

General Catalog

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When reliability is critical.

MEC MOTORS is a global motor manufacturer and solution provider, with its' core focus on providing highly efficient, cost effective, reliable solutions to maximise uptime for your application.

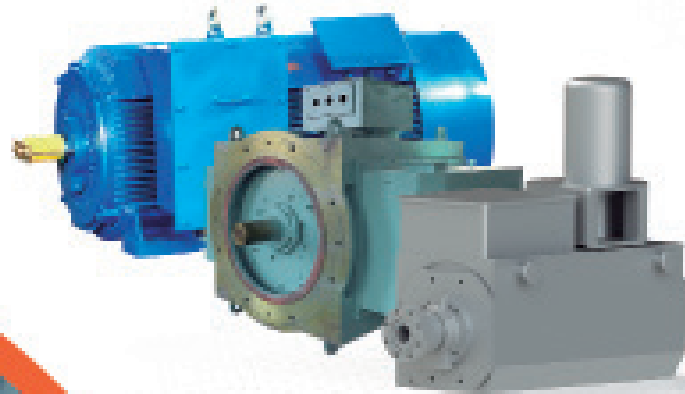


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Product Portfolio



NEMA

MEC *Plus*

MEC *ODP*

MEC *D*

MEC *MV*

IEC

MEC *Plus*

MEC *AI*

MEC *Max*

MEC *RT*

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Certification

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Certification



- ISO9001:2015** ISO9001:2015 Quality Management System Certificate
- ISO14001:2015** Environmental Management System Certification
- ISO9001:2015SGS** SGS Quality Management System Certification



UL listed, DoE Energy Efficiency Registered
 CSA Electrical Safety And Premium Efficiency Registered

CE and UKCA Marked

China Certification Center for Energy Conservation Product (CECP)
 China Compulsory Certificat
 China Classification Society Certificate

DNV-GL Classification

Bureau Veritas Classification

Lloyd's Register Quality Assurance Classification

American Bureau Of Shipping Classification

Russian Classification Society

Italian Bureau of Shipping Classification



HVAC-R

HVAC-R (Heating/Ventilation/Air-Conditioning-Refrigeration) systems manage the heating, cooling, and circulation of air between indoor and outdoor environments in residential, commercial, and industrial settings.

Typical applications in this industrial segment are fans, pumps, and compressors. The motor outputs range from less than one horsepower, thru hundreds and potentially thousands of HP.

Important considerations for this industrial segment are uptime, operating efficiency, and motor power density (resulting in more compact, lighter weight motors).



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Marine

Motors for use in the Marine industry must be of the highest reliability to be able to sustain critical operations in high salinity and humidity levels. OMEC electric motors comply with Marine Classification Society requirements such as American Bureau of Shipping (ABS), Bureau Veritas (BV), China Classification Society (CCS), DNV-GL and others. OMEC can provide motors against "type classification" certificates and individually approved for critical duties.

There are multiple applications for electric motors in the marine industry with LV commonly used for engine room and bilge pumps, cargo loading and offloading pumps and compressors, ventilation systems, deck crane, davit, windlass, and winching / handling applications, as well as some propulsion and manoeuvring systems. MV motors are more commonly used for refrigeration compressors, main propulsion motors and higher-powered thrusters.

There is a trend towards the use of permanent magnet (PM) solutions for certain applications in the marine industry, particularly with the move to hybrid and all electric drive systems. Low speed high torque PM solutions can remove, or substantially reduce the size of gearboxes used in propulsion or winching applications, reducing installed equipment size and weight, increasing efficiency, removing the mechanical element of the drive train and with it one of the critical maintenance items which reduces maintenance requirements increasing uptime of the vessel.



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Metals

The metal industry requires electric motors that can withstand high temperature, high starting torque, and vibration, also and have overload capabilities. Another concern in the metals factory is the amount of metal dust and debris that can accumulate in the motor fins impacting motor performance and cooling capabilities. The most common applications are hot and cold rolling mills, blast furnace blowers, cooling pumps, sinter fans and blowers.

PM motor applications are also found in the metals industry, particularly using low speed high torque designs which allow the reduction in size of electric drives and removal, or reduction in the size of mechanical gear systems.



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Mining

The mining industry is divided in two segments: mineral extraction and mineral processing. The OMEC Electric Motor Portfolio fit perfectly to serve both segments.

OMEC currently manufactures Electric Motors according to NEMA and IEC Standards in Low and Medium Voltage. OMEC Motors are designed considering the requirements of high altitude, high starting torque, and high inertia. Applications like crushers, excavators, conveyors feeders, slurry pumps, cyclone-feed pumps, tailings pumps, mine dewatering pumps and fans are covered by the product portfolio.

Solutions for specialised application such as mine winding gear and slow speed ball mills and crusher mills can be engineered by OMEC using PM motor designs for demanding applications.



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Oil & Gas

Electric Motors are a key component in Upstream, Midstream and Downstream with a wide range of applications like Compressors, Fans, Pumps, Drilling and refrigeration. OMEC Electric Motors are designed to perform and be reliable in these applications. OMEC offers a variety of designs under IEC and NEMA Standards with a portfolio in low voltage and medium voltage and a wide range of power ratings.

OMEC understand the importance of quality and reliability in harsh ambient conditions like insome of the locations in the O&G industry. OMEC offers increased degree of protection (IP) and a paint system that withstand salinity and high humidity.

OMEC has a wide range of solutions for artificial lift applications including jack pump, beam pump, and progressing cavity pumps (PCP) in induction and PM designs.



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Petrochemical

The Petrochemical industry requires electric motors that performs with the highest quality, and reliability. This industry is specification driven and OMEC North America have a team of experts that understand the regulations and requirements for the different applications in Petrochemical Plants. Some of the applications are: Blowers, Compressors, Heat Exchangers, Fans and Pumps. OMEC offers a variety of designs under IEC and NEMA Standards that meets ATEX and UL requirements with a portfolio in low voltage and medium voltage and a wide range of power ratings.



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Power Generation

This industrial segment has been evolving in the last decade with a push for technologies that generate electric power with less carbon footprint. There are multiple types of plants like Coal Fired, Gas Combined Cycle, Geothermal; commonly grouped in the Thermal Power Plants category, there is also Waste to Energy Power Plants. Although, each power generation plant has their own set of specification and requirements, the common applications are: Compressors, Conveyors, Fans, Pumps and Auxiliary Equipment for turbines.

Pulp & Paper

Pulp and Paper requires Electric Motors that can withstand high humidity and provides high performance. OMECE offers a wide range of IP protection degrees and options to avoid condensation in the motor's windings. Applications like Chipper motors, Grinder motors, Conveyor motors, among others.





Renewable Energy

The renewable energy industry is divided in multiple segments like: Wind Energy, Solar Energy, Geothermal Energy and Hydrogen. OMEC North America offers a wide variety of electric motors in IEC and NEMA standards that meet the requirements of these segments. OMEC provides a wide range of options and customization that can help an OEM or EPC meet the specification and design requirements.

OMEC supplies a wide range of products to the wind power industry, onshore and offshore, including pitch and yaw drive motors (geared and PM direct drive) and motors for the hydraulic control systems in the turbine nacelles.



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Water & Wastewater

Water and Wastewater industry is divided in three sub-segments: industrial, municipal, and rural. OMEC Electric motors are designed to fulfill the requirement of this industry. It could be a new installation or a retrofit. OMEC motors provides high efficiency and high power density. The most common application are fans, pumps and compressors which can be found in desalination, irrigation, water and wastewater treatment equipment.



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Compressors



Pumps



Ventilation

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NEMA

Motor designed for everyday applications that can be used for such as centrifugal pumps, fans and conveyors, general Industries, water, HVAC-R, materials handling, marine.

- Motor Power 1-300HP
- Service Factor 1.15
- Dual Voltage 230V/460V Standard D/Y
- 2-6 Poles
- Nema B Torque Design
- Terminal Box able to rotate 4x90 degrees
- Bi-directional Rotation
- Motor UL Recognized, CSA, CA US, CE Labeled
- Class 1 Div 2 Grp B,C and D
- Paint System C2
- Suitable for Inverter Driven Operation
- Paint Color: Stone Grey RAL7030
- IP55

The word "NEMA" is written in large, white, bold, sans-serif capital letters, centered over a semi-transparent orange circular graphic that overlaps the motor images.

NEMA Frame Size	143 - 449
Poles	2,4 and 6
Output (Horsepower) Range	2- pole: 1 - 300 HP 4-pole - 1 - 300 HP 6-pole - 1 - 250 HP
Voltage	230/460
(Agency)Approvals	UL - Component and Insulation System Recognition DoE – Energy efficiency Directive Listed CSA - Certification and Efficiency Verification
Warranty (Months)	12 Months/ 18 Months After Shipment
Design ambient & altitude	40° C & 3300 feet / 1000 m
Insulation Class	F
Winding Temperature Rise	Class B 80°C @ 1.0 Sinusoidal supply
Service Factor	1.15
Nema Design	B
Inverter Capability	Suitable for Inverter operation
Frame Material	Cast Iron
End Shield Material	Cast Iron
Conduit Box Material	Steel Plate
Conduit Box Rotation	4 x 90 degrees increments
Fan Cover Material	Pressed Steel
Fan	Bidirectional, Non-sparking plastic.
Mounting	F1, F2
Nameplate	316 Stainless Steel
Paint System	C2 according to ISO 12944
Paint Color	RAL7030 Stone Grey
Degree of Protection	IP55

HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
1	1800	143T	230/460	143T-4-1HP	\$618.00	
1	1200	145T	230/460	145T-6-1HP	\$652.00	
1.5	3600	143T	230/460	143T-2-1.5HP	\$647.00	
1.5	1800	145T	230/460	145T-4-1.5HP	\$687.00	
1.5	1200	182T	230/460	182T-6-1.5HP	\$1,000.00	
2	3600	145T	230/460	145T-2-2HP	\$703.00	
2	1800	145T	230/460	145T-4-2HP	\$740.00	
2	1200	184T	230/460	184T-6-2HP	\$1,049.00	
3	3600	182T	230/460	182T-2-3HP	\$964.00	
3	1800	182T	230/460	182T-4-3HP	\$997.00	
3	1200	213T	230/460	213T-6-3HP	\$1,406.00	
5	3600	184T	230/460	184T-2-5HP	\$1,120.00	
5	1800	184T	230/460	184T-4-5HP	\$1,063.00	
5	1200	215T	230/460	215T-6-5HP	\$1,709.00	
7.5	3600	213T	230/460	213T-2-7.5HP	\$1,507.00	
7.5	1800	213T	230/460	213T-4-7.5HP	\$1,662.00	
7.5	1200	254T	230/460	254T-6-7.5HP	\$2,347.00	
10	3600	215T	230/460	215T-2-10HP	\$1,762.00	
10	1800	215T	230/460	215T-4-10HP	\$1,881.00	
10	1200	256T	230/460	256T-6-10HP	\$3,035.00	
15	3600	254T	230/460	254T-2-15HP	\$2,793.00	
15	1800	254T	230/460	254T-4-15HP	\$2,681.00	
15	1200	284T	230/460	284T-6-15HP	\$3,614.00	
20	3600	256T	230/460	256T-2-20HP	\$3,119.00	
20	1800	256T	230/460	256T-4-20HP	\$3,218.00	
20	1200	286T	230/460	286T-6-20HP	\$4,294.00	
25	3600	284TS	230/460	284TS-2-25HP	\$3,670.00	
25	1800	284T	230/460	284T-4-25HP	\$3,851.00	
25	1200	324T	230/460	324T-6-25HP	\$5,852.00	
30	3600	286TS	230/460	286TS-2-30HP	\$4,195.00	
30	1800	286T	230/460	286T-4-30HP	\$4,295.00	
30	1200	326T	230/460	326T-6-30HP	\$6,535.00	

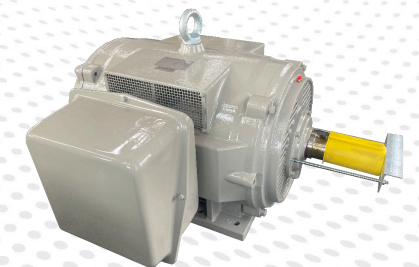
HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
40	3600	324TS	230/460	324TS-2-40HP	\$5,693.00	
40	1800	324T	230/460	324T-4-40HP	\$5,949.00	
40	1200	364T	230/460	364T-6-40HP	\$8,788.00	
50	3600	326TS	230/460	326TS-2-50HP	\$6,195.00	
50	1800	326T	230/460	326T-4-50HP	\$6,713.00	
50	1200	365T	230/460	365T-6-50HP	\$9,601.00	
60	3600	364T	230/460	364TS-2-60HP	\$8,796.00	
60	1800	364TS	230/460	364T-4-60HP	\$8,644.00	
60	1200	404T	230/460	404T-6-60HP	\$11,805.00	
75	3600	365TS	230/460	365TS-2-75HP	\$10,011.00	
75	1800	365T	230/460	365T-4-75HP	\$11,040.00	
75	1200	405T	230/460	405T-6-75HP	\$13,366.00	
100	3600	405TS	230/460	405TS-2-100HP	\$13,381.00	
100	1800	405T	230/460	405T-4-100HP	\$13,396.00	
100	1200	444T	460	444T-6-100HP	\$18,297.00	
125	3600	444TS	460	444TS-2-125HP	\$17,999.00	
125	1800	444T	460	444T-4-125HP	\$19,027.00	
125	1200	445T	460	445T-6-125HP	\$20,725.00	
150	3600	445TS	460	445TS-2-150HP	\$18,960.00	
150	1800	445T	460	445T-4-150HP	\$20,473.00	
150	1200	447T	460	447T-6-150HP	\$27,185.00	
200	3600	447TS	460	447TS-2-200HP	\$25,573.00	
200	1800	447T	460	447T-4-200HP	\$29,049.00	
200	1200	449T	460	449T-6-200HP	\$34,832.00	
250	3600	449TS	460	449TS-2-250HP	\$30,641.00	
250	1800	449T	460	449T-4-250HP	\$33,487.00	
250	1200	449T	460	449T-6-250HP	\$38,151.00	
250	3600	449T	460	449T-2-300HP	\$32,173.05	

NEMA

NEMA Open Drip Proof

Motor designed for industrial applications that requires a compact and light design. Open Drip Proof motors provide an advantage in locations where dust and liquid are not present.

- Motor Power 1-350HP
- Service Factor 1.15
- Dual Voltage 230V/460V*
- 2-6 Poles
- Nema B Torque Design.
- Terminal Box able to rotate 4x90 degrees
- Bidirectional Rotation
- Motor UL Recognized, CSA, CA US Labeled
- Paint System C2
- Suitable for Inverter Use
- Paint Color: Stone Grey RAL7030
- IP21



For power outputs & greater than symbol; 350HP, pole numbers & greater than symbol; 8, and supply voltages other than 460 V (example 400 V, 575 V, 1000 V, 1100 V, 3000 V, 4160 V) please contact OMEC sales team.

NEMA Frame Size	143 - 449
Poles	2, 4 and 6
Horsepower Range	2 pole up to 350HP 4 pole up to 350HP 6 pole up to 300HP
Voltage	208-230/460V
Agency Approvals	UL - Component and Insulation System Recognition DoE – Energy Efficiency Directive Listed CSA - Certification and Efficiency Verification CE - Marking
Warranty (Months)	12 Months
Max Ambient & Altitude	40°C & 3300 feet / 1000 m
Insulation Class	F
Winding Temperature Rise	80°C @ 1.0 Sinusoidal supply
Service Factor	1.15
Nema Design	B
Inverter Capability	Suitable for Inverter operation
Frame Material	Cast Iron
End Shield Material	Cast Iron or Fabricated Steel
Conduit Box Material	Steel
Conduit Box Rotation	4 x 90 degrees increments
Fan Cover Material	Steel or Cast Iron
Mounting	F1 and F2
Nameplate	316 Stainless Steel
Paint System	C2 according to ISO 12944
Paint Color	RAL7030 Stone Grey
Degree of Protection	IP21

HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
1	1800	143T	230/460		O.R	
1	1200	145T	230/460		O.R	
1.5	3600	143T	230/460		O.R	
1.5	1800	145T	230/460		O.R	
1.5	1200	182T	230/460	ODP182T-1200RPM-1.5HP	\$835.00	
2	1200	184T	230/460	ODP184T-1200RPM-2HP	\$932.00	
3	1800	182T	230/460	ODP182T-1800RPM-3HP	\$873.00	
3	1200	213T	230/460	ODP213T-1200RPM-3HP	\$1,341.00	
5	3600	182T	230/460	ODP182T-3600RPM-5HP	\$974.00	
5	1800	184T	230/460	ODP184T-1800RPM-5HP	\$930.00	
5	1200	215T	230/460	ODP215T-1200RPM-5HP	\$1,585.00	
7.5	3600	184T	230/460	ODP184T-3600RPM-7.5HP	\$998.00	
7.5	1800	213T	230/460	ODP213T-1800RPM-7.5HP	\$1,438.00	
7.5	1200	254T	230/460	ODP254T-1200RPM-7.5HP	\$2,143.00	
10	3600	213T	230/460	ODP213T-3600RPM-10HP	\$1,439.00	
10	1800	215T	230/460	ODP215T-1800RPM-10HP	\$1,686.00	
10	1200	256T	230/460	ODP256T-1200RPM-10HP	\$2,790.00	
15	3600	215T	230/460	ODP215T-3600RPM-15HP	\$1,622.00	
15	1800	254T	230/460	ODP254T-1800RPM-15HP	\$2,506.00	
15	1200	284T	230/460	ODP284T-1200RPM-15HP	\$3,504.00	
20	3600	254T	230/460	ODP254T-3600RPM-20HP	\$2,763.00	
20	1800	256T	230/460	ODP256T-1800RPM-20HP	\$2,948.00	
20	1200	286T	230/460	ODP286T-1200RPM-20HP	\$3,994.00	
25	3600	256T	230/460	ODP256T-3600RPM-25HP	\$3,053.00	
25	1800	284T	230/460	ODP284T-1800RPM-25HP	\$3,516.00	
25	1200	324T	230/460	ODP324T-1200RPM-25HP	\$4,992.00	
30	3600	284TS	230/460	ODP284TS-3600RPM-30HP	\$3,944.00	
30	1800	286T	230/460	ODP286T-1800RPM-30HP	\$4,022.00	
30	1200	326T	230/460	ODP326T-1200RPM-30HP	\$5,680.00	

NEMA

NEMA D General Purpose – Main Features

HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
40	3600	286TS	230/460	ODP286TS-3600RPM-40HP	\$4,312.00	
40	1800	324T	230/460	ODP324T-1800RPM-40HP	\$5,253.00	
40	1200	364T	230/460	ODP364T-1200RPM-40HP	\$7,650.00	
50	3600	324TS	258 / 460	ODP324TS-3600RPM-50HP	\$5,336.00	
50	1800	326T	259 / 460	ODP326T-1800RPM-50HP	\$5,870.00	
50	1200	365T	260 / 460	ODP365T-1200RPM-50HP	\$8,422.00	
60	3600	326TS	261 / 460	ODP326TS-3600RPM-60HP	\$6,538.00	
60	1800	364T	262 / 460	ODP364T-1800RPM-60HP	\$7,457.00	
60	1200	404T	263 / 460	ODP404T-1200RPM-60HP	\$10,788.00	
75	3600	364TS	264 / 460	ODP364TS-3600RPM-75HP	\$8,694.00	
75	1800	365T	265 / 460	ODP365T-1800RPM-75HP	\$9,888.00	
75	1200	405T	266 / 460	ODP405T-1200RPM-75HP	\$11,775.00	
100	3600	365TS	267 / 460	ODP365TS-3600RPM-100HP	\$10,603.00	
100	1800	404T	268 / 460	ODP404T-1800RPM-100HP	\$11,853.00	
100	1200	444T	269 / 460	ODP444T-1200RPM-100HP	\$16,509.00	
125	3600	404TS	270 / 460	ODP404TS-3600RPM-125HP	\$12,681.00	
125	1800	405T	271 / 460	ODP405T-1800RPM-125HP	\$15,145.00	
125	1200	445T	272 / 460	ODP445T-1200RPM-125HP	\$18,188.00	
150	3600	405TS	273 / 460	ODP405TS-3600RPM-150HP	\$13,437.00	
150	1800	444T	274 / 460	ODP444T-1800RPM-150HP	\$20,089.00	
150	1200	447T	275 / 460	ODP447T-1200RPM-150HP	\$35,473.00	
200	3600	444TS	276 / 460	ODP444TS-3600RPM-200HP	\$23,010.00	
200	1800	445T	277 / 460	ODP445T-1800RPM-200HP	\$25,812.00	
200	1200	449T	278 / 460	ODP449T-1200RPM-200HP	\$27,976.00	

Motor designed for high starting torque applications like Oil Well Pumps. This high slip motor is adapted for use in harsh conditions in the O&G industry.

- Motor Power 3 – 150HP
- 6 Poles
- Single Voltage 460V in Y configuration
- Service Factor 1.15
- Nema D Torque Design
- Oversized Terminal Box
- Bidirectional Rotation
- Regreaseable bearing for FS 280 and larger
- Stainless Steel Hardware
- Paint System C3
- Paint Color: Stone Grey RAL7030
- IP55 Standard
- Cast Iron Frame
- Anti Condensation Drains SS

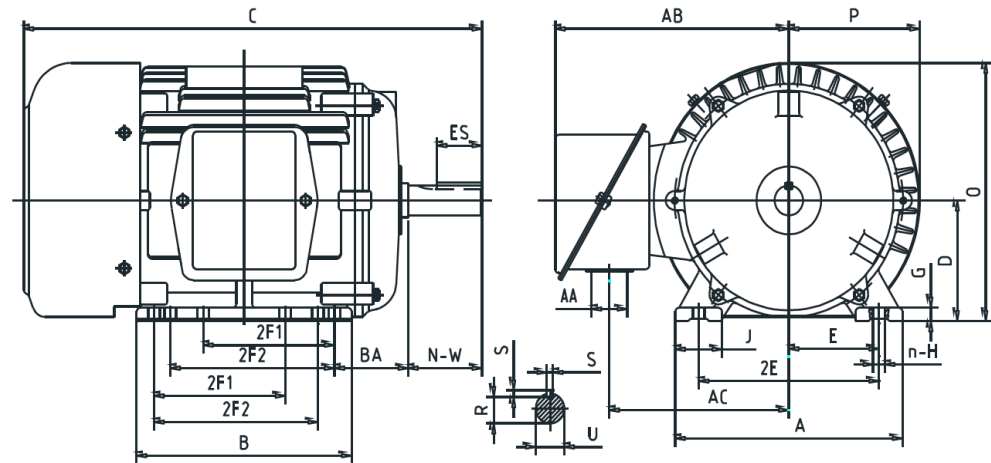
NEMA Frame Size	213 -447
Poles	6
Horsepower Range	3 - 150 HP
Voltage	460 Y
Agency Approvals	UL - Component and Insulation System Recognition DoE - Energy Efficiency Directive Listed CSA - Certification and Efficiency Verification CE - Marking
Warranty (Months)	12 Months/ 18 Months After Shipment
Max Ambient & Altitude	40°C & 3300 feet
Bearing Type	Roller on 400 – 444 , Ball 210-360
Nema Design	D Class 1 div 2
Insulation Class	F
Winding Temperature Rise	80°C @ 1.0 Sine Wave
Service Factor	1.15
Slip	5 - 8 %
Inverter Capability	Suitable for Inverter operation
End Shield Material	Cast Iron
Frame Material	Cast Iron
Conduit Box Material	Cast Iron
Conduit Box Rotation	4 x 90 degrees increments
Fan Cover Material	Pressed Steel
Paint System	C3 according to ISO 12944
Mounting	F2
Balance and Vibration	Grade A
Nameplate	316 Stainless Steel
Degree of Protection	IP55
Paint Color	Stone Grey RAL7030

HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
3	1200	213T	460		O.R	
5	1200	215T	460		O.R	
7.5	1200	254T	460		O.R	
10	1200	256T	460		O.R	
15	1200	284T	460		O.R	
20	1200	286T	460		O.R	
25	1200	324T	460		O.R	
30	1200	326T	460		O.R	
40	1200	364T	460		O.R	
50	1200	404T	460		O.R	
60	1200	404T	460		O.R	
75	1200	444T	460		O.R	
100	1200	444T	460		O.R	
125	1200	444T	460		O.R	
150	1200	444T	460		O.R	

General Dimensions



NEMA Plus, NEMA D, NEMA ODP, foot mount, F1
Frame 143T 145T



Size	Dimensions (Inches)																				
	A	B	C	D	E	n-H	2F1	2F2	G	I	N-W	BA	P	R	S	U	ES	AA	AB	AC	O
143T	6.93	6.55	14	3.5	2.75	8-0.34	4	5	0.4	1.42	2.25	2.25	8	0.77	0.188	0.875	1.41	1	7.2	5.55	7.5
145T	6.93	6.55	14	3.5	2.75	8-0.34	4	5	0.4	1.42	2.25	2.25	8	0.77	0.188	0.875	1.41	1	7.2	5.55	7.5

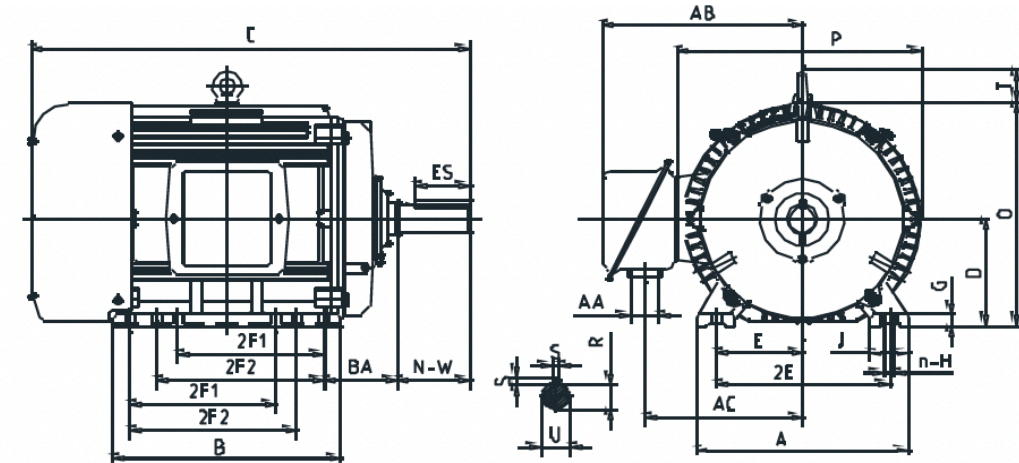
Size	Dimensions (Inches)																					
	A	B	C	D	E	n-H	2F1	2F2	G	J	N-W	BA	P	R	S	U	ES	AA	AB	AC	O	T
IB2T	9	6.6	16	4.3	3.75	4-0.41	4.5	5.5	0.43	1.6	2.73	2.75	9.87	0.986	0.23	1.125	1.78	1	8.2	5.3	9.27	1.73
IB4T	9	6.6	16	4.5	3.75	8-0.41	4.5	5.5	0.45	1.6	2.75	2.75	9.87	0.986	0.25	1.125	1.78	1	8.2	6.5	9.27	1.73
213T	1.4	8.5	19.5	5.25	4.25	4-0.41	5.5	7	0.6	1.8	3.38	3.5	11.9	1.201	0.312	1.375	2.41	1	9.6	7.9	10.9	1.73
215T	1.4	8.5	19.5	5.25	4.25	4-0.41	5.5	7	0.6	1.8	3.38	3.5	11.9	1.201	0.312	0.375	2.41	1	9.6	7.9	10.9	1.73

Note:
Dimensions subject to change, please ask for dimensional drawing when ordering.



General Dimensions

NEMA Plus, NEMA D, NEMA ODP, foot mount, F1

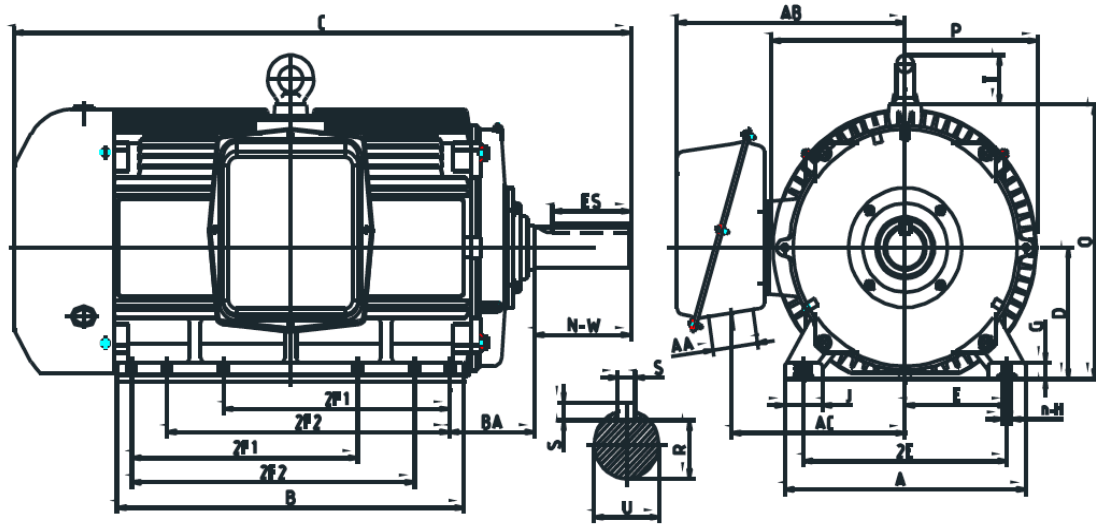


Size	Dimensions (Inches)																					
	A	B	C	D	E	n-H	2F1	2F2	G	I	N-W	BA	P	R	S	U	ES	AA	AB	AC	O	T
254T	12.2	12.8	25.7	6.25	5	8-0.53	8.25	10	0.53	2.56	4.25	4.25	14.2	1.416	0.375	1.625	2.91	1.25	12.7	9.5	13.35	2.05
256T	12.2	12.8	25.7	6.25	5	8-0.53	8.25	10	0.53	2.56	4.25	4.25	14.2	1.416	0.375	1.625	2.91	1.25	12.7	9.5	13.35	2.05
284TS	13.8	14.6	27.4	7	5.5	8-0.53	9.5	11	0.55	2.76	4.75	4.75	15.4	1.416	0.375	1.625	1.91	1.5	13.5	10.2	14.85	2.05
284T	13.8	14.6	28.8	7	5.5	8-0.53	9.5	11	0.55	2.76	4.75	4.75	15.4	1.591	0.5	1.875	3.28	1.5	13.5	10.2	14.85	2.05
286TS	13.8	14.6	27.4	7	5.5	8-0.53	9.5	11	0.55	2.76	4.75	4.75	15.4	1.416	0.375	1.625	1.91	1.5	13.5	10.2	14.85	2.05
286T	13.8	14.6	28.8	7	5.5	8-0.53	9.5	11	0.55	2.76	4.75	4.75	15.4	1.591	0.5	1.875	3.28	1.5	13.5	10.2	14.85	2.05
324TS	14.2	16.4	30.1	8	6.25	8-0.66	10.5	12	0.86	2.85	5.25	5.25	17.2	1.591	0.5	1.875	2.03	2	14.2	11.34	16.66	2.44
324T	14.2	16.4	31.6	8	6.25	8-0.66	10.5	12	0.86	2.85	5.25	5.25	17.2	1.845	0.5	2.125	3.91	2	14.2	11.34	16.66	2.44
326T	14.2	16.4	30.1	8	6.25	8-0.66	10.5	12	0.86	2.85	5.25	5.25	17.2	1.845	0.5	1.875	2.03	2	14.2	11.34	16.66	2.44
326TS	14.2	16.4	31.6	8	6.25	8-0.66	10.5	12	0.86	2.85	5.25	5.25	17.2	1.591	0.5	2.125	3.91	2	14.2	11.34	16.66	2.44
364TS	17	16.5	32.5	9	7	8-0.66	11.25	12.25	1.17	3	5.88	5.88	19.4	1.591	0.5	1.875	2.03	3	16.3	12.3	18.77	2.83
364T	17	16.5	34.6	9	7	8-0.66	11.25	12.25	1.17	3	5.88	5.88	19.4	2.021	0.625	2.375	4.28	3	16.3	12.3	18.77	2.83
365TS	17	16.5	32.5	9	7	8-0.66	11.25	12.25	1.17	3	5.88	5.88	19.4	1.591	0.5	1.875	2.03	3	16.3	12.3	18.77	2.83
365T	17	16.5	34.6	9	7	8-0.66	11.25	12.25	1.17	3	5.88	5.88	19.4	2.021	0.625	2.375	4.28	3	16.3	12.3	18.77	2.83
404T	19.13	18.1	38.7	10	8	4-0.81	12.25	13.75	1.18	3.15	6.62	6.62	21.5	2.45	0.75	2.875	6.1	3	18.11	15.68	21.02	2.83
405TS	19.13	18.1	35.7	10	8	4-0.81	12.25	13.75	1.18	3.15	6.62	6.62	21.5	1.845	0.5	2.125	2.78	3	18.11	15.68	21.02	2.83
405T	19.13	18.1	35.7	10	8	4-0.81	12.25	13.75	1.18	3.15	6.62	6.62	21.5	2.45	0.75	2.875	6.1	3	18.11	15.68	21.02	2.83



General Dimensions

OMEC NEMA TEFC Design B an D, foot mount, F1



Size	Dimensions (Inches)																					
	A	B	C	D	E	n-H	2F1	2F2	G	J	N-W	BA	P	R	S	U	ES	AA	AB	AC	O	T
444TS	22	20.9	41	11	9	4-0.81	14.5	16.5	1.38	3.35	4.75	7.5	23.1	2.021	0.625	2.375	3.03	2X3	19.5	16.3	23	3.5
444T	22	20.9	44.7	11	9	4-0.81	14.5	16.5	1.38	3.35	8.5	7.5	23.1	2.88	0.875	3.375	6.91	1X3	19.5	16.3	23	3.5
445TS	22	20.9	41	11	9	6-0.81	14.5	16.5	1.38	3.35	4.75	7.5	23.1	2.021	0.625	2.375	3.03	2X3	19.5	16.3	23	3.5
445T	22	20.9	44.7	11	9	6-0.81	14.5	16.5	1.38	3.35	8.5	7.5	23.1	2.88	0.875	3.375	6.91	2X3	19.5	16.3	23	3.5
447TS	22	30.7	50.8	11	9	6-0.81	20	25	1.38	3.35	4.75	7.5	23.1	2.021	0.625	2.375	3.03	2X3	19.5	16.3	23	3.5
447T	22	30.7	54.5	11	9	6-0.81	20	25	1.38	3.35	8.5	7.5	23.1	2.88	0.875	3.375	6.91	2X3	19.5	16.3	23	3.5
449TS	22	30.7	50.8/52	11	9	6-0.81	20	25	1.38	3.35	1.75	7.5	23.1	2.021	0.625	2.375	3.03	2X3	19.5	16.3	23	3.5
449T	22	30.7	54.5/55.7	11	9	6-0.81	20	25	1.38	3.35	8.5	7.5	23.1	2.88	0.875	3.375	6.91	2X3	19.5	16.3	23	3.5

Note:
Dimensions subject to change, please ask for dimensional drawing when ordering.

NEMA

NEMA MV



Motor designed for compressors and pumps applications. This high slip motor is adapted for use in harsh conditions in the O&G industry.

- Motor Power 200 – 2500 HP
- 2,4,6 & 8 Poles
- 4,160 Volts
- Service Factor 1.15
- Stainless Steel Hardware
- Paint System C3
- Paint Color: Stone Grey RAL7030
- IP55 Standard
- Steel Frame
- Anti Condensation Drains SS

NEMA Frame Size	5009 - 8810
Poles	2, 4, 6 & 8
Horsepower Range	200 -2500 HP
Voltage	2300V / 4160V / 6600V
Agency Approvals	UL - Component and Insulation System Recognition DoE - Energy Efficiency Directive Listed CSA - Certification and Efficiency Verification CE - Marking
Warranty (Months)	12 Months/18 Months After Shipment
Max Ambient & Altitude	40°C & 3300 feet / 1000 m
Bearing Type	Ball, ball and roller or thrust bearing depending upon application
Cooling Type	TEFC IC411
Insulation Class	F
Winding Temperature Rise	80°C @ 1.0 Sine Wave
Service Factor	1.15 @ F Rise
Insulation Process	VPI
Inverter Capability	Suitable for Inverter operation
Frame Material	Cast Iron Or Fabricated Steel
Paint System	C3 according to ISO 12944
Nameplate	316 Stainless Steel
Paint Color	RAL 7030

For Larger HP outputs or higher voltages, different cooling systems (WP I, WP II, CACA, CACW, water cooler, forced ventilated) please contact OMEC sales team.

HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
175	900	5009/10	4160	OHN5-5009(10)-08P	O.R	
200	3600	5009/10	4160	OHN5-5009(10)-02P	O.R	
200	1800	5009/10	4160	OHN5-5009(10)-04P	O.R	
200	900	5009/10	4160	OHN5-5009(10)-08P	O.R	
250	3600	5009/10	4160	OHN5-5009(10)-02P	O.R	
250	1800	5009/10	4160	OHN5-5009(10)-04P	O.R	
250	1200	5009/10	4160	OHN5-5009(10)-06P	O.R	
250	900	5009/10	4160	OHN5-5009(10)-08P	O.R	
300	3600	5009/10	4160	OHN5-5009(10)-02P	O.R	
300	1800	5009/10	4160	OHN5-5009(10)-04P	O.R	
300	1200	5009/10	4160	OHN5-5009(10)-06P	O.R	
300	900	5809/10	4160	OHN5-5809(10)-08P	O.R	
350	3600	5009/10	4160	OHN5-5009(10)-02P	O.R	
350	1800	5009/10	4160	OHN5-5009(10)-04P	O.R	
350	1200	5809/10	4160	OHN5-5809(10)-06P	O.R	
350	900	5809/10	4160	OHN5-5809(10)-08P	O.R	
400	3600	5009/10	4160	OHN5-5009(10)-02P	O.R	
400	1800	5009/10	4160	OHN5-5009(10)-04P	O.R	
400	1200	5809/10	4160	OHN5-5809(10)-06P	O.R	
400	900	5809/10	4160	OHN5-5809(10)-08P	O.R	
400	900	6309/10	4160	OHN5-6309(10)-08P	O.R	
450	3600	5809/10	4160	OHN5-5809(10)-02P	O.R	
450	1800	5809/10	4160	OHN5-5809(10)-04P	O.R	
450	1200	5809/10	4160	OHN5-5809(10)-06P	O.R	
450	900	6309/10	4160	OHN5-6309(10)-08P	O.R	
450	900	6808/09	4160	OHN5-6809(10)-08P	O.R	
500	3600	5809/10	4160	OHN5-5809(10)-02P	O.R	
500	1800	5809/10	4160	OHN5-5809(10)-04P	O.R	
500	1200	5809/10	4160	OHN5-5809(10)-06P	O.R	
500	900	6309/10	4160	OHN5-6309(10)-08P	O.R	
500	900	6808/09	4160	OHN5-6809(10)-08P	O.R	

HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
550	3600	5809/10	4160	OHN5-5809(10)-02P	O.R	
550	1800	5809/10	4160	OHN5-5809(10)-04P	O.R	
550	1200	6309/10	4160	OHN5-6309(10)-06P	O.R	
550	1200	6808/09	4160	OHN5-6809(10)-06P	O.R	
550	900	6309/10	4160	OHN5-6309(10)-08P	O.R	
550	900	6808/09	4160	OHN5-6809(10)-08P	O.R	
600	3600	6808/09	4160	OHN5-6809(10)-02P	O.R	
600	1800	6808/09	4160	OHN5-6809(10)-04P	O.R	
600	1200	6309/10	4160	OHN5-6309(10)-06P	O.R	
600	1200	6808/09	4160	OHN5-6809(10)-06P	O.R	
600	900	6309/10	4160	OHN5-6309(10)-08P	O.R	
600	900	6808/09	4160	OHN5-6809(10)-08P	O.R	
650	3600	6309/10	4160	OHN5-6309(10)-02P	O.R	
650	3600	6808/09	4160	OHN5-6809(10)-02P	O.R	
650	1800	6309/10	4160	OHN5-6309(10)-04P	O.R	
650	1800	6808/09	4160	OHN5-6809(10)-04P	O.R	
650	1200	6309/10	4160	OHN5-6309(10)-06P	O.R	
650	1200	6808/09	4160	OHN5-6809(10)-06P	O.R	
650	900	6808/09	4160	OHN5-6809(10)-08P	O.R	
700	3600	6309/10	4160	OHN5-6309(10)-02P	O.R	
700	3600	6808/09	4160	OHN5-6809(10)-02P	O.R	
700	1800	6309/10	4160	OHN5-6309(10)-04P	O.R	
700	1800	6808/09	4160	OHN5-6809(10)-04P	O.R	
700	1200	6309/10	4160	OHN5-6309(10)-06P	O.R	
700	1200	6808/09	4160	OHN5-6809(10)-06P	O.R	
700	900	7207/08/09	4160	OHN5-7207(08/09)-08P	O.R	
750	3600	6309/10	4160	OHN5-6309(10)-02P	O.R	
750	3600	6808/09	4160	OHN5-6809(10)-02P	O.R	
750	1800	6309/10	4160	OHN5-6309(10)-04P	O.R	
750	1800	6808/09	4160	OHN5-6809(10)-04P	O.R	
750	1200	6309/10	4160	OHN5-6309(10)-06P	O.R	

HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
750	1200	6808/09	4160	OHN5-6809(10)-06P	O.R	
750	900	7207/08/09	4160	OHN5-7207(08/09)-08P	O.R	
800	3600	6309/10	4160	OHN5-6309(10)-02P	O.R	
800	3600	6808/09	4160	OHN5-6809(10)-02P	O.R	
800	1800	6309/10	4160	OHN5-6309(10)-04P	O.R	
800	1800	6808/09	4160	OHN5-6809(10)-04P	O.R	
800	1200	6808/09	4160	OHN5-6809(10)-06P	O.R	
800	900	7207/08/09	4160	OHN5-7207(08/09)-08P	O.R	
850	3600	6309/10	4160	OHN5-6309(10)-02P	O.R	
850	3600	7207/08/09	4160	OHN5-7207(08/09)-02P	O.R	
850	1800	6309/10	4160	OHN5-6309(10)-04P	O.R	
850	1800	6808/09	4160	OHN5-6809(10)-04P	O.R	
850	1200	7207/08/09	4160	OHN5-7207(08/09)-06P	O.R	
850	900	7207/08/09	4160	OHN5-7207(08/09)-08P	O.R	
900	3600	6309/10	4160	OHN5-6309(10)-02P	O.R	
900	3600	7207/08/09	4160	OHN5-7207(08/09)-02P	O.R	
900	1800	6309/10	4160	OHN5-6309(10)-04P	O.R	
900	1800	6808/09	4160	OHN5-6809(10)-04P	O.R	
900	1200	7207/08/09	4160	OHN5-7207(08/09)-06P	O.R	
900	900	7207/08/09	4160	OHN5-7207(08/09)-08P	O.R	
900	900	8810	4160	OHN5-8810-08P	O.R	
950	3600	6309/10	4160	OHN5-6309(10)-02P	O.R	
950	3600	7207/08/09	4160	OHN5-7207(08/09)-02P	O.R	
950	1800	6309/10	4160	OHN5-6309(10)-04P	O.R	
950	1800	7207/08/09	4160	OHN5-7207(08/09)-04P	O.R	
950	1200	7207/08/09	4160	OHN5-7207(08/09)-06P	O.R	
1000	3600	7207/08/09	4160	OHN5-7207(08/09)-02P	O.R	
1000	1800	7207/08/09	4160	OHN5-7207(08/09)-04P	O.R	
1000	1200	7207/08/09	4160	OHN5-7207(08/09)-06P	O.R	
1000	900	7207/08/09	4160	OHN5-7207(08/09)-08P	O.R	
1000	900	7808	4160	OHN5-7808-08P	O.R	

HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
1000	900	8810	4160	OHN5-8810-08P	O.R	
1100	3600	7207/08/09	4160	OHN5-7207(08/09)-02P	O.R	
1100	1800	7207/08/09	4160	OHN5-7207(08/09)-04P	O.R	
1100	1200	7207/08/09	4160	OHN5-7207(08/09)-06P	O.R	
1100	900	7808	4160	OHN5-7808-08P	O.R	
1100	900	8810	4160	OHN5-8810-08P	O.R	
1250	3600	7207/08/09	4160	OHN5-7207(08/09)-02P	O.R	
1250	1800	7207/08/09	4160	OHN5-7207(08/09)-04P	O.R	
1250	1200	7207/08/09	4160	OHN5-7207(08/09)-06P	O.R	
1250	900	7808	4160	OHN5-7808-08P	O.R	
1250	900	8810	4160	OHN5-8810-08P	O.R	
1350	3600	7207/08/09	4160	OHN5-7207(08/09)-02P	O.R	
1350	1800	7207/08/09	4160	OHN5-7207(08/09)-04P	O.R	
1350	1200	7808	4160	OHN5-7808-06P	O.R	
1350	1200	8810	4160	OHN5-8810-06P	O.R	
1350	900	8810	4160	OHN5-8810-08P	O.R	
1500	1800	7207/08/09	4160	OHN5-7207(08/09)-04P	O.R	
1500	1200	7808	4160	OHN5-7808-06P	O.R	
1500	1200	8810	4160	OHN5-8810-06P	O.R	
1680	1800	7808	4160	OHN5-7808-04P	O.R	
1680	1800	8810	4160	OHN5-8810-04P	O.R	
1680	1200	7808	4160	OHN5-7808-06P	O.R	
1680	1200	8810	4160	OHN5-8810-06P	O.R	
1750	1800	7808	4160	OHN5-7808-04P	O.R	
1750	1800	8810	4160	OHN5-8810-04P	O.R	
1750	1200	7808	4160	OHN5-7808-06P	O.R	
1750	1200	8810	4160	OHN5-8810-06P	O.R	
1880	1800	7808	4160	OHN5-7808-04P	O.R	
1880	1800	8810	4160	OHN5-8810-04P	O.R	
1880	1200	7808	4160	OHN5-7808-06P	O.R	
1880	1200	8810	4160	OHN5-8810-06P	O.R	

HP	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
2000	1800	7808	4160	OHN5-7808-04P	O.R	
2000	1800	8810	4160	OHN5-8810-04P	O.R	
2410	1800	7808	4160	OHN5-7808-04P	O.R	
2410	1800	8810	4160	OHN5-8810-04P	O.R	
2500	1800	8810	4160	OHN5-8810-04P	O.R	

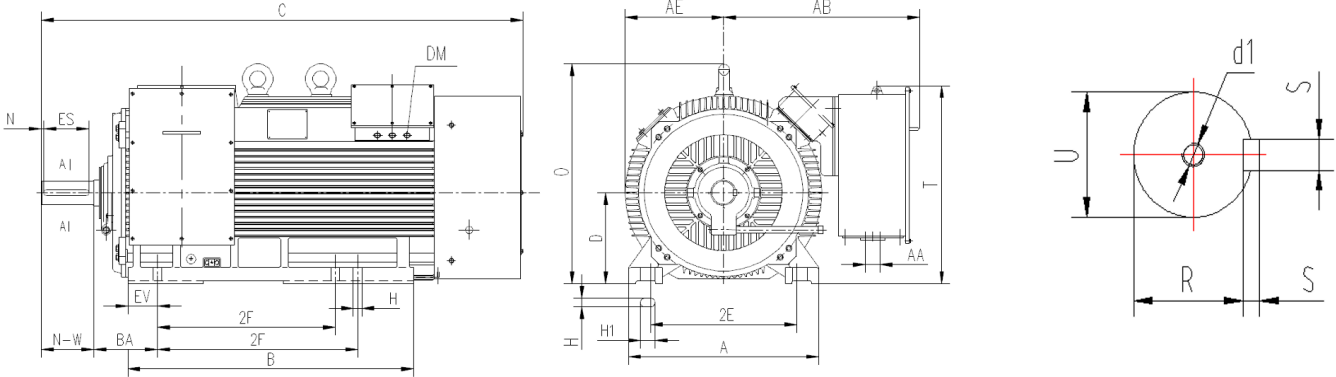
Bearing Data

Frame + Pole	DE-designation	NDE-designation
50—2	6218C3	6218C3
50—4~8	6219C3	6219C3
58—2	6220C3	6220C3
58—4~8	6322C3	6322C3
63—2	6220C3	6220C3
63—4~8	6326C3	6326C3
68—2	6220C3	6220C3
68—4~8	6326C3	6326C3
72—2	6221C3	6221C3
72—4~8	6328C3	6328C3
78—4~8	6330C3	6330C3
88—4~8	6334C3	6330C3

General Dimensions



Frame	Poles	2E	A	AB	AE	2F	B	BA	EV	C	Shaft End						D	O	T	H	H1	d1	AA	DM
											U	N-W	ES	N	S	R								
009/10	2	20	26.77	30.7	13.8	28	42.5	8.5	3.98	71.0	2.625	5.5	4.725	0.625	2.275	125	31.5	31.4	1.10	1.10	UNC3/4"-10	NPT3"	3XNPT3/4"	
	4/6/8					32				72.0	3.625	6.7	5.512	0.875	3.134						UNC7/8"-9			
809/10	2	23	29.92	30.8	15.6	35	44.9	10	4.54	72.0	2.65	5.5	4.725	0.625	2.275	145	35.1	31.3	1.38	1.38	UNC3/4"-10			
	4/6/8					36				75.0	3.750	6.7	5.512	0.875	3.261						UNC7/8"-9			
309/10	2	27	34.25	36.3	17.2	36	55.1	11	3.46	80.0	3.375	6.7	5.512	0.875	2.880	15.75	38.4	38.8	1.38	1.38	UNC3/4"-10			
	4/6/8					40				84.0	4.375	8.3	6.7	1	3.817						UNC1"-8	NPT4"		
5808/9	2	27	34.25	36.3	17.2	36	55.1	11.5	3.46	80.0	3.375	6.7	5.512	0.875	2.88	17	39.7	40.0	1.38	1.38	UNC3/4"-10			
	4/6/8					40				84.0	4.375	8.3	6.7	1	3.817						UNC1"-8			
207/8/9	2	30	38.58	37.5	20.5	36	58.9	11.5	2.96	95.0	3.75	6.7	5.512	0.875	3.261	18	45.0	41.6	1.38	1.38	UNC7/8"-9			
	4/6/8					40				99.0	5	9.85	8.670	1.25	4.296						UNC1"-8			
						45																		
7808	4/6/8	35.4	42.52	40.2	22.0	192	63.0	12.4	4.48	101.0	5.500	9.85	8.670	1.250	4.796	19.5	48.1	45.5	1.65	1.65	UNC1-3/8"-7			
8810	4	39.4	46.10	41.4	23.7	55.13	66.2	13.98	6.22	105.0	5.750	9.85	8.670	1.250	5.046	22	54.8	49.5	1.65	1.65	UNC1-3/8"-7			
	6/8	39.4	46.10	41.4	23.7	55.13	66.2	13.98	6.22	107.0	6.300	11.81	9.843	1.500	5.459	22	54.8	49.5	1.65	1.65				



For different cooling method dimensions please contact your sales representative.

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NEMA Standards

NEMA Standards

DESCRIPTION	NORM
Electrical and mechanical design including testing of AC & DC, single & poly phase, induction & permanent magnet, asynchronous and synchronous, electric motors and generators, including all referenced standards within.	ANSI / NEMA MG1-2021.
IEEE standard for petroleum and chemical industry - Premium-efficiency, severe-duty, total enclosed squirrel cage induction motors from 0.75 kW to 370 kW (1 hp to 500 hp).	IEEE Std 841-2021.
Motors and generators for use as drivers aboard Ships.	"Various marine classifications societies as required including ABS, BV, CCSC, DNV-GL, LR, RINA. IEEE Std 45-2019".
Energy efficiency for the USA market.	USA Code of Federal Regulations 10 CFR 431.25 through 431.26, 10 CFR 431.31 through 431.32, 10 CFR 431.403, 10 CFR Part 431.35 through 431.36
Energy efficiency for the Candian market.	Canada Energy Efficiency Regulations incorporating references to CSA C390-10, IEEE Std 112, IEC 60034-2-1, and NEMA MG-1, Table 12-12.
UL and CSA marking for Electric motor safety certification for the USA and Canadian markets.	Underwriters Laboratories.
CE Marking for the EU and UK markets.	Low Voltage Directive 2014/35/EU.

General Data

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NEMA to IEC

NEMA Enclosure Types		IEC Enclosure Classification Destination	
1	General Purpose - Indoor	IP10	Protected against solid objects up to 50mm, e.g. accidental touch by hands.
2	Drip-Proof - Indoor	IP11	Protected against solid objects up to 50mm, e.g. accidental touch by hands. Protection against vertically falling drops of water e.g. condensation .
3	Dust-tight, Rain-tight, Sleet-tight - Outdoor	IP54	Protected against dust limited ingress (no harmful deposit). Protection against water sprayed from all directions, limited ingress permitted.
3R	Rain-tight, Sleet Resistant - Outdoor	IP14	Protected against solid objects up to 50mm, e.g. accidental touch by hands. Protection against water sprayed from all directions, limited ingress permitted.
3S	Dust-tight, Rain-tight, Sleet-tight - Outdoor	IP54	Protected against dust limited ingress (no harmful deposit). Protection against water sprayed from all directions, limited ingress permitted.
4	Water-tight, Dust-tight, Sleet Resistant - Indoor & Outdoor	IP56	Protection against dust limited ingress (no harmful deposit).
4X	Water-tight, Dust-tight, Sleet Resistant - Indoor & Outdoor	IP56	Protection against dust limited ingress (no harmful deposit).
5	Dust-tight, Drip-Proof - Indoor	IP52	Protection against dust limited ingress (no harmful deposit) Protection against direct sprays of water up to 15 degrees from the vertical.
6	Occasionally Submersible, Water-tight, Sleet Resistant, Prolonged Submersion - Indoor & Outdoor	IP67	Totally protected against dust. Protected against the effect of immersion between 15cm and 1m.
6P	Water-tight, Sleet Resistant, Prolonged Submersion - Indoor & Outdoor	IP67	Totally protected against dust. Protected against the effect of immersion between 15cm and 1m.
12	Dust-tight and Drip-tight - Indoor	IP52	Protection against dust limited ingress (no harmful deposit) Protection against direct sprays of water up to 15 degrees from the vertical.
12K	Dust-tight and Drip-tight, with Knockouts - Indoor	IP52	Protection against dust limited ingress (no harmful deposit) Protection against direct sprays of water up to 15 degrees from the vertical.
13	Oil-tight and Dust-tight - Indoor	IP54	Protection against dust limited ingress (no harmful deposit) Protection against water sprayed from all directions, limited ingress permitted.



60hz Efficiency Classes

Rated Output		HIGH EFFICIENCY (IE2)%				PREMIUM EFFICIENCY (IE3)%				SUPER PREMIUM EFFICIENCY (IE4)%			
		NUMBER OF POLES				NUMBER OF POLES				NUMBER OF POLES			
kW	Hp	2	4	6	8	2	4	6	8	2	4	6	8
0.12	0.15	59.5	64.0	50.5	40.0	62.0	66.0	64.0	59.5	66.0	70.0	68.0	64.0
0.18	0.25	64.0	68.0	55.0	46.0	65.6	69.5	67.5	64.0	70.0	74.0	72.0	68.0
0.25	0.33	68.0	70.0	59.5	52.0	69.5	73.4	71.4	68.0	74.0	77.0	75.5	72.0
0.37	0.50	72.0	72.0	64.0	58.0	73.4	78.2	75.3	72.0	77.0	81.5	78.5	75.5
0.55	0.75	74.0	75.5	68.0	62.0	76.8	81.1	81.7	74.0	80.0	84.0	82.5	77.0
0.75	1.0	75.5	78.0	73.0	66.0	77.0	83.5	82.5	75.5	82.5	85.5	84.0	78.5
1.10	1.5	82.5	84.0	85.5	75.5	84.0	86.5	87.5	78.5	85.5	87.5	88.5	81.5
1.5	2	84.0	84.0	86.5	82.5	85.5	86.5	88.5	84.0	86.5	88.5	89.5	85.5
2.2	3	85.5	87.5	87.5	84.0	86.5	89.5	89.5	85.5	88.5	91.0	90.2	87.5
3.7	5	87.5	87.5	87.5	85.5	88.5	89.5	89.5	86.5	89.5	91.0	90.2	88.5
5.5	7.5	88.5	89.5	89.5	85.5	89.5	91.7	91.0	86.5	90.2	92.4	91.7	88.5
7.5	10	89.5	89.5	89.5	88.5	90.2	91.7	91.0	89.5	91.7	92.4	92.4	91.0
11	15	90.2	91.0	90.2	88.5	91.0	92.4	91.7	89.5	92.4	93.6	93.0	91.0
15.0	20	90.2	91.0	90.2	89.5	91.0	93.0	91.7	90.2	92.4	94.1	93.0	91.7
18.5	25	91.0	92.4	91.7	89.5	91.7	93.6	93.0	90.2	93.0	94.5	94.1	91.7
22	29	91.0	92.4	91.7	91.0	91.7	93.6	93.0	91.7	93.0	94.5	94.1	93.0
30	40	91.7	93.0	93.0	91.0	92.4	94.1	94.1	91.7	93.6	95.0	95.0	93.0
37.0	50	92.4	93.0	93.0	91.7	93.0	94.5	94.1	92.4	94.1	95.4	95.0	93.6
45	60	93.0	93.6	93.6	91.7	93.6	95.0	94.5	92.4	94.5	95.4	95.4	93.6
55	75	93.0	94.1	93.6	93.0	93.6	95.4	94.5	93.6	94.5	95.8	95.4	94.5
75	100	93.6	94.5	94.1	93.0	94.1	95.4	95.0	93.6	95.0	96.2	95.8	94.5
90	125	94.5	94.5	94.1	93.6	95.0	95.4	95.0	94.1	95.4	96.2	95.8	95.0
110	150	94.5	95.0	95.0	93.6	95.0	95.8	95.8	94.1	95.4	96.2	96.2	95.0
150	200	95.0	95.0	95.0	93.6	95.4	96.2	95.8	94.5	95.8	96.5	96.2	95.4
185	250	95.4	95.4	95.0	93.6	95.8	96.2	95.8	95.0	96.2	96.5	96.2	95.4
220	300	95.4	95.4	95.0	93.6	95.8	96.2	95.8	95.0	96.2	96.8	96.5	95.4
250	335	95.4	95.4	95.0	93.6	95.8	96.2	95.8	95.0	96.2	96.8	96.5	95.8
300	400	95.4	95.4	95.0	93.6	95.8	96.2	95.8	95.0	96.2	96.8	96.5	95.8
335	450	95.4	95.4	95.0	93.6	95.8	96.2	95.8	95.0	96.2	96.8	96.5	95.8
375 up to 1000	500 to 1340	95.4	95.8	95.0	94.1	95.8	96.2	95.8	95.0	96.2	96.8	96.5	95.8

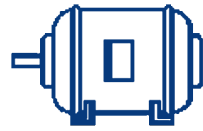
Mountings

Our motors are available in the design versions IM B3, IM B5, IM B14 and derived versions in accordance with standard IEC 60034-7, as outlined in the table below.

FLOOR MOUNTINGS



ASSEMBLY F-1



ASSEMBLY F-2

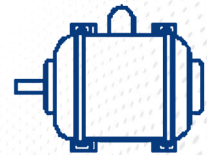


ASSEMBLY F-3

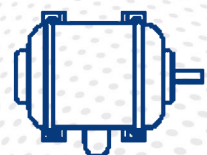
WALL MOUNTINGS



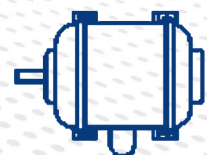
ASSEMBLY W-1



ASSEMBLY W-2



ASSEMBLY W-3



ASSEMBLY W-4

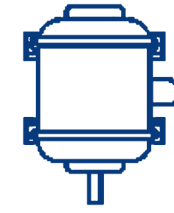
Mountings



ASSEMBLY W-5



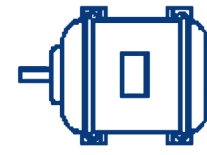
ASSEMBLY W-6



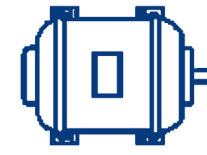
ASSEMBLY W-7



ASSEMBLY W-8



ASSEMBLY W-9



ASSEMBLY W-10



ASSEMBLY W-11

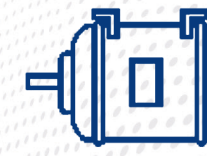


ASSEMBLY W-12

WALL MOUNTINGS



ASSEMBLY C-1



ASSEMBLY C-2



ASSEMBLY C-3



Unfiltered Housing Vibration Limits

NEMA Frame Size		NEMA Frames ≤ 210		NEMA Frame > 210	
Vibration Grade	Mounting	Displacement, mils pk-pk	Velocity in./s pk	Displacement mils pk-pk	Velocity in./s pk
A	Resilient	2.4	0.15	2.4	0.15
	Rigid	N/A	N/A	1.9	0.12 *0.15
B	Resilient	1.0	0.06	1.6	0.10
	Rigid	N/A	N/A	1.3	0.08 *0.10

*This level is the limit when the twice line frequency vibration level is dominant as defined in clause 7.8.5.

Note 1: Grade "A" applies to machines with no special vibration requirements.

Note 2: Grade "B" applies to machines with special vibration requirements. Rigid mounting is not considered acceptable for machines with shaft heights less than NEMA frame size 210.

Note 3: The manufacturer and the purchaser should take into account that the instrumentation can have a measurement tolerance of 10%.

Unfiltered Housing Vibration Limits

Note 4: A machine that is well-balanced in itself and of a grade conforming with Table 7-1 may exhibit large vibrations when installed on-site arising from various causes, such as unsuitable foundations, reaction of the driven machine, current ripple from the power supply, etc. Vibration may also be caused by driving elements with a natural oscillation frequency very close to the excitation due to the small residual unbalance of the rotating masses of the machine. In such cases, checks should be carried out not only on the machine but also on each element of the installation (See ISO 10816-3).

Note 5: As in ISO 20816-1, for on-site operations, special agreements can be made. The values given in ISO 20816-1 Table 1b are the basis for the ease of discussion and agreement between the supplier and the user. The values should ensure in most applications that major errors or unrealistic requirements are avoided. Special agreements shall also be made for acceleration and deceleration ramps. Short-term vibration limits and reduced bearing lifetime as a function of vibration velocity can be given by the manufacturer.



Bearings

NEMA motors have sealed for life pre-lubricated ball bearings DE and NDE side from frame sizes 143 to 286, motors 324 and above are equipped with grease tubes to enable in service regreasing. Alternatively, ball and roller bearings (also known as NU type) are available on request. Bearing lifetime, calculated on basis of supplier data, is L10 40000 hours

The TC series from frame size 315 to 355 (4,6,8 pole) have roller bearings on DE side and ball bearings on NDE side. All regreasable bearings need to be periodically re-lubricated according to the data given in the motors maintenance manuals. Motors with axial bearing constraints have an arrangement with a spring in order to absorb vibrations.

The lifetime of bearings (in accordance with supplier data) is in excess of 40.000 hours, for motors with direct coupling. In the table, all specifications concerning bearings installed on motors frame size from 56 to 630 are mentioned. Generally, we use the quality brand C&U (lowest drop-out percentage in regular long-term tests). For roller bearings and larger frames, we generally use SKF. Insulated bearings are from SKF Insucoat series.

Frame Size	BEARINGS NEMA TEFC					
	2-Pole		4-Pole		>6-Pole	
	DE	NDE	DE	NDE	DE	NDE
143/145T	62052Z	62032Z	62052Z	62032Z	62052Z	62032Z
182/184T	62062ZC3	62052ZC3	62062ZC3	62052ZC3	62062ZC3	62052ZC3
213/215T	63082ZC3	62062ZC3	63082ZC3	62062ZC3	63082ZC3	62062ZC3
254/256T	62092ZC3	62092ZC3	63092ZC3	62092ZC3	63092ZC3	62092ZC3
284/286T/TS	6211C3	6211C3	6311C3	6210C3	6311C3	6210C3
324/326T/TS	6212C3	6212C3	6312C3	6311C3	6312C3	6311C3
364/365T/TS	6312C3	6312C3	6314C3	6313C3	6314C3	6313C3
404/405T/TS	6313C3	6313C3	6316C3	6315C3	6316C3	6315C3
444/445T/TS	6314C3	6314C3	6319C3	6317C3	6319C3	6317C3
447/449T/TS	6314C3	6314C3	6319C3	6317C3	6319C3	6317C3

Bearings

BEARINGS NEMA ODP						
Frame Size	2-Pole		4-Pole		>6-Pole	
	DE	NDE	DE	NDE	DE	NDE
143/145T	62052Z	62032Z	62052Z	62032Z	62052Z	62032Z
182/184T	62062ZC3	62032Z	62062ZC3	62032Z	62062ZC3	62032Z
213/215T	63072ZC3	62062ZC3	63072ZC3	62062ZC3	63072ZC3	62062ZC3
254/256T	62092ZC3	62082ZC3	63092ZC3	62082ZC3	63092ZC3	62082ZC3
284/286T/TS	6211C3	6211C3	6311C3	6210C3	6311C3	6210C3
324/326T/TS	6212C3	6212C3	6312C3	6311C3	6312C3	6311C3
364/365T/TS	6312C3	6312C3	6314C3	6313C3	6314C3	6313C3
404/405T/TS	6313C3	6313C3	6316C3	6315C3	6316C3	6315C3
444/445T/TS	6314C3	6314C3	6319C3	6317C3	6319C3	6317C3
447/449T/TS	6314C3	6314C3	6319C3	6317C3	6319C3	6317C3

Permissible Radial & Axial Loads

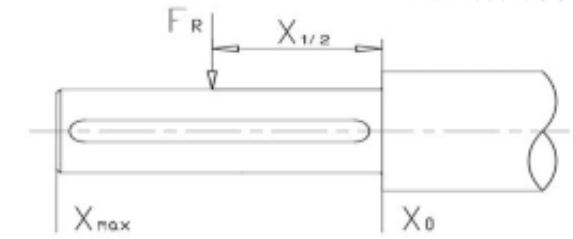
The following tables represent the permissible radial forces in Newton, assuming zero axial force. Our motors are standard executed with ball bearings.

In case of higher radial forces than given in the tables an enforced bearing should be used. In case of higher axial force than given in the tables an angular contact bearing should be used.

The values are based on normal conditions at rated frequency and calculated at 20.000 working hours for the two pole motors and 40.000 working hours for 4,6 and 8 poles. For 60 Hz the value must be reduced by 10%. For two speed motors, calculations are based on the highest speed.

When the desired bearing life has been determined, the minimum pulley diameter can be calculated with the following formula:

$$D = \frac{1.9 * 10^7 * k * PN}{nN * FR}$$



- D** = Diameter of the Pulley (mm)
- PN** = Power of the Motor (kW)
- nN** = Motor Rated Speed (r/min)
- k** = Belt Tension Factor, k= 2,5 for V-belt
- FR(X)** = Permissible Radial Force (N)
- FR** = FXO - x/E (FxoFxmax) (N)
- E** = The Length of the Shaft Diameter (mm)

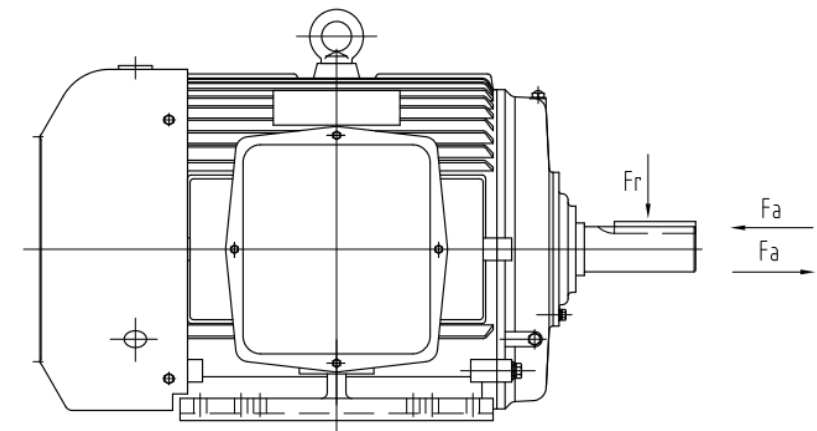
Permissible Radial & Axial Loads

Type	Poles	Fr(max) (lb/ft)	Fa(max) (lb/ft)
143/145T	2	560	370
182/184T	2	780	520
213/215T	2	1620	1280
254/256T	2	2070	940
284/286TS	2	2980	1200
324/326TS	2	3440	1400
364/365TS	2	3540	2040
404/405TS	2	3860	2310
444/449TS	2	4320	2640

Type	Poles	Fr(max) (lb/ft)	Fa(max) (lb/ft)
143/145T	4	600	470
182/184T	4	840	640
213/215T	4	1730	1510
254/256T	4	2240	1790
284/286T	4	3200	2210
324/326T	4	3700	2650
364/365T	4	4010	2960
404/405T	4	4670	3320
444/449T	4	5990	4340

Permissible Radial & Axial Loads

Type	Poles	Fr(max)	Fa(max)	lb/ft	<- UNITS
143/145T	6	690	530		
182/184T	6	960	750		
213/215T	6	1990	1550		
254/256T	6	2560	2080		
284/286T	6	3730	2470		
324/326T	6	4250	2960		
364/365T	6	4660	3310		
404/405T	6	5340	3780		
444/449T	6	6850	4930		
143/145T	8	760	540		
182/184T	8	1050	760		
213/215T	8	2180	1630		
254/256T	8	2900	2250		
284/286T	8	4100	2700		
324/326T	8	4680	3360		
364/365T	8	5050	3680		
404/405T	8	5880	4230		
444/449T	8	7550	5360		





Terminal Box

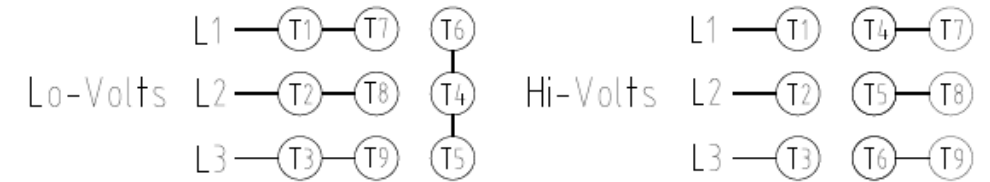
NEMA TEFC		NEMA ODP	NEMA ODP	
Frame Size	T-Box Outlet Size	Frame Size	Frame Size	T-Box Outlet Size
143/145T	1"	143/145T	143/145T	1"
182/184T	1"	182/184T	182/184T	1"
213/215T	1"	213/215T	213/215T	1"
254/256T	1 1/4"	254/256T	254/256T	1 1/4"
284/286T/TS	1 1/2"	284/286T/TS	284/286T/TS	1 1/2"
324/326T/TS	2"	324/326T/TS	324/326T/TS	2"
364/365T/TS	3"	364/365T/TS	364/365T/TS	3"
404/405T/TS	3"	404/405T/TS	404/405T/TS	3"
444~449T/TS	3"	444~449T/TS	444~449T/TS	3"



Connection Diagrams

Our motors are usually delta connected (Δ) from 3 kW to allow a star-delta starting (Y/ Δ) at line voltage of 400V. Upon request and for special applications, based on the powers and supply voltages, motors can be star-connected (Y). Wiring diagrams are shown below.

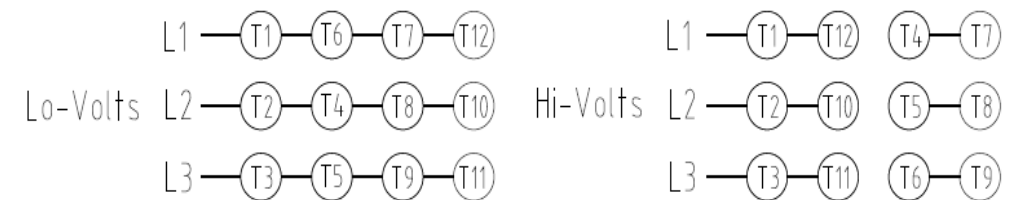
9 LEADS, YY/Y



9 LEADS, $\Delta\Delta/\Delta$

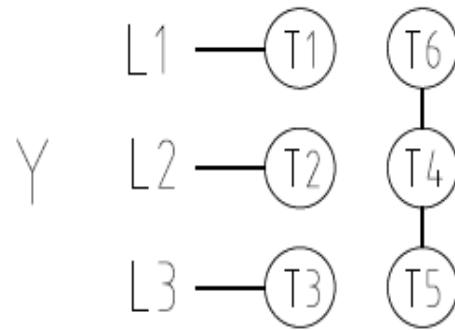


12 LEADS, $\Delta\Delta/\Delta$

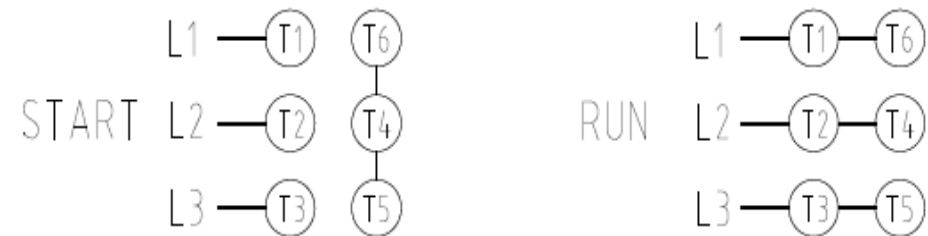


Connection Diagrams

6 LEADS, Y



6 LEADS, Δ



Insulation

All motors are designed and built with insulation class F, with class B temperature rise. The copper wire is "double enamel" insulated and is to class H insulation standards. Following completion of the winding, it is impregnated through a vacuum process using F or H class resins.

On request, motors can be built with tropicalized windings which have enhanced protection to heat, humidity, and chemicals. This would typically be used in marine, coastal, or other areas of high humidity or temperature

Ratings and Tolerances

Power and data reported in the Technical Data Tables are for continuous duty (S1) at an ambient temperature of 40° C / 104 F, max. altitude 1000M / 3300ft.

In such conditions, the temperature rise reached by the motors is lower than the one provided for by insulation class B. The operating characteristics are guaranteed with the tolerances defined by the IEC 60034-2-1 standards and recommendations. The values are shown in the following table.

CHARACTERISTICS	TOLERANCES
Efficiency	Motor Power < 50kW -15% DI (1 - η)
	Motor Power < 50kW -10% DI (1 - η)
Power Factor	+1/6 (1 - Cos Φ) Min 0.02 Max 0.07
Locked Rotor Current	+20% Of Guaranteed Value
Locked Rotor Torque	-15% + 25% Of Guaranteed Value
Pull Out Torque	+10% Of Guaranteed Value
Slip	Motor Power < 1kW -30% Of Guaranteed Value
	Motor Power < 50kW -20% Of Guaranteed Value



Ambient Temperature & Deratings

The tables of technical data are referred to an ambient temperature of 50° C / 122°F at sea level or an ambient temperature of 40° C / 104° F, max. 1000M / 3300ft.

In different environmental conditions output ratings vary and are obtainable by applying the factors as mentioned in "COOLING" maintaining the temperature rise provided for by the B insulation class.

For regions with a high ambient temperature (India, Saudi Arabia, UAE) OMEC Motors supplies motors suitable to operate at 50° C / 122° F or higher.

Allowable Motor Power In %		Altitude (Meters / Feet) a.s.l.							
		500 / 1640	1000 / 3281	1500 / 4921	2000 / 6562	2500 / 8202	3000 / 9843	3500 / 11483	4000 / 13123
Air Inlet Temperature (C / F)	5 / 41	110	110	110	110	110	110	107	104
	10 / 50	110	110	110	110	110	107	104	100
	15 / 59	110	110	110	110	107	104	100	97.5
	20 / 68	110	110	110	107	104	100	97.5	92.5
	25 / 77	110	107	107	104	100	97.5	92.5	82.5
	30 / 86	110	104	104	100	97.5	92.5	87.5	72.5
	35 / 95	105	100	100	97.5	92.5	87.5	80	57.5
	40 / 104	102	97.5	97.5	92.5	87.5	80	72.5	32.5
	45 / 113	100	92.5	92.5	87.5	80	72.5	57.5	-
	50 / 122	95	87.5	87.5	80	72.5	57.5	32.5	-
55 / 131	87.5	80	80	72.5	57.5	32.5	-	-	

Duties

All technical data reported in the tables are referred to continuous duty (S1). Upon request, motors for limited duty (S2, S6) can be supplied.



Starting

Motors are suitable for the following types of starting:

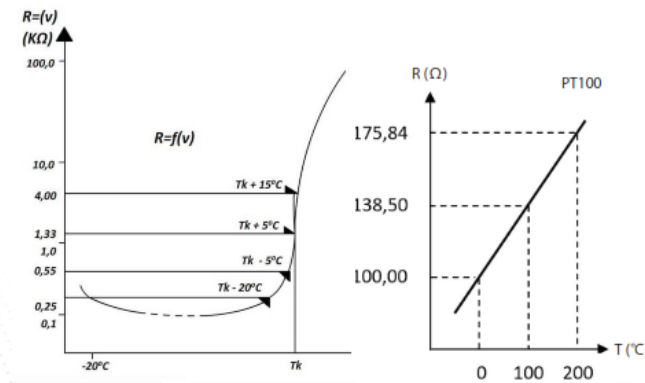
- Direct
- Star-delta
- By Autotransformer
- Soft-start: when the starting is finished soft-start should be by-passed. Use precaution when motor is powered with inverter.
- By inverter: see as recommended in the paragraph "Inverter Supply".

Thermal Protection

- < 250Ω at a temperature from TK -20° C to +20°C
- < 550Ω at a temperature of TK -5°C
- > 1330Ω at a temperature of TK +5°C
- > 4000Ω at a temperature of TK +15°C

The PTCs are directly installed in the head of the coils so that every change of the temperature is measured. The characteristic of the curve (shown below) demonstrates that the increase of the PTCs in the resistance from the switching point onwards is exponential. The behaviour of the PTC's in the relevant range of the temperature from TK = 60°C is in accordance to IEC 60738-1.

Class Of Insulation	Operating temperature limit of the Insulation °C	T °C
A	105	95-100
E	120	110-115
B	130	120-125
F	155	145-150
H	180	170-175



Upon request, the following thermal protections can be installed on the motors:

- All our motors can be supplied by request with inbuilt positive temperature coefficient thermistors PTC. These protections quickly change their standard resistance value at their active temperature.
- Bimetallic devices Motor protectors with contact normally closed. The contact opens when the winding temperature reaches limits dangerous to the insulation system of the motor.
- Platinum resistance thermometers PT100 Variable linear resistance with the winding temperature. Device particularly suitable for a continuous winding temperature monitoring. The protection is normally made by 3 sensitive elements, one for every phase, series connected and with two terminals in a specially provided terminal board located in the main terminal box or in a specially provided auxiliary terminal box.

Anti-Condensation Heaters

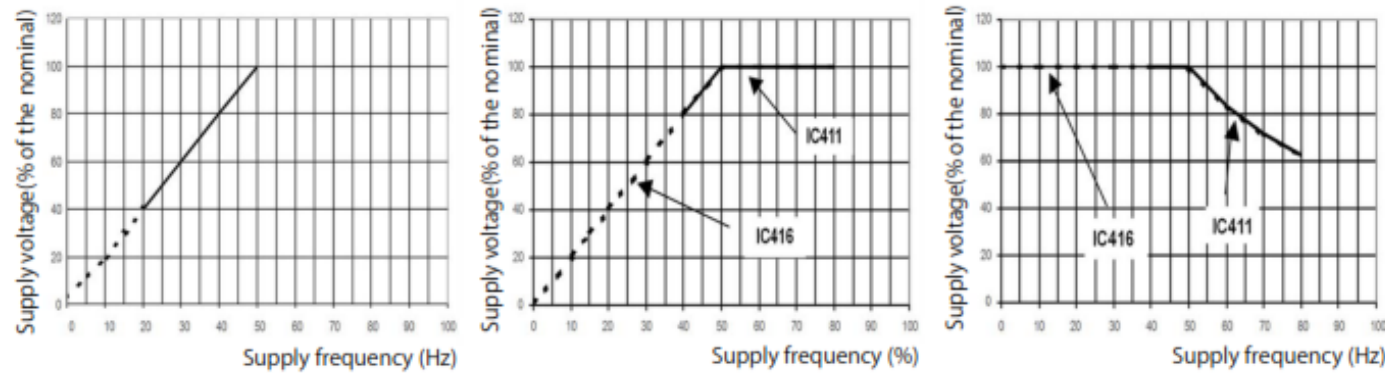
Motors subject to atmospheric condensation, either through standing idle in damp environments or because of wide ambient temperature variations, may be fitted with anti-condensation heaters. They are of tape form and are normally mounted on the stator winding head.

Anti-condensation heaters are normally switched on automatically, mostly when the motor is in stillstand. When the supply to the motor is interrupted, heating the motor is used to avoid water condensation. Normal supply voltage is 115V or 220/240V. Anti-condensation heater terminals are led to a specially provided terminal board located in the main terminal box. Upon request they can be led to a terminal board located in an auxiliary terminal box. The power values normally used are shown in the following table:

NEMA TEFC / ODP	
Heater Ratings	
Frame Size	Heater
143/145T	1X20W 230V
182/184T	1X40W 230V
213/215T	1X40W 230V
254/256T	1X40W 230V
284/286T/TS	1X50W 230V
324/326T/TS	1X50W 230V
364/365T/TS	1X60W 230V
404/405T/TS	1X60W 230V
444/445T/TS	1X80W 230V
447/449T/TS	2X80W 230V

Inverter Supply

All our motors are designed to be supplied by inverter (VFD, Variable Frequency Drive). These motors can be driven up to the rated frequency (60Hz) with supply voltage proportional to the frequency (see diagr. 1), at higher frequencies they can be supplied at constant voltage up to the achievement of 100 Hz (see diagr. 2)



For the type of duty shown in diagr. 3, the flux created by the stator windings will be constant from 0 frequency to 60Hz frequency, at frequencies higher than 60 Hz, the flux will be lower than the maximum value.

NOTE: At low frequencies (0 – approx. 10 Hz), due to the voltage drop, the VFD supply voltage should be slightly increased in order to keep the flux constant. This voltage increase depends both on the motor type and on the inverter type. Consequently the motors in standard design (self cooled TEFC code IC411) are able to run at constant torque with no output reduction between 30 and 60 Hz and at constant power in the speed range 60 and 100 Hz (see diagram 2 and 3).

Δt F(F) Temperature rise can be utilised for constant torque over the speeds 0 - 30 Hz.

Upon request, motors can be equipped with an auxiliary fan (code IC 416), in this case they can supply a constant torque at B temperature rise from 0 - 60 Hz and a constant power from 60 to 100 Hz.

Inverter Supply

1.0 S.F. ON PWM INVERTER POWER										
Frame Size	2P			4P			≥6P			
	CHP (Constant HP)	CT (Constant Torque)	VT (Variable Torque)	CHP (Constant HP)	CT (Constant Torque)	VT (Variable Torque)	CHP (Constant HP)	CT (Constant Torque)	VT (Variable Torque)	
143/145T	60-75 Hz	6-60 Hz	3-60 Hz	60-90 Hz	6-60 Hz	3-60 Hz	60-90 Hz	6-60 Hz	3-60 Hz	
182/184T										
213/215T										
254/256T										
284/286T/TS										
324/326T/TS										
364/365T/TS										
404/405T/TS										/
444/445T/TS										/
447/449T/TS										/

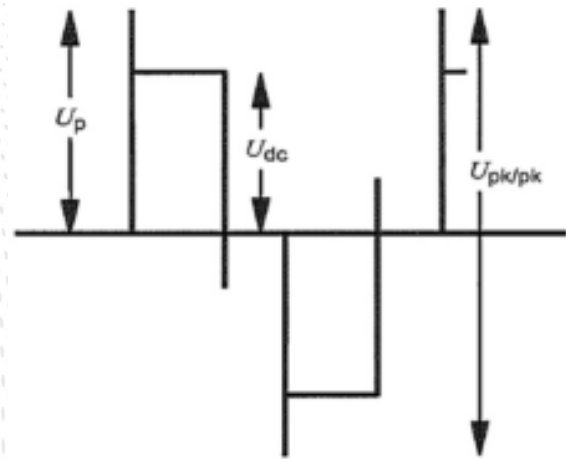
VFD: Motor Features

The asynchronous three-phase motors to be used for inverter allow an optimum of reliable operation. It has to be considered that generally the inverter supplying the asynchronous motor with a non sinusoidal current having a certain harmful effect. This is due in particular: to the type of inverter, to the value of the switch frequency, to the length of the supply cables.

Moreover, steep voltage fronts to the motor terminals (du/dt) originated by the short commutation times of the IGBT, generate considerable stresses on the insulating materials. Consequently the motor insulation must be carried out with the utmost care because it has to be able to withstand such higher stresses.

Our Motors can be executed upon request with Corona-resistant wiring. This wiring is tested for 3000V voltage peak to peak.

Taking into account the number of turns/coil and the number of coils, all motors produced are categorized as: category C- severe.



Summary of Stress Categories		
Stress Category	Overshoot Factor	Impulse Rise Time t
	U_p/U_{dc}	μs r
A - BENIGN	≤ 1.1	≥ 1.0
B - MODERATE	≤ 1.5	≥ 0.3
C - SEVERE	≤ 2.0	≥ 0.1
D - EXTREME	≤ 2.5	≥ 0.05

Insulated Shield (NDE)

Most VFD-produced bearing currents are one of two types:

1. Discharge of capacitively produced shaft voltages
2. High-frequency creeping currents.

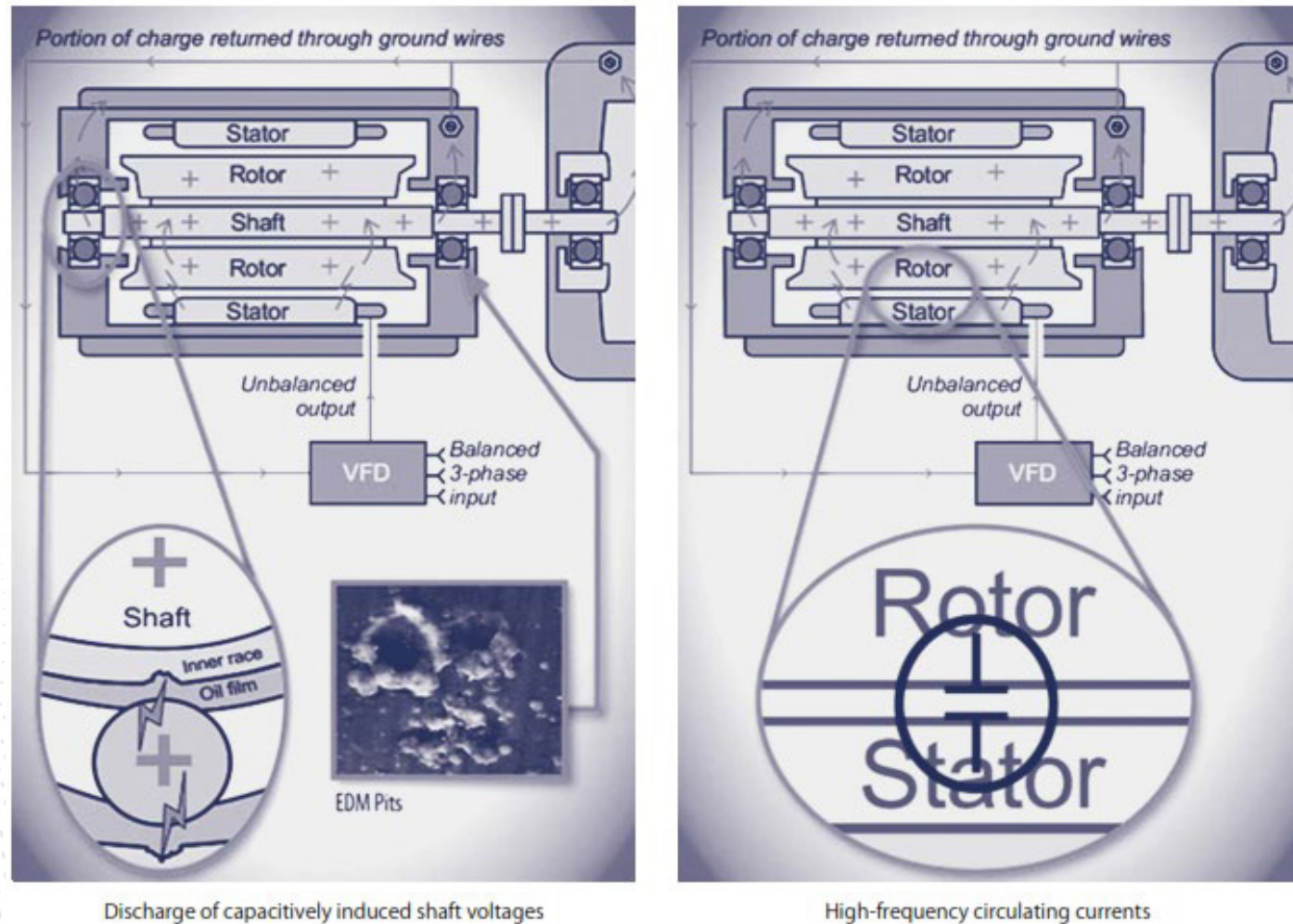
Together, these two types account for 90-95% of all bearing currents. Common mode or capacitive bearing currents, known as bearing current A, are caused by capacitance between the stator and rotor. When the VFD switches between output states, the rapid change in stator voltage capacitively produces a voltage on the shaft.

That voltage can build up until it discharges through the bearings. Bearing current A can occur in motors of any size from fractional kW on up.

In addition to bearing current A, motors over about 100 Hp are prone to high-frequency creeping currents. Known as bearing current B, these high-frequency creeping currents flow as a result of high-frequency flux produced by large common-mode currents.

These currents circulate from the motor shaft through bearings to the motor frame and back. Regardless of the source of the current, AEGIS® Shaft Grounding Rings divert harmful discharges safely around the bearings, protecting them and ensuring motor and system reliability.

Insulated Shield (NDE)



Maximum Speed

Motors supplied by inverter can run at a frequency higher than the rated one supplying the rated power up to the maximum frequency mentioned in the table below. In these conditions the motor maximum torque remains 1.6 times higher than the rated torque.

Frame Size	Max Supply Frequency			
	2 poles	4 poles	6 poles	8 poles
56/140T	75	75	60	60
180T	70	70	60	60
210T - 250T	65	65	60	60

It is also possible to supply motors at a higher frequency. In this case, the deliverable motor powers will be progressively reduced. In any case, the motor maximum speeds, also at no load operation or dragged by the machine, must never exceed the limit mentioned in the following table:

Frame Size	Max Supply Frequency			
	2 poles	4 poles	6 poles	8 poles
210T	5000	5000	4500	4500
250T	5000	5000	4500	4500
280T	5000	5000	4500	4500
320T	5000	5000	4500	4500
360T	4500	4500	4000	4000
400T	4000	4000	3800	3800
440T	4000	3000	3000	3000
5000	3600	2600	2600	2600
5800	3600	2600	2600	2600

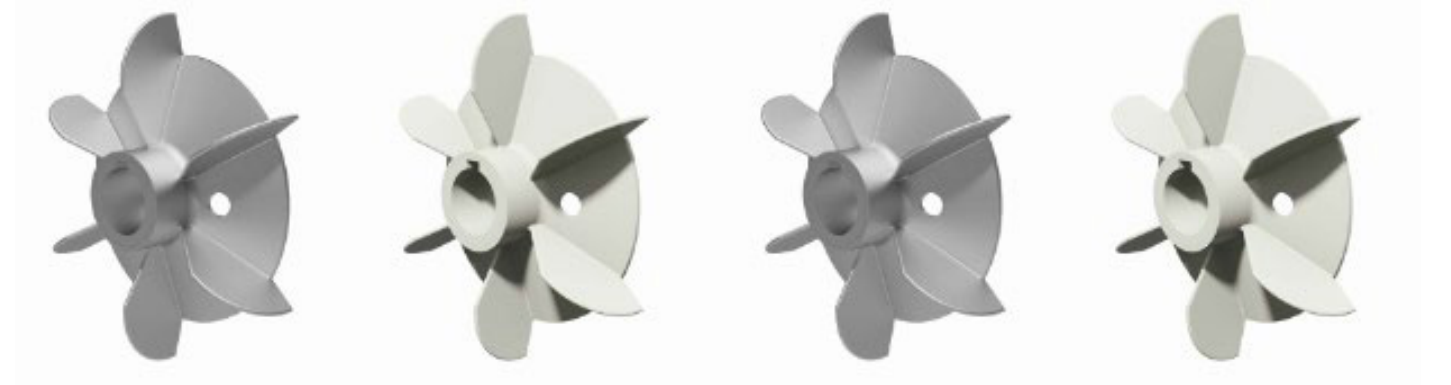
Auxiliary Fans

All frame sizes of OMEC motors can be supplied with OMEC cooling system IC416 (forced ventilation) on request. In this case a proper fan is fitted inside the fan cover, suitably reinforced.

This means that the ventilation supplied to the motor is independent of the rotation speed of the motor itself. IC416 solutions are particularly suitable for motors operating with high torques at low speeds such as mills, extruders, conveyors, and hoists.

Forced ventilation systems are sized according to application requirements, including a review as to whether a permanent magnet solution could offer an effective alternative to IC416. Please contact your local sales contact to review these types of applications.

Fans



Fans					
Type	Width	Weight	Axis	Blades	Motor Type
143/145T	Φ90	20	Φ14.2	5	143/145T-2~6
182/184T-2	Φ110	25.4	Φ23.8	11	182/184T-2
213/215T-2	Φ135	25.4	Φ23.8	11	182/184T-4,6,213/215T-2,4
182/184T-4	Φ152.4	27.9	Φ23.8	11	213/215T-6
284/286TS-2	Φ150	35	Φ43	7	254/256T-2,284/286TS-2
254/256T-4,6	Φ165	30	Φ43	7	254/256T-4,6
324/326TS-2	Φ175	35	Φ43	7	284/286T-4,6,324/326T
364/365TS-2	Φ185	45	Φ58	7	364/365TS-2
364/365T-4	Φ200	50	Φ58	7	364/365T-4
364/365T-6	Φ275	63	Φ52	6	364/365T-6
YX3-200-2	Φ200	80	Φ58	7	404/405TS-2
Y-200-2,4	Φ260	75	Φ58	6	404/405T-4,6
YX3-225-2	Φ210	85	Φ58	7	444~447TS-2
Y-200-6,8	Φ295	75	Φ58	6	444~449T-4,6
YX3-225-4~6	Φ250	90	Φ58	9	449TS-2 250HP
YX3-250-4~6	Φ265	95	Φ63	9	449TS-2 300HP
Y2-200-4~8	Φ300	90	Φ58	9	449T-4 300HP
Y2-280-4~8	Φ400	130	Φ68	9	449T-6 250HP



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IEC

OmecElectric.com

Motor designed for everyday application that can be used in centrifugal pumps, fans and conveyors. General Industries, Water.

- Motor Power 0.75 – 18.5kW
- Service Factor 1.0
- Dual Voltage 220/380 - 380/660 Default D/Y
- 2 – 8 Poles
- IE1, IE2 and IE3
- Terminal Box able to rotate 4 x 90 degrees.
- Removable Feet
- Insulation Class F, TEFC, IC411
- Aluminum Frame and Endshields and Flanges in
- Cast Iron
- Paint System C2
- Suitable for Inverter use
- Paint Color: Light Grey RAL7030
- IP55

IEC Frame Size	80 - 160
Poles	2,4, 6 and 8 Poles
Horsepower Range	2- pole: 0.75 - 18.5kW
	4-pole - 0.55 - 15kW
	6-pole - 0.75 - 11kW
	8-pole - 0.18 - 7.5kW
Voltage	230/400 up to 2.2.kW
	400/690 from 3kW and up
Agency Approvals	CE Compliance
	Designed according IEC 60034
Warranty(months)	12 Months
Design Ambient & Altitude	40°C & 1000 meters
Insulation Class	F
Winding Temperature Rise	80K @ 1.0 Sinusoidal supply
Service Factor	1.15 @Temperature rise F
IEC Vibration Severity	Grade A. According to IEC60034-14
Inverter Capability	Suitable for Inverter operation
Frame Material	Aluminum
End Shield Material	80 - 132 Alu
	160 Cast Iron
Terminal Box Material	Aluminum
Terminal Box Rotation	4 x 90 degrees increments
Fan Cover Material	08F Steel
Fan	Bidirectional, Non-sparking plastic.
Mounting	Terminal Box Mult Mount
Paint System	C2 according to ISO 12944
Nameplate	316 Stainless Steel
Degree of Protection	IP55
Paint Color	RAL7030



kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
0.75	3600	80K	230/400	A80K2-0.75B3	\$399.00	1
1.1	3600	80G	230/400	A80G2-1.1B3	\$422.00	1
0.55	1800	80K	230/400	A80K4-0.55B3	\$398.00	1
0.75	1800	80G	230/400	A80G4-0.75B3	\$436.00	1
0.37	1200	80K	230/400	A80K6-0.37B3	\$418.00	1
0.55	1200	80G	230/400	A80G6-0.55B3	\$463.00	1
0.18	900	80K	230/400	A80K8-0.18B3	\$429.00	1
0.25	900	80G	230/400	A80G8-0.25B3	\$459.00	1
1.5	3600	90S	230/400	A90S2-1.5B3	\$562.00	1
2.2	3600	90L	230/400	A90L2-2.2B3	\$603.00	1
1.1	1800	90S	230/400	A90S4-1.1B3	\$508.00	1
1.5	1800	90L	230/400	A90L4-1.5B3	\$589.00	1
0.75	1200	90S	230/400	A90S6-0.75B3	\$562.00	1
1.1	1200	90L	230/400	A90L6-1.1B3	\$655.00	1
0.37	900	90S	230/400	A90S8-0.37B3	\$599.00	1
0.55	900	90L	230/400	A90L8-0.55B3	\$640.00	1
3	3600	100L	400/690	A100L2-3B3	\$790.00	1
2.2	1800	100L	400/690	A100L4-2.2B3	\$774.00	1
3	1800	100L	400/690	A100LX4-3B3	\$872.00	1
1.5	1200	100L	400/690	A100L6-1.5B3	\$756.00	1
0.75	900	100L	400/690	A100L8-0.75B3	\$731.00	1
1.1	900	100L	400/690	A100LX8-1.1B3	\$799.00	1
4	3600	112M	400/690	A112M2-4B3	\$973.00	1
4	1800	112M	400/690	A112M4-4B3	\$1,064.00	1
2.2	1800	112M	400/690	A112M6-2.2B3	\$965.00	1
1.5	900	112M	400/690	A112M8-1.5B3	\$1,010.00	1
5.5	3600	132S	400/690	A132S2-5.5B3	\$1,418.00	1
7.5	3600	132S	400/690	A132SX2-7.5B3	\$1,578.00	1
11	3600	132M	400/690	A132M2-11B3	\$1,947.00	1
5.5	1800	132S	400/690	A132S4-5.5B3	\$1,475.00	1
7.5	1800	132M	400/690	A132M4-7.5B3	\$1,691.00	1

1. IE1 Efficiency Motors. | . IE2 Efficiency Motors. | 3. IE3 Efficiency Motors.



kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
11	1800	132M	400/690	A132M4-11B3	\$2,050.00	1
3	1200	132S	400/690	A132S6-3B3	\$1,250.00	1
4	1200	132M	400/690	A132M6-4B3	\$1,467.00	1
5.5	1200	132M	400/690	A132MX6-5.5B3	\$1,580.00	1
2.2	900	132S	400/690	A132S8-2.2B3	\$1,262.00	1
3	900	132M	400/690	A132M8-3B3	\$1,443.00	1
11	3600	160M	400/690	A160M2-11B3	\$2,343.00	1
15	3600	160M	400/690	A160MX2-15B3	\$2,615.00	1
18.5	3600	160L	400/690	A160L2-18.5B3	\$2,925.00	1
11	1800	160M	400/690	A160M4-11B3	\$2,377.00	1
15	1800	160L	400/690	A160L4-15B3	\$2,732.00	1
7.5	1200	160M	400/690	A160M6-7.5B3	\$2,261.00	1
11	1200	160L	400/690	A160L6-11B3	\$2,707.00	1
4	900	160M	400/690	A160M8-4B3	\$1,949.00	1
5.5	900	160M	400/690	A160MX8-5.5B3	\$2,194.00	1
7.5	900	160L	400/690	A160L8-7.5B3	\$2,601.00	1

1. IE1 Efficiency Motors. | . IE2 Efficiency Motors. | 3. IE3 Efficiency Motors.



kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
0.75	3600	80K	220/380 - 380/660	IE2-A80K2-0.75B3	\$429.00	2
1.1	3600	80G	220/380 - 380/660	IE2-A80G2-1.1B3	\$454.00	2
0.55	1800	80K	220/380 - 380/660	IE2-A80K4-0.55B3	\$462.00	2
0.75	1800	80G	220/380 - 380/660	IE2-A80G4-0.75B3	\$492.00	2
1.5	3600	90S	220/380 - 380/660	IE2-A90S2-1.5B3	\$605.00	2
2.2	3600	90L	220/380 - 380/660	IE2-A90L2-2.2B3	\$681.00	2
1.1	1800	90S	220/380 - 380/660	IE2-A90S4-1.1B3	\$625.00	2
1.5	1800	90L	220/380 - 380/660	IE2-A90L4-1.5B3	\$697.00	2
0.75	1200	90S	220/380 - 380/660	IE2-A90S6-0.75B3	\$658.00	2
1.1	1200	90L	220/380 - 380/660	IE2-A90L6-1.1B3	\$723.00	2
3	3600	100L	220/380 - 380/660	IE2-A100L2-3B3	\$839.00	2
2.2	1800	100L	220/380 - 380/660	IE2-A100L4-2.2B3	\$882.00	2
3	1800	100L	220/380 - 380/660	IE2-A100LX4-3B3	\$932.00	2
1.5	1200	100L	220/380 - 380/660	IE2-A100L6-1.5B3	\$787.00	2
4	3600	112M	220/380 - 380/660	IE2-A112M2-4B3	\$1,020.00	2
4	1800	112M	220/380 - 380/660	IE2-A112M4-4B3	\$1,098.00	2
2.2	1800	112M	220/380 - 380/660	IE2-A112M6-2.2B3	\$997.00	2
5.5	3600	132S	220/380 - 380/660	IE2-A132S2-5.5B3	\$1,509.00	2
7.5	3600	132S	220/380 - 380/660	IE2-A132SX2-7.5B3	\$1,634.00	2
5.5	1800	132S	220/380 - 380/660	IE2-A132S4-5.5B3	\$1,574.00	2
7.5	1800	132M	220/380 - 380/660	IE2-A132M4-7.5B3	\$1,776.00	2
3	1200	132S	220/380 - 380/660	IE2-A132S6-3B3	\$1,313.00	2
4	1200	132M	220/380 - 380/660	IE2-A132M6-4B3	\$1,574.00	2
5.5	1200	132M	220/380 - 380/660	IE2-A132MX6-5.5B3	\$1,706.00	2
11	3600	160M	220/380 - 380/660	IE2-A160M2-11B3	\$2,446.00	2
15	3600	160M	220/380 - 380/660	IE2-A160MX2-15B3	\$2,694.00	2
18.5	3600	160L	220/380 - 380/660	IE2-A160L2-18.5B3	\$3,045.00	2
11	1800	160M	220/380 - 380/660	IE2-A160M4-11B3	\$2,507.00	2
15	1800	160L	220/380 - 380/660	IE2-A160L4-15B3	\$2,959.00	2
7.5	1200	160M	220/380 - 380/660	IE2-A160M6-7.5B3	\$2,343.00	2
11	1200	160L	220/380 - 380/660	IE2-A160L6-11B3	\$2,795.00	2

1. IE1 Efficiency Motors. | . IE2 Efficiency Motors. | 3. IE3 Efficiency Motors.



kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
0.75	3600	80K	220/380 - 380/660	IE3-A80K2-0.75B3	\$445.00	3
1.1	3600	80G	220/380 - 380/660	IE3-A80G2-1.1B3	\$472.00	3
0.55	1800	80K	220/380 - 380/660	IE3-A80K4-0.55B3	\$466.00	3
0.75	1800	80G	220/380 - 380/660	IE3-A80G4-0.75B3	\$502.00	3
1.5	3600	90S	220/380 - 380/660	IE3-A90S2-1.5B3	\$607.00	3
2.2	3600	90L	220/380 - 380/660	IE3-A90L2-2.2B3	\$698.00	3
1.1	1800	90S	220/380 - 380/660	IE3-A90S4-1.1B3	\$669.00	3
1.5	1800	90L	220/380 - 380/660	IE3-A90L4-1.5B3	\$741.00	3
0.75	1200	90S	220/380 - 380/660	IE3-A90S6-0.75B3	\$648.00	3
1.1	1200	90L	220/380 - 380/660	IE3-A90L6-1.1B3	\$781.00	3
3	3600	100L	220/380 - 380/660	IE3-A100L2-3B3	\$940.00	3
2.2	1800	100L	220/380 - 380/660	IE3-A100L4-2.2B3	\$920.00	3
3	1800	100L	220/380 - 380/660	IE3-A100LX4-3B3	\$990.00	3
1.5	1200	100L	220/380 - 380/660	IE3-A100L6-1.5B3	\$817.00	3
4	3600	112M	220/380 - 380/660	IE3-A112M2-4B3	\$1,087.00	3
4	1800	112M	220/380 - 380/660	IE3-A112M4-4B3	\$1,194.00	3
2.2	1800	112M	220/380 - 380/660	IE3-A112M6-2.2B3	\$1,106.00	3

1. IE1 Efficiency Motors. | . IE2 Efficiency Motors. | 3. IE3 Efficiency Motors.

kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
5.5	3600	132S	220/380 - 380/660	IE3-A132S2-5.5B3	\$1,485.00	3
7.5	3600	132S	220/380 - 380/660	IE3-A132SX2-7.5B3	\$1,595.00	3
5.5	1800	132S	220/380 - 380/660	IE3-A132S4-5.5B3	\$1,517.00	3
7.5	1800	132M	220/380 - 380/660	IE3-A132M4-7.5B3	\$1,750.00	3
3	1200	132S	220/380 - 380/660	IE3-A132S6-3B3	\$1,284.00	3
4	1200	132M	220/380 - 380/660	IE3-A132M6-4B3	\$1,579.00	3
5.5	1200	132M	220/380 - 380/660	IE3-A132MX6-5.5B3	\$1,722.00	3
11	3600	160M	220/380 - 380/660	IE3-A160M2-11B3	\$2,521.00	3
15	3600	160M	220/380 - 380/660	IE3-A160MX2-15B3	\$2,713.00	3
18.5	3600	160L	220/380 - 380/660	IE3-A160L2-18.5B3	\$3,000.00	3
11	1800	160M	220/380 - 380/660	IE3-A160M4-11B3	\$2,572.00	3
15	1800	160L	220/380 - 380/660	IE3-A160L4-15B3	\$2,985.00	3
7.5	1200	160M	220/380 - 380/660	IE3-A160M6-7.5B3	\$2,457.00	3
11	1200	160L	220/380 - 380/660	IE3-A160L6-11B3	\$2,979.00	3

Motor designed for everyday application that can be used in centrifugal pumps, fans and conveyors. General Industries, Food and Beverage and Water. Wide range of Power ratings available.

- Motor Power 1 – 1800kW
- 2 – 8 Poles
- Design according IEC60034
- Terminal Box able to rotate 4 x 90 degrees
- Bidirectional Rotation
- Motor CE labeled IE2, IE3 and IE4 efficiency available
- Paint System C2
- Suitable for Inverter use
- Paint Color: Light Grey RAL7030
- IP55

IEC Frame Size	80 - 560
Poles	2,4, 6 and 8 Poles
Horsepower Range	2- pole: 0.75 - 1120kW 4-pole - 0.55 - 1800kW 6-pole - 0.37 - 1600kW 8-pole - 0.25 - 1250kW
Voltage	230/400 - 400/690
Agency Approvals	CE Compliance Designed according IEC 60034
Warranty(months)	12 Months
Design Ambient & Altitude	40°C & 1000 meters
Insulation Class	F
Winding Temperature Rise	80K @ 1.0 Sinusoidal supply
Service Factor	1.15 at Temperature Rise F
IEC Vibration Severity	Grade A According to IEC60034-14
Inverter Capability	Suitable for Inverter operation
Frame Material	Cast Iron
End Shield Material	Cast Iron
Conduit Box Material	Cast Iron
Conduit Box Rotation	4 x 90° degrees increments
Fan Cover Material	08F Steel
Fan	Bidirectional, Non-sparking plastic.
Mounting	Terminal Box on Top Std
Paint System	C2 according to ISO 12944
Nameplate	316 Stainless Steel
Degree of Protection	IP55 optional IP56, IP65 and IP66
Paint Color	RAL7030

kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
0.75	3600	80K	220/380 - 380/660	IE2-80K2-0.75B3	\$409.00	2
1.1	3600	80G	220/380 - 380/660	IE2-80G2-1.1B3	\$431.00	2
0.55	1800	80K	220/380 - 380/660	IE2-80K4-0.55B3	\$430.00	2
0.75	1800	80G	220/380 - 380/660	IE2-80G4-0.75B3	\$464.00	2
1.5	3600	90S	220/380 - 380/660	IE2-90S2-1.5B3	\$578.00	2
2.2	3600	90L	220/380 - 380/660	IE2-90L2-2.2B3	\$655.00	2
1.1	1800	90S	220/380 - 380/660	IE2-90S4-1.1B3	\$625.00	2
1.5	1800	90L	220/380 - 380/660	IE2-90L4-1.5B3	\$702.00	2
0.75	1200	90S	220/380 - 380/660	IE2-90S6-0.75B3	\$625.00	2
1.1	1200	90L	220/380 - 380/660	IE2-90L6-1.1B3	\$691.00	2
3	3600	100L	220/380 - 380/660	IE2-100L2-3B3	\$852.00	2
2.2	1800	100L	220/380 - 380/660	IE2-100L4-2.2B3	\$835.00	2
3	1800	100L	220/380 - 380/660	IE2-100LX4-3B3	\$883.00	2
1.5	1200	100L	220/380 - 380/660	IE2-100L6-1.5B3	\$804.00	2
4	3600	112M	220/380 - 380/660	IE2-112M2-4B3	\$977.00	2
4	1800	112M	220/380 - 380/660	IE2-112M4-4B3	\$1,059.00	2
2.2	1800	112M	220/380 - 380/660	IE2-112M6-2.2B3	\$1,019.00	2

kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
2.2	1800	112M	220/380 - 380/660	IE2-112M6-2.2B3	\$1,019.00	2
5.5	3600	132S	220/380 - 380/660	IE2-132S2-5.5B3	\$1,473.00	2
7.5	3600	132S	220/380 - 380/660	IE2-132SX2-7.5B3	\$1,569.00	2
5.5	1800	132S	220/380 - 380/660	IE2-132S4-5.5B3	\$1,515.00	2
7.5	1800	132M	220/380 - 380/660	IE2-132M4-7.5B3	\$1,729.00	2
3	1200	132S	220/380 - 380/660	IE2-132S6-3B3	\$1,260.00	2
4	1200	132M	220/380 - 380/660	IE2-132M6-4B3	\$1,506.00	2
5.5	1200	132M	220/380 - 380/660	IE2-132MX6-5.5B3	\$1,653.00	2
11	3600	160M	220/380 - 380/660	IE2-160M2-11B3	\$2,302.00	2
15	3600	160M	220/380 - 380/660	IE2-160MX2-15B3	\$2,556.00	2
18.5	3600	160L	220/380 - 380/660	IE2-160L2-18.5B3	\$2,874.00	2
11	1800	160M	220/380 - 380/660	IE2-160M4-11B3	\$2,335.00	2
15	1800	160L	220/380 - 380/660	IE2-160L4-15B3	\$2,792.00	2
7.5	1200	160M	220/380 - 380/660	IE2-160M6-7.5B3	\$2,178.00	2
11	1200	160L	220/380 - 380/660	IE2-160L6-11B3	\$2,629.00	2

kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
22	3600	180M		IE2-180M2-22B3	\$3,599.00	2
18.5	1800	180M		IE2-180M4-18.5B3	\$3,431.00	2
22	1800	180L		IE2-180L4-22B3	\$3,708.00	2
15	1200	180L		IE2-180L6-15B3	\$3,424.00	2
30	3600	200L		IE2-200L2-30B3	\$4,607.00	2
37	3600	200L		IE2-200LX2-37B3	\$5,046.00	2
30	1800	200L		IE2-200L4-30B3	\$4,775.00	2
18.5	1200	200L		IE2-200L6-18.5B3	\$4,146.00	2
22	1200	200L		IE2-200LX6-22B3	\$4,468.00	2
45	3600	225M		IE2-225M2-45B3	\$6,119.00	2
37	1800	225S		IE2-225S4-37B3	\$6,098.00	2
45	1800	225M		IE2-225M4-45B3	\$6,528.00	2
30	1200	225M		IE2-225M6-30B3	\$6,299.00	2
55	3600	250M		IE2-250M2-55B3	\$7,580.00	2
55	1800	250M		IE2-250M4-55B3	\$7,944.00	2
37	1200	250M		IE2-250M6-37B3	\$7,227.00	2
75	3600	280S		IE2-280S2-75B3	\$10,060.00	2
90	3600	280S		IE2-280M2-90B3	\$11,155.00	2
75	1800	280S		IE2-280S4-75B3	\$10,640.00	2
90	1800	280M		IE2-280M4-90B3	\$11,363.00	2
45	1200	280S		IE2-280S6-45B3	\$8,938.00	2
55	1200	280M		IE2-280M6-55B3	\$10,137.00	2
110	3600	315S		IE2-315S2-110B3	\$18,514.00	2
132	3600	315M		IE2-315M2-132B3	\$19,762.00	2
160	3600	315L		IE2-315L2-160B3	\$21,268.00	2
200	3600	315L		IE2-315LX2-200B3	\$23,245.00	2
110	1800	315S		IE2-315S4-110B3	\$17,319.00	2
132	1800	315M		IE2-315M4-132B3	\$19,381.00	2
160	1800	315L		IE2-315L4-160B3	\$21,307.00	2
200	1800	315L		IE2-315LX4-200B3	\$24,647.00	2
75	1200	315S		IE2-315S6-75B3	\$16,531.00	2

kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
90	1200	315M		IE2-315M6-90B3	\$18,719.00	2
110	1200	315L		IE2-315L6-110B3	\$20,597.00	2
132	1200	315L		IE2-315LX6-132B3	\$22,549.00	2
250	3600	355M		IE2-355M2-250B3	\$35,159.00	2
280	3600	355L		IE2-355L2-280B3	\$36,758.00	2
315	3600	355L		IE2-355LX2-315B3	\$39,928.00	2
355	3600	355L		IE2-355LY2-355B3	\$43,359.00	2
250	1800	355M		IE2-355M4-250B3	\$35,000.00	2
280	1800	355L		IE2-355L4-280B3	\$37,138.00	2
315	1800	355L		IE2-355LX4-315B3	\$39,119.00	2
355	1800	355L		IE2-355LY4-355B3	\$43,784.00	2
160	1200	355M		IE2-355M6-160B3	\$32,581.00	2
185	1200	355M		IE2-355MX6-185B3	\$34,011.00	2
200	1200	355M		IE2-355MY6-200B3	\$35,411.00	2
220	1200	355L		IE2-355L6-220B3	\$36,412.00	2
250	1200	355L		IE2-355LX6-250B3	\$38,401.00	2
280	1200	355L		IE2-355LY6-280B3	\$40,029.00	2
400	3600	400M		IE2-400M2-400B3	\$65,788.00	2
450	3600	400M		IE2-400MX2-450B3	\$72,367.00	2
500	3600	400L		IE2-400L2-500B3	\$79,597.00	2
560	3600	400L		IE2-400LX2-560B3	\$83,380.00	2
630	3600	400L		IE2-400LY2-630B3	\$95,994.00	2
710	3600	400L		IE2-400LZ2-710B3	\$110,393.00	2
400	1800	400M		IE2-400M4-400B3	\$74,187.00	2
450	1800	400M		IE2-400MX4-450B3	\$79,540.00	2
500	1800	400L		IE2-400L4-500B3	\$84,378.00	2
560	1800	400L		IE2-400LX4-560B3	\$91,267.00	2
630	1800	400L		IE2-400LY4-630B3	\$99,053.00	2
710	1800	400L		IE2-400LZ4-710B3	\$108,959.00	2
315	1200	400M		IE2-400M6-315B3	\$73,339.00	2
355	1200	400M		IE2-400MX6-355B3	\$76,239.00	2

kW	RPM	Frame	Cat. No.	List Price	Applicable Notes
400	1200	400M	IE2-400MY6-400B3	87028	2
450	1200	400L	IE2-400L6-450B3	91766	2
500	1200	400L	IE2-400LX6-500B3	94515	2
560	1200	400L	IE2-400LY6-560B3	99712	2

NOTE: For electric motors over 560 HP, please inquire for pricing.

YG series roller table with three phase asynchronous motor is a new generation of high reliability roller motor, has small volume, light weight, good performance, reliable operation and maintenance is convenient. YG series motor installation dimension conforms to the IEC standard, enclosure protection class is IP54 and IC410 cooling, rated voltage of 460v, rated frequency 60 hz, windings in Y configuration.

- Motor Power 0.3 – 15kW.
- Terminal Box on top or on the side
- Bidirectional Rotation
- Paint System C3
- Suitable for Inverter use
- Paint Color: Light Grey. RAL7030
- IP54



IEC Frame Size	112 - 225
Poles	4, 6, 8, 10, 12, 14 16, 18 & 20
Voltage	400
Agency Approvals	CE Compliance
Warranty (Months)	12 Months
Design Ambient & Altitude	40°C & 1000 meters
Insulation Class	F
Winding Temperature Rise	80K @ 1.0 Sinusoidal supply
Service Factor	1.15 at Temperature Rise F
IEC Vibration Severity	Grade A According to IEC60034-14
Inverter Capability	Suitable for Inverter operation
Frame Material	Cast Iron
End Shield Material	Cast Iron
Conduit Box Material	Cast Iron
Conduit Box Rotation	4 x 90° degrees increments
Fan Cover Material	08F Steel
Fan	Bidirectional, Non-sparking plastic.
Mounting	Terminal Box on Top Std
Paint System	C2 according to ISO 12944
Nameplate	316 Stainless Steel
Degree of Protection	IP54
Paint Color	RAL7030

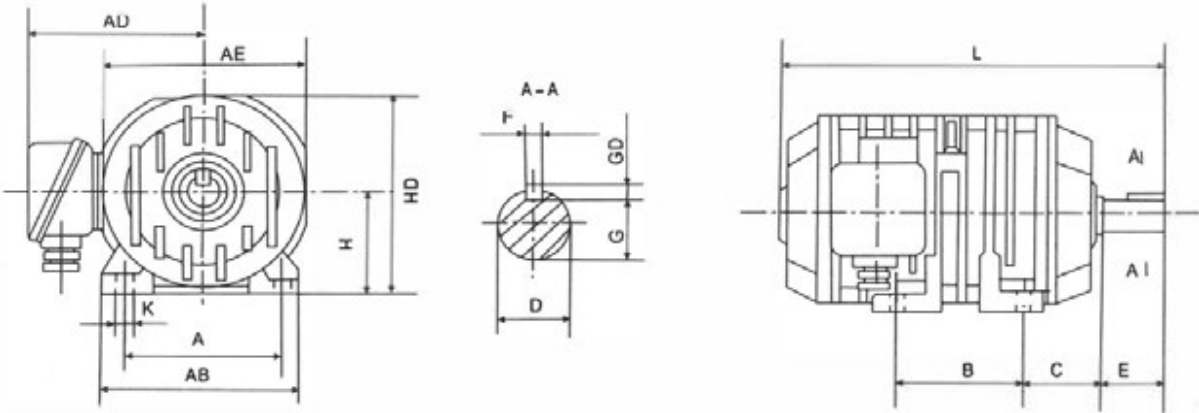
kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
0.3	600	112L	400	YGa112L1-12	O.R	
1.7	1200	132M	400	YGa132M1-6	O.R	
2.4	1200	132M	400	YGa132M2-6	O.R	
1.1	900	132M	400	YGa132M1-8	O.R	
1.6	900	132M	400	YGa132M2-8	O.R	
0.75	720	132M	400	YGa132M1-10	O.R	
1.1	720	132M	400	YGa132M2-10	O.R	
0.56	600	132M	400	YGa132M1-12	O.R	
0.85	600	132M	400	YGa132M2-12	O.R	
2.2	900	160S	400	YGa160S1-8	O.R	
3	900	160S	400	YGa160S2-8	O.R	
4	900	160L	400	YGa160L1-8	O.R	
5.3	900	160L	400	YGa160L2-8	O.R	
1.6	720	160S	400	YGa160S1-10	O.R	
2.2	720	160S	400	YGa160S2-10	O.R	
3	720	160L	400	YGa160L1-10	O.R	
3.8	720	160L	400	YGa 160L2-10	O.R	
1.2	600	160S	400	YGa160S1-12	O.R	
1.6	600	160S	400	YGa 160S2-12	O.R	
2.2	600	160L	400	YGa160L1-12	O.R	
3	600	160L	400	YGa 160L2-12	O.R	
0.48	450	160S	400	YGa160S1-16	O.R	
0.75	450	160S	400	YGa160S2-16	O.R	
1.1	450	160L	400	YGa160L 1-16	O.R	
1.6	450	160L	400	YGa160L2-16	O.R	
6.7	900	180L	400	YGa180L1-8	O.R	
4.8	720	180L	400	YGa180L 1-10	O.R	
6	720	180L	400	YGa 180L2-10	O.R	
4	600	180L	400	YGa180L 1-12	O.R	
5	600	180L	400	YGa 180L2-12	O.R	
2.2	450	180L	400	YGa180L 1-16	O.R	

kW	RPM	Frame	Volts	Cat. No.	List Price	Applicable Notes
3	450	180L	400	YGa180L2-16	O.R	
7.5	720	200L	400	YGa200L 1-10	O.R	
9.5	720	200L	400	YGa200L2-10	O.R	
6.3	600	200L	400	YGa200L 1-12	O.R	
8	600	200L	400	YGa200L2-12	O.R	
4	450	200L	400	YGa200L 1-16	O.R	
5.3	450	200L	400	YGa200L2-16	O.R	
2	360	200L	400	YGa200L 1-20	O.R	
2.8	360	200L	400	YGa200L2-20	O.R	
12	720	225M	400	YGa225M1-10	O.R	
15	720	225M	400	YGa225M2-10	O.R	
10	600	225M	400	YGa225M1-12	O.R	
12	600	225M	400	YGa225M2-12	O.R	
6.7	450	225M	400	YGa225M1-16	O.R	
8.5	450	225M	400	YGa225M2-16	O.R	
3.6	360	225M	400	YGa225M1-20	O.R	
4.5	360	225M	400	YGa225M2-20	O.R	

General Dimensions



B3 Type Appearance and Installation Dimensions (Table-3)

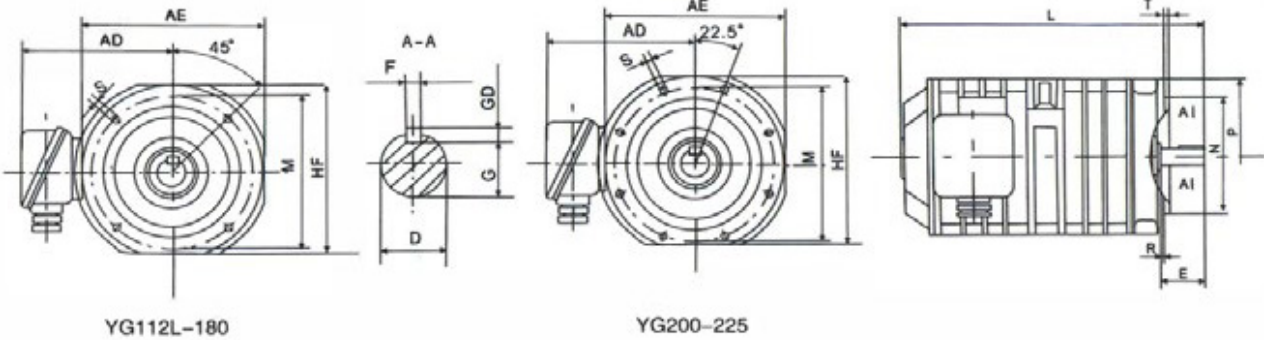


Frame Size	Installation Dimensions														
	8	B	C	D	E	F	G	GD	H	K	AB	AE	AD	HD	L
YG112L	190	159	70	32k6 (+0.018 / +0.002)	80	10	27	8	112 ⁰ _{-0.5}	12	235	240	205	235	445
YG132M	216	178	89	38k6 (+0.018 / +0.002)			33		132 ⁰ _{-0.5}		265	265	220	270	500
YG160S	254		108	48k6 (+0.018 / +0.002)	110	14	42.5	9	160 ⁰ _{-0.5}	15	315	315	245	320	565
YG160L		254													685
YG180L	279	279	121	55m6 (+0.030 / +0.011)		16	49	10	180 ⁰ _{-0.5}		360	365	290	365	730
YG200L	318	305	133	65m6 (+0.030 / +0.011)	140	18	58	11	200 ⁰ _{-0.5}	19	415	420	320	415	780
YG225M	356	311	149	75m6 (+0.030 / +0.011)		20	67.5	12	225 ⁰ _{-0.5}		465	470	345	465	840



General Dimensions

B5 Type Appearance and Installation Dimensions (Table-4)



Frame Size	Installation Dimensions														
	D	E	F	G	GD	M	N	P	R	S	T	AE	AD	HF	L
YG112L	32k6 (+0.018 / +0.002)	80	10	27	8	245	180js6 (+0.012 / -0.012)	250		15	4.0	240	205	235	445
YG132M	38k6 (+0.018 / +0.002)			33		265	230js6 (+0.014 / -0.014)	300				265	220	280	500
YG160S	48k6 (+0.018 / +0.002)	110	14	42.5	9	300	250js6 (+0.014 / -0.014)	350		19	5.0	315	245	335	565
YG160L					10				0						685
YG180L	55m6 (+0.030 / +0.011)		16	49								365	290	360	730
YG200L	65m6 (+0.030 / +0.011)	140	18	58	11	400	350js6 (+0.018 / -0.018)	450				420	320	455	780
YG225M	75m6 (+0.030 / +0.011)		20	67.5	12							470	345	460	840



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General Data

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General Data



Electric Motors

This catalogue includes technical data for the entire range of electric motors manufactured and / or distributed by OMEC Motors. These squirrel cage electric motors conform to the international IEC- and EN- standards. The production facilities conform to the international quality standards of ISO 9001.



IEC Standards



IEC Standards

DESCRIPTION	NORM
RATINGS AND PERFORMANCES	IEC 60034-1
METHODS FOR DETERMINING LOSSES AND EFFICIENCY	IEC 60034-2-1
ROTATING ELECTRICAL MACHINES, PART 30, EFFICIENCY CLASSES OF SINGLE SPEED, THREE- PHASE INDUCTION MOTORS	IEC 60034-30-1
CLASSIFICATION OF DEGREES OF PROTECTION (IP-CODE)	IEC 60034-5
METHODS OF COOLING (IC-CODE)	IEC 60034-6
CLASSIFICATION OF TYPE OF CONSTRUCTION MOUNTING ARRANGEMENTS (IM-CODE)	IEC 60034-7
TERMINAL MARKINGS AND DIRECTION OF ROTATION	IEC 60034-8
NOISE LEVELS	IEC 60034-9
BUILT-IN THERMAL PROTECTIONS	IEC 60034-11
STARTING PERFORMANCE OF ROTATING ELECTRICAL MACHINES	IEC 60034-12
MECHANICAL VIBRATIONS	IEC 60034-14
GENERAL PURPOSE THREE-PHASE INDUCTION MOTORS HAVING STANDARD DIMENSIONS AND OUTPUTS – FRAME SIZE 56 TO 315 AND FLANGE SIZE 65 TO 740	DIN EN 50347
IEC STANDARD VOLTAGES	IEC 60038



New Efficiency Classes

New efficiency levels according to IEC 60034-30:2014.

There are different standards worldwide to classify asynchronous motors. To ensure an international common base, the new international standard IEC 60034-30:2014 (Rotating electrical machines Part 30: Efficiency classes of singlespeed, three-phase, cage-induction motors (IE code)) was created.

This standard divides low voltage asynchronous motors into new efficiency classes (valid since october 2008).

The level of efficiency in the IEC 60034-30:2014 is based on the Standard IEC 60034-2-1:2007. This was introduced in November 2007 and replaces Standard IEC 60034-2:1996 from November 2010.

The supplementary load loss is now measured and no longer included in the flat rate. By comparing results from the same motor, the efficiency levels measured according to the new test method are lower than those with the old method.

New efficiency levels: The new efficiency levels are classified as follows (IE = International Efficiency):

IE1: Standard efficiency IE2: High efficiency IE3: Premium efficiency IE4: Super premium efficiency

The EcoDesign EuP directive (2005/32/CE) states the ecodesign requirements for energy-using products. It is the Commission Regulation (EC) 640/2009 that specifies the efficiency requirements for electric motors and that introduces in all countries of the European Community the obligation of the IE2 minimum efficiency level as from 16th June 2011.

At further dates, progressively higher minimum efficiency requirements will be established. The IE3 level will come into force from 2015-2017. The scope of the Commission Regulation includes single speed, three-phase 50Hz or 50/60Hz, squirrel cage asynchronous motors with rated output between 0,75kW and 375kW, 2, 4 or 6 poles, on the basis of continuous duty operation S1. Motors to be exclusively exported out of the EU may be produced and distributed with a lower IE efficiency level, even after 16th June 2011. To that end, a statement will have to be made to the manufacturer.



High Efficiency Motors

Our motors are designed and manufactured in accordance with the parameters of the new European standard for high efficiency IE1, IE2 and IE3. MS series are designed and manufactured in accordance with the parameters of the new European classification standard for IE1 and IE2.

With the exception of the OMD(H) IP23 range, all motors are totally enclosed, fan cooled, with squirrel cage rotor. OMT2, MS and TA series from frame size 56 to 160 and OMT4 series from frame size 56 to 160 are provided with aluminium frame. OMT1 and TC series from frame size 80 to 630 are provided with a cast iron frame. The IEC 60034-2-1 standard defines three IE (International Efficiency) classes of single speed three- phase cage induction motors; 50Hz and 60Hz; rated voltage up to 1000 V; duty type S1 or S3 with a rated cyclic duration factor of 80% or higher operating direct on line.

IE1: standard efficiency IE2: high efficiency from 0,75 to 375 kW, obligatory in the E.U. from 16.07.2012
IE3: premium efficiency from 7,5 to 375 kW, obligatory in the E.U. from 01.01.2015 and from 0,75 to 375 kW obligatory in the E.U. from 01.01.2017

Efficiency levels 3-phase induction motors	Efficiency Classes	Testing Standard	Performance Standard
	IEC 60034-30-1	IEC 60034-2-1	Mandatory MEPS
	Global classes IE-code 2014	incl. stray load losses 2007, rev. 2014	National policy requirement
Super Premium Efficiency	IE4	Preferred method	
Premium Efficiency	IE3		Canada(< 150kw) Mexico(< 150kw) USA(<150kw) South Korea Switzerland Japan EU Australia Israel
High Efficiency	IE2	Summation of losses with load test: pII determined from residual loss	Brazil Canada(< 150kw) China, Mexico(< 150kw) New Zealand, Turkey USA (< 150kw)
Standard Efficiency	IE1		Africa Costa Rica Taiwan



New Efficiency Classes

Rated Output	Standard Efficiency (IE1)%				High Efficiency (IE2)%				Premium Efficiency (IE3)%				Super Premium Efficiency (IE4)%			
	Number of poles				Number of poles				Number of poles				Number of poles			
kW	2	4	6	8	2	4	6	8	2	4	6	8	2	4	6	0.18
0.12					53.6	59.1	50.6	39.8	60.8	64.8	57.7	50.7	66.5	69.8	64.9	62.3
0.18					60.4	64.7	56.6	45.9	65.9	69.9	63.9	58.7	70.8	74.7	70.1	67.2
0.20					61.9	65.9	58.2	47.4	67.2	71.1	65.4	60.6	71.9	75.8	71.4	68.4
0.25					64.8	68.5	61.6	50.6	69.7	73.5	68.6	64.1	74.3	77.9	74.1	70.8
0.37					69.5	72.7	67.6	56.1	73.8	77.3	73.5	69.3	74.3	77.9	74.1	70.8
0.40					70.4	73.5	68.8	57.2	74.6	78.0	74.4	70.1	78.9	81.7	78.7	74.9
0.55	69.0	70.0	65.8	56.1	74.1	77.1	73.1	61.7	77.8	80.8	77.2	73.0	81.5	83.9	80.9	77.0
0.75	72.1	72.1	70.0	61.2	77.4	79.6	75.9	66.2	80.7	82.5	78.9	75.0	83.5	85.7	82.7	78.4
1.1	75.0	75.0	72.9	66.5	79.6	81.4	78.1	70.8	82.7	84.1	81.0	77.7	85.2	87.2	84.5	80.8
1.5	77.2	77.2	75.2	70.2	81.3	82.8	79.8	74.1	84.2	85.3	82.5	79.7	86.5	88.2	85.9	82.6
2.2	79.7	79.7	77.7	74.2	83.2	84.3	81.8	77.6	85.9	86.7	84.3	81.9	88.0	89.5	87.4	84.5
3	81.5	81.5	79.7	77.0	84.6	85.5	83.3	80.0	87.1	87.7	85.6	83.5	89.1	90.4	88.6	85.9
4	83.1	83.1	81.4	79.2	85.8	86.6	84.6	81.9	88.1	88.6	86.8	84.8	90.0	91.1	89.5	87.1
5.5	84.7	84.7	83.1	81.4	87.0	87.7	86.0	83.8	89.2	89.6	88.0	86.2	90.9	91.9	90.5	88.3
7.5	86.0	86.0	84.7	83.1	88.1	88.7	87.2	85.3	90.1	90.4	89.1	87.3	91.7	92.6	91.3	89.3
11	87.6	87.6	86.4	85.0	89.4	89.8	88.7	86.9	91.2	91.4	90.3	88.6	92.6	93.3	92.3	90.4
15	88.7	88.7	87.7	86.2	90.3	90.6	89.7	88.0	91.9	92.1	91.2	89.6	93.3	93.9	92.9	91.2
18.5	89.3	89.3	88.6	86.9	90.9	91.2	90.4	88.6	92.4	92.6	91.7	90.1	93.7	94.2	93.4	91.7
22	89.9	89.9	89.2	87.4	91.3	91.6	90.9	89.1	92.7	93.0	92.2	90.6	94.0	94.5	93.7	92.1
30	90.7	90.7	90.2	88.3	92.0	92.3	91.7	89.8	93.3	93.6	92.9	91.3	94.5	94.9	94.2	92.7
37	91.2	91.2	90.8	88.8	92.5	92.7	92.2	90.3	93.7	93.9	93.3	91.8	94.8	95.2	94.5	93.1
45	91.7	91.7	91.4	89.2	92.9	93.1	92.7	90.7	94.0	94.2	93.7	92.2	95.0	95.4	94.8	93.4

50hz

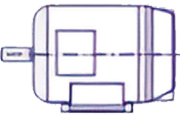
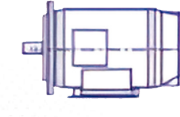
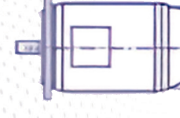




Rating Plate

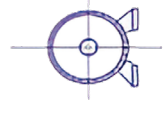
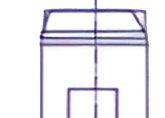
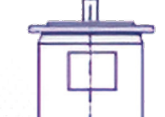

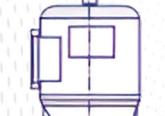

1 Motor Type	8 Standards
2 Design Version	9 Rated Power [kW]
3 Ambient Temperature	10 Rated Voltage [V]
4 Serial Number	11 Rated Current [A]
5 Insulation Class	12 Speed [RPM]
6 Protection Class	13 Power Factor
7 Duty Cycles	14 Efficiency

Mountings

Our motors are available in the design versions IM B3, IM B5, IM B14 and derived versions in accordance with standard IEC 60034-7, as outlined in the table below.

Figure	Standards / Normen			Frame Sizes / BaugöÙe		
	CEI 2-14	IEC 600034-7		56-160	180-280	315-355
		Code I	Code II			
	B3	IM B3	IM 1001	Standard	Standard	Standard
	B3 / B5	IM B35	IM 2001	Standard	Standard	Standard
	B5	IM B5	IM 3001	Standard	Standard	Upon Request
	B8	IM B8	IM 1071	Standard	Upon Request	Upon Request
	B6	IM B6	IM 1051	Standard	Upon Request	Upon Request

Mountings

Figure	Standards / Normen			Frame Sizes / BaugöÙe		
	CEI 2-14	IEC 600034-7		56-160	180-280	315-355
		Code I	Code II			
	B7	IM B7	IM 1061	Standard	Upon Request	Upon Request
	V1	IM V1	IM 3011	Standard	Standard	Standard
	V3	IM V3	IM 3031	Standard	Standard	Upon Request
	V5	IM V5	IM 1011	Standard	Standard	Upon Request
	V6	IM V6	IM 1031	Standard	Standard	Upon Request
	V1 / V5	IM V15	IM 2011	Standard	Standard	Upon Request



Ingress Protection

The motors protection degrees according to IEC 60034-5 standards, are: IP55 (standard) totally enclosed motors, fan cooled, protected against penetration of dust and water splashes coming from any direction. IP56 (upon request) totally enclosed motors, protected against dust penetration and against sea waves, for use on deck. Normally IP56 motors are supplied with external fan (IC 411 – IC 416 or IC 418). IP65 and higher are available on request.

Upon request they can be supplied without fan (IC 410). In this case the features, outputs and technical data will be supplied upon request. The external fan is covered by a fan cover with IP20 protection degree, in line with safety standards. Motors for vertical mounting V1, V5, V15 are supplied with rain cowl. The terminal box, in aluminium or cast iron, has IP55 or IP56 protection degree. Exception to the above description are our IP23 open drip proof motors in low, medium and high voltage.



General Construction Features

The motors have been designed and manufactured in compliance with international standards. The OMT1 series is available from frame size 80 to 630, OMT3 from 80 to 355, and TC from frame 80 to 355. Frames, flanges, shields and terminal boxes are in cast iron, fan covers are in sheet steel.

The OMT2 and OMT4 series are available from frame size 56 to 160 and the TA and MS series from frame size 56 to 200. Frames and terminal boxes are in aluminium, fan covers are in sheet steel and flanges are in cast iron. With the OMT1 series, terminal box from frame size 80 to 280 and frame size 400 can standard be rotated 4 x 90°. With frame sizes 315 and 355, the terminal boxes can be rotated 2 x 180°.

On request, terminal boxes 4 x 90° rotatable can be supplied. The TC series' terminal box (from frame size 56 to frame size 280), standard is mounted on the top of the motor, can be rotated in steps of 90° and can transform standard motors into motors with terminal box on left or on right. The fans standard mounted are in nylon, polyethylene or polypropylene. In addition fans in aluminium can be supplied on request.

With the following motors the feet are removable:

- OMT2 series: frame size 56 to frame size 160
- OMT4-series: frame size 56 to frame size 160
- TCR-series: frame size 80 to frame size 280
- TA-series: frame size 63 to frame size 160

Rotor Balancing

The motors are dynamically balanced with a half-key and fit vibration class A in accordance with standard IEC 60034-14. Where low noise is a priority requirement, the option Z-VR ensures reduced vibration in accordance with vibration class B. The table below reports effective velocity of vibration for normal (A) and B grade balancing.

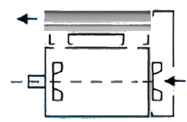
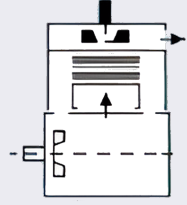
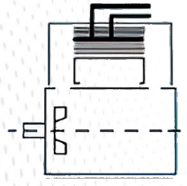
Oscillation Size Step	Shaft Height H (mm)	56 ≤ H ≤ 132			132 ≤ H ≤ 280			H ≥ 280					
		Machine Assembly			S _{eff}	V _{eff}	a _{eff}	S _{eff}	V _{eff}	a _{eff}	S _{eff}	V _{eff}	a _{eff}
		μm	mm/s	m/s ²	μm	mm/s	m/s ²	μm	mm/s	m/s ²			
A	FREE MOUNTING	25	1,6	2,5	3,5	2,2	3,5	45	2,8	4,4			
	FIXED MOUNTING	21	1,3	2	2,8	1,8	2,8	37	2,3	3,6			
B	FREE MOUNTING	11	0,7	1,1	1,7	1,1	1,7	29	1,8	2,8			
	FIXED MOUNTING	-	-	-	1,4	0,9	1,4	24	1,5	2,4			

Cooling

The designation of cooling method is given by the IC (International Cooling) code, according to IEC 60034-6. Motors in standard execution of frame sizes from 56 to 355 are supplied with IC 411 cooling systems, incorporating a bidirectional fan. All frame sizes can be supplied with cooling system IC 416 on request. In this case a proper fan is fitted inside the fan cover, suitably reinforced, in order to make the ventilation independent of the rotation speed.

Code I (Simplified)	IC	-	-	-
Circuit Arrangement I				
Method Of Fluid Circulation For The Secondary Cooling Fluid				
Method Of Fluid Circulation For The Primary Cooling Fluid				
Figure	IC Code	Description		
	IC 01	SELF VENTILATING MOTOR, SHAFT-MOUNTED FAN, INTEGRAL FAN COOLING		
	ICC 410 (IC418)	MOTOR WITH SURFACE-COOLING BY SURROUNDING AIR, ENCLOSED MACHINE, EXTERNALLY FINNED (MOTOR WITH EXTERNAL VENTILATION COOLED BY AIR FLOWING FROM THE VENTILATION DRIVEN SYSTEM, EXTERNALLY FINNED)		
	IC 411	SELF VENTILATING MOTOR, ENCLOSED MACHINE, EXTERNALLY FINNED, EXTERNAL SHAFT-MOUNTED FAN		
	IC 416	MOTOR WITH ASSISTED VENTILATION, ENCLOSED MACHINE, EXTERNALLY FINNED, INDEPENDENT EXTERNAL FAN MOUNTED INSIDE THE FAN COVER		
	IC 511	MOTOR WITH BUILT-IN COOLING PIPES AS HEAT EXCHANGER, ENCLOSED MASHINE, MOVEMENT OF INTERNAL AND EXTERNAL COOLANT FORCED BY SHAFT-MOUNTED FANS		

Cooling

Code I (Simplified)	IC	-	-	-
Circuit Arrangement I				
Method Of Fluid Circulation For The Secondary Cooling Fluid				
Method Of Fluid Circulation For The Primary Cooling Fluid				
Figure	IC Code	Description		
	IC611	MOTOR WITH EXTERNAL BUILT-ON HEAT EXCHANGER, ENCLOSED MACHINE, MOVEMENT OF INTERNAL AND EXTERNAL COOLANT FORCED BY SHAFT-MOUNTED FANS		
	IC616	MOTOR WITH EXTERNAL BUILT-ON HEAT EXCHANGER, ENCLOSED MACHINE, MOVEMENT OF INTERNAL COOLANT FORCED BY SHAFT-MOUNTED FAN, MOVEMENT OF EXTERNAL COOLANT FORCED BY INDEPENDENT EXTERNAL FAN		
	81W	MOTOR WITH EXTERNAL BUILT-ON HEAT EXCHANGER, ENCLOSED MACHINE, PRIMARY (INTERNAL) COOLANT IS AIR, MOVEMENT OF INTERNAL COOLANT FORCED BY SHAFT-MOUNTED FAN, SECONDARY (EXTERNAL) COOLANT IS WATER, MOVEMENT OF EXTERNAL COOLANT FORCED BY EXTERNAL SYSTEM		

Bearings

The OMT1 and OMT2 series have sealed pre-lubricated ball bearings, DE and NDE side, C3 tolerance from frame size 90 to 280. Frames from 280 have regreasable ball bearings. Option- ally, roller bearings (NU) are available. Larger frame sizes are on stock in both bearing configurations.

The TA and MS series from frame size 56 to 200 have sealed pre-lubricated ball bearings, DE and NDE side, C3 tolerance. TC series frame size 132 have sealed pre-lubricated ball bearings, DE and NDE side, C3 tolerance. Motors TC series from frame size 160 to 280 (including 315 2 pole) have ball bearings, DE and NDE, C3 tolerance bearings.

The TC series from frame size 315 to 355 (4,6,8 pole) have roller bearings on DE side and ball bearings on NDE side. All regreasable bearings need to be periodically re-lubricated according to the data given in the motors maintenance manuals. Motors with axial bearing constrains have an arrangement with a spring in order to absorb vibrations.

The OMT3 and OMT4 series have sealed pre-lubricated ball bearings, DE and NDE side, C3 tolerance from frame size 160 to 355. Frames from 160 have regreasable ball bearings.

The lifetime of bearings (in accordance with supplier data) is in excess of 40.000 hours, for motors with direct coupling. In the table, all specifications concerning bearings installed on motors frame size from 56 to 630 are mentioned. Generally, we use the quality brand C&U (lowest drop-out percentage in regular long-term tests). For roller bearings and larger frames, we generally use SKF. Insulated bearings are from SKF Insucoat series.



Bearings

BEARINGS OMT1, OMT2, OMT3 & OMT4						
Frame Size	2-Pole		4-Pole		>6-Pole	
	DE	NDE	DE	NDE	DE	NDE
56	6201 2RZ C3	6201 2RZ C3	6201 2RZ C3	6201 2RZ C3	/	/
63	6201 2RZ C3	6201 2RZ C3	6201 2RZ C3	6201 2RZ C3	/	/
71	6202 2RZ C3	6202 2RZ C3	6202 2RZ C3	6202 2RZ C3	6202 2RZ C3	6202 2RZ C3
80	6204 2RZ C3	6204 2RZ C3	6204 2RZ C3	6204 2RZ C3	6204 2RZ C3	6204 2RZ C3
90	6205 2RZ C3	6205 2RZ C3	6205 2RZ C3	6205 2RZ C3	6205 2RZ C3	6205 2RZ C3
100	6206 2RZ C3	6206 2RZ C3	6206 2RZ C3	6206 2RZ C3	6206 2RZ C3	6206 2RZ C3
112	6306 2RZ C3	6306 2RZ C3	6306 2RZ C3	6306 2RZ C3	6306 2RZ C3	6306 2RZ C3
132	6308 2RZ C3	6308 2RZ C3	6308 2RZ C3	6308 2RZ C3	6308 2RZ C3	6308 2RZ C3
160	6309 2RZ C3	6309 2RZ C3	6309 2RZ C3	6309 2RZ C3	6309 2RZ C3	6309 2RZ C3
180	6311 2RZ C3	6311 2RZ C3	6311 2RZ C3	6311 2RZ C3	6311 2RZ C3	6311 2RZ C3
200	6312 2RZ C3	6312 2RZ C3	6312 2RZ C3	6312 2RZ C3	6312 2RZ C3	6312 2RZ C3
225	6313 2RZ C3	6313 2RZ C3	6313 2RZ C3	6313 2RZ C3	6313 2RZ C3	6313 2RZ C3
250	6314 2RZ C3	6314 2RZ C3	6314 2RZ C3	314 2RZ C3	314 2RZ C3	314 2RZ C3
280	6314 C3	6314 C3	6317 C3	6317 C3	6317 C3	6317 C3
315	6317 C3	6317 C3	6319 C3	6319 C3	6319 C3	6319 C3
355	6317 C3	6317 C3	6322 C3	6320 C3	6320 C3	6320 C3



Bearings

BEARINGS OMT1, OMT2, OMT3 & OMT4						
Frame Size	2-Pole		4-Pole		>6-Pole	
	DE	NDE	DE	NDE	DE	NDE
80	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3
90S/L	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3
100L	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3
112M	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3
132	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3
160	6309 C3	6309 C3	6309 C3	6309 C3	6309 C3	6309 C3
180	6311 C3	6311 C3	6311 C3	6311 C3	6311 C3	6311 C3
200	6312 C3	6312 C3	6312 C3	6312 C3	6312 C3	6312 C3
225	6313 C3	6313 C3	6313 C3	6313 C3	6313 C3	6313 C3
250	6314 C3	6314 C3	6314 C3	6314 C3	6314 C3	6314 C3
280	6316 C3	6316 C3	6316 C3	6316 C3	6316 C3	6316 C3
315	6317 C3	6317 C3	NU319	6319 C3	NU319	6319 C3
355	6319 C3	6319 C3	NU322	6322 C3	NU322	6322 C3



Bearings

BEARINGS OMD IP23						
Frame Size	2-Pole		4-Pole		>6-Pole	
	DE	NDE	DE	NDE	DE	NDE
160	6310 C3	6309 C3	6310 C3	6309 C3	6310 C3	6309 C3
180	6312 C3	6312 C3	6312 C3	6312 C3	6312 C3	6312 C3
200	6313 C3	6313 C3	6313 C3	6313 C3	6313 C3	6313 C3
225	6314 C3	6314 C3	6314 C3	6314 C3	6314 C3	6314 C3
250	6314 C3	6314 C3	6317 C3	6317 C3	6317 C3	6317 C3
280	6314 C3	6314 C3	6318 C3	6318 C3	6318 C3	6318 C3
315	6317 C3	6317 C3	6319 C3	6319 C3	6319 C3	6319 C3
355	6317 C3	6317 C3	6322 C3	6320 C3	6322 C3	6320 C3

BEARINGS OMD IP23						
Frame Size	2-Pole		4-Pole		>6-Pole	
	DE	NDE	DE	NDE	DE	NDE
315	6317C3	6317C3	6319C3	6319C3	6319C3	6319C3
355	6320C3	6320C3	6322C3 (NU322)	6322C3	6322C3 (NU322)	6322C3
400	6320C3	6320C3	6326C3 (NU326)	6326C3	6326C3 (NU326)	6326C3
450	6321C3	6321C3	6328C3 (NU328)	6328C3	6328C3 (NU328)	6328C3
500	/	/	6328C3 (NU330)	6328C3	6330C3 (NU330)	6330C3
560	/	/	6328C3 (NU328)	6328C3	6334C3 (NU334)	6330C3



Bearings

BEARINGS OMT1, OMT2, OMT3 & OMT4						
Frame Size	2-Pole		4-Pole		>6-Pole	
	DE	NDE	DE	NDE	DE	NDE
71	6204 2RZ C3	6204 2RZ C3	6204 2RZ C3	6202 2RZ C3	6204 2RZ C3	6202 2RZ C3
80	6205 2RZ C3	6205 2RZ C3	6205 2RZ C3	6204 2RZ C3	6205 2RZ C3	6204 2RZ C3
90	6205 2RZ C3	6205 2RZ C3	6205 2RZ C3	6205 2RZ C3	6205 2RZ C3	6205 2RZ C3
100	6306 2RZ C3	6306 2RZ C3	6306 2RZ C3	6306 2RZ C3	6306 2RZ C3	6306 2RZ C3
112	6307 2RZ C3	6306 2RZ C3	6307 2RZ C3	6306 2RZ C3	6307 2RZ C3	6306 2RZ C3
132	6308 2RZ C3	6308 2RZ C3	6308 2RZ C3	6308 2RZ C3	6308 2RZ C3	6308 2RZ C3
160	6309 2RZ C3	6309 2RZ C3	6311 2RZ C3	6309 2RZ C3	6311 2RZ C3	6309 2RZ C3
180	6311 2RZ C3	6311 2RZ C3	6313 2RZ C3	6311 2RZ C3	6312 2RZ C3	6311 2RZ C3
200	6313 2RZ C3	6313 2RZ C3	6313 2RZ C3	6312 2RZ C3	6313 2RZ C3	6312 2RZ C3
225	6313 2RZ C3	6314 2RZ C3	6315 2RZ C3	6313 2RZ C3	6315 2RZ C3	6313 2RZ C3
250	6314 2RZ C3	6314 2RZ C3	6317 2RZ C3	6314 2RZ C3	6317 2RZ C3	6314 2RZ C3
280	6315C3	6314C3	6317C3	6317C3	6317C3	6317C3
315	6317C3	6317C3/ 7317B (V1)	6319C3	6319C3/ 76319B (V1)	6319C3	6319C3/ 76319B (V1)



Bearings

BEARINGS TA & MS Series						
Frame Size	2-Pole		4-Pole		>6-Pole	
	DE	NDE	DE	NDE	DE	NDE
56	6201 ZZ C3	6201 ZZ C3	6201 ZZ C3	6201 ZZ C3	6201 ZZ C3	6201 ZZ C3
63	6201 ZZ C3	6201 ZZ C3	6201 ZZ C3	6201 ZZ C3	6201 ZZ C3	6201 ZZ C3
71	6202 ZZ C3	6202 ZZ C3	6202 ZZ C3	6202 ZZ C3	6202 ZZ C3	6202 ZZ C3
80	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3
90	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3
100	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3
112	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3
132	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3
160	6309 ZZ C3	6309 ZZ C3	6309 ZZ C3	6309 ZZ C3	6309 ZZ C3	6309 ZZ C3

BEARINGS OMH 3kV & 6kV												
Frame Size	2-Pole		4-Pole		6-Pole		8-Pole		10-Pole		12-Pole	
	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE
355	6317C3	6317C3	6319C3	6319C3	6319C3	6319C3	6319C3	6319C3				
400	6318C3	6318C3	6322C3	6322C3	6322C3	6322C3	6322C3	6322C3				
450	6318C3	6318C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3
500	6318C3	6318C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3
560			6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3
630			6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3



Bearings

BEARINGS OMH-A 3kV & 6kV												
Frame Size	2-Pole		4-Pole		6-Pole		8-Pole		10-Pole		12-Pole	
	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE
355	6317C3	6317C3	6322C3	6322C3								
400	6320C3	6320C3	6324C3	6324C3	6324C3	6324C3	6324C3	6324C3				
450	6320C3	6320C3	6326C3	6326C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3
500	Sleeve Bearing		6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3
560	Sleeve Bearing		6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3
630	Sleeve Bearing		NU238	6338C3	NU238	6338C3	NU238	6338C3	NU238	6338C3	NU238	6338C3

BEARINGS OMH-A 3kV & 6kV												
Frame Size	2-Pole		4-Pole		6-Pole		8-Pole		10-Pole		12-Pole	
	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE
355	6317C3	6317C3	6322C3	6322C3	6322C3	6322C3						
400	6320C3	6320C3	6324C3	6324C3	6324C3	6324C3	6324C3	6324C3				
450	6320C3	6320C3	6326C3	6326C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3
500	Sleeve Bearing		6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3
560	Sleeve Bearing		6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3
630			NU238	6338C3	NU238	6338C3	NU238	6338C3	NU238	6338C3	NU238	6338C3



Bearings

BEARINGS OMH 10kV & 11kV												
Frame Size	2-Pole		4-Pole		6-Pole		8-Pole		10-Pole		12-Pole	
	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE
315	6317C3	6317C3	6319C3	6319C3	6319C3	6319C3	6319C3	6319C3				
355	6318C3	6318C3	6322C3	6322C3	6322C3	6322C3	6322C3	6322C3				
400	6318C3	6318C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3
450	6318C3	6318C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3
500			6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3	6330C3
560			6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3



Bearings

BEARINGS OMH-A 10kV & 11kV												
Frame Size	2-Pole		4-Pole		6-Pole		8-Pole		10-Pole		12-Pole	
	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE
400	6320C3	6320C3	6324C3	6324C3								
450	6320C3	6320C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3				
500	Sleeve Bearing		6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3		
560	Sleeve Bearing		6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3
630	Sleeve Bearing		NU238	6338C3	NU238	6338C3	NU238	6338C3	NU238	6338C3	NU238	6338C3

BEARINGS OMH-IP23 10kV & 11kV												
Frame Size	2-Pole		4-Pole		6-Pole		8-Pole		10-Pole		12-Pole	
	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE	DE	NDE
400	6320C3	6320C3	6324C3	6324C3								
450	6320C3	6320C3	6326C3	6326C3	6326C3	6326C3	6326C3	6326C3				
500	Sleeve Bearing		6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3	6328C3		
560	Sleeve Bearing		6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3	6334C3
630			NU238	6338C3	NU238	6338C3	NU238	6338C3	NU238	6338C3	NU238	6338C3

Terminal Box

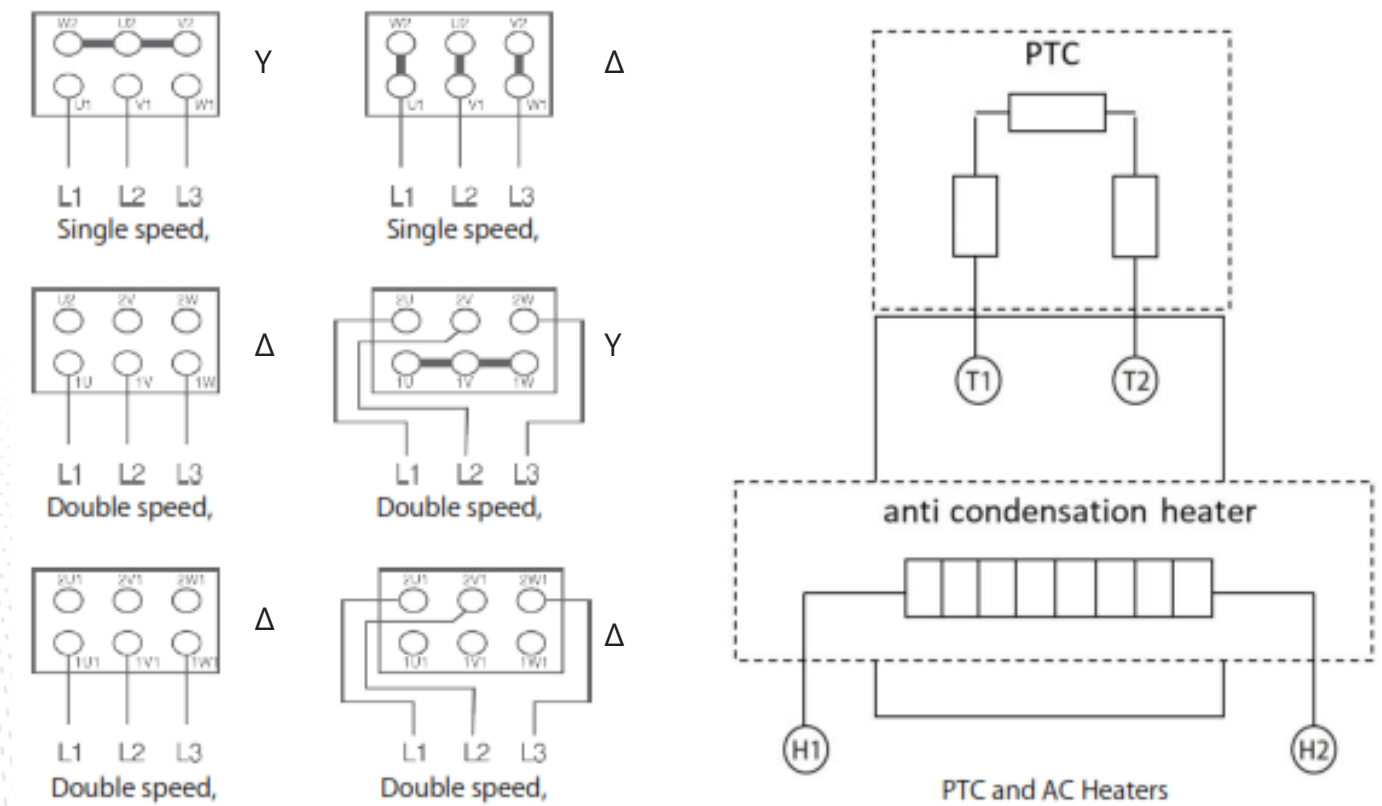
The terminal board is normally equipped with 6 terminals and is made with non-hygroscopic and mildew resistance material. Terminal boxes for OMT2, OMT4, T A and MS series are made of aluminium, OMT1, OMT3 and T C series are of cast iron. Terminal boxes have IP55 standard protection degree or IP56. OMT series have a glands M 20x 1,5 for an extra PTC connection and two cable holder from frame size 160 upwards.

In the series TA and MS from frame size 56 to 90 a gland and a plug is mounted. From frame size 100 to 200 two glands are mounted. From size 160 and bigger a cable-holder M16x1,5 for PTC connection is mounted. In the TC series two glands are mounted. From frame size 160 and bigger a gland M16x1.5 for PTC connection is mounted.

OMT 1		OMT 2		OMT3 & 4		OMD IP23	
Frame Size	Cable-Holder	Frame Size	Cable-Holder	Frame Size	Cable-Holder	Frame Size	Cable-Holder
56	1-M20 X 1.5	56-71	1-M20 X 1.5	80	2-M20X1.5	160, 180	2-M50X1.5
63-100	1-M25 X 1.5	80-100	1-M25 X 1.5	90-100	2-M25X1.5	200, 225	2-M63X1.5
112-132	1-M32 X 1.5	112-132	1-M35 X 1.5	112-132	2-M32X1.5	250	2-M63X1.5
160-80	2-M40 X 1.5	160-180	-M40 X 1.5	160-180	2-M40X1.5	280	2-M63X1.5
200-225	2-M50 X 1.5	OMT1c		200-225	2-M50X1.5	315	2-M63X1.5
250-280	2-M63 X 1.5	Frame Size	Cable-Holder	250-280	2-M63X1.5	355	2-M63X1.5
315	2-M63 X 1.5		7-M63 X 1.5	315	2-M63X1.5		
355	2-M70 X 2.0	315,355,400	7-M63 X 1.5	355	2-M63X1.5		
400	7-M63 X 1.5	450,500					

Connection

Our motors are usually delta connected (Δ) from 3 kW to allow a star-delta starting (Y/Δ) at line voltage of 400V. Upon request and for special applications, based on the powers and supply voltages, motors can be star-connected (Y). Wiring diagrams are shown below.





Insulation

All motors are fitted with F insulation class with B rise. The soft copper electrolytic wire is insulated by using a special enamel (double enamel). This is classified as H insulation class.

All insulating materials used to produce the motors are F or H insulation class. After the winding has been filled, interconnected, and fixed in the stator, it is impregnated by soaking it in oven curing F-class resins.

For special applications, the relevant motor gets tropicalized. Therefore, an enamel is used, that fits following characteristics: heatproof, humidity proof, chemical proof.

The motor also can be fitted to be used in sea-water ambiance. The impregnation cycle is carried out under vacuum (VPI).



Ratings & Technical

Power and data reported in the Technical Data Tables are for continuous duty (S1) at an ambient temperature of 40° C, max. altitude 1000 a.s.l., with supply at 400V - 50Hz.

In such conditions, the temperature rise reached by the motors is lower than the one provided for by insulation class B. The operating characteristics are guaranteed with the tolerances defined by the IEC 60034-2-1 standards and recommendations. The values are shown in the following table.

CHARACTERISTICS	TOLERANCES
Efficiency	Motor Power < 50kW -15% DI (1 - η)
	Motor Power < 50kW -10% DI (1 - η)
Power Factor	+1/6 (1 - Cos Φ) Min 0.02 Max 0.07
Locked Rotor Current	+20% Of Guaranteed Value
Locked Rotor Torque	-15% + 25% Of Guaranteed Value
Pull Out Torque	+10% Of Guaranteed Value
Slip	Motor Power < 1kW -30% Of Guaranteed Value
	Motor Power < 50kW -20% Of Guaranteed Value



Voltage & Frequency Variations

The motors from frame size 56 to 250 are designed to be used for supply at rated voltages from 220V to 690V at 50Hz and at 60Hz, motors from frame size 280 to 355 are designed to be used for supply at rated voltages from 400V to 690V at 50Hz and 60Hz.

Standard rated voltages of the motors usually in stock are:

- Up to 3kW: 230/400V 50Hz
- 3kW and up: 400/690V 50 Hz

Our motors in low-voltage execution are standard connected in Δ-wiring while motors in medium or high-voltage execution are standard connected in Y-wiring. In these supply conditions efficiencies are in compliance with the IEC 60034- 30. Our motors can work without failures if the supply voltage variations are limited as stated in the Classification Society Standards.

In particular, motors can run with voltage variations of 10% and frequency variations of 5% with a maximum combined variation of 10% with a temperature rise in compliance with the provisions of the International Association of Classification Societies (IACS).



Ambient Temperature & Deratings

The tables of technical data are referred to an ambient temperature of 50° C at sea level or an ambient temperature of 40° C at an altitude of 1.000m a.s.l.

In different environmental conditions output ratings vary and are obtainable by applying the factors as mentioned in "COOLING" maintaining the temperature rise provided for by the B insulation class.

OMEC OMT1 and OMT2 series are designed to operate at 47° C. For regions with a high ambient temperature (India, Saudi Arabia, UAE) OMEC Motors supplies motors suitable to operate at 50° C or higher.

Allowable Motor Power In %	Altitude In Meters a.s.l.								
	500	1000	1500	2000	2500	3000	3500	4000	
5	110	110	110	110	110	110	107	104	
10	110	110	110	110	110	107	104	100	
15	110	110	110	110	107	104	100	97,5	
20	110	110	110	107	104	100	97,5	92,5	
25	110	107	107	104	100	97,5	92,5	82,5	
30	110	104	104	100	97,5	92,5	87,5	72,5	
35	105	100	100	97,5	92,5	87,5	80	57,5	
40	102	97,5	97,5	92,5	87,5	80	72,5	32,5	
45	100	92,5	92,5	87,5	80	72,5	57,5	-	
50	95	87,5	87,5	80	72,5	57,5	32,5	-	
55	87,5	80	80	72,5	57,5	32,5	-	-	

Duties

All technical data reported in the tables are referred to continuous duty (S1). Upon request, motors for limited duty (S2, S6) can be supplied.

Starting

Motors are suitable for the following types of starting:

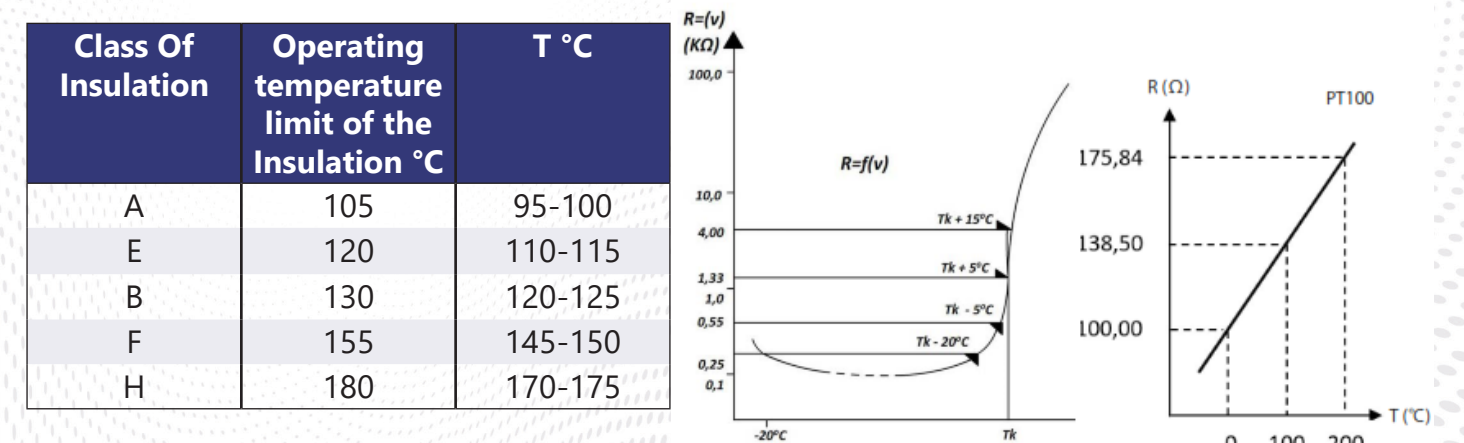
- Direct
 - Star-delta
 - By Autotransformer
- Soft-start: when the starting is finished soft-start should be by-passed. Use precaution when motor is powered with inverter.
 - By inverter: see as recommended in the paragraph "Inverter Supply".

Thermal Protections

All our motors have inbuilt positive temperature coefficient thermistors PTC. These protections quickly change their standard resistance value at their active temperature.

- < 250Ω at a temperature from TK -20° C to +20°C
- < 550Ω at a temperature of TK -5°C
- > 1330Ω at a temperature of TK +5°C
- > 4000Ω at a temperature of TK +15°C

The PTCs are directly installed in the head of the coils so that every change of the temperature is measured. The characteristic of the curve (shown below) demonstrates that the increase of the PTCs in the resistance from the switching point onwards is exponential. The behaviour of the PTC's in the relevant range of the temperature from TK = 60°C is in accordance to IEC 60738-1.



Thermal Protections

Upon request, the following thermal protections can be installed on the motors:

- Bimetallic devices Motor protectors with contact normally closed. The contact opens when the winding temperature reaches limits dangerous to the insulation system of the motor.
- Platinum resistance thermometers PT100 Variable linear resistance with the winding temperature. Device particularly suitable for a continuous winding temperature monitoring. The protection is normally made by 3 sensitive elements, one for every phase, series connected and with two terminals in a specially provided terminal board located in the main terminal box or in a specially provided auxiliary terminal box.

Anti-Condensation Heaters

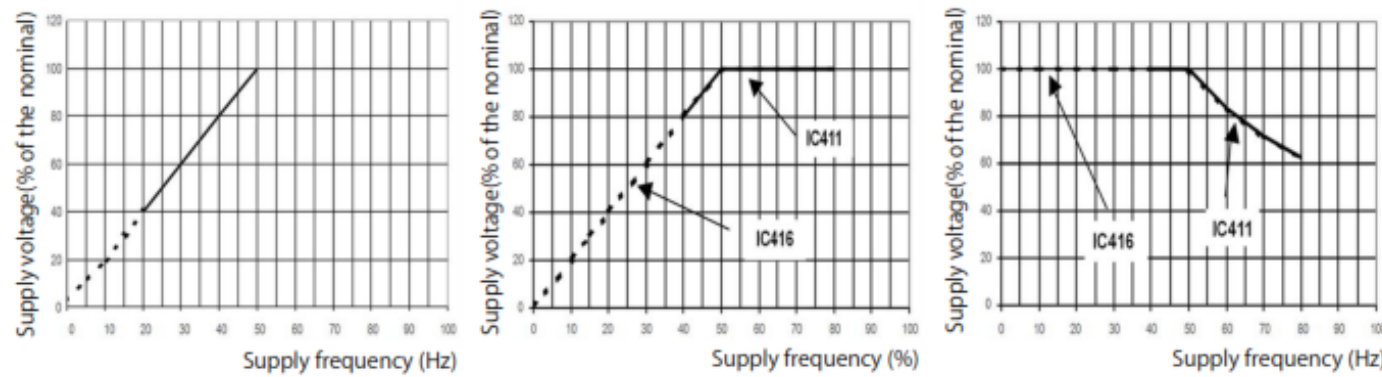
Motors subject to atmospheric condensation, either through standing idle in damp environments or because of wide ambient temperature variations, may be fitted with anti-condensation heaters. They are of tape form and are normally mounted on the stator winding head.

Anti-condensation heaters are normally switched on automatically, mostly when the motor is in stillstand. When the supply to the motor is interrupted, heating the motor is used to avoid water condensation. Normal supply voltage is 115V or 220/240V. Anti-condensation heater terminals are led to a specially provided terminal board located in the main terminal box. Upon request they can be led to a terminal board located in an auxiliary terminal box. The power values normally used are shown in the following table:

Heater			
Low Voltage		High Voltage	
Frame	Frame	Frame	Frame
H71	1X10W 230V/50HZ	H355	2X200W 230V/50HZ
H80	1X20W 230V/50HZ	H400	2X200W 230V/50HZ
H90	1X20W 230V/50HZ	H450	2X250W 230V/50HZ
H100	1X20W 230V/50HZ	H500	2X250W 230V/50HZ
H112	1X40W 230V/50HZ	H560	2X250W 230V/50HZ
H132	1X40W 230V/50HZ	H630	2X250W 230V/50HZ
H160	1X40W 230V/50HZ	H710	2X500W 230V/50HZ
H180	1X50W 230V/50HZ	H800	2X500W 230V/50HZ
H200	1X50W 230V/50HZ	-	-
H225	1X60W 230V/50HZ	-	-
H250	1X60W 230V/50HZ	-	-
H280	1X60W 230V/50HZ	-	-
H315	2X80W 230V/50HZ	-	-
H355	3X80W 230V/50HZ	-	-
H400	4X80W 230V/50HZ	-	-

Inverter Supply

All our motors are designed to be supplied by inverter (VFD, Variable Frequency Drive). These motors can be driven up to the rated frequency (50Hz) with supply voltage proportional to the frequency (see diagr. 1), at higher frequencies they can be supplied at constant voltage up to the achievement of 87Hz (see diagr. 2).



By the type of supply shown in diagr. 3, the flux created by the stator windings will be constant from 0 frequency to 50Hz frequency, at frequencies higher than 50 Hz, the flux will be lower than the maximum value.

NOTE: At low frequencies (0 – approx. 10 Hz), due to the voltage drops, the supply voltage should be slightly increased in order to keep the flux constant. This voltage increase depends both on the motor type and on the inverter type. Consequently the motors in standard execution (self ventilating code IC411) are able to run at constant torque between 25 and 50 Hz and at constant power in the section included between 50 and 87 Hz (see diagram 2 and 3).

Δt F(F) Temperature rise

Upon request, motors can be equipped with an auxiliary fan (code IC 416), in this case they can supply a constant torque between 0 and 50 Hz and a constant power in the section included between 50 and 87Hz.

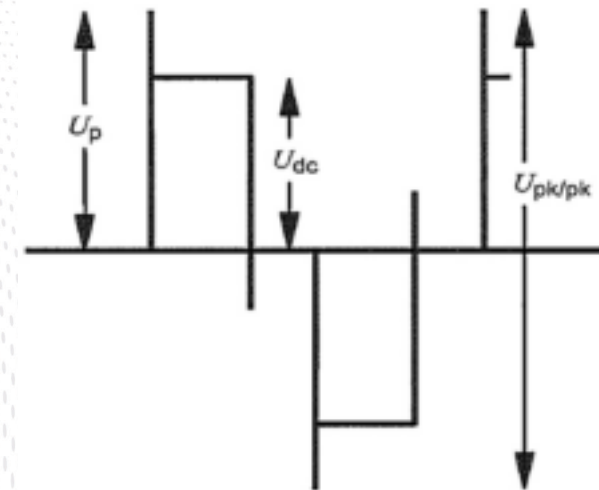
VFD: Motor Features

The asynchronous three-phase motors to be used for inverter allow an optimum of reliable operation. It has to be considered that generally the inverter supplying the asynchronous motor with a non sinusoidal current having a certain harmful effect. This is due in particular: to the type of inverter, to the value of the switch frequency, to the length of the supply cables.

Moreover, steep voltage fronts to the motor terminals (du/dt) originated by the short commutation times of the IGBT, generate considerable stresses on the insulating materials. Consequently the motor insulation must be carried out with the utmost care because it has to be able to withstand such higher stresses.

Our Motors can be executed upon request with Corona-resistant wiring. This wiring is tested for 3000V voltage peak to peak.

Taking into account the number of turns/coil and the number of coils, all motors produced are categorized as: category C- severe.



Summary of Stress Categories		
Stress Category	Overshoot Factor	Impulse Rise Time t_r
	U_p/U_{dc}	μs
A - BENIGN	$\leq 1,1$	$\geq 1,0$
B - MOODERATE	$\leq 1,5$	$\geq 0,3$
C - SEVERE	$\leq 2,0$	$\geq 0,1$
D - EXTREME	$\leq 2,5$	$\geq 0,05$



VFD: Voltage, Bearings & Windings

Motors for VFD application must have:

1. Formed windings (Frame sizes larger than 355)
2. Current Insulated Bearings (Frame sizes larger than 280)
3. EMC Cable Glands
4. Grounding for high frequency

The motors for VFD-application are available for the following voltages and in following frame sizes:

Frame Size	Voltage		Bearing
	400-480 V	500-690 V	
56-200	ST	CRW	STANDARD BEARING
225-280	ST	CRW	CIB, CUSTOMER CHOICE
315	ST	CRW	CIB HIGHLY RECOMMENDED
355	ST	CRW	CIB HIGHLY RECOMMENDED
400	CRW	CRW	CIB HIGHLY RECOMMENDED
450	CRW	FW	CIB HIGHLY RECOMMENDED
500	CRW	FW	CIB HIGHLY RECOMMENDED

Type	Description	Upk	du/dt
		[V]	kV/ μ s
ST	STANDARD WINDING	<1900	2,5
CRW	CORONA RESISTANT WINDING <3000 3,0	<3000	3,0
FW	FORMED WINDINGS	<5000	4,5



Insulated Shield (NDE)

Most VFD-produced bearing currents are one of two types:

1. Discharge of capacitively produced shaft voltages
2. High-frequency creeping currents.

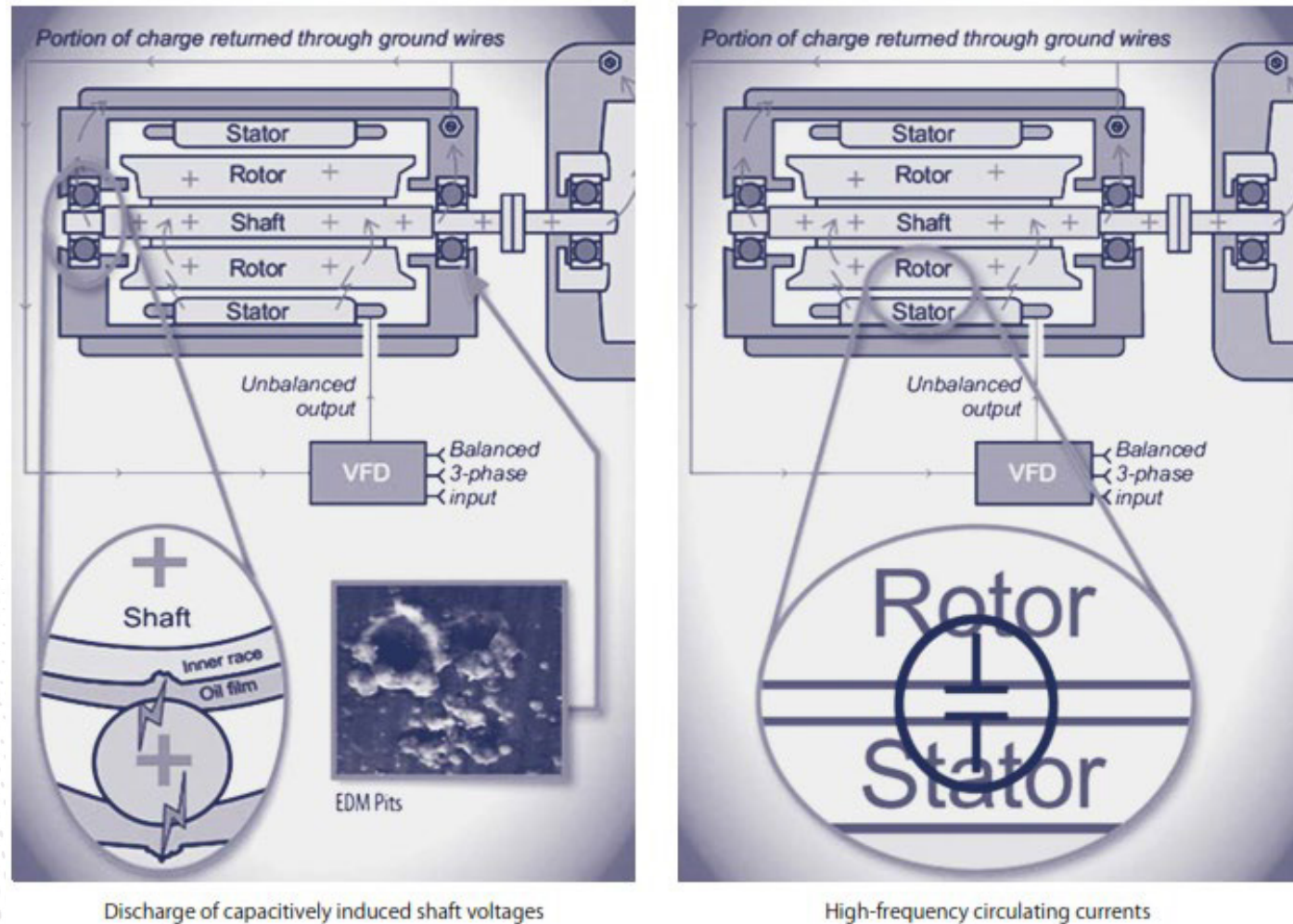
Together, these two types account for 90-95% of all bearing currents. Common mode or capacitive bearing currents, known as bearing current A, are caused by capacitance between the stator and rotor. When the VFD switches between output states, the rapid change in stator voltage capacitively produces a voltage on the shaft.

That voltage can build up until it discharges through the bearings. Bearing current A can occur in motors of any size from fractional kW on up.

In addition to bearing current A, motors over about 75kW are prone to high-frequency creeping currents. Known as bearing current B, these high-frequency creeping currents flow as a result of high-frequency flux produced by large common-mode currents.

These currents circulate from the motor shaft through bearings to the motor frame and back. Regardless of the source of the current, AEGIS® Shaft Grounding Rings divert harmful discharges safely around the bearings, protecting them and ensuring motor and system reliability.

Insulated Shield (NDE)



Discharge of capacitively induced shaft voltages

High-frequency circulating currents

Maximum Speed

Motors supplied by inverter can run at a frequency higher than the rated one supplying the rated power up to the maximum frequency mentioned in the table below. In these conditions the motor maximum torque remains 1.6 times higher than the rated torque.

Frame Size	Max Supply Frequency			
	2 poles	4 poles	6 poles	8 poles
56-90	75	75	60	60
100-112	70	70	60	60
132-160	65	65	60	60

It is also possible to supply motors at a higher frequency. In this case, the deliverable motor powers will be progressively reduced. In any case, the motor maximum speeds, also at no load operation or dragged by the machine, must never exceed the limit mentioned in the following table:

Frame Size	Max Supply Frequency			
	2 poles	4 poles	6 poles	8 poles
132	5000	5000	4500	4500
160	5000	5000	4500	4500
180	5000	5000	4500	4500
200	5000	5000	4500	4500
225	4500	4500	4000	4000
250	4000	4000	3800	3800
280	4000	3000	3000	3000
315	3600	2600	2600	2600
355	3600	2600	2600	2600



Auxiliary Fans

All frame sizes of OMEC motors can be supplied with OMEC cooling system IC416 (forced ventilation) on request. In this case a proper fan is fitted inside the fan cover, suitably reinforced.

Consequently the ventilation is independent of the rotation speed of the motor itself. This solution is particularly suitable for inverter supplied motors.

OMT1 & OMT2 Motors						
Frame Size	Max Input	Voltage (50 Hz)	Current	Speed	Weight	Extended Length
	W	V	I	RPM	kg	mm
63A	30	3 X 400	0,08	2300	1	55
71A	30	3 X 400	0,08	2700	1	69
80A	30	3 X 400	0,09	2300	1,5	78
90A	42	3 X 400	0,13	2800	1,8	90
100A	52	3 X 400	0,13	2800	2,2	90
112A	60	3 X 400	0,13	2730	2,4	100
132A	40	3 X 400	0,1	1300	3,4	100
160A	80	3 X 400	0,2	1350	4,8	150
180A	90	3 X 400	0,3	1300	5,4	180
200A	150	3 X 400	0,6	1350	11	185
225A	200	3 X 400	0,6	1350	13	185
250A	220	3 X 400	0,6	1350	15	210
280A	320	3 X 400	1,1	1350	27	290
355A	600	3 X 400	1,8	1350	36	380



Auxiliary Fans

TC, TA & MS Motors						
Frame Size	Three Phase Supply Voltage	Supply Frequency	Input Power	Extended Length MS Series	Extended Length TA Series	Extended Length TC Series
	230/400V	50 Hz	W	mm	mm	mm
63	230/400	50	20	92	92	-
71	230/400	50	25	92	105	-
80	230/400	50	29	98	110	-
90	230/400	50	32	97	110	-
100	230/400	50	58	103	120	-
112	230/400	50	69	93	125	-
132	230/400	50	52	109	120	120
160	230/400	50	70	-	145	130
180	230/400	50	85	-	-	130
200	230/400	50	105	-	-	140
225	230/400	50	105	-	-	160
250	230/400	50	115	-	-	167
280	230/400	50	180	-	-	175
315	230/400	50	480	-	-	205
355	230/400	50	460	-	-	205

Permissible Radial & Axial Loads

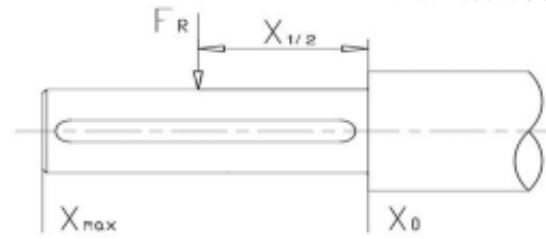
The following tables represent the permissible radial forces in Newton, assuming zero axial force. Our motors are standard executed with ball bearings.

In case of higher radial forces than given in the tables an enforced bearing should be used. In case of higher axial force than given in the tables an angular contact bearing should be used.

The values are based on normal conditions at 50 Hz and calculated at 20.000 working hours for the two pole motors and 40.000 working hours for 4,6 and 8 poles. For 60 Hz the value must be reduced by 10%. For two speed motors, calculations are based on the highest speed.

When the desired bearing life has been determined, the minimum pulley diameter can be calculated with the following formula:

$$D = \frac{1.9 * 10^7 * k * PN}{nN * FR}$$



- D** = Diameter of the Pulley (mm)
- PN** = Power of the Motor (kW)
- nN** = Motor Rated Speed (r/min)
- k**= Belt Tension Factor, k= 2,5 for V-belt
- FR(X)** = Permissible Radial Force (N)
- FR** = FXO - x/E (FxoFxmax) (N)
- E** = The Length of the Shaft Diameter (mm)

Permissible Radial & Axial Loads

Poles	Frame Size	Radial & Axial Force Aluminium				Shaft Length (mm)	Maximum Axial Force (FA)	
		Maximum Radial Force (FR)					(L10h) = 20000 hrs	(L10h) = 40000 hrs
		(L10h) = 20000 hrs	(L10h) = 40000 hrs	X=0	Xmax			
2	63	315	273	245	210	16,1	266	203
	71	371	315	294	245	21	322	238
	80	504	413	392	322	28	434	329
	90	560	448	427	350	35	462	343
	100	770	630	609	490	42	651	483
	112	770	609	588	476	42	630	469
	132	1260	980	980	770	56	1015	756
	160	2100	1645	1610	1260	77	1701	1260
	180	2450	1960	1890	1554	77	1960	1449
	200	3220	2688	2520	2030	77	2590	1890
4	63	399	343	315	273	16,1	357	269,5
	71	483	406	378	322	21	434	329
	80	644	525	504	406	28	595	444,5
	90	700	567	539	441	35	623	461,3
	100	945	756	735	581	42	840	616
	112	910	735	700	560	42	819	595
	132	1470	1183	1120	910	56	1295	938
	160	2590	1960	1995	1540	77	2205	1631
	180	3010	2380	2345	1890	77	2590	1890
	200	4480	3570	3080	2520	77	2870	1995
6	63	441	378	350	301	77	420	308
	71	525	441	413	343	16,1	504	371
	80	756	616	588	483	28	721	535
	90	7891	644	609	490	35	728	539



Permissible Radial & Axial Loads

Radial & Axial Force Aluminium								
Poles	Frame Size	Maximum Radial Force (FR)				Shaft Length (mm)	Maximum Axial Force (FA)	
		(L10h) = 20000 hrs		(L10h) = 40000 hrs			(L10h) = 20000 hrs	(L10h) = 40000 hrs
		X0	Xmax	X=0	Xmax			
6	100	1099	882	854	700	42	1001	735
	112	1050	840	805	651	42	980	714
	132	1610	1330	1260	1001	56	1505	1099
	160	2940	2310	2240	1750	77	2590	1911
	180	3360	2660	2520	2030	77	2380	1729
	200	4620	3850	3570	2940	77	3990	2940
	63	539	462	420	364	16,1	490	371
	71	630	539	504	427	21	588	441
	80	910	728	700	574	28	840	630
	90	910	735	714	581	35	854	637
8	100	1330	1085	1050	840	42	1365	1022
	112	1330	1085	1050	840	42	1344	1008
	132	1960	1575	1505	1190	56	1778	1309
	160	3360	2590	2590	2030	77	3080	2310
	180	3850	3080	3010	2380	77	2800	2051
	200	5110	4200	3920	3220	77	3640	2695



Permissible Radial & Axial Loads

Radial & Axial Force Cast Iron 2-pole / 4-pole						
Poles	Frame Size	Maximum Radial Force (FR)			Maximum Axial Force (FA)	
		Xo	X1/2	Xmax	B3 Fpressure	B3 Fpull
2	56	175	126	70	140	140
	63	252	210	161	175	175
	71	329	280	224	189	189
	80	469	427	385	266	266
	90	518	462	413	308	308
	100	721	644	574	427	427
	112	1043	931	840	854	854
	132	1512	1330	1183	1050	1050
	160	1960	1708	1519	1155	1155
	180	2751	2450	2205	1470	1470
	200	3136	2835	2590	1680	1680
	225	3500	3178	2912	1904	1904
	250	3976	3570	3234	2170	2170
	280	3934	3556	3548	3710	2170
	315	5159	4788	4473	4130	2660
	355	11431	10773	6111	4270	1295
4	56	175	196	70	168	168
	63	252	210	161	196	196
	71	329	280	224	245	245
	80	511	455	413	329	329
	90	560	497	441	385	385
	100	777	693	653	525	525
	112	1120	1001	903	1008	1008
	132	1631	1428	1274	1246	1246
	160	2100	1841	1631	1470	1470
	180	2968	2639	2373	1820	1820
	200	3374	3052	2786	2184	2184
	225	3752	3304	2947	2436	2436
	250	4284	3843	3486	2730	2730
	280	5453	4935	4501	4410	3080
	315	6405	58559	5404	4970	3570
	355	19810	18102	10003	6860	2730
400	23611	21798	13496	7840	2730	

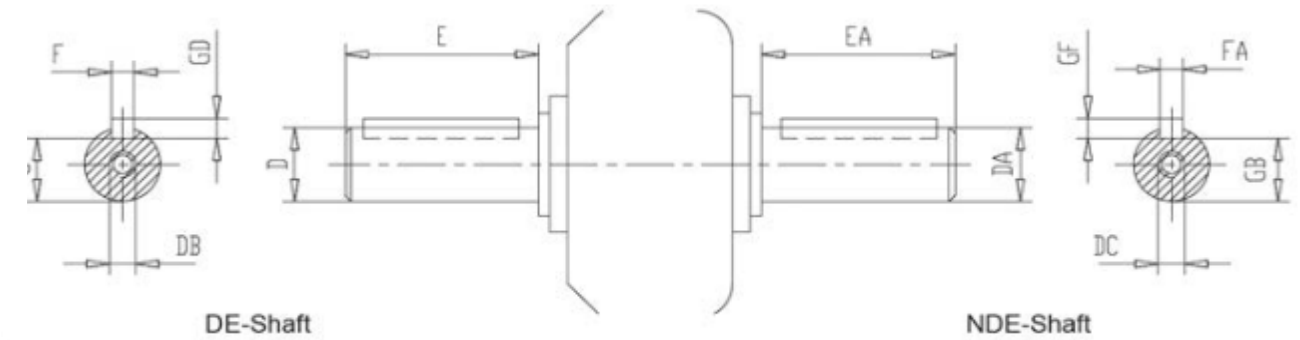
Permissible Radial & Axial Loads

Radial & Axial Force Cast Iron 2-pole / 4-pole						
Poles	Frame Size	Maximum Radial Force (FR)			Maximum Axial Force (FA)	
		Xo	X1/2	Xmax	B3 Fpressure	B3 Fpull
6	71	329	280	224	308	308
	80	581	525	476	413	413
	90	644	567	511	434	434
	100	889	791	714	616	616
	112	1288	1148	1036	1155	1155
	132	1869	1638	1456	1274	1274
	160	2408	2107	1869	1715	1715
	180	3423	3073	2786	2030	2030
	200	3864	3500	3192	2436	2436
	225	4326	3836	3444	2723	2723
	250	4900	4396	3990	3115	3115
	280	6244	5642	5152	4690	3010
	315	7336	6713	6181	5320	4060
	355	22680	20720	11445	7350	3290
400	27027	24955	15449	8750	3360	
8	80	644	574	525	434	434
	90	707	623	560	448	448
	100	980	868	784	626,5	626,5
	112	1414	1260	1141	1246	1246
	132	2058	1799	1603	1344	1344
	160	2695	2387	2142	1855	1855
	180	3766	3381	3066	2219	2219
	200	4256	3850	3514	2765	2765
	225	4725	4158	3717	3031	3031
	250	5397	4844	4389	3486	3486
	280	6874	6216	5670	4970	3514
315	8071	7385	6804	5670	4410	
355	24962	22806	12600	8750	4200	
400	29750	27468	17003	8960	3465	

Shaft Dimensions

The schematics below illustrate the basic dimensions of the shafts of electric motors.

Shaft Schematics



Shaft Dimensions IP55													
Frame	Pole	D	DA	E	EA	F	FA	G	GB	GD	GF	DB	DC
56	2-4	Ø9J6	Ø9J6	20	20	3	3	7	7	3	3	M3	M3
63	2-4	Ø11J6	Ø11J6	23	23	4	4	8,5	8,5	4	4	M4	M4
71	2-6	Ø14J6	Ø14J6	30	30	5	5	11	11	5	5	M5	M5
80	2-8	Ø19J6	Ø19J6	40	40	6	6	15,5	15,5	6	6	M6	M6
90S	2-8	Ø24J6	Ø24J6	50	50	8	8	20	20	7	7	M8	M8
90L	2-8	Ø24J6	Ø24J6	50	50	8	8	20	20	7	7	M8	M8
100L	2-8	Ø28J6	Ø28J6	60	60	8	8	24	24	7	7	M10	M10
112M	2-8	Ø28J6	Ø28J6	60	60	8	8	24	24	7	7	M10	M10
132S	2-8	Ø38K6	Ø38K6	80	80	10	10	33	33	8	8	M12	M12
132M	2-8	Ø38K6	Ø38K6	80	80	10	10	33	33	8	8	M12	M12
160M	2-8	Ø42J6	Ø42J6	110	110	12	12	37	37	8	8	M16	M16
160L	2-8	Ø42K6	Ø42K6	110	110	12	12	37	37	8	8	M16	M16

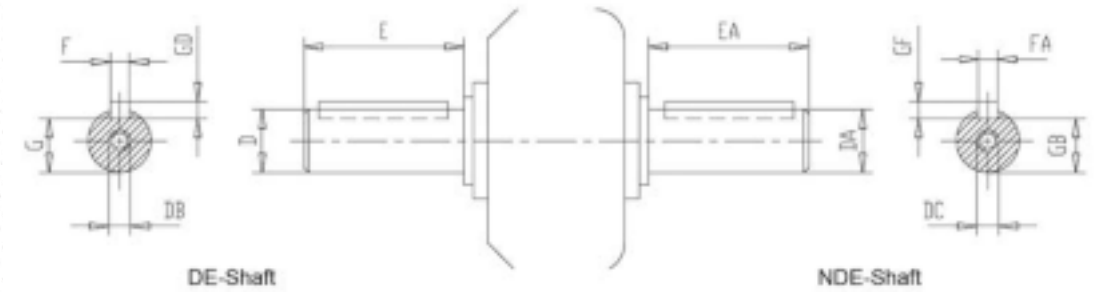
Shaft Schematics

Shaft Dimensions IP55													
Frame	Pole	D	DA	E	EA	F	FA	G	GB	GD	GF	DB	DC
180M	2-4	Ø48K6	Ø48K6	110	110	14	14	42,5	42,5	9	9	M16	M16
180L	2-8	Ø48K6	Ø48K6	110	110	14	14	42,5	42,5	9	9	M16	M16
200L1	2	Ø55M6	Ø48K6	110	110	16	14	49	42,5	10	9	M20	M20
200L2	2-8	Ø55M6	Ø55M6	110	110	16	16	49	49	10	10	M20	M20
225S	4-8	Ø60M6	Ø55M6	140	110	18	16	53	49	11	10	M20	M20
225M1	2	Ø60M6	Ø48K6	110	110	16	14	49	49	10	9	M20	M20
225M2	4-8	Ø65M6	Ø55M6	140	110	18	16	53	49	11	10	M20	M20
250M1	2	Ø60M6	Ø55M6	140	110	18	16	53	53	11	10	M20	M20
250M2	4-8	Ø65M6	Ø55M6	140	110	18	16	58	49	11	10	M20	M20
280S1	2	Ø65M6	Ø55M6	140	110	18	16	58	53	11	10	M20	M20
280S2	4-8	Ø75M6	Ø65M6	140	140	20	18	67,5	67,5	12	10	M20	M20
280M1	2	Ø65M6	Ø55M6	140	110	18	16	58	58	11	11	M20	M20
280M2	4-8	Ø75M6	Ø65M6	140	140	20	20	67,5	67,5	12	10	M20	M20
315S1	2	Ø65M6	Ø65M6	140	140	18	18	58	58	11	11	M20	M20
315S2	4-8	Ø80M6	Ø80M6	170	170	22	22	71	71	14	11	M20	M20
315M	2	Ø65M6	Ø65M6	140	140	18	18	58	58	11	14	M20	M20
315L	4-8	Ø80M6	Ø80M6	170	170	22	22	71	71	14	14	M20	M20
355M1	2	Ø80M6	Ø80M6	170	170	20	20	71	67,5	14	12	M20	M20
355M2	4-8	Ø100M6	Ø100M6	210	210	25	25	90	86	16	14	M20	M20
355L1	2	Ø80M6	Ø80M6	170	170	20	20	71	67,5	14	12	M20	M20
355L2	4-8	Ø100M6	Ø95M6	210	210	25	25	90	86	16	14	M20	M20
400M	2	Ø80M6	Ø80M6	170	170	22	22	71	71	14	14	M24	M24
400L	4-8	Ø110M6	Ø110M6	210	210	28	28	100	100	16	16	M24	M24

Shaft Schematics

Shaft Dimensions IP55												
Frame	Pole	D	DA	E	EA	F	FA	G	GB	GD	GF	
315	2	Ø65M6	Ø65M6	140	140	18	18	58	58	11	11	
315	4-6	Ø80M6	Ø80M6	170	170	22	22	71	71	14	14	
355	2	Ø75M6	Ø75M6	140	140	20	20	68	68	12	12	
355	4-6	Ø100M6	Ø100M6	210	210	28	28	90	90	16	16	
400	2	Ø80M6	Ø80M6	170	170	22	22	71	71	14	14	
400	4-6	Ø110M6	Ø110M6	210	210	28	28	100	100	16	16	
450	2	Ø95M6	Ø95M6	170	170	25	25	86	86	14	14	
450	4-6	Ø120M6	Ø120M6	210	210	32	32	109	109	18	18	
500	4-6	Ø140M6	Ø140M6	250	250	36	36	128	128	20	20	
560	4-6	Ø160M6	Ø160M6	300	250	40	40	147	147	22	22	

Shaft Schematics





Shaft Schematics

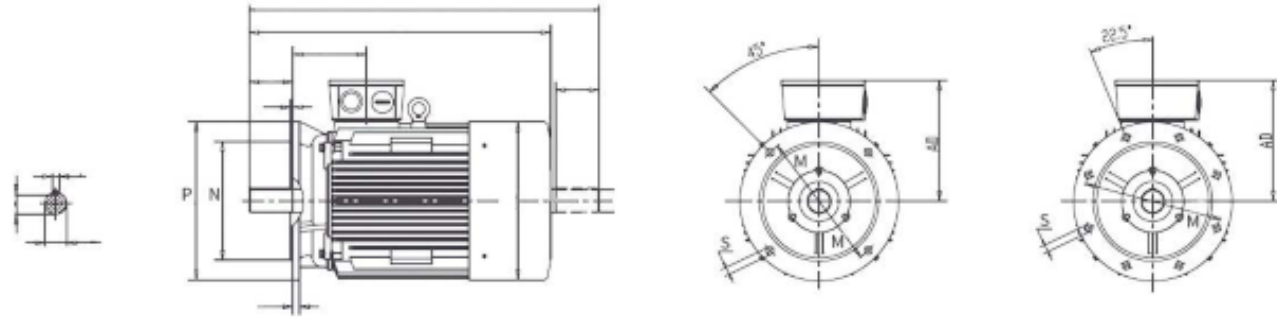
Shaft Dimensions IP23													
Frame	Pole	D	DA	E	EA	F	FA	G	GB	GD	GF	DB	DC
160M	2-6	Ø48K6	Ø48K6	110	110	14	14	42,5	42,5	9	9	M16	M16
160L	2-6	Ø48K6	Ø48K6	110	110	14	14	42,5	42,5	9	9	M16	M16
180M	2-6	Ø55M6	Ø55M6	110	110	16	16	49	49	10	10	M20	M20
180L	2-6	Ø55M6	Ø55M6	110	110	16	16	49	49	10	10	M20	M20
200M	2-6	Ø60M6	Ø60M6	140	140	18	18	53	53	11	11	M20	M20
200L	2-6	Ø60M6	Ø60M6	140	140	18	18	53	53	11	11	M20	M20
225S	2	Ø60M6	Ø60M6	140	140	18	18	53	53	11	11	M20	M20
225S	4-6	Ø65M6	Ø65M6	140	140	18	18	58	58	11	11	M20	M20
225M	2	Ø60M6	Ø60M6	140	140	18	18	53	53	11	11	M20	M20
225M	4-6	Ø65M6	Ø65M6	140	140	18	18	58	58	11	11	M20	M20
250S	2	Ø65M6	Ø65M6	140	140	18	18	58	58	11	11	M20	M20
250S	4-6	Ø75M6	Ø75M6	140	140	20	20	67,5	67,5	11	11	M20	M20
250M	2	Ø65M6	Ø65M6	140	140	18	18	58	58	11	11	M20	M20
250M	4-6	Ø75M6	Ø75M6	140	140	20	20	67,5	67,5	12	12	M20	M20
280S	2	Ø65M6	Ø65M6	140	140	18	18	58	58	11	11	M20	M20
280S	4-6	Ø80M6	Ø80M6	170	170	22	22	71	71	14	14	M20	M20
280M	2	Ø65M6	Ø65M6	140	140	18	18	58	58	11	11	M20	M20
280M	4-6	Ø80M6	Ø80M6	170	170	22	22	71	71	14	14	M20	M20
315S	2	Ø70M6	Ø70M6	140	140	20	20	62,5	62,5	12	12	M20	M20
315S	4-6	Ø90M6	Ø90M6	170	170	25	25	81	81	14	14	M20	M20
315M	2	Ø70M6	Ø70M6	140	140	20	20	62,5	62,5	12	12	M20	M20
315M	4-6	Ø90M6	Ø90M6	170	170	25	25	81	81	14	14	M20	M20
315L (a)	2	Ø70M6	Ø70M6	140	140	20	20	62,5	62,5	12	12	M20	M20
315L (a)	4-6	Ø90M6	Ø90M6	170	170	25	25	81	81	14	14	M20	M20
315L (b)	2	Ø70M6	Ø70M6	140	140	20	20	62,5	62,5	12	12	M20	M20
315L (b)	4-6	Ø90M6	Ø90M6	170	170	25	25	81	81	14	14	M20	M20
355M	2	Ø80M6	Ø80M6	170	170	22	22	71	71	14	14	M24	M24
355M	4-6	Ø100M6	Ø95M6	210	100	28	28	90	90	16	16	M24	M24
355L	2	Ø80M6	Ø80M6	170	170	22	22	71	71	14	14	M24	M24
355L	4-6	Ø100M6	Ø95M6	210	100	28	28	90	90	16	16	M24	M24



Shaft Schematics

Shaft Dimensions IP23											
Frame	Pole	D	DA	E	EA	F	FA	G	GB	GD	GF
315	2	Ø65M6	Ø65M6	140	140	20	20	63	63	12	12
315	4-6	Ø80M6	Ø80M6	170	170	25	25	81	81	14	14
355	2	Ø75M6	Ø75M6	140	140	20	20	68	68	12	12
355	4-6	Ø100M6	Ø100M6	210	210	28	28	90	90	16	16
400	2	Ø85M6	Ø85M6	170	170	22	22	76	76	14	14
400	4-6	Ø110M6	Ø110M6	210	210	28	28	100	100	16	16
450	2	Ø95M6	Ø95M6	170	170	25	25	86	86	14	14
450	4	Ø120M6	Ø120M6	210	210	32	32	109	109	18	18
450	6	Ø130M6	Ø130M6	250	250	32	32	119	119	18	18
500	4	Ø130M6	Ø130M6	250	250	32	32	119	119	18	18
500	6	Ø140M6	Ø140M6	250	250	36	36	128	128	20	20
560	4	Ø150M6	Ø150M6	250	250	36	36	138	138	20	20
560	6	Ø160M6	Ø160M6	300	300	40	40	147	147	22	22

Flange Schematics Cast Iron IP55 B5



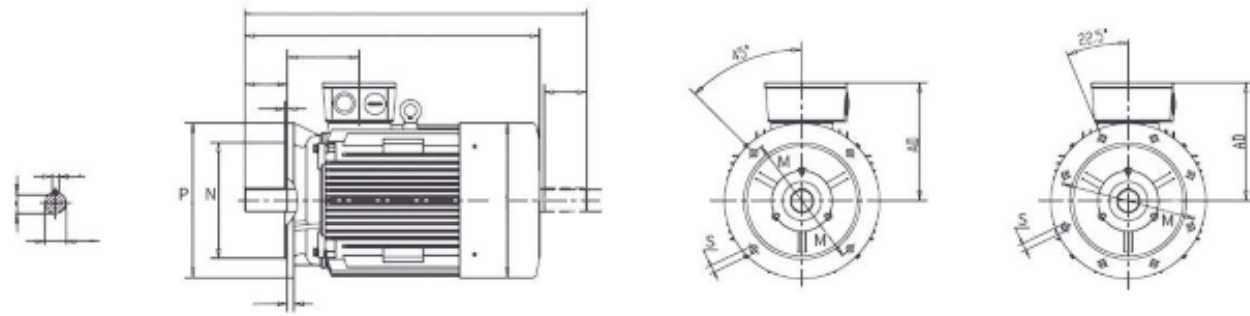
Low Voltage B5 Dimensions Cast Iron IP55					
Frame	Pole	M	N	P	S
80	2-8	165	130	200	4*Ø12
90	2-8	165	130	200	4*Ø12
100	2-8	215	180	250	4*Ø15
112	2-8	215	180	250	4*Ø15
132	2-8	265	230	300	4*Ø15
160	2-8	300	250	350	4*Ø19
180	2-8	300	250	350	4*Ø19
200	2-8	350	300	400	8*Ø19
225	2-8	400	350	450	8*Ø19
250	2-8	500	450	550	8*Ø19
280	2-8	500	450	550	8*Ø19
315	2-8	660	550	600	8*Ø24
355	2-8	800	680	740	8*Ø24
400	2-8	1000	940	880	8*Ø28

Flange Schematics Cast Iron IP55 B5

Low Voltage B5 Dimensions Cast Iron IP55					
Frame	Pole	M	N	P	S
315	2-12	600	550	660	8X24
355	2-12	740	680	800	8X24
400	2-12	740	680	800	8X24
450	2-12	940	880	1000	8X28
500	2-12	1250	1180	1320	8X28
560	2-12	1300	1200	1400	8X28

Low Voltage B5 Dimensions Cast Iron IP55					
Frame	Pole	M	N	P	S
315	2-8	600	550	660	8*Ø24
355	2-8	740	680	800	8*Ø24
400	2-8	940	680	1000	8*Ø28
450	2-8	1080	1000	1150	8*Ø28
500	2-8	1180	1120	1250	8*Ø28
560	2-8	1180	1120	1250	8*Ø28

Flange Schematics Cast Iron IP23 B5



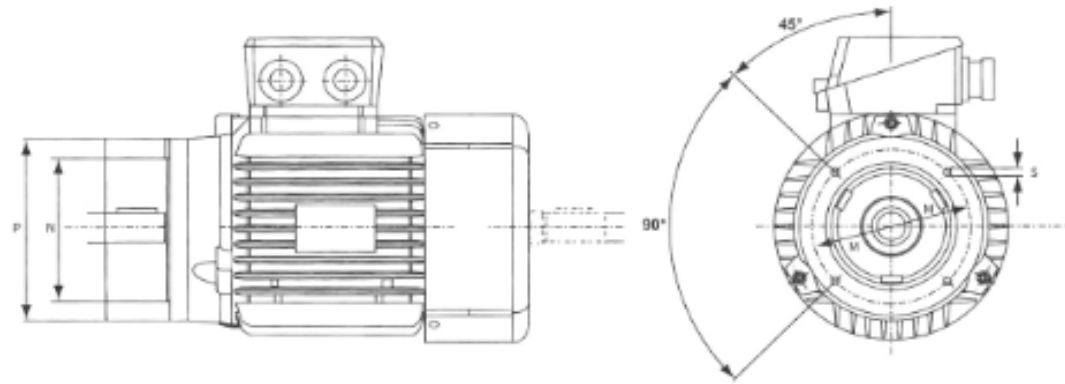
B5 Dimensions Cast Iron OMD IP23					
Frame	Pole	M	N	P	S
160	2-8	300	250	350	4*Ø19
180	2-8	350	300	400	4*Ø19
200	2-8	400	350	450	8*Ø19
225	2-8	500	450	550	8*Ø19
250	2-8	600	550	660	8*Ø24
280	2-8	600	550	660	8*Ø24
315	2-8	740	680	800	8*Ø24
355	2-8	940	880	1000	8*Ø24

Flange Schematics Cast Iron IP23 B5

High Voltage B5 Dimensions Cast Iron IP23 IC01					
Frame	Pole	M	N	P	S
355	2-12	940	880	1000	8x24
400	2-12	740	680	800	8X23
450	2-12	1180	1120	1250	8X28
500	2-12	1180	1130	1300	8X28
560	2-12	1320	1250	1400	8X28
630	2-12	1700	1600	1800	12X28

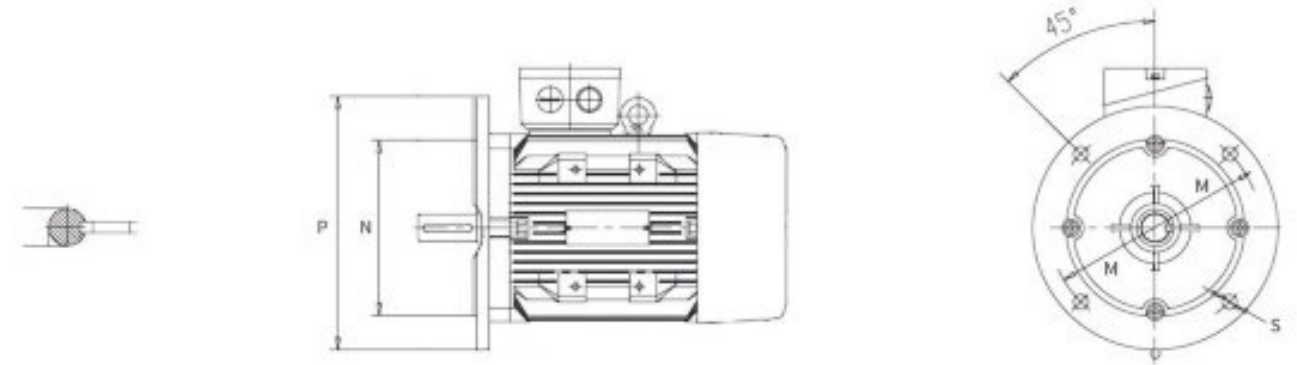
High Voltage B5 Dimensions Cast Iron IP23 IC01					
Frame	Pole	M	N	P	S
355	2-12	940	880	1000	8X24
400	2-12	1080	1000	1150	8X28
450	2-12	1180	1120	1186	8X28
500	2-12	1320	1250	1400	8X28
560	2-12	1500	1400	1600	12X28
630	2-12	1700	1600	1800	12X28

Flange Schematics Cast Iron & Aluminium IP55 B14



B14 Dimensions Cast Iron & Aluminium																					
Frame	AC	AD	D	E	L	LA	LB	LC	B14S					B14L							
									M	N	P	S	T	M	N	P	S	T			
56	2-4	108	92	9	9	20	20	199	10	179	225	65	50	80	M5	2,5	85	70	105	M6	2,5
63	2-4	118	99	11	11	23	23	208	10	185	237	75	60	90	M5	2,5	100	80	120	M6	3
71	2-6	128	104	14	14	30	30	236	10	206	272	85	70	105	M6	2,5	115	95	140	M8	3
80	2-8	144	124	19	14	40	30	268	12	228	304	100	80	120	M6	3	130		160	M8	3,5
90S	2-8	156	130	24	19	50	40	312	12	262	358	115	95	140	M8	3	130		160	M8	3,5
90L	2-8	156	130	24	19	50	40	332	12	282	378	115	95	140	M8	3	130		160	M8	3,5
100L/LX	2-8	190	146	28	28	60	60	367	13	307	435	130	110	160	M8	3,5					
112M	2-8	216	165	28	28	60	60	384	13	324	454	130	110	160	M8	3,5					
132S/SX	2-8	246	180	38	38	80	80	445	15	365	537	165	130	200	M10	3,5					
132M/MX	2-8	246	180	38	38	80	80	483	15	403	575	165	130	200	M10	3,5					

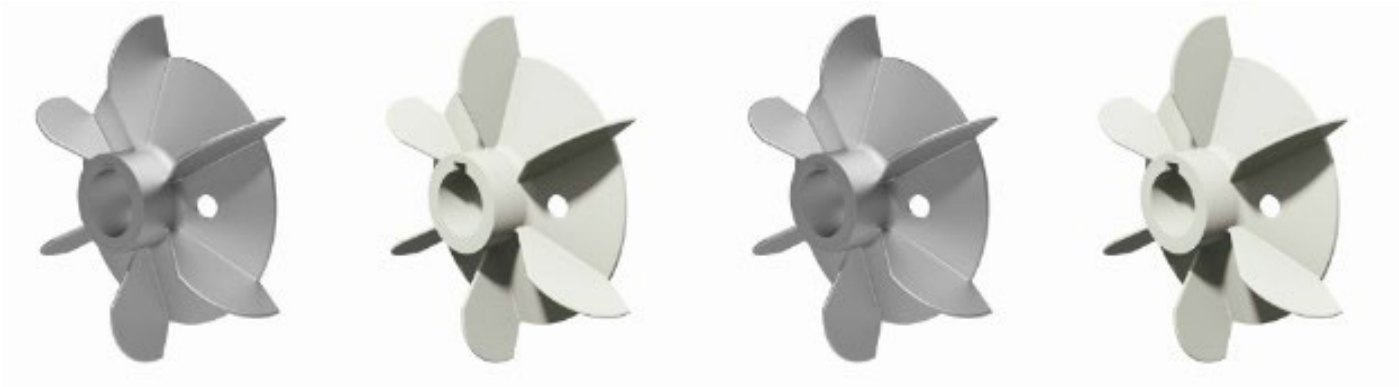
Flange Schematics Aluminium IP55 B5



B5 Dimensions Aluminium IP55					
Frame	Pole	M	N	P	S
56	2-4	100	80	120	Ø7
63	2-4	115	95	140	Ø10
71	2-6	130	110	160	Ø10
80	2-8	165	130	200	Ø12
90S	2-8	165	130	200	Ø12
90L	2-8	165	130	200	Ø12

B5 Dimensions Aluminium IP55					
Frame	Pole	M	N	P	S
100L	2-8	215	180	250	Ø15
112M	2-8	215	180	250	Ø15
132S	2-8	265	230	300	Ø15
132M	2-8	265	230	300	Ø15
160M	2-8	300	250	350	Ø19
160L	2-8	300	250	350	Ø19

Fans



Type	Width	Weight	Axis	Blades	Motor Type
Y2-63	Φ 90	20	Φ 11.2	5	IE1-56 2, IE1-63 2-4
Y2-71	Φ 90	20	Φ 14.2	5	IE1-71 2-4-6, IE2-80 2-4, IE2-90-2, IE3-80-2, IE3-90-2, IE3-90-4, IE3-100-2, IE3-100-4
Y2-80	Φ 100	26	Φ 19.2	5	IE1-80-2-4-6-8, IE2-90-4, IE2-100-2, IE3-90-6, IE3-132-2
YX3-80	Φ 80	26	Φ 19.2	5	IE3-80-4
Y2-90-2	Φ 135	35	Φ 24.2	5	IE1-90 2, IE2-100-4, IE2-132-2, IE3-100-6, IE3-160-2
Y2-90-4-8	Φ 155	40	Φ 24.2	7	IE1-90 4-6-8
Y2-100	Φ 155	40	Φ 28.2	5	IE1-100 2-4-6-8, IE2-100-6
Y2-112-2	Φ 155	35	Φ 28.2	5	IE2-160-4, IE3-180-2, IE3-180-4, IE3-200-2, IE3-200-4
Y-112-4	Φ 155	35	Φ 28.2	6	IE2-132-4, IE3-132-4, IE1-112 4-6-8
Y-112-2	Φ 135	35	Φ 28.2	6	IE1-112 2, IE2-112-2, IE2-112-4, IE2-112-6, IE2-160-2, IE3-112-2, IE3-112-4, IE3-1122-6, IE3-160-4
Y2-132-2	Φ 185	45	Φ 38.2	5	IE1-132 2, IE2-180-2, IE2-200-2, IE3-225-2, IE3-225-2, IE3-250-2, IE3-250-4
Y2-132-4-8	Φ 200	50	Φ 38.2	7	IE1-132 4-6-8, IE2-132-6, IE2-180-4, IE3-132-6
Y2-160-2	Φ 220	60	Φ 43	5	IE3-225-4
Y-160-2	Φ 215	50	Φ 43	6	IE1-160 2, IE2-160-6, IE2-200-4, IE2-225-2, IE2-250-2, IE3-160-6, IE3-280-2
Y-160-4-8	Φ 250	60	Φ 43	6	IE1-160 4-6-8, IE3-180-6
Y2-180-2-4	Φ 240	90	Φ 52	5	IE1-180 2-4, IE2-180-6, IE2-225-4, IE2-280-2, IE3-200-6, IE-315-2-110/132/160KW
Y2-180-6-8	Φ 290	90	Φ 52	9	IE1-180 6-8
Y2-200-2	Φ 260	90	Φ 58	5	IE1-200 2, IE2-200-6, IE2-250-4, IE3-250-6, IE3-280-4

Fans

Type	Width	Weight	Axis	Blades	Motor Type
Y2-200-4-7	Φ 300	90	Φ 58	9	IE1-200 4-6-8, IE2-250-6, IE2-280-4
Y-225-2	Φ 265	100	Φ 58	5	IE1-225 2, IE3-225-6
Y2-225-4	Φ 370	100	Φ 58	9	IE1-225 2, IE1-225-4-6-8
Y2-250-2	Φ 270	110	Φ 63	5	IE1-250 2, IE2-315-2-110KW
Y2-250-4-8	Φ 380	110	Φ 63	9	IE-250 4-6-8, IE3-280-6, IE3-315-6
Y2-280-2	Φ 270	110	Φ 63	5	IE1-280 2
Y2-280-2	Φ 280	110	Φ 68	5	IE2-315-2-132/160/200KW, IE3-315-4-110/132/160KW
Y2-280-4-8	Φ 400	130	Φ 68	9	IE1-280 4-6-8, IE2-280-6
Y2-315-2	Φ 300	150	Φ 80	5	IE1-315 2, IE2-355-2-280/315/355KW, IE3-315-2-200KW, IE3-355-2-280/315/355KW, IE1-355 2
Y2-315-4	Φ 420	150	Φ 90	9	IE1-315 4, IE2-355-4, IE3-355-4, IE1-355 4
Y2-355-6	Φ 460	150	Φ 90	9	IE2-355-6, IE3-355-6, IE1-355 6-8-10
Y2-315-6-10	Φ 460	150	Φ 90	9	IE1-315 6
8430315005	Φ 300	120	Φ 90	9	IE2-315-4, IE2-315-6, IE3-315-4-200KW
8430315003	Φ 300	110	Φ 80	5	IE2-355-2-250KW, IE3-355-2-250KW

Warranty Terms



Warranty General Terms And Conditions

OMEC warrants that the Motor will be produced with quality craftsmanship and will match the description in the Quotation Letter for a period specified below ("Warranty Period"). If any Motor does not meet this warranty during the Warranty Period, and the BUYER promptly notifies OMEC in writing, OMEC will, at OMEC's discretion and expense, modify, repair, or replace the faulty Motor to fulfil its warranty obligations.

REMEDY AND PROCEDURE FOR SPECIFIC TYPES OF MOTOR

FOR MOTORS WITH FRAME SIZE UP TO 215T (not including Washdown Motors):

Motors with frame sizes 215T and smaller are covered and will be replaced under a "No-Fault Warranty" in case of defects discovered during its Warranty Period. This replacement remedy is offered one time per end-user, per application. If there is more than one failure during the Warranty Period, please contact OMEC's Service Department for review. Within 7 days after the defect is detected, the following must be sent to OMEC to process a "No-Fault" warranty claim.

- Original nameplate from the defective Motor.
- Copy of the original OMEC invoice for the defective Motor.
- A comprehensive failure report (for quality control record).

FOR MOTORS WITH A FRAME LARGER THAN 215T:

A defective Motor with a frame larger than 215T should be inspected by a EASA accredited Service Center, or if none is available, an EASA-affiliated service shop. Depending on the inspection results and according to the limitations set forth in this Warranty Certificate, OMEC will decide whether to cover the motor under its warranty.



Warranty General Terms And Conditions

Prior to a decision being made on a claim for warranty, the following are required from the service shop and the BUYER.

- Completed EASA Service Center inspection report.
- Repair Quote.
- Copy of the original OMEC invoice for the defective Motor.
- For Frame 215T and above, photos of the failure in JPEG format suitable for e-mailing (this will allow OMEC to properly evaluate the details of the warranty claim, as well as to ensure that any data sent to our Quality Control Department are fully understood).

The warranty claim will be evaluated and OMEC Service Department will advise the BUYER how to proceed. The service shop should not remove the nameplate nor make repairs without being requested to do so by a OMEC Service Department representative.

FOR WASHDOWN MOTORS:

The warranty coverage period on these models is twenty-four (24) months from date of delivery. Any warranty claim submitted to OMEC Service Department must include:

- Copy of the original OMEC invoice for the defective motor.
- A complete EASA Service Center inspection report or a description of the failure for quality control record, accompanied by photographs of the motor wire connections and any other photograph supporting the claimed failure.

OMEC will analyse the claim, along with the supporting documents and determine if the warranty is applicable.



Warranty General Terms And Conditions

WARRANTY PERIOD

- The warranty period for Washdown Motors is 24 months from delivery date.
- The warranty for standard and high efficiency Low Voltage Motors is 18 months from the delivery date.
- The warranty for Premium and Super Premium Low Voltage Motors is 36 months from the delivery date.
- For IEEE 841 motors, the warranty period is 60 months from the delivery date.
- Custom built Motors shall be covered for twelve (12) months from start-up date or eighteen (18) months from delivery date, whichever occurs first.
- For medium voltage stock products, the warranty period is 24 months from delivery date.
- If the Motor fits in two of these options, the larger term shall apply.

LIMITATION OF THIS WARRANTY

A Motor will not be considered as failing to meet OMEC's warranty or being defective due to normal wear and tear, inability to withstand corrosive or erosive substances, improper storage, installation, operation, or maintenance by the BUYER, or failure of BUYER to provide accurate information regarding the Motor's operational application.

The BUYER must make the defective Motor available for correction. This warranty will immediately terminate if the BUYER or a third party makes improper modifications or repairs, or if the BUYER does not promptly notify OMEC in writing of a defect and take appropriate measures to mitigate damages. The correction of non-conformities as stated in this certificate will fulfil all OMEC's liabilities to the BUYER concerning defects of the Motor.



Warranty General Terms And Conditions

For Motors that have been replaced or repaired, the Warranty Period shall not be extended and will expire on the same date as the original Warranty Period.

OMEC will not be responsible for costs related to removal, reinstallation, or accessing the defective Motor. OMEC's only obligation and BUYER's exclusive remedy for a defective Motor will be the repair or replacement of the Motor as specified in this certificate.

Purchases of OMEC's products from unauthorized dealers or distributors, even of otherwise "new" OMEC products, voids warranty coverage.

THE EXPRESS WARRANTY SET FORTH IN THIS CERTIFICATE IS EXCLUSIVE AND NO OTHER WARRANTIES OF ANY KIND, WHETHER STATUTORY, ORAL, WRITTEN, EXPRESS OR IMPLIED INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY. IN ALL CASES WHERE THE BUYER'S CLAIMS INVOLVES DEFECTIVE OR NONCONFORMING MOTOR, THE BUYER'S EXCLUSIVE REMEDIES AND OMEC ONLY OBLIGATION IN CONNECTION WITH THIS WARRANTY SHALL BE THOSE STATED HEREIN. IN NO EVENT SHALL OMEC BE RESPONSIBLE FOR ANY INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND AND THE BUYER HEREBY WAIVES ANY RIGHTS IT MAY HAVE TO SUCH DAMAGES. THIS WARRANTY SHALL NOT BE ALTERED EXCEPT BY WRITTEN AGREEMENT OF THE PARTIES..

Terms & Conditions



General Terms And Conditions Of OMEC America LLC

1. DEFINITIONS

1.1 "Applicable Export Laws" means any export control regulations and/or laws in force at the time of export in the Seller's country of export and/or, in the case of re-export, in force at the time of re-export in the country of origin of the particular re-exported Export Item.

1.2 "Change" means a change in the design, drawings, specifications, shipping instructions, shipment schedules or any other documents forming part of the Contract, including any additions, substitutions or omissions to the Scope of Supply.

1.3 "Change Order" means the document issued by authorized representatives of Buyer and Seller in mutual agreement after a Change has been requested by Buyer or Seller, and which governs the modification of the Contract with respect to the Contract Price, specifications, shipment schedule, warranty, delivery time, etc.

1.4 "Confidential Information" means proprietary or confidential data including pricing, terms, documents, specifications, plans or drawings that are not generally known to the public.

1.5 "Contract" means the Terms and Conditions contained herein, together with (i) such additional terms as stated within Seller's written Quotation, (ii) such specifications, drawings or other documents incorporated by reference within Seller's Quotation, (iii) any documents related to a Change Order, and (iv) the Purchase Order to the extent approved in writing by Seller.

1.6 "Contract Price" means the total sum indicated in the Purchase Order or as modified in accordance with these Terms and Conditions. For Services carried out on a time basis, the Contract Price shall be determined in accordance with the hourly rates specified in the Purchase Order.

1.7 "Day(s)" means calendar day(s) unless the term "working day(s)" is used.

1.8 "Delivery Date" means the date or dates agreed between the Parties with regard to the performance of the Scope of Supply in the Contract or as modified in accordance with these Terms and Conditions.

1.9 "Disclosing Party" means the Party disclosing Confidential Information to the other Party.

1.10 "Effective Date" means the date when the Purchase Order has been accepted by the Seller in writing or, in case the Contract documents are signed by both Parties, the date of the latest signing.

1.11 "End-User" means the ultimate user and/or the ultimate owner of the Scope of Supply.



General Terms And Conditions Of OMEC America LLC

1.12 "Export Item" means any goods or services, including but not limited to, commodities, software or technology provided by Seller that is required to be exported or re-exported under the Contract.

1.13 "Incoterms" means the version in force on the Effective Date of the Contract published by the International Chamber of Commerce.

1.14 "Liquidated Damages" means an expressly stated amount in the Contract to be paid by Seller as compensation for estimated damage that Buyer may incur in the event of breach of Contract, such as failure to meet delivery dates or performance guarantees. Such expressly stated amount is agreed by the Parties to be a pre-estimate of such damages and is not to be considered a penalty.

1.15 "Party" means Buyer or Seller; "Parties" means Buyer and Seller.

1.16 "Purchase Order" means the order documents issued by Buyer for the order of the Scope of Supply in the version confirmed by Seller in writing.

1.17 "Buyer" means the Party defined as the Buyer in the Purchase Order or, if such definition is missing, the Party issuing the Purchase Order.

1.18 "Quotation" means Seller's written proposal for the delivery of the Scope of Supply.

1.19 "Receiving Party" means the Party receiving Confidential Information of the other Party.

1.20 "Sanctions" means any trade or economic sanctions (e.g., embargoes, etc.) in force at the time of export in the Seller's country of export and/or, in the case of re-export, in force at the time of re-export in the country of origin of the particular re-exported Item.

1.21 "Scope of Supply" means the Motors to be delivered by Seller and/or Services to be performed by Seller under the Contract.

1.22 "Services" means repairs, and maintenance work.

1.23 "Seller" means OMEC AMERICA LLC.

1.24 "Terms and Conditions" means these General Terms and Conditions of Supply.

1.25 "Warranty Period" means the time period stipulated in Section 9 hereof.



General Terms And Conditions Of OMEC America LLC

2. GENERAL

2.1 The Contract supersedes all previous negotiations, representations, and/or contractual commitments between the Parties. Seller hereby gives notice of its objection to and rejection of any different or additional terms, and Buyer agrees that the terms contained in the Contract shall apply and govern to the exclusion of all others. The Parties agree that the Terms and Conditions shall be construed as if jointly drafted by the Parties, and no presumption or burden of proof will arise favoring or disfavoring either Party by virtue of authorship of any provision of these Terms and Conditions.

2.2 An offer by Seller in its Quotation that does not stipulate an expiration date shall not be binding unless otherwise stated in the Quotation. In this case, the Contract shall be deemed to have been entered into upon written acknowledgment of the Purchase Order by an authorized representative of Seller, which may not be modified except in a Change Order.

2.3 In case of an inconsistency between the said documents within the Contract, the following order of priority shall apply:

- a. These Terms and Conditions.
- b. Documents related to Change Orders mutually agreed upon by both Parties, with the latest date having priority and clearly identified as "Change Order" to the Contract.
- c. Purchase Order (version confirmed by Seller in writing) as defined in Clause 1.16 and all documents incorporated therein by reference.
- c. Seller's Quotation and all documents incorporated therein by reference.
- d. Buyer's specifications.
- f. Buyer's terms and conditions.

2.4 The Incoterms version current at the Effective Date of the Contract shall apply. If no specific Incoterms concept has been stated in the Contract or subsequently agreed by both Parties, delivery will be made:

- a. Ex works (Seller's or Seller's sub-Seller's works) for domestic deliveries (delivery within the country in which the Scope of Supply is delivered or performed).
- b. FCA (free carrier, Seller's or sub-Seller's works) for international transactions.

Irrespective of the delivery term, for the purpose of determining compliance with the Delivery Date, the delivery shall be deemed to have been made on the date the Seller notifies the Buyer that the Scope of Supply is ready for shipment.



General Terms And Conditions Of OMEC America LLC

3. DELIVERY

3.1 Seller shall make commercially reasonable efforts to deliver the Scope of Supply on the Delivery Date. In no event shall any period of time specified to calculate the Delivery Date commence earlier than the latest of the following dates:

- a. Effective Date.
- b. Date which is five (5) Days after receipt of Letter of Credit or advance payment from Buyer, if such Letter of Credit or advance payment is required in the Contract.
- c. Date of receipt of approval of engineering submittals by Seller.

3.2 The Delivery Date shall be amended if any delay is due to one or more of the following:

- a. Force Majeure.
- b. Changes.
- c. Buyer's failure to fulfill any obligation under the Contract.
- d. Delay caused by End-User or any party engaged by Buyer.
- e. Delay in obtaining an export license.
- f. Buyer's delay in delivery of any documentation or approvals to Seller.
- g. Delays caused by a sub-Seller where the sub-Seller was designated by Buyer or End User.

3.3 In any event, Seller shall have no responsibility for any delay caused by a sub-Seller where such sub-Seller has been designated by Buyer or End-User.

3.4 Except in the case of Force Majeure, Buyer shall reimburse Seller for costs of extra transportation, storage, and/or administration fees incurred as a result of any delay resulting from reasons not attributable to Seller.

3.5 In the event Seller fails to meet the Delivery Date for more than two (2) calendar weeks (grace period) due to reasons for which Seller or its sub-Sellers are directly responsible, and provided that the Purchase Order expressly provides Liquidated Damages for such failure, Buyer shall be entitled to require Seller to pay Liquidated Damages at the rate stated in the Purchase Order.



General Terms And Conditions Of OMEC America LLC

4. FORCE MAJEURE

4.1 Seller shall not be liable for any non-performance, loss, damage, or delay due to war, riots, fire, flood, strikes or labor difficulty, governmental acts such as trade restrictions including embargoes, acts of God, acts of the Buyer, its customer, or the End-User, delays in transportation, inability to obtain necessary labor or materials from usual sources, or other causes beyond the reasonable control of Seller. In the event of delay in performance due to any such cause, the Delivery Date or time for completion of the Services will be extended to reflect the length of time lost by reason of such delay. Payment obligations shall not be affected by force majeure events. If the grounds for force majeure continue for more than six (6) months, either Seller or Buyer may terminate the Contract upon seven (7) Days' written notice to the other Party. Seller shall be entitled to be compensated for the extra costs caused by the interruption or, in the case of termination, for the work done prior to termination, and the expenses for non-cancelable procurements. Buyer shall be entitled to receive the work for which it has paid.

5. TRANSFER OF TITLE AND RISK

5.1 Unless otherwise required by applicable compulsory law, title to the Scope of Supply shall be transferred to Buyer after Seller has received payment in full of the Contract Price. Risk of loss or damage to the Scope of Supply shall pass to Buyer from the Seller upon delivery according to applicable Incoterms.

6. PRICE AND PAYMENT

6.1 Seller is entitled to receive payment of the Contract Price on the dates determined in the Purchase Order or a respective Change Order, if any. For work carried out on a time basis, the prices shall be determined in accordance with Seller's hourly rates as specified in the Purchase Order.

6.2 The Contract Price and any part thereof are exclusive of sales, excise duties, VAT, sales taxes, or similar taxes and duties.

6.3 All payments shall be made net, without any deductions, within thirty (30) Days after the date of the invoice. Payment terms shall be as specified in the Purchase Order or any respective Change Order or, if not included therein, as specified in the Quotation.



General Terms And Conditions Of OMEC America LLC

6.4 If the Buyer does not comply with the agreed dates of payment, Buyer shall be liable, without reminder, for interest with effect from the agreed date on which payment was due, at a rate depending on the normal interest conditions at the Buyer's domicile, but not less than five percentage points (5%) above the three months' LIBOR (London Interbank Offered Rate) applicable at the due date of the delayed payment.

6.5 In case of late payment, Seller may, after having notified the Buyer in writing, suspend its performance of the Scope of Supply until the open and due invoices have been paid.

6.6 If Buyer and Seller agreed on issuing a Letter of Credit by Buyer in favor of Seller, such Letter of Credit shall be irrevocable, extendable, and confirmed by a bank nominated by the Seller. If no nomination is provided, then by a first-class bank in the Seller's country of domicile. Payments under such Letter of Credit shall be made on sight against presentation by Seller of an invoice together with a bill of lading, airway bill, or warehouse receipt, as applicable, or whatever documents have been agreed upon between the Parties.

6.7 If the cost to the Seller of performing its obligations under the Contract shall be increased after the date of Quotation by reason of the making of any amendment of any law, order, regulation, or by-law having the force of law, the amount of such increase shall be added to the Contract Price.

6.8 Both Parties shall be entitled to set-off due amounts in accordance with the applicable law. However, the party effecting a set-off shall provide prior written notification detailing the reason for the set-off to the other Party.

7. INSPECTION AND ACCEPTANCE

7.1 The Scope of Supply shall be subject to Buyer's final inspection upon receipt at the delivery site. Claims for damage, shortage, errors in shipping, or rejection of the Scope of Supply, or portion thereof, must be made by Buyer in writing within fourteen (14) Days following the date of receipt at the delivery site or within the time period agreed in the Purchase Order or provided by applicable law. Failure to make such claims within the specified timeframe shall waive the claims, and the Scope of Supply shall be deemed irrevocably accepted by Buyer.



General Terms And Conditions Of OMEC America LLC

7.2 Buyer's sole remedy for such claims shall be the repair or replacement of the Scope of Supply by Seller. After the expiration of the aforementioned fourteen (14) Day period, all claims for defects shall be remedied in accordance with Clause 9, Warranty herein.

7.3 Services shall be accepted or rejected upon completion of such Services.

7.4 Unless otherwise agreed in the Purchase Order, costs related to inspections or tests of the goods shall be borne by the Buyer.

8. CHANGES

8.1 Buyer and Seller may request Changes in writing as defined in Clause 1.3 hereof. Upon receipt of a request for a Change by Seller, Seller will promptly advise Buyer of any amendments to the Contract that may be necessitated by such requested Changes.

8.2 The Parties shall strive to agree on a fair and equitable adjustment of the Contract amendments at their earliest convenience. In the event that an agreement cannot be reached within fifteen (15) Days after a Change has been requested by either Party, Seller shall be entitled to continue with the delivery of the Scope of Supply without the requested Change.

9. WARRANTY AND REPLACEMENT PROCEDURE

9.1 General Warranty:

Seller hereby warrants to the Buyer that the Scope of Supply shall be of quality craftsmanship, match the description provided in the Quotation Letter and remain free of manufacturing defects for the duration of the Warranty Period specified herein. If the Scope of Supply fails to comply with this warranty and Buyer promptly notifies Seller in writing during the Warranty Period, Seller shall, at its sole discretion and expense, modify, repair, or replace the defective Motor to meet its warranty obligations.

9.2 Specific Procedures for Different Types of Motors:

a. For Motors with frame size up to 215T (excluding Washdown Motors)



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These motors are covered under a "No-Fault Warranty". Should a defect be discovered within the Warranty Period, the Seller will replace the Motor. This remedy applies one time per end-user, per application. For multiple failures within the Warranty Period, Buyer should contact the Seller's Service Department for review. To process a "No-Fault" warranty claim, the following must be provided to the Seller by Buyer within 7 days of defect detection:

- i. Original nameplate from the defective Motor.
 - ii. Copy of the original Seller invoice for the defective Motor.
 - iii. A comprehensive failure report for quality control record.
- b. For Motors with a frame size larger than 215T

Defective Motors of this size must be inspected by an EASA accredited Service Center or, if none is available, an EASA-affiliated service shop. Based on the inspection findings and in accordance with the limitations of this Warranty Section, the Seller will determine warranty applicability. Prior to a warranty claim decision, the following are required:

- i. Completed EASA Service Center inspection report.
 - ii. Repair Quote.
 - iii. Copy of the original Seller invoice for the defective Motor.
 - iv. For Frame 215T and larger, photos of the failure in JPEG format suitable for e-mailing.
- c. For Washdown Motors

The warranty coverage period for these models is 24 months from the delivery date. Any warranty claim must include:

- i. Copy of the original Seller's invoice for the defective Motor.
- ii. A complete EASA Service Center inspection report or a detailed description of the failure, accompanied by relevant photographs.



General Terms And Conditions Of OMEC America LLC

9.3 WARRANTY PERIOD

The Warranty Period for each type of Motor is as follows:

- a. Washdown Motors: 24 months from the delivery date.
- b. Standard and High Efficiency Low Voltage Motors: 18 months from the delivery date.
- c. Premium and Super Premium Low Voltage Motors: 36 months from the delivery date.
- d. IEEE 841 Motors: 60 months from the delivery date.
- e. Custom Built Motors: 12 months from the startup date or 18 months from the delivery date, whichever comes first.
- f. Medium Voltage Stock Products: 24 months from the delivery date.
- g. If the Motor qualifies for more than one category, the longer warranty period will apply.

9.4 EXCLUSIONS AND LIMITATIONS OF THIS WARRANTY

- a. This warranty does not cover failure due to normal wear and tear, inability to withstand corrosive or erosive substances, improper storage, installation, operation, or maintenance by the Buyer, or failure to provide accurate operational application information. This warranty is void if the Motor has been improperly modified or repaired by the Buyer or a third party, or if the Seller has not been promptly notified of a defect in writing. The sole obligation of the Seller under this warranty shall be to correct the non-conformities as stated herein, and this action shall fulfill all of the Seller's obligations with regard to motor defects.
- b. Motors that have been replaced or repaired will maintain the original Warranty Period, which will not be extended and will expire on the original expiration date. The Seller will not bear costs related to the removal, reinstallation, or accessing of the defective Motor. The exclusive remedy for a defective Motor will be its repair or replacement as specified in this Section 9.
- c. This warranty does not cover products purchased from unauthorized dealers or distributors, including new products from these unauthorized sources.



General Terms And Conditions Of OMEC America LLC

d. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER STATUTORY, ORAL, WRITTEN, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE BUYER'S EXCLUSIVE REMEDY AND THE SELLER'S SOLE OBLIGATION FOR ANY CLAIMS REGARDING DEFECTIVE OR NON-CONFORMING MOTORS SHALL BE AS STATED IN THIS WARRANTY.

10. INTELLECTUAL PROPERTY

10.1 Buyer confirms that it is fully authorized to use or grant permission to use the technical documentation provided to Seller for the performance of the Scope of Supply by Seller or its sub-Sellers. If Buyer is not authorized to order said performance from Seller without violating intellectual property rights of third parties, Buyer shall promptly inform Seller. In such cases, Seller shall suspend work until the necessary approvals have been obtained. Seller shall not use technical documentation received from Buyer for any purpose other than fulfilling the Contract.

10.2 Any know-how, inventions, patents, copyrights, or similar intellectual property belonging to or provided by Seller and used for or developed in the course of fulfilling the Contract by Seller shall remain Seller's property. No ownership shall be transferred to Buyer, Buyer's customer, or End-User with respect to such intellectual property, independent of the hardware on which it is made available. However, End-User shall be granted a limited right to use such intellectual property for the operation, maintenance, and repair of the Scope of Supply on a non-exclusive basis, excluding reproduction of the Scope of Supply or its parts.

10.3 Seller shall make reasonable efforts to ensure that the Scope of Supply, in the particular form designed and sold by Seller, does not infringe any intellectual property rights of third parties. In the event of any infringement, Seller may, at its sole discretion, procure the right to use the Scope of Supply without impairing its suitability, or modify or replace it to render it non-infringing. This is subject to Seller receiving prompt written notice from Buyer of the infringement, Buyer's assistance in the defense, and Seller's right to settle or defend.

10.4 The obligations of Seller in this Clause are not applicable to:

- a. The Scope of Supply or part thereof manufactured according to Buyer's design.
- b. Services performed using Buyer's documentation.
- c. The use of the Scope of Supply or any part thereof in conjunction with any other product in a combination not furnished by Seller as part of the Scope of Supply.



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d. Products fabricated by using the Scope of Supply.

For any of the above, Seller assumes no liability for infringement of third-party intellectual property rights, and Buyer shall indemnify Seller against any infringement claims. Seller shall cooperate with Buyer in the same manner as required by Seller under this Clause.

11. TERMINATION FOR CAUSE

11.1 Buyer shall have the right to terminate the Contract (or any portion thereof) for cause if Seller:

- a. Becomes insolvent, makes an assignment for the benefit of its creditors, has a receiver or trustee appointed, or files for bankruptcy or insolvency protection.
- b. Substantially breaches its material obligations under the Contract, subject to providing written notice to Seller of the breach and intention to terminate, and Seller failing to cure the breach within a reasonable period.

11.2 If Buyer terminates the Contract under Clause 12, Buyer shall pay Seller for the completed and accepted portion of the Scope of Supply terminated, a neutral expert agreed upon by both Parties shall determine the price, which shall be accepted by both Parties. The determination of the price shall consider Seller's costs related to the partial Scope of Supply and the value of said partial Scope of Supply to the Buyer on a fair and reasonable basis. In the case where Buyer does not accept any part of the Scope of Supply, Buyer shall return any tangible and intangible goods already delivered to Seller at Seller's expense, and Seller shall reimburse the purchase price received. No further payments shall be owed by Seller.

11.3 Seller shall have the right to terminate the Contract (or any portion thereof) for cause if Buyer:

- a. Becomes insolvent, makes an assignment for the benefit of its creditors, has a receiver or trustee appointed, or files for bankruptcy or insolvency protection.
- b. Fails to comply with any material terms of the Contract, including failure to make payments when due or fulfill payment conditions.

11.4 If Seller terminates the Contract under this Clause, Seller shall be entitled to receive payment for all completed or partially completed Scope of Supply prior to the termination date, along with any extra costs and damages incurred due to the termination, including cancellation costs under subcontracts and expenses for non-cancelable procurement.



General Terms And Conditions Of OMEC America LLC

12. TERMINATION FOR CONVENIENCE

12.1 Buyer shall have the right to terminate the Contract upon fifteen (15) Days' prior written notice to Seller. Upon receipt of the notice, Seller shall cease performance, except as otherwise agreed with Buyer.

12.2 If Buyer terminates the Contract for convenience, Buyer shall compensate Seller as follows:

- a. The agreed unit price for the completed and delivered Scope of Supply.
- b. Additional material and labor costs incurred, as well as engineering services supplied by Seller with respect to the canceled items, charged at Seller's prevailing rates but not exceeding the Contract Price for such items.
- c. Six percent (6%) of the costs and expenses mentioned in (b) above as a profit share.
- d. Any other costs and expenses incurred by Seller in connection with the cancellation or termination.
- e. If a cancellation schedule is included in the Contract, the specified amount on the schedule shall be paid.

13. SUSPENSION

13.1 If Buyer decides to suspend the Contract, Seller shall be entitled to compensation for any proven costs directly caused by the suspension. If the suspension extends beyond two (2) months, the Contract shall be deemed terminated for convenience under Clause 13.

13.2 In the event of a suspension as per Clause 14.1 or Clause 6.4, Seller shall resume work upon written instruction from Buyer, receipt of payments due and owing by Buyer under the Contract, and written agreement between the Parties regarding any requested Changes, as soon as the necessary workshop capacity becomes available.



General Terms And Conditions Of OMEC America LLC

14. CONFIDENTIALITY

14.1 In connection with the Contract, both Seller and Buyer (as the Disclosing Party) may disclose Confidential Information to each other (as the Receiving Party). Confidential Information shall not include information that: (i) becomes generally available to the public, other than through disclosure by the Receiving Party, its representatives, or its affiliates; (ii) is received by the Receiving Party from a source not subject to a confidentiality obligation to the Disclosing Party; (iii) is independently developed by the Receiving Party without reference to the Confidential Information; or (iv) is required to be disclosed by a competent court or government agency.

14.2 The Receiving Party agrees to use the Confidential Information solely in connection with the performance of the Contract or the installation, operation, maintenance, and use of the Scope of Supply. The Receiving Party shall take reasonable measures to prevent the disclosure of Confidential Information, except to its employees involved in the Contract's performance or the installation, operation, maintenance, or use of the Scope of Supply. If disclosure to a third party is necessary, the Receiving Party shall use its best efforts to ensure proprietary or confidential treatment of the information by the third party.

15. EXPORT CONTROL

15.1 Seller shall export and/or re-export any Export Item in compliance with all Applicable Export Laws. Buyer acknowledges and agrees not to:

- a. Divert, use, export, or re-export any Export Items in violation of Applicable Export Laws.
- b. Export, re-export, or provide any Export Items to entities or individuals in countries subject to Sanctions.
- c. Export, re-export, or provide any Export Item to entities or individuals ineligible under Applicable Export Laws.

15.2 If an export license is required, Seller shall prepare an application on Buyer's behalf and submit it to the appropriate authorities upon receipt of the Purchase Order. Buyer shall provide Seller with information regarding the validity, number, date of issue, and expiration date of any export license. Seller's performance under the Contract is contingent upon Seller receiving satisfactory evidence of a valid export license. Buyer shall reimburse Seller for all expenses incurred in obtaining the export license.



General Terms And Conditions Of OMEC America LLC

16. INDEMNITY

16.1 Both Parties shall indemnify and hold harmless the other Party from damages to third-party tangible property or bodily injury (including death) arising from the performance of the Contract to the extent that such damage or injury is attributable to the indemnifying Party's negligence or willful misconduct.

16.2 Any claim of contribution or indemnity between Seller and Buyer shall be resolved based on each Party's percentage of negligence, following the resolution of the third-party claim on which the liability is based.

17. APPLICABLE LAW / DISPUTE RESOLUTION

17.1 The Contract is governed by and interpreted in accordance with the laws of the State of Texas, U.S.A., excluding its conflict or choice of law provisions.

17.2 In the event of any Dispute arising under or relating to the Contract, including claims created by statutory law, the parties shall first attempt to resolve it through informal mediation. Mediation shall be initiated by one party sending a written request for mediation, including a description of the Dispute, to the other party. The mediation process shall be conducted in a manner agreed upon by both parties. If the Dispute remains unresolved after 45 days from the written request for mediation, the Dispute shall be resolved as follows:

- a. Disputes involving a Buyer that is not incorporated or does not have its principal offices in the U.S.A. shall be subject to arbitration administered by the International Centre for Dispute Resolution in accordance with its International Arbitration Rules. The arbitration shall take place in Houston, Texas, with the number of arbitrators determined by the amount in dispute. The arbitration proceedings shall be conducted in English, and the decision of the arbitrator(s) shall be final and binding.
- b. Disputes not involving a Buyer that is not incorporated or does not have its principal offices in the U.S.A. shall be brought before an appropriate court in Harris County, Texas, and the Parties consent to the exclusive jurisdiction of such court for all such claims.



General Terms And Conditions Of OMEC America LLC

18. ASSIGNMENT

18.1 Any attempt by a Party to assign, transfer, or delegate any rights, duties, or obligations under the Contract to a third party without prior written consent from the other Party shall be deemed null and void. However, this restriction shall not apply when Seller, as part of its usual business practices, requires subcontractors or sub-Sellers to undertake or supply part of the work.

19. WAIVER OF RIGHTS

19.1 The failure of either Seller or Buyer to exercise any of their rights under the Contract shall not constitute a waiver or forfeiture of such rights.

20. SEVERABILITY

20.1 If any provision of the Contract is determined to be void or unenforceable, such finding shall not affect the validity or enforceability of other provisions. Seller and Buyer shall make reasonable efforts to replace the void or unenforceable provision with a valid provision that preserves the original commercial intention to the extent permitted by law.

21. WAIVER OF DAMAGES AND LIMITATION OF LIABILITY

21.1 NOTWITHSTANDING ANY CONTRARY PROVISIONS IN THE CONTRACT, INCLUDING ALL ASSOCIATED DOCUMENTS, AND TO THE MAXIMUM EXTENT PERMITTED BY LAW, SELLER SHALL NOT BE LIABLE TO BUYER, WHETHER BY WAY OF INDEMNITY OR AS A RESULT OF ANY BREACH OF CONTRACT, STATUTORY DUTY, OR TORT (INCLUDING NEGLIGENCE), FOR ANY INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFIT, LOSS OF CONTRACTS OR EARNINGS, DELAY DAMAGES, INTERRUPTION OR LOSS OF PRODUCTION, LOSS OF USE, LOSS OF OPPORTUNITY OR BUSINESS, SUFFERED BY BUYER. BUYER AGREES TO DEFEND, INDEMNIFY, AND HOLD SELLER HARMLESS FROM ANY CLAIMS MADE BY END-USER OR BUYER'S CUSTOMERS FOR SUCH LOSSES. SELLER'S LIABILITY WITH RESPECT TO ANY CONTRACT, INDEMNITY, TORT (INCLUDING NEGLIGENCE), OR WARRANTY, UNDER ANY THEORY OF LIABILITY, SHALL NOT EXCEED ONE HUNDRED PERCENT (100%) OF THE CONTRACT PRICE OR PORTION THEREOF UPON WHICH THE LIABILITY IS BASED, UNLESS CLAIMS ARISE FROM SELLER'S GROSS NEGLIGENCE OR WILLFUL MISCONDUCT. THE TERM "GROSS NEGLIGENCE" SHALL MEAN RECKLESS DISREGARD OR WANTON INDIFFERENCE TO HARMFUL AND AVOIDABLE CONSEQUENCES, WHILE "WILLFUL MISCONDUCT" SHALL MEAN INTENTIONAL DISREGARD FOR THE SAFETY OF OTHERS AND/OR THEIR PROPERTY. GROSS NEGLIGENCE AND WILLFUL MISCONDUCT SHALL NOT INCLUDE ACTS OR OMISSIONS MADE IN GOOD FAITH OR ERRORS OF JUDGMENT.

Glosary Of Terms



ATEX: The ATEX directive (ATEX 95) is a European Union directive for controlling explosive atmospheres. It covers equipment and protective systems intended for use in potentially explosive atmospheres.

Brushless DC Motor: A type of DC motor that uses electronic commutation, rather than brushes, to control the current flow to the rotor.

AC Motor: An electric motor that runs on alternating current.

Commutation: The process of switching the current in an electric motor to change the direction of the rotor's rotation.

CENELEC: The European Committee for Electrotechnical Standardization (CENELEC) is a European standardization organization that develops and publishes standards for the electrical industry.

Current, Motor: Motor current refers to the amount of electrical current flowing through an electric motor during operation. It is typically measured in units of amperes (A) or milliamperes (mA) and is an important parameter in determining the performance and efficiency of the motor. The amount of current flowing through an electric motor is determined by a variety of factors, including the motor's design, the voltage of the power source, the load on the motor, and the speed of the motor. As the load on the motor increases, the amount of current required to maintain a given speed also increases.

In general, the motor current can be used to determine the power consumption and efficiency of the motor. Higher current levels typically indicate that the motor is operating at a higher power level and is consuming more electrical energy. By monitoring the motor current, it is possible to optimize the motor's performance and ensure that it is operating within safe limits.

Motor current is also an important factor in the design and operation of electrical systems. Overloading a motor with excessive current can cause it to overheat and fail, which can result in damage to the motor and other components of the system. Properly sizing the motor and ensuring that it is operating within safe limits can help to ensure reliable and efficient operation of the system.

DC Motor: An electric motor that runs on direct current.

Electromagnetic winding: A wire coil in an electric motor that creates a magnetic field when an electric current runs through it.

Efficiency: The ratio of the useful power output of an electric motor to the input power.



Glosay Of Terms

Frequency: is an electrical parameter that measures the number of cycles per unit time of an alternating current (AC) or signal. It is expressed in Hertz (Hz), which represents the number of cycles per second.

In an AC circuit, the frequency is the rate at which the current alternates direction, and it is determined by the frequency of the source of the AC power. The frequency of an AC power source in most countries is 50 or 60 Hz, which means that the current alternates direction 50 or 60 times per second. In electronic systems, frequency is used to describe the rate at which signals are generated and processed. In radio communication systems, the frequency of a signal determines its wavelength, and different frequencies are used for different types of communication.

The frequency of an electrical signal can be measured using a frequency meter or an oscilloscope. The frequency of an AC power source can be controlled by adjusting the speed of the generator or by using frequency converters.

Frequency is an important parameter in the design and analysis of electrical systems. It affects the behavior of electrical components and can impact the performance and efficiency of electronic systems. Understanding the frequency of an electrical signal is critical in the design and analysis of electronic systems, and it must be carefully controlled and monitored to ensure the reliable and safe operation of electrical systems.

Full-Load Current: is the amount of electrical current that flows through an electric motor when it is operating at its rated load and speed. It represents the maximum current draw of the motor under normal operating conditions and is used to specify the electrical requirements of the motor.

The full-load current is typically determined by the design and rating of the motor, as well as the load that it is driving. It is specified in the motor's documentation and can be used to properly size and protect the electrical circuitry that supplies power to the motor.

Knowing the full-load current of a motor is important for several reasons. It helps to ensure that the motor is being operated within safe limits and that the electrical circuitry is properly sized and protected against overloads. It can also be used to calculate the energy consumption of the motor, which is important for estimating operating costs and determining the environmental impact of the motor.

Hazardous Locations: Areas that are classified as dangerous because of the presence of flammable gases, liquids, dust, or fibers that can ignite and cause explosions or fires.

Horsepower: is a unit of power that is commonly used to describe the output power of engines and motors. It is a measure of the rate at which work is done, and is defined as the power required to lift a weight of 550 pounds at a rate of one foot per second, or the equivalent of 745.7 watts.

The horsepower unit was originally developed by James Watt, a Scottish inventor and engineer who worked on improving steam engines in the late 18th century. He used the term "horsepower" to compare the output of steam engines to the power of draft horses, which were commonly used to perform work in his time.



Glosay Of Terms

IEC (International Electrotechnical Commission): A global organization that publishes international standards for electrical and electronic equipment and systems.

IECEx: The IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres (IECEx) is a system for the certification of equipment and service facilities used in explosive atmospheres.

Induction Motor: An electric motor that uses an electromagnetic induction principle to generate torque.

Permanent Magnet Motor: An electric motor that uses a permanent magnet to generate the magnetic field, rather than using an electromagnetic winding.

Locked-Rotor Current: also known as locked-rotor amps (LRA), is the electrical current that flows through an electric motor when its rotor is prevented from turning while voltage is applied. This can occur when the motor is initially started or if it becomes jammed or overloaded during operation. The locked-rotor current is typically much higher than the full-load current of the motor, and can be several times greater. This is because when the rotor is prevented from turning, the motor is unable to develop a magnetic field and the stator windings draw high levels of current to try to produce the required torque.

The magnitude of the locked-rotor current is dependent on several factors, including the motor's design, size, and rating, as well as the voltage of the power supply. The locked-rotor current is specified by motor manufacturers and is an important parameter to consider when designing electrical systems that use motors.

The high current draw of the locked-rotor condition can cause damage to the motor, as well as the electrical circuitry supplying power to the motor. As a result, protective devices such as fuses or circuit breakers are typically used to limit the current to a safe level and prevent damage to the motor or electrical system.

Knowing the locked-rotor current is important for properly sizing and selecting protective devices, as well as designing and optimizing electrical systems for maximum efficiency and reliability.

NEC (National Electric Code): A set of safety regulations for the installation and maintenance of electrical equipment in the United States.

NEMA (National Electrical Manufacturers Association): A trade association of manufacturers of electrical equipment in the United States.



Glosay Of Terms

NOM: in Mexico standardization manifests as the mandatory Official Mexican Standards (NOM), prepared by federal government agencies, and the primarily voluntary Mexican Standards (NMX) promoted by the Secretariat of Economy and the private sector through national standardization bodies.

Output Rating: (of an electric motor) refers to the amount of power that the motor is capable of delivering to its load. It is a measure of the motor's ability to convert electrical energy into mechanical energy.

The output rating of an electric motor is typically expressed in horsepower (HP) or watts (W). Horsepower is a unit of power that is commonly used in North America, while watts are used in most other parts of the world. The output rating can also be expressed in kilowatts (kW), which is equal to 1,000 watts.

The output rating of an electric motor depends on several factors, including the motor's size, speed, and efficiency. The speed and torque of the motor determine its power output, which is typically specified by the manufacturer for a given operating condition. The output rating may also be influenced by the ambient temperature, altitude, and other environmental factors that affect the motor's performance.

The output rating of an electric motor is an important parameter in selecting and designing motor-driven equipment. It determines the motor's suitability for a given application and the size of the motor required to meet the power demands of the load. Properly matching the output rating of the motor to the load is critical to ensuring efficient and reliable operation of the motor and equipment.

Power Factor: is a dimensionless quantity that expresses the ratio of the real power (also known as active power) to the apparent power (the product of voltage and current) in an alternating current (AC) electrical circuit.

It represents the efficiency with which the electrical power is being used in the circuit, and ranges from 0 to 1, with a value of 1 indicating a purely resistive load and no reactive power.

In practical applications, most AC loads have both resistive and reactive components, which can cause the power factor to be less than 1. A lower power factor means that more apparent power is required to deliver a given amount of real power, which can lead to higher energy costs and reduce the overall efficiency of the electrical system.

Power factor can be improved by using power factor correction devices, such as capacitors, to reduce the amount of reactive power in the circuit. This can improve the overall efficiency of the electrical system and reduce energy costs.

RETIE: Certificate in Colombia is the mandatory certification related to all electrical installations for residential or industrial use.



Glosay Of Terms

RETIQ is the Colombian regulation for energy efficiency, applicable to: Air conditioners. Refrigerators/ freezers (household and commercial) Lighting ballast. Electric motors.

Rotor: The rotating part of an electric motor that is attached to the output shaft.

Service Factor (SF): is a rating used to indicate the ability of an electric motor to handle intermittent overloading or operating conditions that exceed the motor's nameplate rating. It is typically expressed as a percentage, such as 1.15 or 1.25, and is applied to the motor's rated horsepower (HP) to determine its maximum safe operating capacity.

The service factor represents the amount of additional load that the **motor can handle above its** rated load without overheating or suffering damage. For example, a motor with a nameplate rating of 10 HP and a service factor of 1.15 can safely operate at 11.5 HP for short periods of time, such as during peak demand or starting.

The service factor is determined by the design and construction of the motor and is specified by the manufacturer. It is important to note that the use of the service factor should be limited to intermittent or occasional overloading and should not be used as a means to regularly operate the motor beyond its rated capacity.

Exceeding the service factor rating for prolonged periods of time can cause the motor to overheat, reduce its operating life, and increase the risk of premature failure. Therefore, it is important to properly size and select motors for the specific application and operating conditions to ensure reliable and efficient operation.

Stepper Motor: An electric motor that moves in precise steps, rather than continuously.

Stator: The stationary part of an electric motor that surround the rotor and contains the electromagnetic winding.

Synchronous Motor: An electric motor in which the rotor rotates at the same speed as the stator's rotating magnetic field.

Torque: is a measure of the rotational force or turning effort exerted by an electric motor. It is defined as the product of force and the distance from the axis of rotation to the point where the force is applied.

Torque is typically measured in units of Newton-meters (Nm) or pound-feet (lb-ft), and is a function of the motor's speed, current, and the number of magnetic poles in the motor.



Glosay Of Terms

In an electric motor, torque is created by the interaction between the magnetic fields of the stator and rotor. When current is applied to the stator windings, a magnetic field is created that interacts with the magnetic field of the rotor, causing it to turn. The amount of torque generated by the motor is proportional to the strength of the magnetic field and the current flowing through the windings. The torque of an electric motor is an important parameter in determining its performance and suitability for a given application. It is used to specify the motor's ability to produce a certain amount of rotational force or to overcome a certain amount of resistance. The torque required by the load must be matched to the torque output of the motor to ensure efficient and reliable operation.

In addition to its role in electric motors, torque is also a key parameter in many other types of electrical equipment, such as gearboxes, couplings, and shafts. In these applications, torque is used to measure the amount of rotational force exerted by the equipment and to ensure that it can handle the required load.

LOCKED-ROTOR TORQUE

Locked-rotor torque ('Breakaway Torque' or 'Starting Torque') is the torque which the motor will develop at rest (for all angular positions of the rotor) with rated voltage at rated frequency applied. It is also sometimes known as starting torque and is usually expressed as a percentage of full-load torque.

PULL-UP TORQUE

Pull-up (pull-in) torque is the minimum torque developed during the period of acceleration from locked-rotor to the speed at which breakdown torque occurs. For motors which do not have a definite breakdown torque (such as NEMA design D) pull-up torque is the minimum torque developed up to rated full-load speed. It is usually expressed as a percentage of full-load torque.

BREAKDOWN TORQUE

Breakdown (Maximum or Pull-out) torque is the maximum torque the motor will develop with rated voltage applied at rated frequency without an abrupt drop in speed. Breakdown torque is usually expressed as a percentage of full-load torque.

FULL-LOAD TORQUE

Full-load torque is the torque necessary to produce rated horsepower at full-load speed. In pound-feet, it is equal to the rated horsepower times 5252 divided by the full-load speed in RPM.



Glosay Of Terms

Voltage: is an electrical parameter that pertains to electric apparatus and represents the potential difference between two points in an electric circuit. It is measured in volts (V) and is the force that drives the flow of electric charge through an electric apparatus. Electric apparatus such as transformers, motors, generators, and power supplies are designed to operate at specific voltage levels. The voltage rating of an electric apparatus indicates the maximum voltage level that it can safely handle without damage or malfunction. In transformers, voltage is used to transform the voltage level of an AC power source to a higher or lower voltage level. This voltage transformation is achieved by induction, where the voltage is transferred from the primary winding to the secondary winding through a magnetic field. In motors and generators, voltage is used to generate a magnetic field that produces mechanical energy. The voltage is applied to the coils of the motor or generator, which generates a magnetic field that interacts with a permanent magnet to produce rotation. In power supplies, voltage is used to regulate the output voltage level and provide a stable power source to other electrical components. The voltage is regulated using a feedback mechanism that adjusts the output voltage level based on the input voltage level and load conditions. Voltage is a critical parameter in the design and operation of electric apparatus. It must be carefully controlled and monitored to ensure the safe and efficient operation of the electrical system.

Note: As distribution system voltages vary from country to country, motor nameplate voltage should be selected according to the country in which it will be operated. In general, however, nominal voltages are between 230V/400V and 400V/690V. IEEE 141 and IEC 60038 also provide references to 'System voltages'.



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