



### *Data sheet for motors*

Manufacturer	Bharat Bijlee Ltd.		Customer			
Type of motor	3 phase Induction Motor		BBL Enquiry reference No			
Quantity			Customer P.O.Number			
Application	CUSTOMER TO FURNISH		W.O. No. / SAP No.			
Tag no.			Output kW / Pole		90	/ 2P
BBL type Ref.		MD28M233	Frame size		MJ280	
Installation details			Applicable standards (latest edition)			
Area classification (Safe / Hazardous)		Hazardous area	Performance: IS/IEC 60034-1 Maintenance IS:900		FLP Motors: IS/IEC 60079-1	
Location: indoor/outdoor/deck		Indoor	Dimensions: IS 1231/IS 2223/IS:8223			
Altitude (meters)		1000 or less	Vibrations: IS 12075			
			Noise level: IS 12065			
Hazardous area details			Supply conditions and permissible variations (grid supply)			
Area classification GAS (Zone 1/Zone 2)		ZONE I	Number of phases		Three	
Gas group		IIA, IIB	Voltage (Volts) and permissible variation		415	±10%
Temp.class		T4	Frequency (Hz) and permissible variation		50	±5%
Type of Explosion protection (FLP/Type 'a'/Type 'b')		Ex 'd'	Combined variation (absolute sum)		±10%	
Approving authority for hazardous area		If Mine application then DGMS else PESO				
Electrical parameters						
Starting performance						
Method of starting		DOL	Starting current (%FLC)		600	
Load speed (rpm)		CUSTOMER TO FURNISH	Starting torque (%FLT)		180	
Motor GD <sup>2</sup> (kgm <sup>2</sup> )		3.01	Pull out torque (%FLT)		270	
Load GD <sup>2</sup> (kgm <sup>2</sup> )		CUSTOMER TO FURNISH	Locked rotor withstand time (hot/cold) (sec)		20	/ 40
Load torque-speed curve		Parabolic TS curve	Number of consecutive starts (hot/cold) (nos.) provided Load GD2 = Motor GD2		2 / 3	
Starting time at rated voltage (sec)		PLEASE FURNISH ALL ABOVE DETAILS				
Running Performance						
Efficiency class		-	Duty and designation		Continuous (S1)	
Ambient temp./temp.rise by resistance (deg.C)		45 / 75	CDF/Equivalent starts per hour/FI		-	
Enclosure		TEFC (TOTALLY ENCLOSED FAN COOLED)	Insulation class / utilisation class on DOL		F/B	
Full load current (FLC) amps.		146.0	Rotor type (Squirrel Cage/ Slip ring )		Squirrel Cage	
Full load speed (rpm)		2970	Rotor voltage/rotor current (RV/RA) (Volts/Amps)		Not applicable	
Full load torque (FLT) kg-m		29.5	Stator/rotor time constant (min)		144/194	
Efficiency in % at FL/0.75FL/0.5FL		94.0 93.0 91.0	Power factor at FL/0.75FL/0.5FL		0.91	0.89 0.84
Mechanical parameters						
Mounting		B3	Mounting dimensions		Refer GA drawing	
Shaft extention		Single cylindrical	Direction of rotation viewed from DE		Clockwise	
Degree of protection		IP 55	Suitable for bidirectional rotation		Yes	
Method of cooling (TEFC/forced cooled/TESC)		TEFC (IC 411)	Paint type		Acid Alkali Proof	
Net weight of motor (kg)		740	Paint shade		632 as per IS 5	
			Earthing provision (two terminals on stator body)		Yes	
Bearings			Terminal box			
Coupling (Direct/flexible/Belt & Pulley/Gearbox)		Direct	Terminal box location when viewed from DE		As per GA drawing	
Dimenssions of pulley (OD x width) mm		-	Direction of cable entry		As per GA drawing	
Bearings (roller/ball/angular contact)		Ball /Ball	Cable size and type(Aluminium)		2R X 3C X 120 SQ MM	
Bearing size DE/NDE		6316 C3/6316 C3	Earthing provision (one terminal in TB)		Yes	
Type of lubrication		SKF LGMT3- GREASE	No of phase/ winding connection/number of terminals		3 / DELTA / 6	
Accessories						
RTDs - 3 numbers simplex(w/o controller)			Arrow plate for direction of rotation			
BTDs - 1 number per bearing(w/o controller)			Double compression glands (main cable)			
Space heaters - single phase 50z, 230V			Double compression glands (Space heater/Thermisters/RTDs)			
Thermisters - PTC			Brake (Type/voltage/torque)			
Additional T-Box for Accessories						
Additional nameplate						
Notes:						
1) All performance values are subject to IS/IEC 60034-1 tolerances, unless otherwise specified.						
2) Performance values are at rated voltage and rated frequency condition and for DOL starting condition.						
3) Motor GD <sup>2</sup> = Load GD <sup>2</sup> assumed wherever not mentioned.						
4) Where starting time is more than 10 seconds, provision of heavy duty relays is mandatory.						
5) Kilowatt rating is mandatory and HP is approximate.						
6) Accessories provided are marked as "YES"						
					Prepared by	
					Approved by	

				Revision	
Project:		Contractor/Client		Date:	
Consultant		Package			