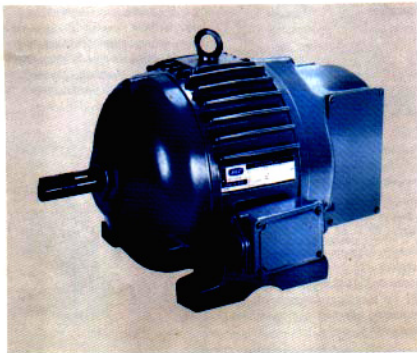


TYPE - MZ MOTORS



Years of trouble free service in cranes have made MZ range of totally enclosed surface cooled slipring motors a popular choice amongst all crane manufacturers.

MZ range of motors have been specially designed to suit arduous crane duty applications e.g. hoist, travel, traverse drives.

Frame Size

MZ3514 — MZ6335

Output

6 Pole Frame Size	Output
	S2 — 30 Minutes
MZ3514	2.2 KW
MZ6335	33.7 KW
8 Pole Frame Size	Output
	S2 — 30 Minutes
MZ4120	3.7 KW
MZ6335	22KW

Standards

- MZ motors are designed to suit specific crane duty requirements.
- Dimensionally MZ motors do not conform to IEC requirement and are manufactured as per company standard.
- For other requirements e.g. performance and test it complies with IS 325-1978.

Mounting	IS 2253-1974
Protection	IS 4691 -1985
Cooling	IS 6362-1971

Supply Voltage & Frequency

MZ motors are normally wound for 3 phase, 415V \pm 10%, 50 c/s \pm 5% supply conditions. However, motors may be offered for other voltage upto 660V, other preferred voltages being 380V, 400V, 440V depending on requirement.

The supply voltage is assumed to be virtually sinusoidal and balanced as defined in IS 325-1978.

Site Conditions

Motors are suitable for operation at rated duty with an ambient temperature upto 40°C and altitude not exceeding 1000 m above mean sea level.

For other site conditions rated output should be adjusted as per following tables.

Table - 1

Variation in output with Ambient Temperature

Cooling Air Temperature	Approximate permissible output (% Standard Rating)
Upto 40°C	100
45°C	95
50°C	86
55°C	80
60°C	75

Table - 2

Variation in output with Altitude

Altitude above sea level (Meters)	Approximate permissible output (% Standard Rating)
Upto 1000	100
1500	95
2000	91
2500	87
3000	83

When both ambient temperature and site altitude differ from standards the approximate permissible output is obtained by multiplying the factors against each variable as indicated in Table-1 and Table-2

Ratings and Performance

MZ motors are rated for short time S2 duty condition with either 30 minutes or 60 minutes or 90 minutes duration.

To suit actual operating conditions motors are designed to operate satisfactorily on periodic duty system with S3, S4 or S5 duties involving starts, reversals, plug braking and jogging. Equivalent no. of starts are computed on following bases.

- One plug braking is thermally

equivalent to 80% of a complete start.

- One complete plug reversal is thermally approximately 180% of a complete starting operation.
- One Jog is thermally equivalent to 25% of a complete starting operation.

Cyclic duration factor (CDF) = $\frac{\text{Period Energised}}{\text{Duration of a complete duty cycle}}$

The short time S2 duty rating is primarily intended for acceptance tests.

Performance data with S2 duty outputs at 30 minutes, 60 minutes, 90 minutes duration are listed in Table-4. In accordance with IPSS recommendation -40% CDF = 52-60 minutes

Motor ratings are normally calculated by crane manufacturers based on IS4137 and IPSS 2-02-004-B4. For specific recommendation regarding selection of motor frame-size refer to works.

Insulation and Temperature Rise

Both stator and rotor winding are provided with well proven Class 'B' insulating system and total temperature rise limited to 120°C. Class 'F' insulation system is provided against specific enquiry.

Mounting

MZ motors are manufactured with horizontal foot mounted construction with single cylindrical shaft extension (IM1001)

Cooling Form

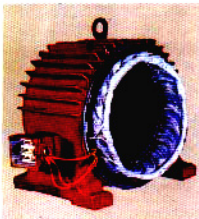
Motors are totally enclosed surfaced cooled type (IC0041).

Degree of Protection

Standard motors are provided with IP44 degree of protection. Higher degree of protection e.g. IP54, IP55 may be provided on request.

Construction Frame and End Shield

Frame housing with integral feet construction and end shields is made of grey iron casting amply dimensioned to provide high structural strength required for crane duty applications. Frame housing is provided with external ribs adding to strength and providing increased area for excellent thermal dissipation. End shields are securely spigotted and bolted to the frame housing. Lifting eye bolt is provided for all motors.



Wound Shell

Shaft and Rotor

Shaft is made from C45 grade of carbon steel. The rotor core is made of high quality low loss electrical grade steel sheet laminations and are assembled on machined shaft with keyway and flanges at both ends.

Alternative arrangement of shaft extension e.g. double cylindrical, single taper, double taper and non-standard extension details are available on request.

Winding and Impregnation

The integral system of wire and slot insulation and the overall varnish impregnation withstand high moisture, injurious deposits and chemical contamination. The impregnation provides the best tracking protection, together with a winding rigidity that is capable of

withstanding the vibration limits imposed by industrial drives.

Overhang banding are carried out on all wound rotors to provide winding rigidity during overspeed operation, while lowering the load for hoist drives.

Strict quality control procedures ensuring high standards of winding and treatment result in motors having an extended winding life expectation with an assured long actual life when applied correctly.

Balancing

All rotors are dynamically balanced with half key to ensure normal class of vibration as per IS12075.

Sliprings and Brushgear

Internal sliprings are fitted on all motors. Three cupronickel sliprings are epoxy moulded with cast iron hub to form an integral slipring assembly.

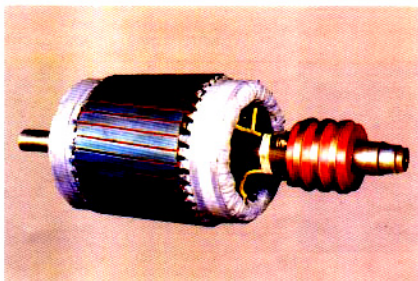
The internal brush gear is carried on insulated spindles attached to the N.D.E. inner bearing cap and can be easily serviced via inspection windows at each side of the motor. Independently spring loaded brushes are mounted in box type holders with two brushes per slipring.

Terminal Box

For standard motors stator and rotor terminals are terminated in a single terminal box located at RHS looking from D.E. side on motor frame with cable entry positions from either side of Terminal box. Provisions are kept for mounting Terminal box on either side of frame offering relocation of Terminal box without reversing the rotor.

Bearing and Lubrication

The bearings are directly mounted into the bore of the endbracket. The bearings are lubricated with premium grade Lithium based MP3 grease which contains oxidation and corrosion inhibitors. Regreasing points are incorporated as standard.



Rotor with Shaft and Slipring

The bearing housing is packed with the correct amount of grease before the motor is released from the works. All motors are therefore ready for immediate service and will run for long periods without attention if installed within a reasonable period after manufacture. Bearing sizes and recommended lubricating interval are given in Table 3.

Paints

Standard motors are provided with synthetic enamel finish over a coat of red oxide primer. All cast iron components are shot blasted and fettled prior to application of primer. Alternative point finish in glossy base paint may be provided on request.

Table 3
Bearing Sizes and Lubricating Interval

Frame Size	DE		NDE	
	Brg. Size	Interval (Hours)	Brg. Size	Interval (Hours)
MZ3514	6306	20000	6306	20000
MZ4120	6308	20000	6307	20000
MZ4618	6308	20000	6308	20000
MZ4826	6308	20000	6308	20000
MZ5622	6310	17000	6309	18000
MZ6322	N311	8000	6310	17000
MZ6328	N211	8000	6310	17000
MZ6335	N311	8000	6310	17000

TABLE - 4
TECHNICAL DATA
SUPPLY 3 PHASE 415 VOLTS 50 CYCLES

Ambient Temp - 40°C
Insulation - Class B/B

FRAME SIZE	Pole	AS 1/2 HOUR RATING					AS 1 HOUR RATING				AS 1 1/2 HOUR RATING			
		Speed	Output (H.P.)	Full-load Current	Rotor Volts	Rotor Amps	Output (H.P.)	Speed	Full-load Current	Rotor Amps	Output (H.P.)	Speed	Full-load Current	Rotor Amps
MZ 3514	6	900	3	6.25	103	17	2	930	5.4	12.9	1.5	940	5.1	10.5
MZ 4120	6	910	7	10.6	158	22	5	935	8.0	16.5	3.5	950	7.3	13.0
MZ 4818	6	945	9	13.5	227	20	7.5	955	12.0	17	5	965	9.3	12.5
MZ 4826	6	945	12.5	18	272	23	10	960	15.5	19	7	970	12.3	13.5
MZ 5622	6	950	15	21	195	36.5	12.5	965	18.0	31	9	975	14.5	25.0
MZ 6322	6	955	25	36	241	48	17.5	970	26.6	35	12.5	980	22.0	27
MZ 6328	6	960	30	42	306	45.5	20	975	32.0	32	15	985	27.0	25
MZ 6335	6	965	40	56	385	48	25	980	42	32	17.5	985	35.2	24

MZ 4120	8	685	5	11	130	20	3.5	700	10	15	2.5	705	9.5	12
MZ 4818	8	710	7.5	16	174	21	6.0	715	14.5	17.5	4.0	720	12.6	13
MZ 4826	8	710	11	20	241	22	7.5	720	16.0	16	5.0	725	14.5	11.5
MZ 5622	8	725	12.5	22	335	18	9.0	730	18.0	13.5	6.0	735	15.7	10.5
MZ 6322	8	725	20	31	306	46	14.0	730	23.0	35	10.0	735	19.0	28
MZ 6328	8	725	25	37	265	45	18.0	730	29.0	35	12.5	735	24.0	27
MZ 6335	8	725	30	45	325	45	22.5	730	36	37	15.0	735	30.5	27



Specialized custom built motors • Specialists in short cycle deliveries

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