# HIGH POWER MOTOR MEMAX 1507 & 1616 -

It is a Radial Air Gap, Permanent Magnet Synchronous Motor (PMSM) with an Internal Permanent Magnet Rotor (IPM). PMAC AIR / Water Cooled motor is designed 96Vdc / 120Vdc for battery packs. *Other windings are available for up to 700 VDC applications.

| These motors has the same stator and rotor, the main difference is kind of cooling. | **AIR cooled ( IP65 )** | **LIQUID cooled ( IP67 )** |
|---|---|---|
| | **ME MAX 1507** | **ME MAX 1616** |
| • Maximum Temperature: 140C<br>• Liquid **Cooling requirements: 6-15 liters per minute, 1.5 Bar max** pressure. Water is OK, but Glycol (radiator fluid) is best. The gasket is made of Silicone rubber.<br><br>**Rotor Specifications**<br>Neodymium Magnets<br>150 C rating (180 C Option)<br>Sinusoidal Back-EMF ( 3 Hall optional)<br>Magnets Pass GM Salt Spray Test<br>Nichol Plated<br>**Designed for Field Weakening**<br>  |  |  |
| Maximum rotor speed: | 6000 rpm / (8000 for short time) | 6000 rpm / (8000 for short time) |
| Structure of the motor: | 12 turns per phase, 10 poles motor | |
| Recommended Voltage [ V ] | 96V / 120V /144V | |
| Rated Speed (with nominal load ) | ~3800 RPM @96V / ~ 4600 RPM @120V / ~ 5500 RPM @144V<br>[ Voltage constant 0.026 V/RPM ] | |
| | | |
| Continuous current (Phase AC) : | 157 Amps RMS | 250 Amps RMS |
| Peak current (Phase AC) : | 600 Amps RMS | 600 Amps RMS |
| | | |
| Continuous Power [ kW ] | 16kW @96V / 19kW @120V | 24kW @96V / 30kW @96V |
| Peak Power [ kW ] | 55kW @96V / 66kW @120V | 55kW @96V / 66kW @120V |
| | | |
| Torque Constant: | 0.22 Nm/Amp | 0.22 Nm/Amp |
| Continuous Torque: | 35Nm@160A | 55Nm @250A |
| Maximum Torque: | 120 Nm | 120 Nm |
| | | |
| Encoder: | Sin/Cos – 5V | Sin/Cos – 5V |
| Temperature sensor | KTY84-130 | KTY84-130 |
| Shaft diameter: | 28.57mm | 22,23mm |
| Weight : | 48lbs / 21,8 kg. | 48lbs / 21,8 kg. |
| | | |

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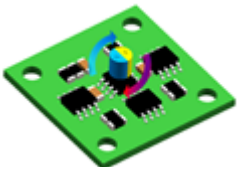
## Options:

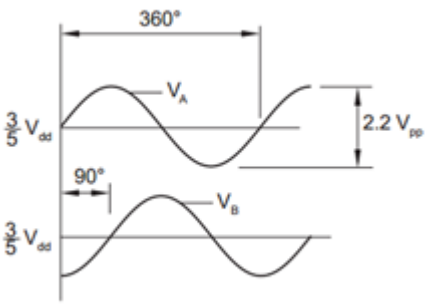
3 Hall Sensors, 120 electrical degrees
Metric Shaft and Mounting face
Windings for maximum speeds of 300-8000 rpm
Voltages form 24 to 700 VDC systems
Water Cooled Case for 80% more continuous power.
10,000 hour bearing set
Longer motors (In axial direction) due to extruded case design
Custom Colors – Private Label markings

## Sin/Cos Encoder parameters

| | |
|---|---|
| Power supply | Vdd= 5 V ± 5 % |
| Operating Temperature | -40~+105°C |
| Maximum speed | 60,000 rpm |
| Resolution | one sine/cosine wave per revolution |
| Sin/Cos outputs | Signal amplitude: 1.1 V ± 0.2 V |
| Power consumption | 20mA |
| Accuracy | ±0.6° |
| Hysteresis | 1.62° at 30000 rpm |

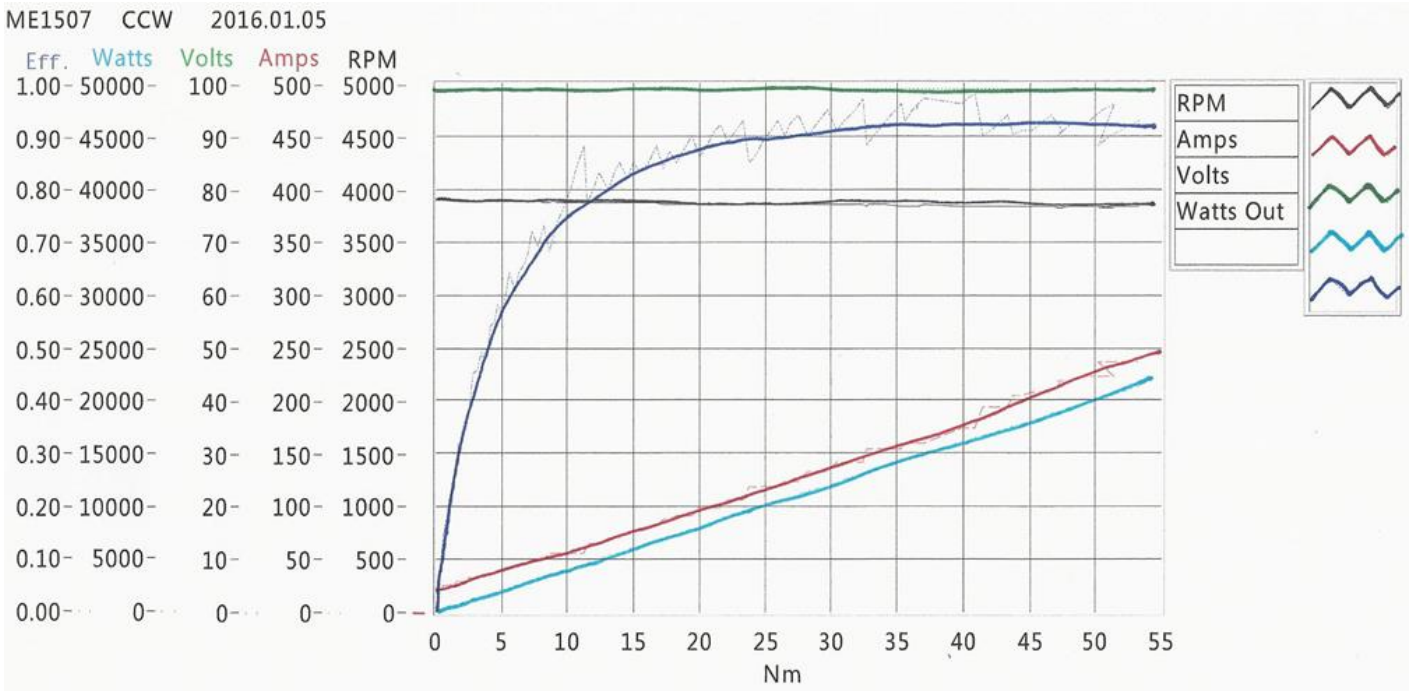


**Timing diagram**




$V_B$ leads $V_A$ for clockwise rotation of magnet.

## Test Curve of the motor:

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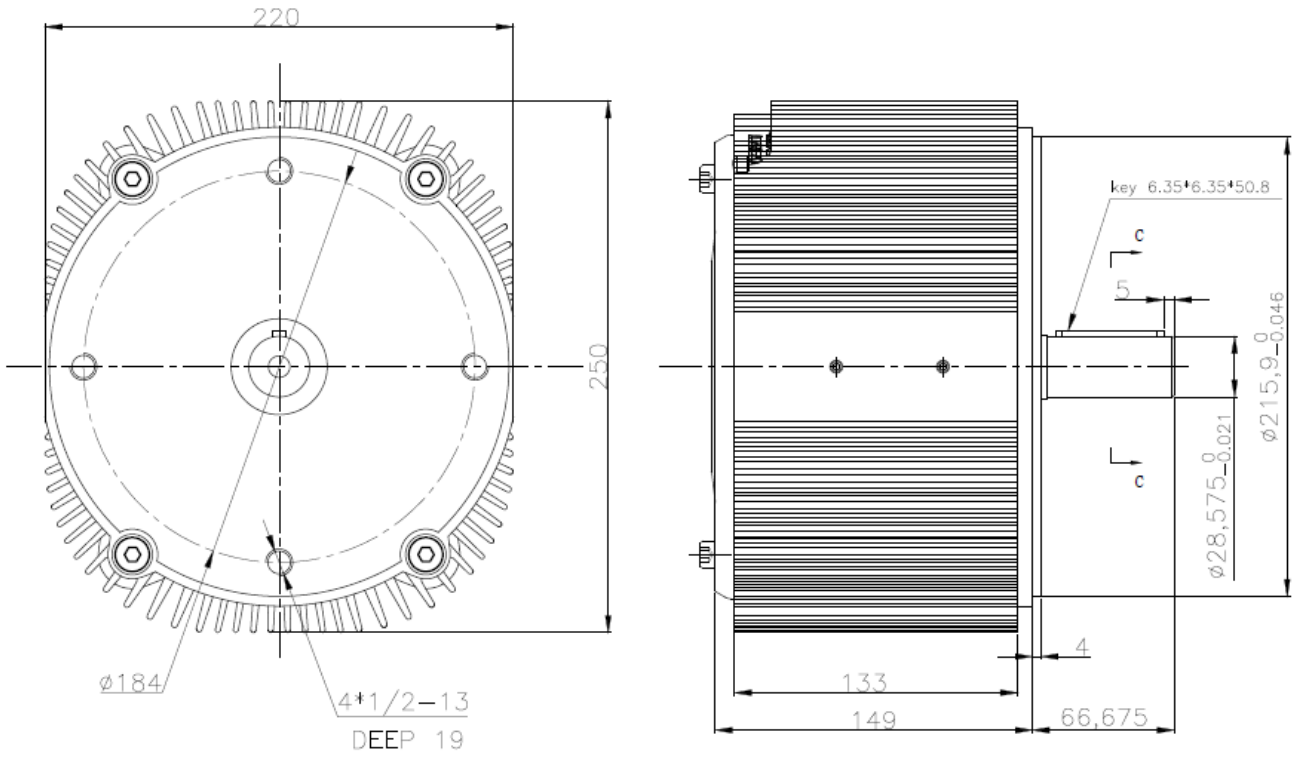
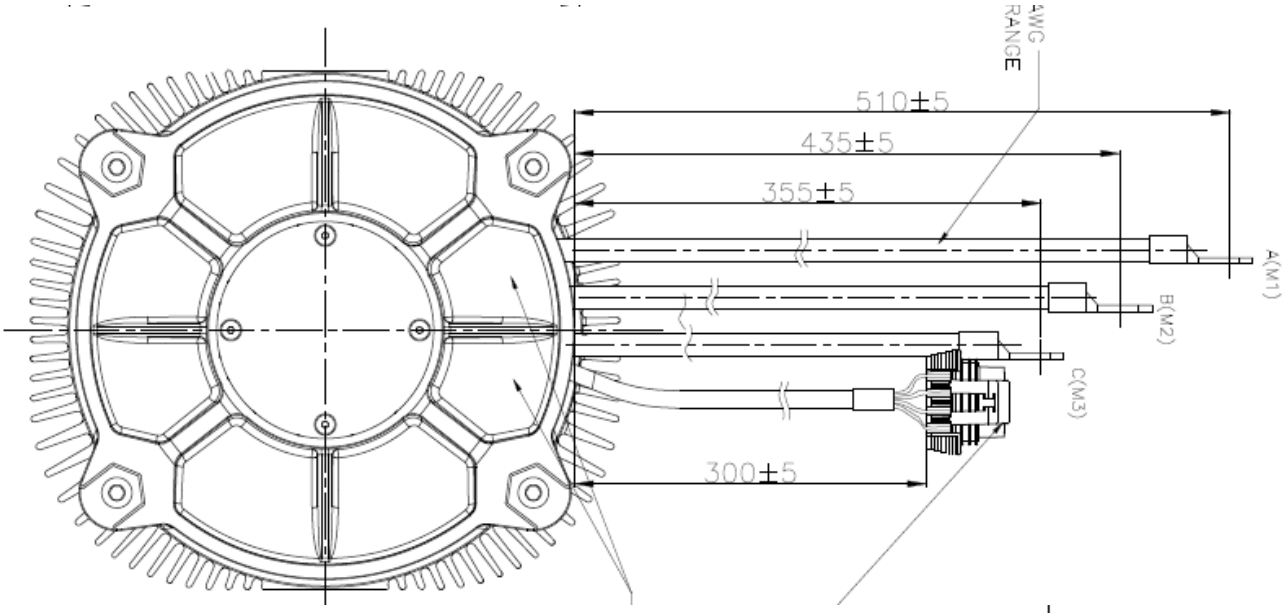
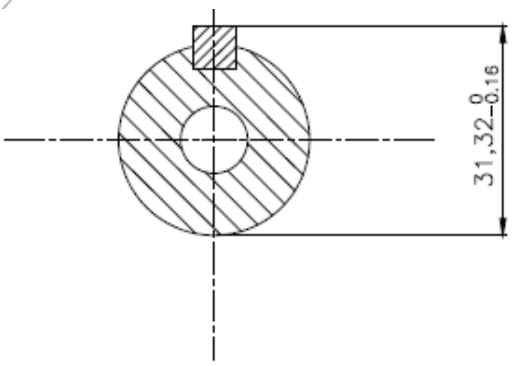
**DRAWING of AIR Cooled motor :**

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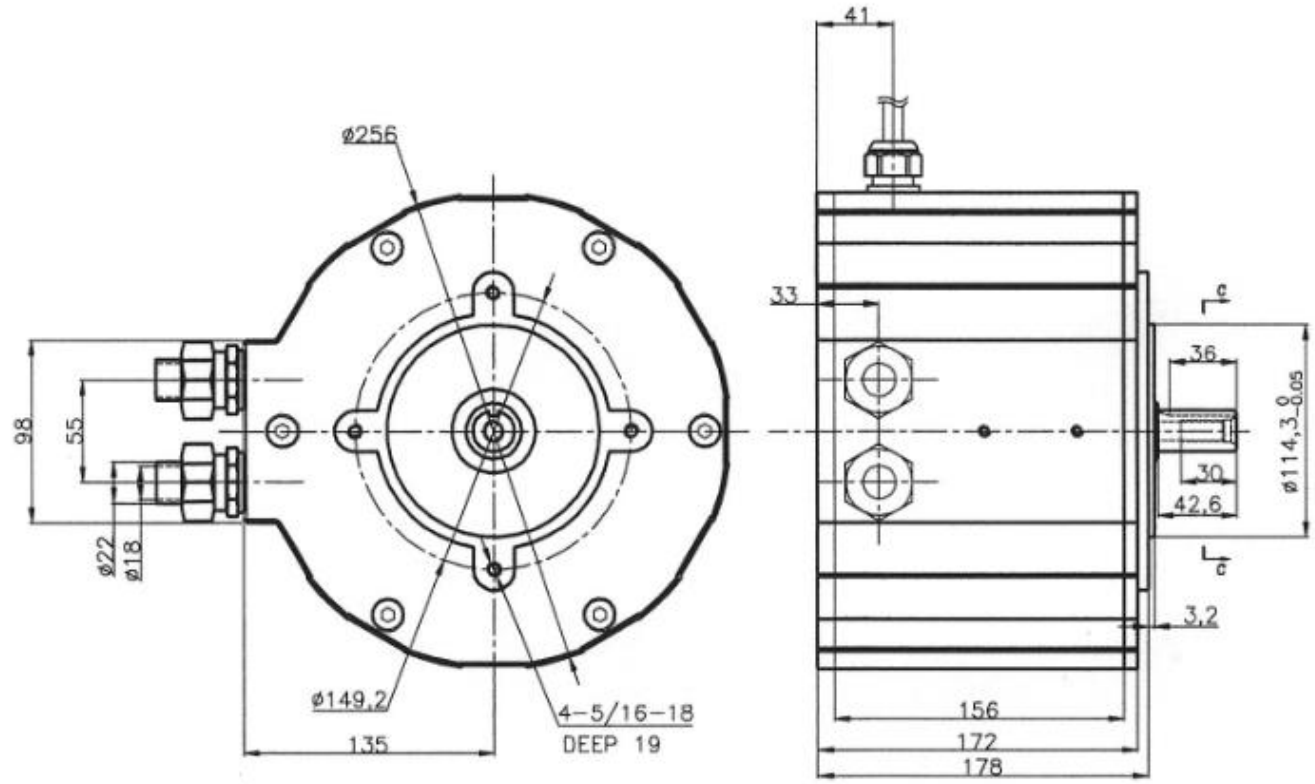
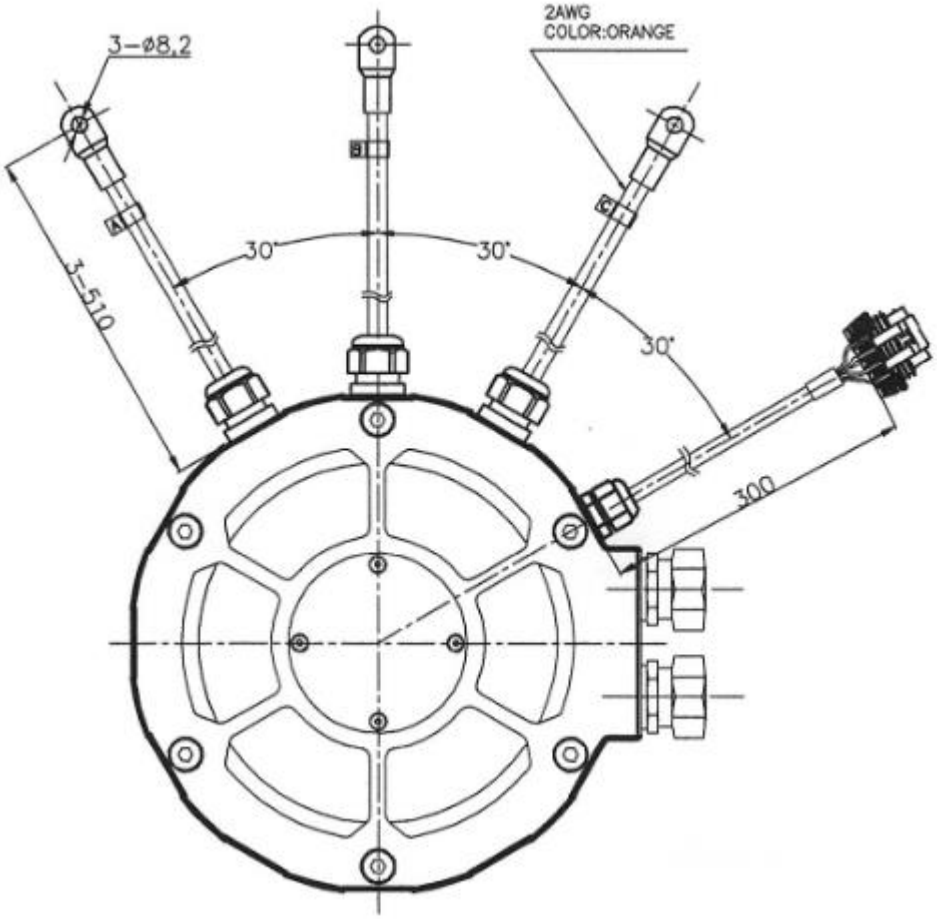
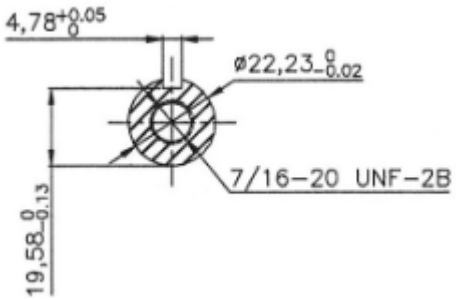
**DRAWING of LIQUID Cooled motor :**

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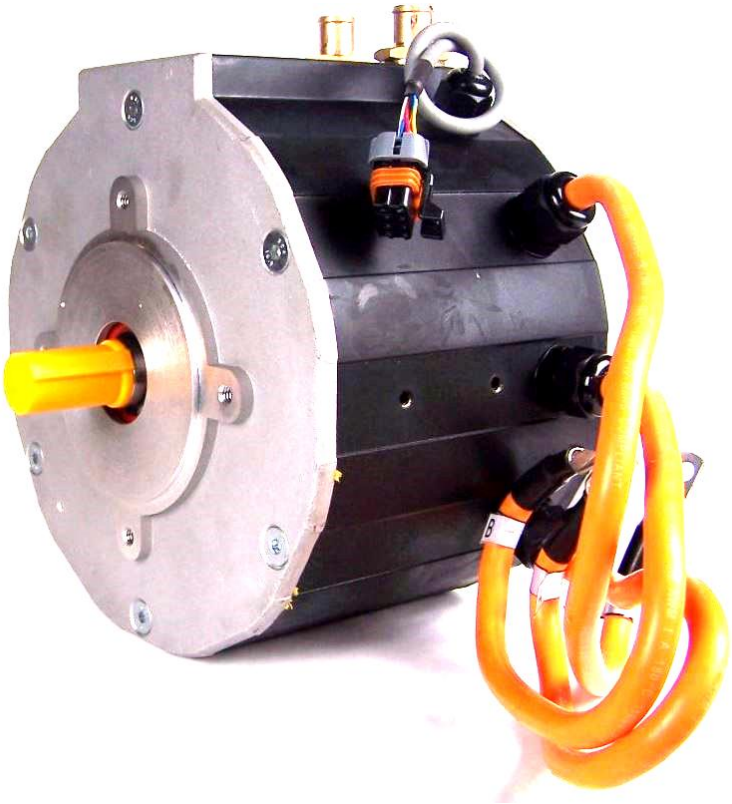
# ME MAX 1616 – Liquid cooled motor pictures



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**ME MAX 1507 – AIR cooled motor pictures**

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