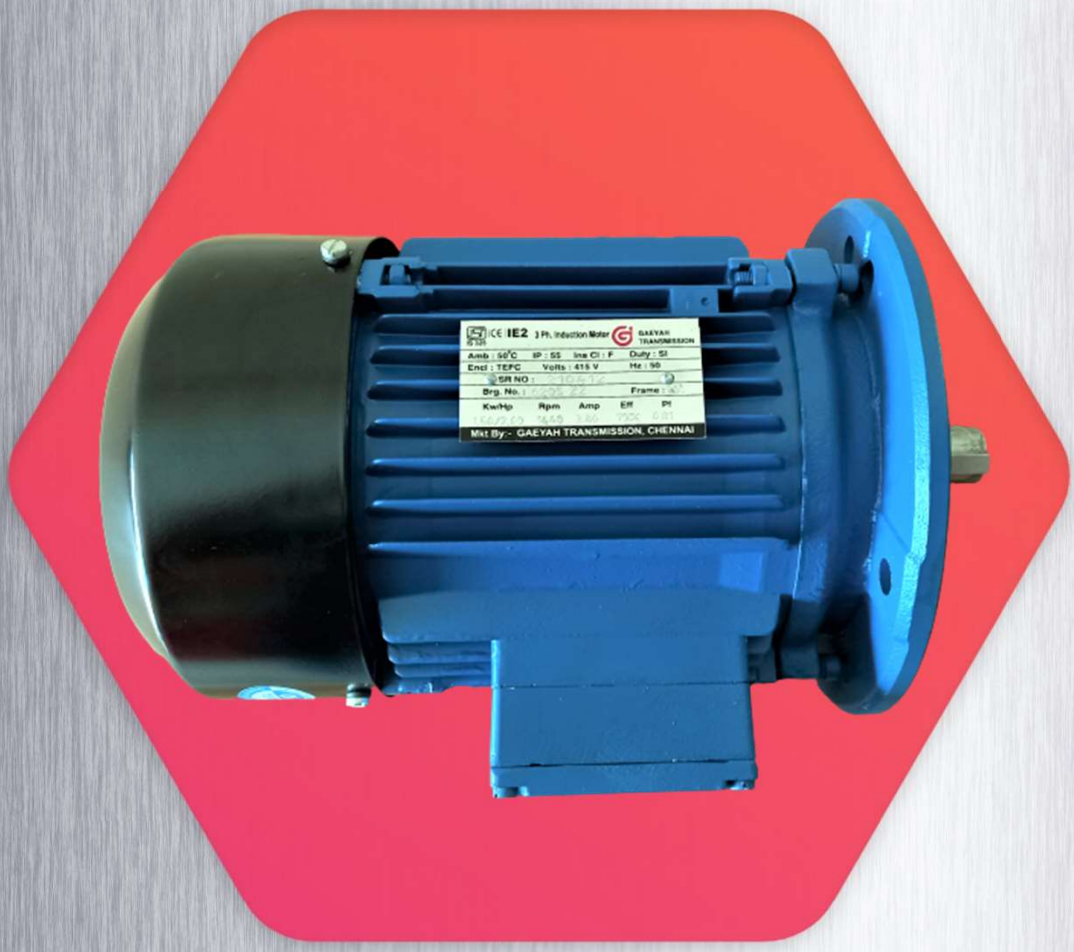
GAEYAH™
TRANSMISSION



GEM SERIES
ELECTRIC MOTOR

WWW.GAEYAH.COM

About Us.

Gaeyah Transmission and Indian Company manufacturing efficient power transmission products to meet the growing aspirations of the Indian customers. Gaeyah is mentored by an experienced team of transmission engineers having decades of expertise in various applications and solutions. We promise to deliver, right combination of efficient, affordable and quality products for the light duty industry segment.

Our Vision.

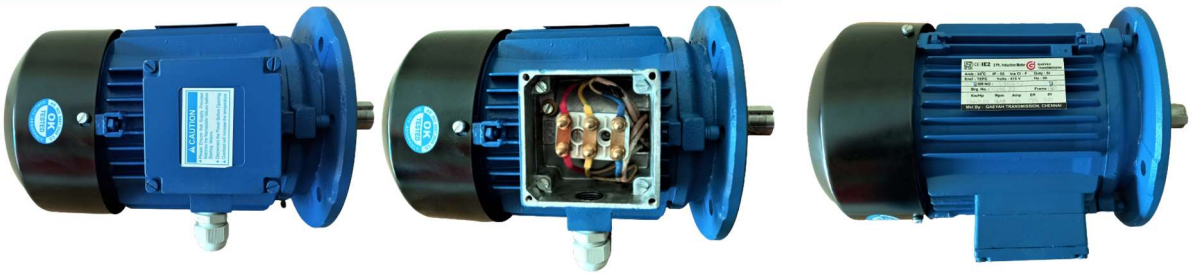
'Gaeyah's vision is to offer affordable power transmission solutions, empowering customers to improve their product performance'

Our Values.

Our work will be guided and informed by our beliefs and commitments to:

Inclusiveness - Respect all Living Being.
Honesty - Upright & Fair.
Commitment - Promise to Persevere.
Innovate - Contemporary Solution.
Passion - Empathize & Listen.

GEM Series Motors (B5) and Tolerances



-0.15 (1 - η) P ≤ 50kW	Efficiency
-(1 - cosφ)/6 min 0.02 max 0.07	Power factor
±20% *	Slip
+20%	Locked rotor current
-15% +25%	Locked rotor torque
-10%	Max. torque

* ± 30% for motors with Pn < 1 kW

Technical Information - GEM Series

Housing:
Motor up to 112 m Frame in Aluminium Pressure Die-Cast and Higher Frames in Cast Iron Components.
Stamping:
Imported cold rolled non grain oriented (CRNGO) high silicon steel.
Copper Wire:
Super enameled dual coat copper wire.
Insulating Material:
Imported Nomex equivalent to Class H.
Varnish:
Dr. Beck varnish with high dielectric strength almost eliminating chances of insulation failure. Class H Insulation is available upon request.
Bearing:
Double sealed (metallic sealing) ball bearing lubricated for life with high quality imported grease.
Rotor: Pressure die cast with 99.7% EC grade pure aluminium.
Dynamic Balancing: Dynamic balancing with high precision balancing machines resulting in low vibration in motors.
Manufactured as per BIS Standard Specification furnished below:

Special Care In the Construction allows the Motor:

- High voltage variation ±10%, Frequency Variation ±6%, Ambient temperatures higher than 45oC.
- Class of insulation 'F'
- Motors with cooling arrangement as per IS: 4691, Degrees of Protection IP 55
- Motors suitable for VFD applications. Very much suitable for application in industries like Textiles, Process, Mills, Conveyors, Power Generation, Crushers, Packaging M/Cs, Machine Tools, Paper, Steel, Sugar Mills, food processing etc.
- Customized Motors available as per specified requirement.

IS: 325	Specifications for three phase induction motors.
IS: 1231	Dimensions of three phase foot mounted inductions motors.
IS: 2223	Dimensions of flange mounted AC induction motors.
IS: 8789	Values of performance characteristics for three phase inductions motors.
IS: 2691	Degree of protection
IS: 1271	Class of Insulation

GEM Series Technical Spefications

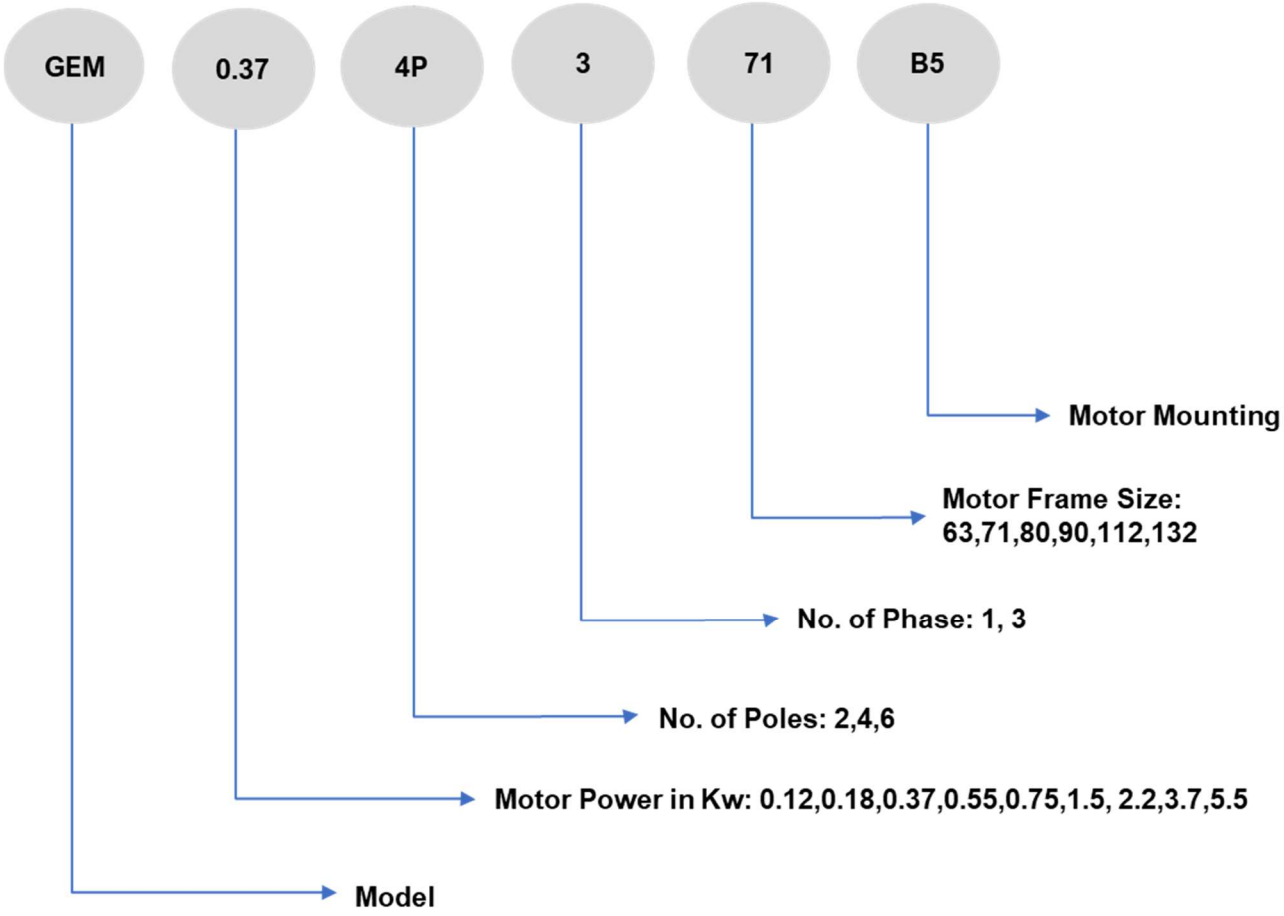
Range - Three Phase
Output 0.18 kW to 7.50 kW
Frames 63 -132
Poles 2,4,6

Specification	Standard Motor
Frame sizes	63 to 132
Enclosure	IP55
Mounting option	Flange (B5), Face (B14)
Terminal box position	Top (Options LHS/RHS)
	0.18 kW to 7.5kW
Voltage	3.7 kW and above: 415
Frequency	50 Hz
Cooling	IC411
Lubrication	Frame 63 to 132 double-shielded bearings
Insulation	Class F
Temperature rise	Class B
Paint color	Gentian blue (RAL 5010)
Fan cover	Steel
Thermal protection	Optional
Inverter Duty	Variable Torque - 10:1,
(With derate)	Constant Torque - 2:1
Ambient temperature	- 20°C to + 50°C
DC brake	62 - 132
Altitude	<1000m for >Consult Gaeyah

Range – Single Phase

Kw	HP	Frame	Specification
0.1	0.13	56	TEFC / 1Ph / 4P/ 50Hz / IP54 / CLF / 415V
0.18	0.25	63	
0.37	0.50	71	
0.75	1.00	90	
1.10	1.50	100	
1.50	2.00	112	
2.20	3.00	132	

Ordering Specification



Effect of Ambience in the performance

Amb. Temp. °C	Permissible output as % of rated torque
<30	107
30-45	103
50	100
55	96
60	92

Altitude above sea level mtr	Permissible output torque as % of rated torque
1000	100
1500	97
2000	94
2500	90
3000	86
3500	82
4000	77

TEFC 415V/ 50hz/ 3 Ph/ Insulation 'B'/ Protection 'IP54'/ Amb. Temp 40^{0}C

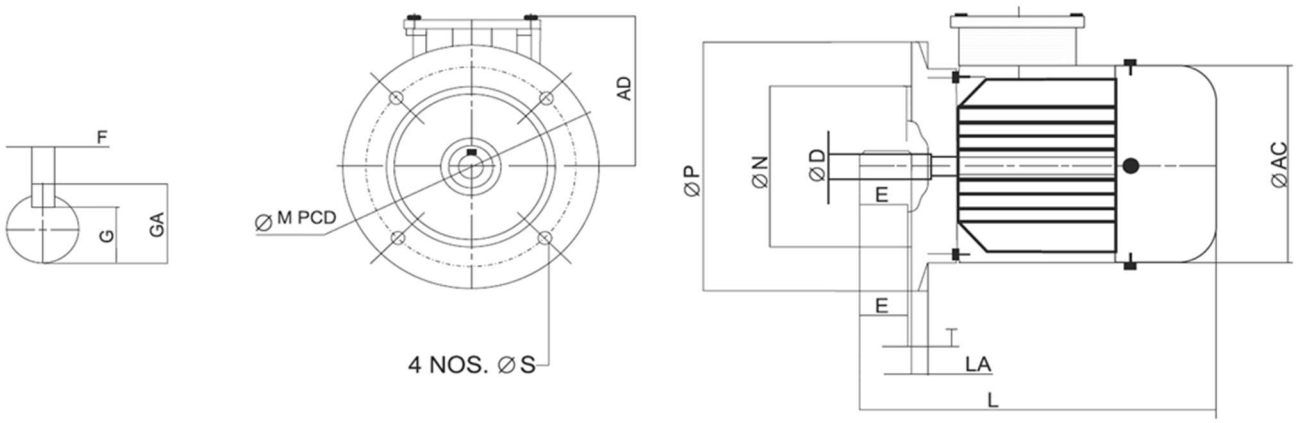
2POLE MOTORS (3000 RPM Synchronous)							
FRAME SIZE	OUTPUT		SPEED RPM	CURRENT AMPS	TORQUE kgm	EFF %	POWER FACTOR
	KW	HP					
63	0.09	0.12	2670	0.35	0.035	3.0	0.63
	0.18	0.25	2700	0.55	0.065	68.0	0.73
71	0.25	0.33	2700	0.65	0.088	68.0	0.73
	0.37	0.50	2800	1.05	0.14	70.0	0.77
80	0.55	0.75	2800	1.45	0.20	76.0	0.79
	0.75	1.00	2800	1.70	0.26	76.0	0.80
	1.10	1.50	2820	2.50	0.38	78.0	0.83
90S	1.50	2.00	2840	3.25	0.55	79.0	0.85
90L	2.20	3.00	2850	4.65	0.78	80.0	0.85
100L	3.70	5.00	2850	7.30	1.25	83.0	0.87
112M	5.50	7.50	2880	10.25	1.87	86.0	0.88
132S	7.50	10.00	2880	14.00	2.48	86.0	0.88

4 POLE MOTORS (1500 RPM Synchronous)							
FRAME SIZE	OUTPUT		SPEED RPM	CURRENT AMPS	TORQUE kgm	EFF %	POWER FACTOR
	KW	HP					
63	0.09	0.125	1330	0.52	0.07	59.0	0.62
	0.18	0.25	1350	0.66	0.15	62.0	0.65
71	0.25	0.33	1370	0.82	0.18	68.0	0.66
	0.37	0.50	1370	1.12	0.28	69.0	0.73
80	0.55	0.75	1390	1.52	0.40	73.0	0.73
	0.75	1.00	1400	1.92	0.52	76.0	0.74
90S	1.10	1.50	1410	2.62	0.77	78.0	0.79
90L	1.50	2.00	1410	3.52	1.05	79.0	0.81
100L	2.20	3.00	1420	4.90	1.55	81.0	0.81
112M	3.70	5.00	1430	7.85	2.55	83.0	0.83
132S	5.50	7.50	1440	11.00	3.75	86.0	0.88
132M	7.50	10.00	1440	15.50	4.98	86.0	0.89

6 POLE MOTORS (1000 RPM Synchronous)							
FRAME SIZE	OUTPUT		SPEED RPM	CURRENT AMPS	TORQUE kgm	EFF %	POWER FACTOR
	KW	HP					
71	0.09	0.125	880	0.50	0.10	50.0	0.53
	0.18	0.25	860	0.75	0.19	57.0	0.60
	0.25	0.33	860	1.10	0.26	59.0	0.55
80	0.37	0.50	890	1.20	0.39	68.0	0.67
	0.50	0.75	880	1.60	0.59	69.0	0.68
90S	0.75	1.00	900	2.00	0.77	70.0	0.74
90L	1.10	1.50	900	2.80	1.16	70.0	0.74
100L	1.50	2.00	930	3.60	1.54	77.0	0.75
112M	2.20	3.00	940	5.00	2.30	79.0	0.78
132S	3.70	5.00	950	8.20	3.77	82.0	0.79
132M	5.50	7.50	960	11.80	5.62	83.0	0.78

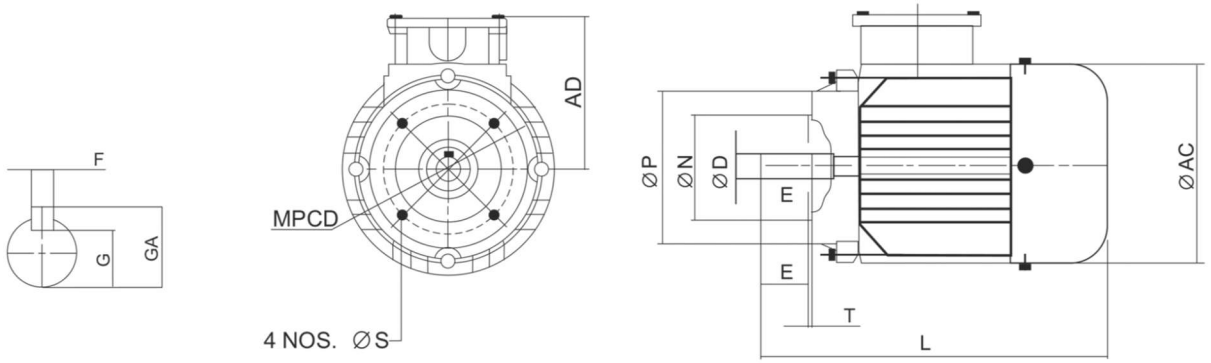
8 POLE MOTORS (750 RPM Synchronous)							
FRAME SIZE	OUTPUT		SPEED RPM	CURRENT AMPS	TORQUE kgm	EFF %	POWER FACTOR
	KW	HP					
71	0.09	0.125	665	0.72	0.15	45.0	0.47
80	0.18	0.25	680	0.77	0.28	62.0	0.60
	0.25	0.33	670	0.92	0.35	66.0	0.62
90S	0.37	0.50	690	1.41	0.52	67.0	0.58
90L	0.55	0.75	680	1.91	0.79	68.0	0.63
100L	0.75	1.00	700	2.12	1.10	72.0	0.65
	1.10	1.50	700	3.25	1.55	74.0	0.66
112M	1.50	2.00	700	4.25	2.20	76.0	0.67
132S	2.20	3.00	710	5.85	3.05	80.0	0.68
132M	3.70	5.00	710	8.85	5.10	82.0	0.72

Dimensions of Flange Mounted Motor (B5)



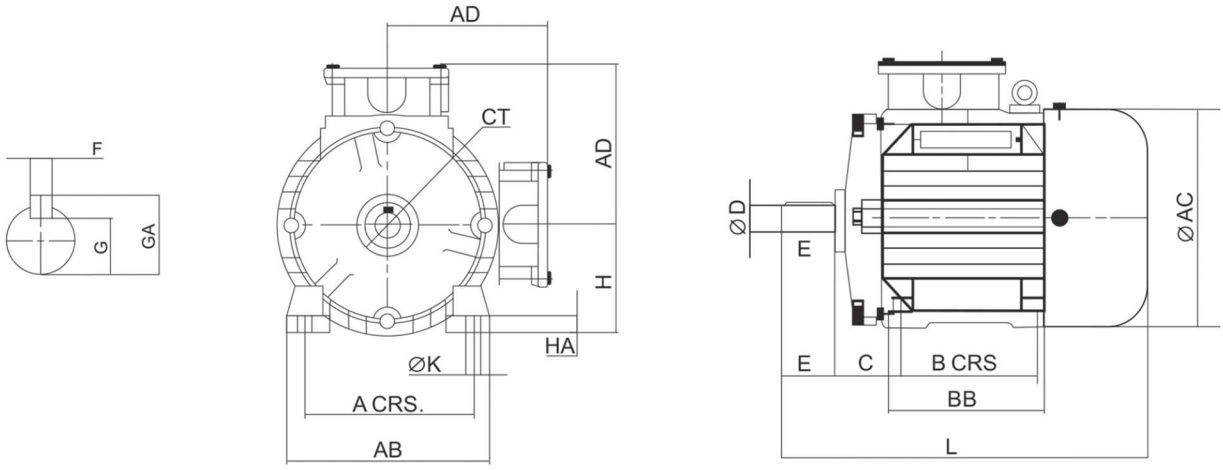
Frame Size	B5 Flange Dimensions mm						Shaft Dimensions						Overall Details		
	ØP	M PCD	ØN	ØS	T	LA	ØD	E	F	GA	G	CT	AD	ACØ	L
63	140	115	95	10	3	9	11	23	4	12.5	8.5	M4	104	118	215
71	160	130	110	10	3.5	9	14	30	5	16	11	M5	110	140	240
80	200	165	130	12	3.5	10	19	40	6	21.5	15.5	M6	120	160	280
90S	200	165	130	12	3.5	10	24	50	8	27	20	M8	130	176	310
90L	200	165	130	12	3.5	10	24	50	8	27	20	M8	130	176	335
100L	250	215	180	15	4	11	28	60	8	31	24	M10	140	199	374
112M	250	215	180	15	4	11	28	60	8	31	24	M10	152	224	380
132S	300	265	230	15	4	12	38	80	10	41	33	M12	180	262	455
132M	300	265	230	15	4	12	38	80	10	41	33	M12	180	262	493

Dimensions of Flange Mounted Motor (B14)



B14 FLANGE DETAILS						SHAFT DETAILS						OVERALL DETAILS		
FRAME SIZE	ØP	M PCD	ØN	ØS	T	ØD	E	F	GA	G	CT	AD	ACØ	L
63	90	75	60	M5	2.5	11	23	4	12.5	8.5	M4	104	118	215
71	105	85	70	M6	2.5	14	30	5	16	11	M5	110	140	240
80	120	100	80	M6	3	19	40	6	21.5	15.5	M6	120	160	280
90S	140	115	95	M8	3	24	50	8	27	20	M8	130	176	310
90L	140	115	95	M8	3	24	50	8	27	20	M8	130	176	335
100L	160	130	110	M8	3.5	28	60	8	31	24	M10	140	199	374
112M	160	130	110	M8	3.5	28	60	8	31	24	M10	152	224	380
132S	200	165	130	M12	3.5	38	80	10	41	33	M12	180	262	455
132M	200	165	130	M12	3.5	38	80	10	41	33	M12	180	262	493

Dimensions of Flange Mounted Motor (B3)



FRAME Size	A	B	C	H	ØK	AB	BB	HA	ØD	E	F	GA	G	CT	AD	ACØ	L
63	100	80	40	63	7	122	108	8	11	23	4	12.5	8.5	M4	104	118	215
71	112	90	45	71	7	137	108	11	14	30	5	16	11	M5	110	140	240
80	125	100	50	80	10	155	126	12	19	40	6	21.5	15.5	M6	120	160	280
90S	140	100	56	90	10	172	130	12	24	50	8	27	20	M8	130	176	310
90L	140	125	56	90	10	172	156	12	24	50	8	27	20	M8	130	176	335
100L	160	140	63	100	12	198	170	14	28	60	8	31	24	M10	140	199	374
112M	190	140	70	112	12	225	176	14	28	60	8	31	24	M10	152	224	380
132S	216	140	89	132	12	250	172	17	38	80	10	41	33	M12	180	262	455
132M	216	178	89	132	12	250	212	17	38	80	10	41	33	M12	180	262	493

Trouble Shooting with TEFC MOTOR…

MOTOR PROBLEM	CAUSE	REMEDY
Wrong rotation	Wrong sequence of phases	Reverse connections at motor or at switchboard.
Motor overheats while running under load	Overload	Reduce load
	Frame or bracket vents may be clogged with dirt and prevent proper ventilation of motor.	Open vent holes and check for a continuous stream of air from the motor.
	Motor may have one phase open	Check to make sure that all leads are well connected.
	Grounded coil	Locate and repair
	Unbalanced terminal voltage	Check for faulty leads, connections and transformers.
Motor vibrates	Motor misaligned	Realign
	Weak support	Strengthen base
	Coupling out of balance	Balance coupling
	Driven equipment unbalanced	Re-balance driven equipment
	Defective bearings	Replace bearing
	Bearings not in line	Line bearings up properly
	Balancing weights shifted	Re-balance motor
	Poly-phase motor running single phase	Check for open circuit
	Excessive end play	Adjust bearing
Unbalanced line current on poly-phase motors during normal operation	Unequal terminal volts	Check leads and connections
	Single phase operation	Check for open contacts
	Unbalanced voltage	Correct unbalanced power supply
Noisy Operation	Airgap not uniform	Check and correct bracket fits or bearing.
	Rotor unbalance	Rebalance
Hot bearings general	Bent or sprung shaft	Straighten or replace shaft
	Excessive belt pull	Decrease belt tension
	Pulley too far away	Move pulley closer to motor bearing
	Pulley diameter too small	Use larger pulleys
	Misalignment	Correct by realignment of drive
Hot bearings ball	Insufficient grease	Maintain proper quantity of grease in bearing
	Deterioration of grease or lubricant contaminated	Remove old grease, wash bearings thoroughly in kerosene and replace with new grease.
	Excessive lubricant	Reduce quantity of grease, bearing should not be more than 1/2 filled
	Overloaded bearing	Check alignment, side and end thrust.
	Broken ball or rough races	Replace bearing, first clean housing thoroughly

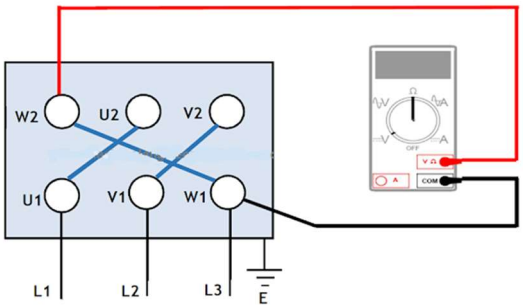
Trouble Shooting with TEFC MOTOR

MOTOR PROBLEM	CAUSE	REMEDY
Motor fails to start	Blown fuses	Replace fuse with proper type and rating
	Overload Trips	Check and reset overload in starter
	Improper power supply	Check to see that power supplied agrees with nameplate specifications and load factor
	Improper line connections	Check connections with wiring diagram supplied with motor
	Open circuit in winding or control switch	This is normally indicated by a humming sound when switch is closed. Check for loose wiring connections. Confirm that all control contacts are closing.
	Mechanical failure	Check to see that motor and drive turns freely. Check bearings and lubrication
	Short circuited stator	Indicated by blown fuses. Motor must be rewound
	Poor stator coil connections	Remove end belts. Locate poor connections with test lamp.
	Rotor defective	Check for broken bars or end rings
	Motor may be overloaded	Reduce motor load
Motor stalls	One phase may be open	Check supply lines for open phase
	Wrong application	Change type or size. Consult motor manufacturer
	Overload	Reduce load
	Low voltage	Check that nameplate voltage is maintained. Check connection.
	Open circuit	Fuses blown. Check overload relay, stator and push buttons
Motor runs and then dies down	Power failure	Check for loose connections to line, to fuses and to control
Motor does not come up to speed	Motor is applied for the wrong application	Consult manufacturer for right application of motor
	Voltage too low at motor terminals because of line drop	Use higher voltage on transformer terminals or reduce load. Check connections. Check conductors for proper size.
	Starting load too high	Check load motor is supposed to carry at start.
	Broken rotor bars or loose rotor	Look for cracks near the rings. A new rotor may be required as repairs are usually temporary not permanent
	Open primary circuit	Locate fault with testing device and repair.
Motor takes too long to accelerate and/or draws high current (Amps)	Excessive load	Reduce load
	Low voltage during start up	Check for high resistance. Adequate wire size.
	Defective squirrel cage rotor	Replace with new rotor
	Applied voltage too low	Improve voltage at terminals of transformer by tap changing.

Trouble Shooting with Brake

DEFECY	POSSIBLE CAUSE	SOLUTION
No action	No power inside brake	Check supply power
	Brake disc wornout	Replace brake disc
	Brake slipping	Adjust disc clearance
	Low volt	Use correct voltage
	Power supply issue	Use new power supply
	Dirt inside	Clean the parts
	Wrong voltage	Apply correct voltage
	Connect wire lost	Re-connect wire
	Brake disc locked	Clean the parts
	Brake coil burned-out	Replace brake coil
Over stop	Brake disc worn out	Replace brake disc
	Brake slipping	Adjust disc clearance
	Surface wet/oil	Clean brake disc
	Overloading	Re-design brake unit
	Disc surface twist	Use new parts
	High momentum	System re-design
	Select wrong type	Select unit
	High temperature	Adjust temperature

How to test a 3Ph Electric Motor with an Ohm meter



The first thing to do before testing the windings of the motor is to remove the links linking terminals W2U2V2 and the disconnect the motor from supply (L1, L2, L3). A multimeter terminals placed across this matrix of terminals will indicate the following readings for a good 3 phase motor:

(a) Terminals W1W2, U1U2, V1V2 will indicate *continuity* for a good motor

(b) Every other terminal combination should indicate *Open* for a good motor

(c) Readings between any of the six (6) terminals and the motor frame signifying earth (E) should indicate *open* for a good motor.

Ohmmeter Readings for a Bad 3 phase Motor

In the case of a burnt or bad 3 phase motor, this matrix of terminals should indicate the opposite readings for a bad motor:

(a) If any of the terminal combinations W1W2, U1U2, V1V2 should indicate *open* then the motor is bad.

(b) If any other terminal combinations should indicate *continuity* instead of *open*, then the motor is bad.

(c) If the reading between any of the six (6) terminals and motor frame (E) should indicate *continuity*, then the motor is dead.

Gaeyah range of products include...

GWM Series Worm Geared Motor
Upto Size 150

GPM Series Hypoid Geared Motor
Upto Size 110

GCLM Series Helical Geared Motor
Upto Size 050

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