

Introduction

Crane and Hoist duty motors from Bharat Bijlee are ideal for frequent starts/stops and reversing.

They are also used for applications such as material handling, weirs and sluices, lifts of all types and auxiliary motors in rolling-mills or wherever intermittent drives are required.

They conform to IS : 325 for Three-phase Induction Motors and IS : 4722 for Rotating Electrical Machines.

The size of the motor is governed by the mechanical effects of starting and braking functions, the type of control and the number of switchings per hour. The rated output, the number of starts/hour and the inertia (i.e load GD^2 + rotor GD^2) are interdependent.

Suitable for diverse duties

a) Intermittent periodic duty (S3) [Fig 1(a).]

This includes a period of operation at constant load and a de-energised period, which are too short to attain thermal equilibrium during one cycle. The starting current does not significantly affect the temperature rise for this type of duty.

b) Intermittent duty with starting (S4) [Fig. 1(b).]

This includes a period of starting, a period of operation at constant load and a de-energised period, which are too short to attain thermal equilibrium during one cycle. The starting affects temperature rise, as load GD^2 is higher than rotor GD^2 and/or no. of starts/hour is high, for this type of duty. The motor is stopped after switching off, either by natural deceleration, or by a mechanical brake, without additional heating of the windings.

c) Intermittent duty with electrical braking (S5) [Fig. 1 (c).]

This includes a period of starting, a period of operation at constant load, a period of electrical braking, and a de-energised period, which are too short to attain thermal equilibrium during one duty cycle. It is understood that the starting affects temperature rise, as in (b) above, and the stopping also affects temperature rise as braking is carried out electrically.

We also supply motors for special types of duties, on enquiry, including multi-speed motors with squirrel cage rotors.

The common Cyclic Duration Factors (CDF) for the above duties are 25%, 40% and 60%. We also supply, on enquiry, motors for other CDF's. The CDF calculations are shown in figures 1(a), 1(b), 1(c). Unless otherwise specified a duty cycle is ten minutes long.

Please refer to table 1 for examples of typical starting duties and selection of starting class.

Tables given herein are for load GD^2 equal to or less than rotor GD^2 . For cases where load $GD^2 >$ rotor GD^2 the motor should be selected from the table with a higher no. of starts/hr. as per the formula

No. of starts allowed = No. of starts as per table $\times 2 \times GD^2$ of rotor / (GD^2 of rotor - GD^2 of load).

Rotor type and identification of motors

The motors are identified by the type reference.

a) MC for squirrel cage rotors and

b) MP for Slip Ring (Wound) rotors.

Squirrel cage rotors are of die cast Aluminium material for low starting currents with high starting torques, suitable for the large number of starts/stops required.

Enclosure

Totally enclosed fan cooled (TEFC) with degree of protection IP55 as per IS : 4691. IP56 or IP66 on request.

Voltage, frequency and ambient temperature

Three phase 415 Volts 50 Hz supply with $\pm 10\%$ Voltage & $\pm 5\%$, frequency variation, and 45°C ambient temperature. Motors for voltages from 220V to 550V, frequencies from 50Hz to 60Hz, higher ambient temperatures and suited for wider power supply variations, can also be given on request.

Type of mounting and dimensions

Foot, flange or face mounting, and combination, are offered. Dimensions of squirrel cage types, are given in the catalogue on standard motors, while those of slipring types are included herein.

Insulation

a) For squirrel cage type MC class F for stator

b) For slipring type MP class F for stator and rotor.

Temperature rise for stator windings are limited to class B limits.

How to select motors for hoisting and similar duties.

The formula to establish the rated output P_n in kW is :

$$P_n > = \frac{F \times V}{102 \times \text{eff}} \text{ kW}$$

where F = maximum total load in Kg.

V = Hoisting speed in mtrs/sec., and

eff = overall mechanical efficiency of the driving unit

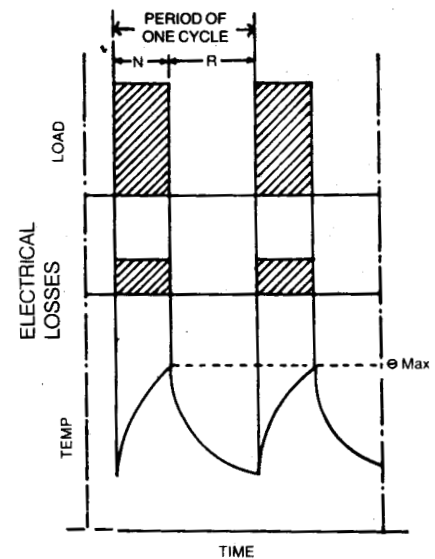


Fig. 1 (a)

$$\text{Cyclic duration factor} = \frac{N}{N + R}$$

N = Operation under rated conditions

R = At rest de-energised

$\Theta \text{ Max}$ = Maximum temperature attained during the duty cycle.

For horizontal motion ensure that the rated output P_n of the motor is greater than the power necessary to move the equipment given by :

$$P_n > = \frac{M \times n}{974 \times \text{eff}} \text{ kW}$$

Where M = Torque reqd. for movement in Kgm.

n = motor r.p.m.

Inverter Applications

All crane duty motors are suitable for Inverter Duty applications. Motors for Inverters can be supplied upto 315M frame size.

Motors with Integral Brakes

These motors can be supplied with integral fail safe D.C. brakes in frame sizes upto 132M, with built in rectifiers (so that no separate supply is required). The braking torque values are :

Frame size : 71 80 90S/L 100L 112M 132S/M
Braking torque Kgm : 0.5 1 2 4 5 or 6 5 or 6

These are of TEFC construction, smaller than the surface cooled motors used conventionally. For details, please refer our brake motor catalogue.

Flame-proof crane duty motors

These are also available on enquiry.

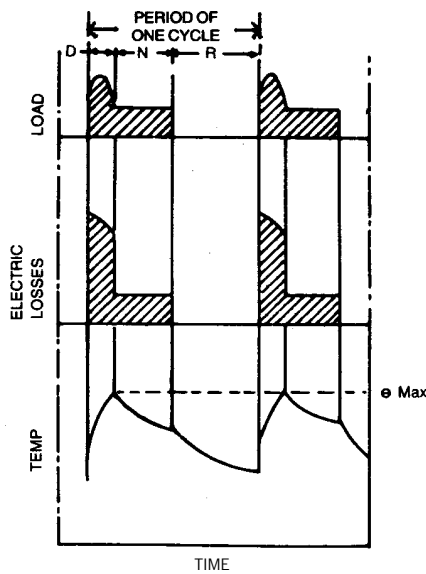


Fig. 1 (b)

$$\text{Cyclic duration factor} = \frac{D + N}{D + N + R}$$

D = Starting

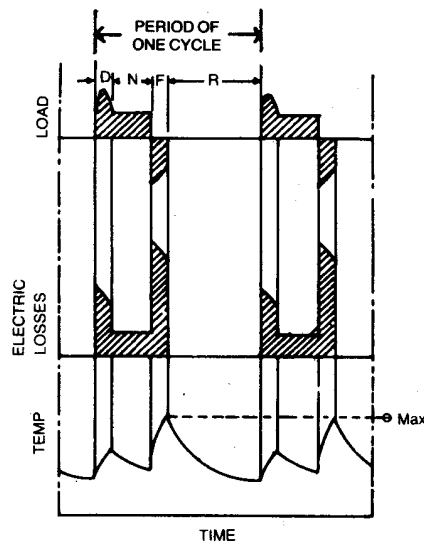


Fig. 1 (c)

$$\text{Cyclic duration factor} = \frac{D + N + F}{D + N + F + R}$$

F = Electric braking

If motors in the selection tables are to be operated under ambient temperature other than 40°C, a correction factor shall be applied as given in Fig. 2

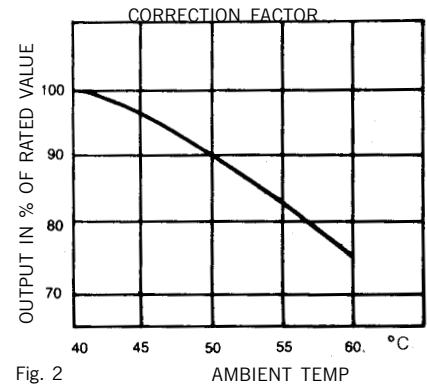


Fig. 2

Selection Table 1 : Examples of Typical Starting Duties

| Duty cycle | Starting Duties | | | | Starting Class |
|------------|-----------------|----------|---------------------|----------------------------|--------------------------------------|
| | St/hr. | Jogs/hr. | Braking to stop/hr. | Complete plug reversal/hr. | No. of starts/hrs. Thermal equipment |
| S3 | 60 | 0 | 0 | 0 | 60 |
| | 40 | 80 | 0 | 0 | |
| | 20 | 80 | 20 | 0 | |
| S4 | 150 | 0 | 0 | 0 | 150 |
| | 100 | 200 | 0 | 0 | |
| S5 | 80 | 0 | 80 | 0 | 150 |
| | 65 | 130 | 65 | 0 | |
| | 30 | 160 | 30 | 30 | |
| S4 | 300 | 0 | 0 | 0 | 300 |
| | 200 | 400 | 0 | 0 | |
| S5 | 160 | 0 | 180 | 0 | 300 |
| | 130 | 260 | 130 | 0 | |
| | 60 | 320 | 60 | 60 | |

Enquiries :

The following information should be included :

- Application.
- Voltage and frequency + variations.
- Ambient temperature, and type of protection required.
- Mounting.
- No. of starts/stops per hour with duty and CDF.
- Load GD² at motor speed.
- Load torque ; or Torque/Speed curve of driven equipment.
- Duty cycle diagram, if other than those described earlier.

ADDITIONAL DETAILS RELATING TO SLIPRING MOTORS

Application

Slipring motors are used for systems specifying limitations on starting current, for high inertia drives and for frequent starting. The motors are eminently suitable for high mechanical and electrical stresses encountered under heavy duty conditions such as excavating machinery, scrapers and winders, straightening machines, stone

crushers, main and auxiliary drives in rolling mills etc. These motors are well suited for 'smooth starting' drives by suitably stepping the starting resistance. They can also be used for variable speed drives, particularly for short periods and within a small speed range.

Additional Mechanical Features

The sliprings at the drive end are accessible through hinged brushes on the top after opening the T. Box cover. The brush block assembly can hence easily be replaced as a whole without dismantling the motor.

The terminal box on top of the motor, contains 3 terminals for stator and 3 for rotor and 4 cable entries (2 on each side as viewed from drive end).

Starting and speed control

The maximum torque (which is approx. the pull-out torque) can be obtained for starting by correct selection of the resistances of the controller. By appropriately switching the resistances as the motor picks up speed, the mean torque during starting can be high as 2.25 times the rated full load torque.

The values of rated rotor current and voltage required for selecting the starting resistors are listed in the Tables. For reduced load, the rotor current reduces and is given

by rated current x (reduced load/rated load)

The rotor current while starting is proportional to the motor torque and determines the size of the starting resistance.

Fine speed variation is possible by inserting resistances in the rotor circuit calculated per phase as :

$$R_c = \frac{V_r \times (N_s - N) \times M_n}{\sqrt{3} \times I_r \times N_s \times M} - R_r$$

Where V_r , I_r and R_r are the open ckt. Voltage, rated current and resistance of the rotor, M_n and M are the rated and required torque values, and N_s and N are the synchronous and required speeds respectively.

Since the cooling is reduced at lower speed, torque and output must be reduced as per the following table, otherwise a larger motor should be selected.

| | | | | | | | |
|--------|---|-----|----|----|----|----|----|
| Speed | % | 100 | 90 | 80 | 70 | 60 | 50 |
| Torque | % | 100 | 96 | 91 | 85 | 80 | 72 |
| Output | % | 100 | 86 | 73 | 60 | 48 | 36 |

At lower speeds the torque speed characteristic is such that the speed varies inversely as the load. Below 50% rated speed, satisfactory operating characteristics may not be obtained even if the load torque remains constant.

If sufficiently ventilated by using a separate fan etc. the motor can provide the rated full load torque at reduced speed.

Crane & Hoist Duty Motors

CC1/B

TEFC SO-Cage Crane & Hoist Motors :

Frames 71 to 225 M, B3 Construction, class 'F' insulation, suitable 415 V \pm 10%, 50 Hz \pm 5%, combined Variation \pm 10%, Ambient temperature 45°C, Degree of Protection IP 55. All motors Conform to IS 325.

Performance Table- MC Type

S2 Duty

4 - Pole (1500 rev/min)

| Frame Size | Motor Type | Rated rpm. | Mtr Weight Kg. | Half Hour / One Hour | | | | Stg Trq./ Full Load Trq | P.O.T. / Full Load Trq | Stg Amp/ Full Load Amps | Rotor GD ² KgM ² |
|------------|------------|------------|----------------|----------------------|------|------|---------------------|-------------------------|------------------------|-------------------------|--|
| | | | | kW | HP | RPM | Line Current (Amp.) | | | | |
| 71 | MC071433 | 1310 | 7 | 0.55 | 0.75 | 1310 | 1.56 | 2.25 | 2.75 | 3.7 | 0.0033 |
| 80 | MC080413 | 1340 | 10 | 0.75 | 1.0 | 1340 | 1.80 | 2.3 | 2.8 | 4.5 | 0.0061 |
| 80 | MC080433 | 1385 | 11 | 1.1 | 1.5 | 1385 | 2.80 | 2.8 | 2.9 | 5.0 | 0.0072 |
| 90S | MC09S433 | 1395 | 19 | 1.5 | 2 | 1395 | 3.70 | 2.25 | 2.75 | 4.7 | 0.0124 |
| 90L | MC09L453 | 1380 | 23 | 2.2 | 3 | 1380 | 4.95 | 2.5 | 2.8 | 5.2 | 0.0158 |
| 100L | MC10L453 | 1390 | 31 | 3.7 | 5 | 1390 | 7.95 | 2.7 | 3.4 | 6.0 | 0.0259 |
| 112M | MC11M453 | 1430 | 48 | 5.5 | 7.5 | 1430 | 12.4 | 2.9 | 3.5 | 6.5 | 0.0579 |
| 132S | MC13S453 | 1410 | 70 | 7.5 | 10 | 1410 | 14.8 | 2.25 | 2.9 | 6.5 | 0.1270 |
| 132M | MC13M483 | 1430 | 84.5 | 9.3 | 12.5 | 1430 | 18.1 | 2.7 | 3.3 | 6.5 | 0.1508 |
| 160M | MC16M413 | 1460 | 92 | 11 | 15 | 1460 | 21.2 | 2.25 | 2.8 | 6.5 | 0.2511 |
| 160M | MC16M433 | 1450 | 105 | 15 | 20 | 1450 | 30.7 | 2.3 | 2.9 | 6.5 | 0.2767 |
| 160L | MC16L483 | 1450 | 132 | 18.5 | 25 | 1450 | 34.8 | 2.6 | 3.2 | 6.5 | 0.3767 |
| 180L | MC18L473 | 1460 | 190 | 22 | 30 | 1460 | 39.5 | 3.1 | 2.75 | 6.0 | 0.5400 |
| 200L | MC20L433 | 1465 | 266 | 30 | 40 | 1465 | 52 | 2.8 | 2.75 | 6.0 | 0.8600 |
| 225S | MC22S413 | 1470 | 338 | 37 | 50 | 1470 | 64.5 | 2.7 | 2.5 | 6.0 | 1.3200 |
| 225M | MC22M433 | 1470 | 366 | 45 | 60 | 1470 | 78.0 | 2.7 | 2.5 | 6.0 | 1.6000 |

Note: 4 pole motors upto and including 15kw and 6 pole motors upto and including 9.3 kW are also suitable for 50° C Amb. without applying derating factor.

6-pole (1000 rev /min)

| | | | | | | | | | | | |
|------|----------|-----|-----|------|------|-----|-------|------|------|-----|--------|
| 71 | MC071633 | 800 | 7 | 0.35 | 0.47 | 800 | 1.40 | 1.6 | 1.80 | 3.0 | 0.0038 |
| 80 | MC080613 | 890 | 10 | 0.37 | 0.50 | 890 | 1.90 | 2.4 | 2.75 | 3.0 | 0.0060 |
| 80 | MC080613 | 830 | 10 | 0.55 | 0.75 | 830 | 2.00 | 1.6 | 1.80 | 3.3 | 0.0060 |
| 80 | MC080633 | 885 | 11 | 0.75 | 1.0 | 885 | 2.40 | 2.25 | 2.75 | 3.8 | 0.0084 |
| 90L | MC09L6A3 | 900 | 22 | 1.1 | 1.5 | 900 | 2.90 | 2.30 | 2.60 | 4.0 | 0.0160 |
| 90L | MC09L653 | 895 | 22 | 1.5 | 2 | 895 | 4.20 | 2.25 | 2.75 | 4.5 | 0.0160 |
| 100L | MC10L653 | 930 | 32 | 2.2 | 3 | 930 | 6.50 | 2.25 | 2.75 | 4.4 | 0.0250 |
| 112M | MC11M653 | 920 | 43 | 3.7 | 5 | 920 | 9.10 | 2.25 | 2.75 | 4.6 | 0.0576 |
| 132S | MC13S653 | 920 | 65 | 5.5 | 7.5 | 920 | 14.20 | 2.30 | 2.75 | 6.0 | 0.1526 |
| 132M | MC13M693 | 925 | 79 | 7.5 | 10 | 925 | 18.80 | 2.30 | 2.75 | 6.0 | 0.1940 |
| 160M | MC16M633 | 950 | 102 | 9.3 | 12.5 | 950 | 19.20 | 2.30 | 2.75 | 6.0 | 0.2760 |
| 160L | MC16L663 | 960 | 119 | 11 | 15 | 960 | 24 | 2.30 | 3.00 | 6.0 | 0.3400 |
| 160L | MC16L673 | 940 | 129 | 15 | 20 | 940 | 33 | 2.25 | 2.80 | 6.5 | 0.4000 |
| 200L | MC20L613 | 975 | 234 | 18.5 | 25 | 975 | 34 | 2.90 | 2.50 | 6.0 | 1.0000 |
| 200L | MC20L633 | 975 | 251 | 22 | 30 | 975 | 40.5 | 2.90 | 2.50 | 6.0 | 1.2000 |
| 225M | MC22M633 | 975 | 341 | 30 | 40 | 975 | 53 | 2.75 | 2.50 | 5.5 | 2.1200 |

8- pole (750 rev/min)

| | | | | | | | | | | | |
|------|----------|-----|-----|------|------|-----|------|------|------|-----|-------|
| 90S | MC09S813 | 615 | 17 | 0.47 | 0.63 | 615 | 2.05 | 2.25 | 2.75 | 3.5 | 0.011 |
| 90L | MC09L853 | 680 | 20 | 0.64 | 0.84 | 680 | 2.40 | 2.25 | 2.75 | 3.5 | 0.014 |
| 100L | MC10L813 | 655 | 28 | 1.1 | 1.5 | 655 | 3.4 | 2.25 | 2.75 | 3.7 | 0.023 |
| 100L | MC10L833 | 680 | 32 | 1.5 | 2 | 680 | 4.95 | 2.25 | 2.75 | 3.7 | 0.027 |
| 112M | MC11M813 | 700 | 38 | 2.2 | 3 | 700 | 7.5 | 2.25 | 2.75 | 4.5 | 0.051 |
| 132S | MC13S813 | 645 | 57 | 3.2 | 4.3 | 645 | 9.8 | 2.25 | 2.75 | 4.0 | 0.099 |
| 160M | MC16M813 | 720 | 91 | 4.45 | 6 | 720 | 14.8 | 2.25 | 2.75 | 4.8 | 0.217 |
| 160M | MC16M833 | 660 | 106 | 6.6 | 8.8 | 660 | 17.5 | 2.25 | 2.75 | 5.2 | 0.299 |
| 160L | MC16L873 | 720 | 130 | 9.3 | 12.5 | 720 | 21.5 | 2.25 | 2.75 | 6.0 | 0.400 |

Higher or lower output can be offered against enquiries.

TEFC SO-Cage Crane & Hoist Motors :

Frames 71 to 225 M, B3 Construction, class 'F' insulation, suitable 415 V \pm 10%, 50 Hz \pm 5%, combined Variation \pm 10%, Ambient temperature 45°C, Degree of Protection IP 55. All motors Conform to IS 325. All motors are suitable for Inverter Duty applications.

Performance Table- MC Type
4 - Pole
S3 Duty
S4Duty and S5Duty

| | | | | 60 STARTS | | | | 150 STARTS | | | | 300 STARTS | | | |
|------------|------------|------------|----------------|---------------------|-------|---------------|-------|---------------------|-------|---------------|-------|---------------------|-------|---------------|-------|
| Frame Size | Motor Type | Rated rpm. | Mtr Weight Kg. | 25 OR 40% CDF Rated | | 60% CDF Rated | | 25 OR 40% CDF Rated | | 60% CDF Rated | | 25 OR 40% CDF Rated | | 60% CDF Rated | |
| | | | | kW | Amps. | kW | Amps. | kW | Amps. | kW | Amps. | kW | Amps. | kW | Amps. |
| 71 | MC071433 | 1310 | 7 | 0.55 | 1.56 | 0.55 | 1.56 | 0.55 | 1.56 | 0.55 | 1.56 | 0.55 | 1.56 | 0.55 | 1.56 |
| 80 | MC080413 | 1340 | 10 | 0.75 | 1.80 | 0.75 | 1.80 | 0.75 | 1.80 | 0.75 | 1.80 | 0.75 | 1.80 | 0.75 | 1.80 |
| 80 | MC080433 | 1385 | 11 | 1.1 | 2.80 | 1.1 | 2.80 | 1.1 | 2.80 | 1.1 | 2.80 | 1.1 | 2.80 | 1.1 | 2.80 |
| 90S | MC09S433 | 1395 | 19 | 1.5 | 3.70 | 1.5 | 3.70 | 1.5 | 3.70 | 1.5 | 3.70 | 1.5 | 3.70 | 1.5 | 3.70 |
| 90L | MC09L453 | 1380 | 23 | 2.2 | 4.95 | 2.2 | 4.95 | 2.2 | 4.95 | 2.2 | 4.95 | 2.2 | 4.95 | 2.2 | 4.95 |
| 100L | MC10L453 | 1390 | 31 | 3.7 | 7.95 | 3.7 | 7.95 | 3.7 | 7.95 | 3.7 | 7.95 | 3.7 | 7.95 | 3.7 | 7.95 |
| 112M | MC11M453 | 1430 | 48 | 5.5 | 12.40 | 5.5 | 12.40 | 5.5 | 12.40 | 5.5 | 12.40 | 5.5 | 12.40 | 5.5 | 12.40 |
| 132S | MC13S453 | 1410 | 70 | 7.5 | 14.80 | 7.5 | 14.80 | 7.5 | 14.80 | 7.5 | 14.80 | 7.5 | 14.80 | 7.5 | 14.80 |
| 132M | MC13M483 | 1430 | 84.5 | 9.3 | 18.10 | 9.3 | 18.10 | 9.3 | 18.10 | 9.3 | 18.10 | 9.3 | 18.10 | 9.3 | 18.10 |
| 160M | MC16M413 | 1460 | 92 | 11 | 21.2 | 11 | 21.2 | 11 | 22.2 | 11 | 22.2 | 11 | 22.2 | 11 | 22.2 |
| 160M | MC16M433 | 1450 | 105 | 15 | 30.7 | 15 | 30.7 | 15 | 30.7 | 15 | 30.7 | 15 | 30.7 | 15 | 30.7 |
| 160L | MC16L483 | 1450 | 132 | 18.5 | 34.8 | 18.5 | 34.8 | 18.5 | 34.8 | 18.5 | 34.8 | 18.5 | 34.8 | 18.5 | 34.8 |
| 180L | MC18L473 | 1460 | 190 | 22 | 39.5 | 22 | 39.5 | 22 | 39.5 | 22 | 39.5 | 22 | 39.5 | 20 | 38 |
| 200L | MC20L433 | 1465 | 266 | 30 | 52.0 | 30 | 52.0 | 30 | 52.0 | 30 | 52.0 | 28 | 50 | 25 | 45 |
| 225S | MC22S413 | 1470 | 338 | 37 | 64.5 | 37 | 64.5 | 37 | 64.5 | 35 | 63 | - | - | - | - |
| 225M | MC22M433 | 1470 | 366 | 45 | 78.0 | 45 | 78.0 | 45 | 78.0 | 44 | 75 | - | - | - | - |

Note: 4 pole motors upto and including 15kw and 6 pole motors upto and including 9.3 kw are also suitable for 50° C Amb. without applying derating factor.

6-pole (1000 rev /min)

| | | | | | | | | | | | | | | | |
|------|----------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| 71 | MC071633 | 800 | 7 | 0.37 | 1.43 | 0.35 | 1.40 | 0.37 | 1.43 | 0.35 | 1.4 | 0.37 | 1.43 | 0.35 | 1.4 |
| 80 | MC080613 | 890 | 10 | 0.37 | 1.9 | 0.37 | 1.9 | 0.37 | 1.9 | 0.37 | 1.9 | 0.37 | 1.9 | 0.37 | 1.9 |
| 80 | MC080613 | 830 | 10 | 0.55 | 2.0 | 0.55 | 2.0 | 0.55 | 2.0 | 0.55 | 2.0 | 0.55 | 2.0 | 0.55 | 2.0 |
| 80 | MC080633 | 885 | 11 | 0.75 | 2.4 | 0.75 | 2.4 | 0.75 | 2.4 | 0.75 | 2.4 | 0.75 | 2.4 | 0.75 | 2.4 |
| 90L | MC09L6A3 | 900 | 22 | 1.1 | 2.9 | 1.1 | 2.9 | 1.1 | 2.9 | 1.1 | 2.9 | 1.1 | 2.9 | 1.1 | 2.9 |
| 90L | MC09L653 | 895 | 22 | 1.5 | 4.2 | 1.5 | 4.2 | 1.5 | 4.2 | 1.5 | 4.2 | 1.5 | 4.2 | 1.5 | 4.2 |
| 100L | MC10L653 | 930 | 32 | 2.2 | 6.5 | 2.2 | 6.5 | 2.2 | 6.5 | 2.2 | 6.5 | 2.2 | 6.5 | 2.2 | 6.5 |
| 112M | MC11M653 | 920 | 43 | 3.7 | 9.1 | 3.7 | 9.1 | 3.7 | 9.1 | 3.7 | 9.1 | 3.7 | 9.1 | 3.7 | 9.1 |
| 132S | MC13S653 | 920 | 65 | 5.5 | 14.2 | 5.5 | 14.2 | 5.5 | 14.2 | 5.5 | 14.2 | 5.5 | 14.2 | 5.5 | 14.2 |
| 132M | MC13M693 | 925 | 79 | 7.5 | 18.8 | 7.3 | 18.8 | 7.5 | 18.8 | 7 | 18.8 | 7.5 | 18.8 | 6.8 | 17 |
| 160M | MC16M633 | 950 | 102 | 9.3 | 19.2 | 9.3 | 19.2 | 9.3 | 19.2 | 9.3 | 19.2 | 9.3 | 19.2 | 9.3 | 19.2 |
| 160L | MC16L663 | 960 | 119 | 11 | 24 | 11 | 24 | 11 | 24 | 11 | 24 | 11 | 24 | 11 | 24 |
| 160L | MC16L673 | 940 | 129 | 15 | 33 | 14.5 | 33 | 15 | 33 | 14.5 | 33 | 15 | 33 | 14.0 | 32 |
| 200L | MC20L613 | 975 | 234 | 18.5 | 34 | 18.5 | 34 | 18.5 | 34 | 18.5 | 34 | 18.5 | 34 | 18 | 34 |
| 200L | MC20L633 | 975 | 251 | 22 | 40.5 | 22 | 40.5 | 22 | 40.5 | 22 | 40.5 | 22 | 40.5 | 21 | 40 |
| 225M | MC22M633 | 975 | 341 | 30 | 53 | 30 | 53 | 30 | 53 | 30 | 53 | 28 | 51 | 26 | 50 |

8- pole (750 rev/min)

| | | | | | | | | | | | | | | | |
|------|----------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| 90S | MC09S813 | 615 | 17 | 0.55 | 2.4 | 0.47 | 2.05 | 0.55 | 2.4 | 0.47 | 2.05 | 0.55 | 2.4 | 0.47 | 2.05 |
| 90L | MC09L853 | 680 | 20 | 0.75 | 2.76 | 0.64 | 2.40 | 0.75 | 2.76 | 0.64 | 2.40 | 0.75 | 2.76 | 0.64 | 2.4 |
| 100L | MC10L813 | 655 | 28 | 1.1 | 3.5 | 1.1 | 3.4 | 1.1 | 3.5 | 1.1 | 3.5 | 1.1 | 3.5 | 1.1 | 3.5 |
| 100L | MC10L833 | 680 | 32 | 1.5 | 4.95 | 1.5 | 4.95 | 1.5 | 4.95 | 1.5 | 4.95 | 1.5 | 4.95 | 1.5 | 4.95 |
| 112M | MC11M813 | 700 | 38 | 2.2 | 7.5 | 2.2 | 7.5 | 2.2 | 7.5 | 2.2 | 7.5 | 2.2 | 7.5 | 2.2 | 7.5 |
| 132S | MC13S813 | 645 | 57 | 3.7 | 11.1 | 3.2 | 9.8 | 3.7 | 11.1 | 3.2 | 9.8 | 3.7 | 11.1 | 3.1 | 9.3 |
| 160M | MC16M813 | 720 | 91 | 5.5 | 18.4 | 4.45 | 14.8 | 5.5 | 18.4 | 4.45 | 14.8 | 5.5 | 18.4 | 4.25 | 14.3 |
| 160M | MC16M833 | 660 | 106 | 7.5 | 19.9 | 6.6 | 17.5 | 7.5 | 19.9 | 6.6 | 17.5 | 7.5 | 19.9 | 6.3 | 16.5 |
| 160L | MC16L873 | 720 | 130 | 9.3 | 21.3 | 9.3 | 21.5 | 9.3 | 21.3 | 9.3 | 21.5 | 9.3 | 21.3 | 9.3 | 21.5 |

Higher or lower outputs can be offered against enquiries.

TEFC Slip Ring Crane Motors -S2 Duty :

Frames 100 to 160L, B3 Construction, 415 V \pm 10%, 50 Hz \pm 5%, Combined Variation \pm 10%, Ambient temperature 45°C; Class of Insulation 'F' Stator and 'F' Rotor ; Degree of Protection IP 55.

Performance Table - MP Type
4- Pole (1500 rev / min)

| Frame Size | Motor Type | Half Hour | | | | | One Hour | | | | |
|------------|------------|-----------|-----|------|-----------|-------|----------|-----|------|-----------|-------|
| | | kW | HP | RPM | Line Amps | | kW | HP | RPM | Line Amps | |
| | | | | | Stator | Rotor | | | | Stator | Rotor |
| 100L | MP10L413 | 1.5 | 2 | 1280 | 4 | 18 | 1.3 | 1.7 | 1320 | 3.7 | 14.5 |
| 100L | MP10L433 | 2.5 | 3.3 | 1200 | 6.6 | 26 | 2.2 | 3 | 1255 | 5.7 | 21 |
| 112M | MP11M413 | 3.6 | 4.8 | 1290 | 9.3 | 25.8 | 3.1 | 4.1 | 1325 | 8.2 | 20.7 |
| 112M | MP11M433 | 4.2 | 5.6 | 1340 | 9.7 | 20.9 | 3.6 | 4.8 | 1370 | 8.6 | 18.7 |
| 132M | MP13M413 | 5.7 | 7.6 | 1310 | 13.4 | 31.2 | 5 | 6.7 | 1350 | 11.4 | 27.2 |
| 132M | MP13M463 | 7.5 | 10 | 1375 | 17 | 29 | 6.4 | 8.5 | 1410 | 14.6 | 23.7 |

6-pole (1000 rev /min)

| | | | | | | | | | | | |
|------|----------|-----|-------|-----|------|------|-----|------|-----|------|------|
| 100L | MP10L613 | 1.1 | 1.5 | 850 | 3.5 | 13 | 1 | 1.3 | 870 | 3.4 | 12 |
| 100L | MP10L623 | 1.5 | 2 | 870 | 5 | 13 | 1.3 | 1.7 | 890 | 4.7 | 11 |
| 112M | MP11M623 | 2.4 | 3.2 | 840 | 6.4 | 20.5 | 2.1 | 2.8 | 870 | 6 | 17.1 |
| 112M | MP11M643 | 3.3 | 4.4 | 850 | 8.6 | 20.5 | 2.8 | 3.7 | 880 | 8.2 | 17 |
| 132M | MP13M613 | 4 | 5.3 | 890 | 11 | 26 | 3.4 | 4.5 | 905 | 9.7 | 21 |
| 132M | MP13M663 | 5.5 | 7.3 | 895 | 13.3 | 26.5 | 4.8 | 6.4 | 915 | 12.4 | 23 |
| 160M | MP16M613 | 7.5 | 10.00 | 910 | 16.9 | 31.3 | 6.5 | 8.7 | 920 | 14.7 | 27.2 |
| 160L | MP16L653 | 9.5 | 12.70 | 915 | 21.0 | 28 | 8.5 | 11.4 | 930 | 18.5 | 24 |



TEFC Slip Ring Crane Motors -S3, S4 & S5 Duty :

Frames 100 to 132M, B3 Construction, 415 V \pm 10%, 50Hz \pm 5%, Combined Variation \pm 10%, Ambient temperature 45°C Class of Insulation 'F' Stator and 'F' Rotor Degree of Protection IP 55.

Performance Table - MP Type

4- Pole (1500 rev / min)

| CDF | | | 25% | | | | | 40% | | | | | 60% | | | | | 100% | | | | | | | | |
|---------------------|---------------|---------------|-----|------|--------------------------------------|---------------------------------|-----|------|--------------------------------------|---------------------------------|-----|------|--------------------------------------|---------------------------------|-----|------|--------------------------------------|---------------------------------|-----------------|----------------------------------|--------------------------|---------------------------|--|--|--|--|
| | Frame Size | Motor Type | Kw | RPM | Pullout Torque Rated Torque | Line Amps Stator Rotor | Kw | RPM | Pullout Torque Rated Torque | Line Amps Stator Rotor | Kw | RPM | Pullout Torque Rated Torque | Line Amps Stator Rotor | Kw | RPM | Pullout Torque Rated Torque | Line Amps Stator Rotor | Rotor O.C.V. | GD ² Rotor Load | kgm ² Load | Wt. of motor kg. | | | | |
| 60 Starts per hour | 100L | MP10L413 | 1.8 | 1200 | 1.85 | 4.7 23.5 | 1.5 | 1280 | 2.3 | 4.0 18.0 | 1.3 | 1320 | 2.8 | 3.7 14.5 | 1.1 | 1360 | 3.4 | 3.4 12.0 | 70 | 0.03 | 0.08 | 37 | | | | |
| | 100L | MP10L433 | 2.5 | 1200 | 1.85 | 6.6 26.0 | 2.5 | 1200 | 1.85 | 6.6 26.0 | 2.2 | 1255 | 2.2 | 5.7 21.0 | 1.5 | 1365 | 3.5 | 4.1 12.5 | 85 | 0.035 | 0.09 | 40 | | | | |
| | 112M | MP11M413 | 4.1 | 1200 | 2.0 | 10.5 32.0 | 3.6 | 1290 | 2.4 | 9.3 25.8 | 3.1 | 1325 | 2.9 | 8.2 20.7 | 2.2 | 1380 | 4.3 | 7.1 14.0 | 110 | 0.48 | 0.12 | 58 | | | | |
| | 112M | MP11M433 | 5.0 | 1300 | 2.2 | 11.2 27.0 | 4.2 | 1340 | 2.7 | 9.7 20.9 | 3.6 | 1370 | 3.3 | 8.6 18.7 | 3.0 | 1390 | 4.0 | 8.0 15.5 | 140 | 0.056 | 0.14 | 61 | | | | |
| | 132M | MP13M413 | 6.0 | 1300 | 2.0 | 14.7 33.0 | 5.7 | 1310 | 2.1 | 13.4 31.3 | 5.0 | 1350 | 2.4 | 11.4 27.2 | 4.0 | 1410 | 3.2 | 9.1 21.0 | 130 | 0.090 | 0.22 | 90 | | | | |
| | 132M | MP13M463 | 8.3 | 1365 | 2.0 | 18.5 32.3 | 7.5 | 1375 | 2.2 | 17.0 29.0 | 6.4 | 1410 | 2.6 | 14.6 23.7 | 5.5 | 1420 | 3.1 | 13.2 20.0 | 180 | 0.14 | 0.35 | 94 | | | | |
| 150 Starts per hour | 100L | MP10L413 | 1.7 | 1240 | 2.0 | 4.5 21.5 | 1.4 | 1300 | 2.6 | 3.9 16.5 | 1.3 | 1320 | 2.8 | 3.7 14.5 | 1.1 | 1360 | 3.4 | 2.4 12.0 | 70 | 0.03 | 0.08 | 37 | | | | |
| | 100L | MP10L433 | 2.5 | 1200 | 1.85 | 6.6 26.0 | 2.4 | 1220 | 2.0 | 6.3 24.0 | 2.1 | 1265 | 2.3 | 5.4 20.0 | 1.5 | 1365 | 3.5 | 4.1 12.5 | 85 | 0.035 | 0.09 | 40 | | | | |
| | 112M | MP11M413 | 4.1 | 1200 | 2.0 | 10.5 32.0 | 3.5 | 1295 | 2.5 | 9.0 24.5 | 3.0 | 1330 | 3.0 | 8.1 20.0 | 2.2 | 1380 | 4.3 | 7.1 14.0 | 110 | 0.048 | 0.12 | 58 | | | | |
| | 112M | MP11M433 | 4.7 | 1315 | 2.4 | 10.6 24.6 | 4.0 | 1350 | 2.9 | 9.4 19.5 | 3.5 | 1375 | 3.4 | 8.4 18.5 | 3.0 | 1390 | 4.0 | 8.0 15.5 | 140 | 0.056 | 0.14 | 61 | | | | |
| | 132M | MP13M413 | 6.0 | 1300 | 2.0 | 14.7 33.0 | 5.4 | 1325 | 2.2 | 12.3 29.4 | 4.7 | 1365 | 2.6 | 10.8 25.6 | 4.0 | 1410 | 3.2 | 9.1 21.0 | 130 | 0.09 | 0.22 | 90 | | | | |
| | 132M | MP13M463 | 7.2 | 1390 | 2.3 | 16.2 27.5 | 6.3 | 1415 | 2.7 | 14.4 23.3 | 5.6 | 1420 | 3.0 | 13.4 20.3 | 5.0 | 1430 | 3.4 | 10.9 18.2 | 180 | 0.14 | 0.35 | 94 | | | | |
| 300 Starts per hour | 100L | MP10L413 | 1.6 | 1260 | 2.2 | 4.3 20.0 | 1.3 | 1320 | 2.8 | 3.7 14.5 | 1.2 | 1340 | 3.1 | 3.6 13.5 | 1.0 | 1380 | 3.8 | 3.3 10.5 | 70 | 0.03 | 0.08 | 37 | | | | |
| | 100L | MP10L433 | 2.5 | 1200 | 1.85 | 6.6 26.0 | 2.3 | 1240 | 2.1 | 6.0 22.5 | 2.6 | 1280 | 2.5 | 5.1 18.5 | 1.5 | 1365 | 3.5 | 4.1 12.5 | 85 | 0.035 | 0.09 | 40 | | | | |
| | 112M | MP11M413 | 3.9 | 1250 | 2.2 | 9.9 29.4 | 3.3 | 1310 | 2.7 | 8.5 22.0 | 2.8 | 1345 | 3.3 | 7.8 18.3 | 2.2 | 1380 | 4.3 | 7.1 14.0 | 110 | 0.048 | 0.12 | 58 | | | | |
| | 112M | MP11M433 | 4.1 | 1345 | 2.8 | 9.6 20.2 | 3.5 | 1375 | 3.4 | 8.4 18.5 | 3.2 | 1385 | 3.7 | 8.2 16.7 | 2.8 | 1400 | 4.3 | 7.8 14.3 | 140 | 0.056 | 0.14 | 61 | | | | |
| | 132M | MP13M413 | 5.5 | 1320 | 2.2 | 12.5 30.0 | 4.8 | 1360 | 2.6 | 11.0 26.1 | 4.3 | 1390 | 2.9 | 9.9 23.0 | 3.9 | 1415 | 3.3 | 9.0 20.3 | 130 | 0.09 | 0.22 | 90 | | | | |
| | 132M | MP13M463 | 5.5 | 1420 | 3.1 | 13.2 20.0 | 5.0 | 1430 | 3.4 | 10.9 18.2 | 4.5 | 1435 | 3.8 | 10.3 16.4 | 4.2 | 1440 | 4.1 | 9.9 15.3 | 180 | 0.14 | 0.35 | 94 | | | | |

All 4 pole motors have maximum speed 2250 rpm.

TEFC Slip Ring Crane Duty Motors -S3, S4 & S5 Duty :

Frames 100 to 160L, B3 Construction, 415 V \pm 10%, 50Hz \pm 5%, Combined Variation \pm 10%, Ambient temperature 45°C Class of Insulation 'F' Stator and 'F' Rotor Degree of Protection IP 55.

Performance Table - MP Type
6 - Pole (1000 rev / min)

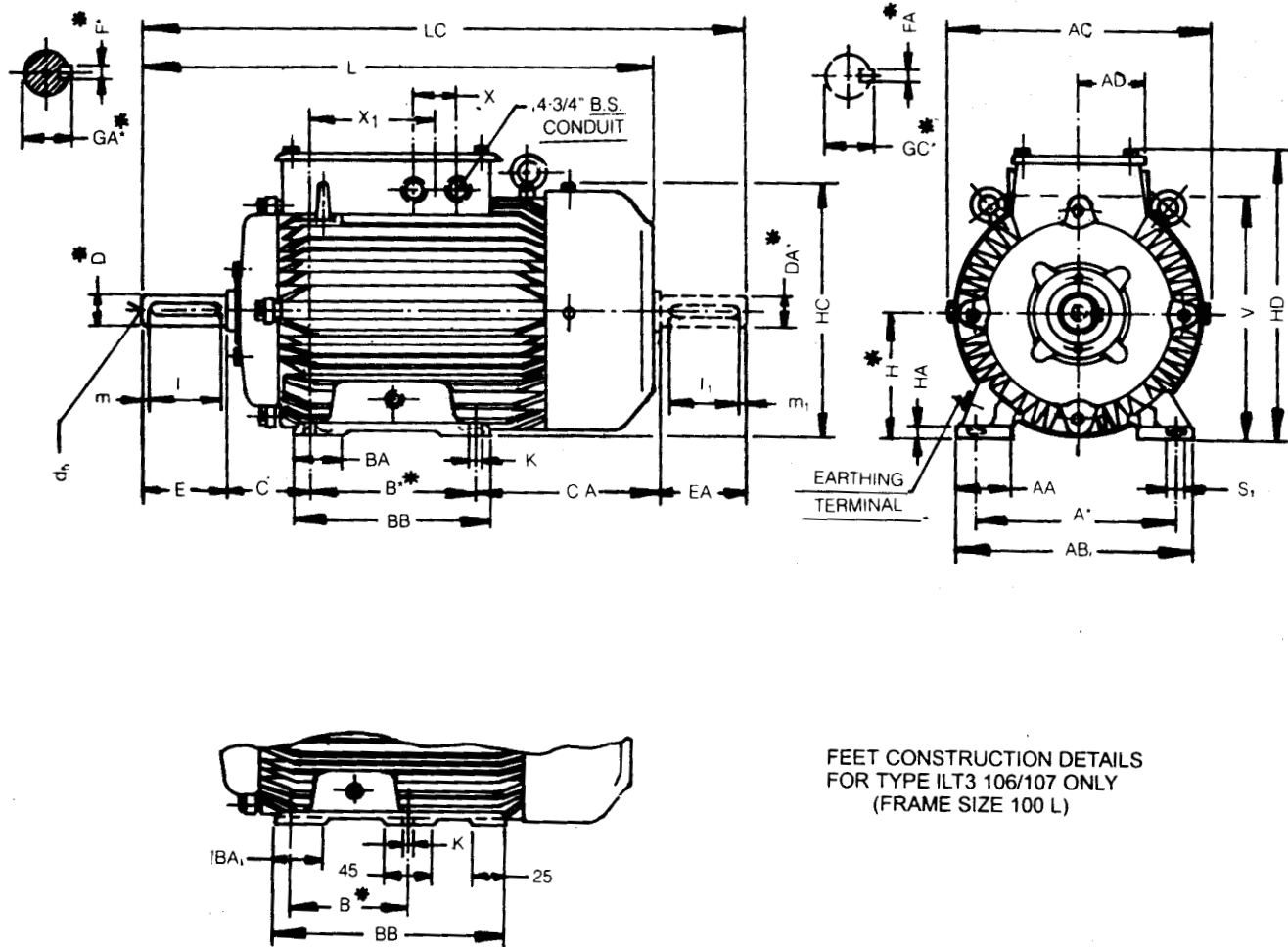
| CDF | | | 25% | | | | | 40% | | | | | 60% | | | | | 100% | | | | | | | | |
|---------------------|------------|------------|------|-----|----------------|-----------|-------|------|-----|----------------|-----------|-------|-----|-----|----------------|-----------|-------|------|-----|----------------|-----------|-------|--------------|-----------------------|-----------------------|------------------|
| | Frame Size | Motor Type | Kw | RPM | Pullout Torque | Line Amps | | Kw | RPM | Pullout Torque | Line Amps | | Kw | RPM | Pullout Torque | Line Amps | | Kw | RPM | Pullout Torque | Line Amps | | Rotor O.C.V. | GD ² Rotor | kgm ² Load | Wt. of motor kg. |
| | | | | | Rated Torque | Stator | Rotor | | | Rated Torque | Stator | Rotor | | | Rated Torque | Stator | Rotor | | | Rated Torque | Stator | Rotor | | | | |
| 60 Starts per hour | 100L | MP10L613 | 1.3 | 800 | 1.75 | 3.8 | 17.0 | 1.1 | 850 | 2.2 | 3.5 | 13.0 | 1.0 | 870 | 2.5 | 3.4 | 12.0 | 0.75 | 900 | 3.4 | 3.2 | 8.5 | 65 | 0.034 | 0.09 | 37 |
| | 100L | MP10L623 | 1.9 | 785 | 2.0 | 5.4 | 18.5 | 1.5 | 870 | 2.8 | 5.0 | 13.0 | 1.3 | 890 | 3.3 | 4.7 | 11.0 | 1.1 | 910 | 4.0 | 4.4 | 9.5 | 80 | 0.038 | 0.1 | 40 |
| | 112M | MP11M623 | 2.6 | 820 | 2.0 | 9.8 | 22.5 | 2.4 | 840 | 2.2 | 6.4 | 20.5 | 2.1 | 870 | 2.7 | 6.0 | 17.1 | 1.5 | 910 | 3.9 | 4.8 | 12.5 | 90 | 0.068 | 0.17 | 58 |
| | 112M | MP11M643 | 3.8 | 830 | 2.0 | 9.6 | 23.5 | 3.3 | 850 | 2.3 | 8.6 | 20.5 | 2.8 | 880 | 2.8 | 8.2 | 17.0 | 2.2 | 900 | 3.7 | 7.5 | 13.5 | 115 | 0.076 | 0.19 | 61 |
| | 132M | MP13M613 | 4.8 | 860 | 2.1 | 12.5 | 32.5 | 4.0 | 890 | 2.6 | 11.0 | 26.0 | 3.4 | 905 | 3.0 | 9.7 | 21.0 | 3.0 | 920 | 3.5 | 9.0 | 18.0 | 110 | 0.153 | 0.38 | 90 |
| | 132M | MP13M663 | 6.6 | 870 | 1.9 | 16.0 | 35.0 | 5.5 | 895 | 2.5 | 13.3 | 26.5 | 4.8 | 915 | 2.9 | 12.4 | 23.0 | 4.0 | 930 | 3.6 | 11.0 | 18.0 | 140 | 0.18 | 0.45 | 94 |
| | 160M | MP16M613 | 8.0 | 900 | 2.0 | 18.1 | 33.0 | 7.5 | 910 | 2.1 | 16.9 | 31.3 | 6.5 | 920 | 2.5 | 14.7 | 27.2 | 6 | 930 | 2.7 | 13.4 | 25.0 | 165 | 0.31 | 0.77 | 129 |
| | 160L | MP16L653 | 11.5 | 890 | 1.6 | 25.3 | 46.2 | 10.0 | 910 | 1.8 | 22.0 | 28 | 9.0 | 920 | 2.1 | 19.8 | 25.2 | 7.5 | 940 | 2.5 | 16.5 | 21.0 | 240 | 0.378 | 0.94 | 139 |
| 150 Starts per hour | 100L | MP10L613 | 1.3 | 800 | 1.75 | 3.8 | 17.0 | 1.1 | 850 | 2.2 | 3.5 | 13.0 | 1.0 | 870 | 2.5 | 3.4 | 12.0 | 0.75 | 900 | 3.4 | 3.2 | 8.5 | 65 | 0.034 | 0.09 | 37 |
| | 100L | MP10L623 | 1.8 | 810 | 2.2 | 5.3 | 17.0 | 1.5 | 870 | 2.8 | 5.0 | 13.0 | 1.3 | 890 | 3.3 | 4.7 | 11.0 | 1.1 | 910 | 4.0 | 4.4 | 9.5 | 80 | 0.038 | 0.1 | 40 |
| | 112M | MP11M623 | 2.6 | 820 | 2.0 | 6.8 | 22.5 | 2.3 | 850 | 2.4 | 6.2 | 19.5 | 2.0 | 875 | 2.8 | 5.9 | 16.0 | 1.5 | 910 | 3.9 | 4.8 | 12.5 | 90 | 0.068 | 0.17 | 58 |
| | 112M | MP11M643 | 3.8 | 830 | 2.0 | 9.6 | 23.5 | 3.2 | 855 | 2.4 | 8.5 | 20.0 | 2.7 | 885 | 3.0 | 8.1 | 16.5 | 2.2 | 900 | 3.7 | 7.5 | 13.5 | 115 | 0.076 | 0.19 | 61 |
| | 132M | MP13M613 | 4.5 | 865 | 2.2 | 11.9 | 30.0 | 3.7 | 895 | 2.8 | 10.4 | 23.5 | 3.2 | 915 | 3.3 | 9.4 | 19.5 | 2.8 | 930 | 3.8 | 8.7 | 16.5 | 110 | 0.153 | 0.38 | 90 |
| | 132M | MP13M663 | 6.5 | 870 | 2.0 | 15.1 | 34.0 | 5.4 | 895 | 2.7 | 13.2 | 25.0 | 4.6 | 920 | 3.0 | 12.0 | 22.0 | 3.9 | 935 | 3.7 | 10.0 | 17.5 | 140 | 0.18 | 0.45 | 94 |
| | 160M | MP16M613 | 8.0 | 900 | 2.0 | 18.1 | 33.0 | 7.0 | 920 | 2.3 | 15.8 | 29 | 6.0 | 930 | 2.7 | 13.4 | 25 | 5.5 | 940 | 2.9 | 12.3 | 23.0 | 165 | 0.31 | 0.77 | 129 |
| | 160L | MP16L653 | 10.5 | 900 | 1.8 | 23.1 | 29.4 | 9.5 | 915 | 1.9 | 21.0 | 28 | 8.6 | 930 | 2.25 | 18.5 | 24 | 7.5 | 940 | 2.5 | 16.5 | 21.0 | 240 | 0.378 | 0.94 | 139 |
| 300 Starts per hour | 100L | MP10L613 | 1.3 | 800 | 1.75 | 3.8 | 17.0 | 1.1 | 850 | 2.2 | 3.5 | 13.0 | 0.9 | 890 | 2.8 | 3.3 | 10.5 | 0.75 | 900 | 3.4 | 3.2 | 8.5 | 65 | 0.034 | 0.09 | 37 |
| | 100L | MP10L623 | 1.8 | 810 | 2.2 | 5.3 | 17.0 | 1.5 | 870 | 2.8 | 5.0 | 13.0 | 1.3 | 890 | 3.3 | 4.7 | 11.0 | 1.1 | 910 | 4.0 | 4.4 | 9.5 | 80 | 0.038 | 0.1 | 40 |
| | 112M | MP11M623 | 2.6 | 820 | 2.0 | 6.8 | 22.5 | 2.3 | 850 | 2.4 | 6.2 | 19.5 | 1.9 | 880 | 3.0 | 5.7 | 15.0 | 1.5 | 910 | 3.9 | 4.8 | 12.5 | 90 | 0.068 | 0.17 | 58 |
| | 112M | MP11M643 | 3.6 | 840 | 2.1 | 9.2 | 22.0 | 3.0 | 870 | 2.6 | 8.3 | 18.5 | 2.6 | 890 | 3.1 | 8.0 | 16.0 | 2.2 | 900 | 3.7 | 7.5 | 13.5 | 115 | 0.076 | 0.19 | 61 |
| | 132M | MP13M613 | 4.0 | 890 | 2.6 | 11.0 | 26.0 | 3.4 | 905 | 3.0 | 9.7 | 21.0 | 3.0 | 920 | 3.5 | 9.0 | 18.0 | 2.6 | 935 | 4.1 | 8.2 | 15.0 | 110 | 0.153 | 0.38 | 90 |
| | 132M | MP13M663 | 6.1 | 875 | 2.2 | 14.6 | 30.0 | 5.1 | 900 | 2.7 | 12.5 | 24.0 | 4.4 | 930 | 3.2 | 11.5 | 20.5 | 3.7 | 935 | 3.8 | 9.7 | 15.8 | 140 | 0.18 | 0.45 | 94 |
| | 160M | MP16M613 | 6.7 | 920 | 2.4 | 15.2 | 28.0 | 5.5 | 940 | 2.9 | 12.3 | 23 | 5.0 | 945 | 3.2 | 11.2 | 21 | 4.5 | 950 | 3.5 | 10 | 18.8 | 165 | 0.31 | 0.77 | 129 |
| | 160L | MP16L653 | 9.0 | 920 | 2.1 | 19.8 | 25.2 | 8.0 | 935 | 2.4 | 17.4 | 22.6 | 7.5 | 940 | 2.5 | 16.5 | 21 | 5.5 | 950 | 3.4 | 12.1 | 15.4 | 240 | 0.378 | 0.94 | 139 |

All 6 pole motors have maximum speed 2000 rpm.

TEFC SLIPRING MOTOR

B3 Construction (Foot mounted) Frames 100L - 160L

Type of Construction B3**



FEET CONSTRUCTION DETAILS
FOR TYPE ILT3 106/107 ONLY
(FRAME SIZE 100 L)

| IEC Fr. Size Motor Type | B* | A* | HA | BB | AB | AC | AD | H* | L | LC | BA | AA | HD | HC | K | S | V | C | CA | X | X. | D, DA* | E, EA | GA, GC* | F FA* | I, I1, | m1, m1 | d5mm |
|----------------------------|-----|-----|----|-----|-----|-----|----|-----|-----|-----|----|----|-----|-----|----|----|-----|-----|-----|----|-----|--------|-------|---------|-------|--------|--------|--------|
| 100I MP10L__3 | 140 | 160 | 14 | 245 | 200 | 202 | 61 | 100 | 488 | 570 | 40 | 50 | 262 | 201 | 13 | 16 | 210 | 63 | 247 | 36 | 171 | 28 | 60 | 31 | 8 | 55 | 3 | M10X20 |
| 112M MP11M__3 | 140 | 190 | 15 | 176 | 230 | 227 | 63 | 112 | 537 | 620 | 50 | 62 | 292 | 226 | 13 | 16 | 231 | 70 | 290 | 36 | 186 | 28 | 60 | 31 | 8 | 55 | 3 | M10X20 |
| 132M MP13M__3 | 178 | 216 | 17 | 218 | 256 | 267 | 74 | 132 | 612 | 715 | 54 | 64 | 328 | 266 | 13 | 17 | 267 | 89 | 288 | 42 | 185 | 38 | 80 | 41 | 10 | 70 | 5 | M12X28 |
| 160M MP16M/L__3 | 254 | 254 | 20 | 294 | 314 | 324 | 88 | 160 | 730 | 866 | 70 | 60 | 374 | 322 | 15 | 19 | 313 | 105 | 287 | 56 | 219 | 42 | 110 | 45 | 12 | 105 | 3 | M16X32 |

| Tolerance on Dimernsions Marked* (I.S.A. FIT) | |
|--|---|
| DIMENSIONS | TOLERANCES |
| B, A H D, DA GA, GC; FFA D5 + centering to IS 2540 | ±0.75 -0.5 IS 1231 280 j6, 380, 420 k6 IS 2048 |

Also Suitable for mounting arrangement B6; B7; B8; V5 & V6
as per IS 2253

Note : Dimension details for motors of other type of constructions
will be made available on enquiry.


Bharat Bijlee Limited
: Registered Office :

Electric Mansion, 6th Floor, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025.
Tel.: 2430 6237, 2430 6375 Fax: 022-2437 0624

: Central Marketing Office & Works :

Post Box No. 100, Thane Belapur Road, Thane 400 601.
Tel : 2760 0401 / 2760 0411 Fax : 91-22-2760 0430

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| | CHENNAI | C/o. Arpan Corporation, AVM Studios Compound, 38, Arcol Road, Vadapalani, Chennai 600 026. | 2372 85 79 2472 67 34 | 044-2372 8579 |
| | SECUNDERABAD | Krishna Mansion, 2nd Floor, Adjacent to Bible House, 134, Rashtrapati Road, Secunderabad 500 003. | 2753 45 12 | 040-2753 1791 |