53.7 | 51.7 | 93.6 | 0.86 | 6.8 | 1.8 | 2.3 | 194.2 | 275 |
| 37 | 50 | 225S | 69.5 | 66.1 | 63.7 | 93.9 | 0.86 | 7.1 | 1.7 | 2.3 | 237.9 | 315 |
| 45 | 60 | 225M | 83.2 | 79.1 | 76.2 | 94.2 | 0.87 | 7.1 | 1.8 | 2.4 | 289.4 | 345 |
| 55 | 75 | 250M | 101 | 96.2 | 92.7 | 94.6 | 0.87 | 7 | 1.8 | 2.4 | 353.7 | 421 |
| 75 | 100 | 280S | 138 | 131 | 126 | 95.0 | 0.87 | 6.9 | 1.8 | 2.2 | 482 | 538 |
| 90 | 125 | 280M | 165 | 157 | 151 | 95.2 | 0.87 | 7.2 | 1.6 | 2.1 | 578.4 | 638 |
| 110 | 150 | 315S | 199 | 189 | 182 | 95.4 | 0.88 | 7.2 | 1.6 | 2.1 | 706 | 958 |
| 132 | 175 | 315M | 238 | 226 | 218 | 95.6 | 0.88 | 7.2 | 1.5 | 2.0 | 847 | 1045 |
| 160 | 215 | 315L | 288 | 274 | 264 | 95.8 | 0.88 | 6.8 | 1.5 | 2.0 | 1027 | 1115 |
| 200 | 270 | 315L | 360 | 342 | 329 | 96 | 0.88 | 7.2 | 1.6 | 2.1 | 1282 | 1233 |
| 250 | 335 | 355M | 449 | 427 | 411 | 96 | 0.88 | 7.3 | 1.4 | 2.1 | 1603 | 1744 |
| 315 | 425 | 355L | 567 | 538 | 519 | 96 | 0.88 | 7.4 | 1.4 | 2.0 | 2019 | 1950 |

DIMENSIONAL DETAILS



| Frame Size | Mounting Dimensions (mm) | | | | | | | | | | | | | | | | Frame Dimensions (mm) | | | | | | | | |
|------------|--------------------------|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|-----|----|-----|-----|-----|-----------------------|----|-----|-----|-----|-----|------|--------|--------|
| | A | B | C | D | | E | | F | | G | | H | K | M | N | P | R | S | T | AB | AC | AD | HD | L | |
| | | | | 2 Pole | 4 Pole | | | | | | | | | | | | | 2 Pole | 4 Pole |
| 71 | 112 | 90 | 45 | 14 | 14 | 30 | 30 | 5 | 5 | 11 | 11 | 71 | 7 | 130 | 110 | 160 | 0 | 10 | 3 | 150 | 145 | 80 | 195 | 255 | 255 |
| 80 | 125 | 100 | 50 | 19 | 19 | 40 | 40 | 6 | 6 | 15.5 | 15.5 | 80 | 10 | 165 | 130 | 200 | 0 | 12 | 3.5 | 165 | 175 | 145 | 220 | 295 | 295 |
| 90S | 140 | 100 | 56 | 24 | 24 | 50 | 50 | 8 | 8 | 20 | 20 | 90 | 10 | 165 | 130 | 200 | 0 | 12 | 3.5 | 180 | 195 | 155 | 250 | 320 | 320 |
| 90L | 140 | 125 | 56 | 24 | 24 | 50 | 50 | 8 | 8 | 20 | 20 | 90 | 10 | 165 | 130 | 200 | 0 | 12 | 3.5 | 180 | 195 | 155 | 250 | 345 | 345 |
| 100L | 160 | 140 | 63 | 28 | 28 | 60 | 60 | 8 | 8 | 24 | 24 | 100 | 12 | 215 | 180 | 250 | 0 | 15 | 4 | 205 | 215 | 180 | 270 | 385 | 385 |
| 112M | 190 | 140 | 70 | 28 | 28 | 60 | 60 | 8 | 8 | 24 | 24 | 112 | 12 | 215 | 180 | 250 | 0 | 15 | 4 | 230 | 240 | 190 | 300 | 400 | 400 |
| 132S | 216 | 140 | 89 | 38 | 38 | 80 | 80 | 10 | 10 | 33 | 33 | 132 | 12 | 265 | 230 | 300 | 0 | 15 | 4 | 270 | 275 | 210 | 345 | 470 | 470 |
| 132M | 216 | 178 | 89 | 38 | 38 | 80 | 80 | 10 | 10 | 33 | 33 | 132 | 12 | 265 | 230 | 300 | 0 | 15 | 4 | 270 | 275 | 210 | 345 | 510 | 510 |
| 160M | 254 | 210 | 108 | 42 | 42 | 110 | 110 | 12 | 12 | 37 | 37 | 160 | 15 | 300 | 250 | 350 | 0 | 19 | 5 | 315 | 330 | 255 | 400 | 605 | 605 |
| 160L | 254 | 254 | 108 | 42 | 42 | 110 | 110 | 12 | 12 | 37 | 37 | 160 | 15 | 300 | 250 | 350 | 0 | 19 | 5 | 315 | 330 | 255 | 400 | 660 | 660 |
| 180M | 279 | 241 | 121 | 48 | 48 | 110 | 110 | 14 | 14 | 42.5 | 42.5 | 180 | 15 | 300 | 250 | 350 | 0 | 19 | 5 | 355 | 380 | 280 | 440 | 690 | 690 |
| 180L | 279 | 279 | 121 | 48 | 48 | 110 | 110 | 14 | 14 | 42.5 | 42.5 | 180 | 15 | 300 | 250 | 350 | 0 | 19 | 5 | 355 | 380 | 280 | 440 | 725 | 725 |
| 200L | 318 | 305 | 133 | 55 | 55 | 110 | 110 | 16 | 16 | 49 | 49 | 200 | 19 | 350 | 300 | 400 | 0 | 19 | 5 | 410 | 420 | 305 | 500 | 765 | 765 |
| 225S | 356 | 286 | 149 | - | 60 | - | 140 | - | 18 | - | 53 | 225 | 19 | 400 | 350 | 450 | 0 | 19 | 5 | 445 | 470 | 335 | 555 | - | 810 |
| 225M | 356 | 311 | 149 | 55 | 60 | 110 | 140 | 16 | 18 | 49 | 53 | 225 | 19 | 400 | 350 | 450 | 0 | 19 | 5 | 445 | 470 | 335 | 550 | 805 | 835 |
| 250M | 406 | 349 | 168 | 60 | 65 | 140 | 140 | 18 | 18 | 53 | 58 | 250 | 24 | 500 | 450 | 550 | 0 | 19 | 5 | 485 | 510 | 370 | 615 | 910 | 910 |
| 280S | 457 | 368 | 190 | 65 | 75 | 140 | 140 | 18 | 20 | 58 | 67.5 | 280 | 24 | 500 | 450 | 550 | 0 | 19 | 5 | 550 | 580 | 410 | 660 | 980 | 980 |
| 280M | 457 | 419 | 190 | 65 | 75 | 140 | 140 | 18 | 20 | 58 | 67.5 | 280 | 24 | 500 | 450 | 550 | 0 | 19 | 5 | 550 | 580 | 410 | 660 | 1030 | 1030 |
| 315S | 508 | 406 | 216 | 65 | 80 | 140 | 170 | 18 | 22 | 58 | 71 | 315 | 28 | 600 | 550 | 660 | 0 | 24 | 6 | 630 | 645 | 630 | 825 | 1180 | 1275 |
| 315M | 508 | 457 | 216 | 65 | 80 | 140 | 170 | 18 | 22 | 58 | 71 | 315 | 28 | 600 | 550 | 660 | 0 | 24 | 6 | 630 | 645 | 630 | 830 | 1290 | 1320 |
| 315L | 508 | 508 | 216 | 65 | 80 | 140 | 170 | 18 | 22 | 58 | 71 | 315 | 28 | 600 | 550 | 660 | 0 | 24 | 6 | 630 | 645 | 630 | 830 | 1290 | 1320 |
| 355M | 610 | 560 | 254 | 75 | 95 | 140 | 170 | 20 | 25 | 67.5 | 86 | 355 | 28 | 740 | 680 | 800 | 0 | 24 | 6 | 705 | 710 | 655 | 1010 | 1510 | 1540 |
| 355L | 610 | 630 | 254 | 75 | 95 | 140 | 170 | 20 | 25 | 67.5 | 86 | 355 | 28 | 740 | 680 | 800 | 0 | 24 | 6 | 705 | 710 | 655 | 1010 | 1510 | 1540 |

IMB14



| Frame Size | Mounting Dimensions (mm) | | | | | | | | | | Frame Dimensions (mm) | | |
|------------|--------------------------|----|----|------|-----|-----|-----|---|-----|-----|-----------------------|-----|--|
| | E | F | D | G | M | N | P | R | S | AC | AD | L | |
| 71 | 30 | 5 | 14 | 11 | 85 | 70 | 105 | 0 | M6 | 150 | 110 | 246 | |
| 80 | 40 | 6 | 19 | 15.5 | 100 | 80 | 120 | 0 | M6 | 170 | 135 | 285 | |
| 90S | 50 | 8 | 24 | 20 | 115 | 95 | 140 | 0 | M8 | 185 | 137 | 335 | |
| 90L | 50 | 8 | 24 | 20 | 115 | 95 | 140 | 0 | M8 | 185 | 137 | 335 | |
| 100L | 60 | 8 | 28 | 24 | 130 | 110 | 160 | 0 | M8 | 206 | 150 | 376 | |
| 112M | 80 | 8 | 28 | 24 | 130 | 110 | 160 | 0 | M8 | 228 | 170 | 400 | |
| 132S | 80 | 10 | 38 | 33 | 165 | 130 | 200 | 0 | M10 | 267 | 190 | 460 | |
| 132M | 110 | 10 | 38 | 33 | 165 | 130 | 200 | 0 | M10 | 267 | 190 | 500 | |
| 160M | 110 | 12 | 42 | 37 | 215 | 180 | 250 | 0 | M12 | 330 | 255 | 615 | |
| 160L | 110 | 12 | 42 | 37 | 215 | 180 | 250 | 0 | M12 | 330 | 255 | 675 | |
| 180M | 110 | 14 | 48 | 42.5 | 265 | 230 | 300 | 0 | M15 | 380 | 280 | 700 | |
| 180L | 110 | 14 | 48 | 42.5 | 265 | 230 | 300 | 0 | M15 | 380 | 280 | 740 | |



T H E P O W E R B E H I N D T H E F O R C E

Naargo Industries Private Limited, one of the leading manufacturers of latest state of art, large range of pumps and motors, is managed by veterans who are in the pump industry for almost half a century. The products are employed in various applications like irrigation, domestic, civil construction, de-watering etc; The Company has a strong distribution network in India for sales & service and a strong global presence.

Quality is the key factor in Naargo's products. The expansive infrastructure and environment accredited with ISO 9001 quality certification, latest engineering softwares, high-tech machinery, futuristic pumping technology and high caliber workforce facilitate the production of flawless and efficient products on par with international standards under the brand name of "Tormac". The well equipped R & D wing stays alive to the changing global trends and comes out with viable solutions for innovative product development and upgradation.

The Products currently available include Stainless Steel Submersible Pumps, 4" Thermoplastic Submersible Pumps, 6" & 8" Cast Iron Submersible Pumps, Submersible Motors and Controls, Centrifugal Pumps, Inline Booster Pumps, Jet Self-priming Pumps and Peripheral Pumps.

The power, performance and endurance of the products backed by the uncompromising teamwork and value systems will certainly propel the company's growth towards new horizons in the pump industry.

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Tormac
P U M P S