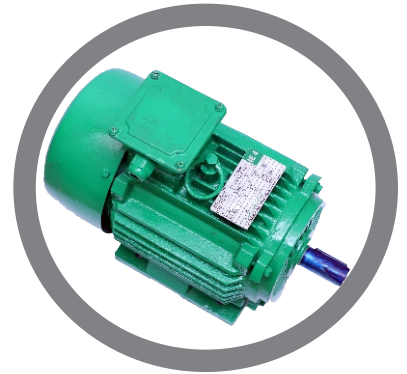
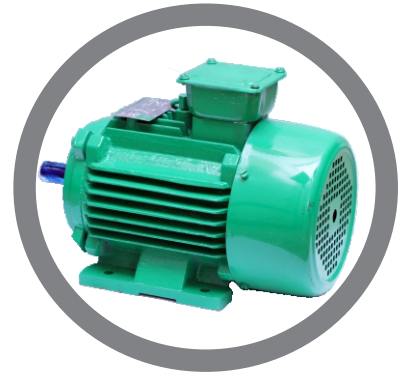
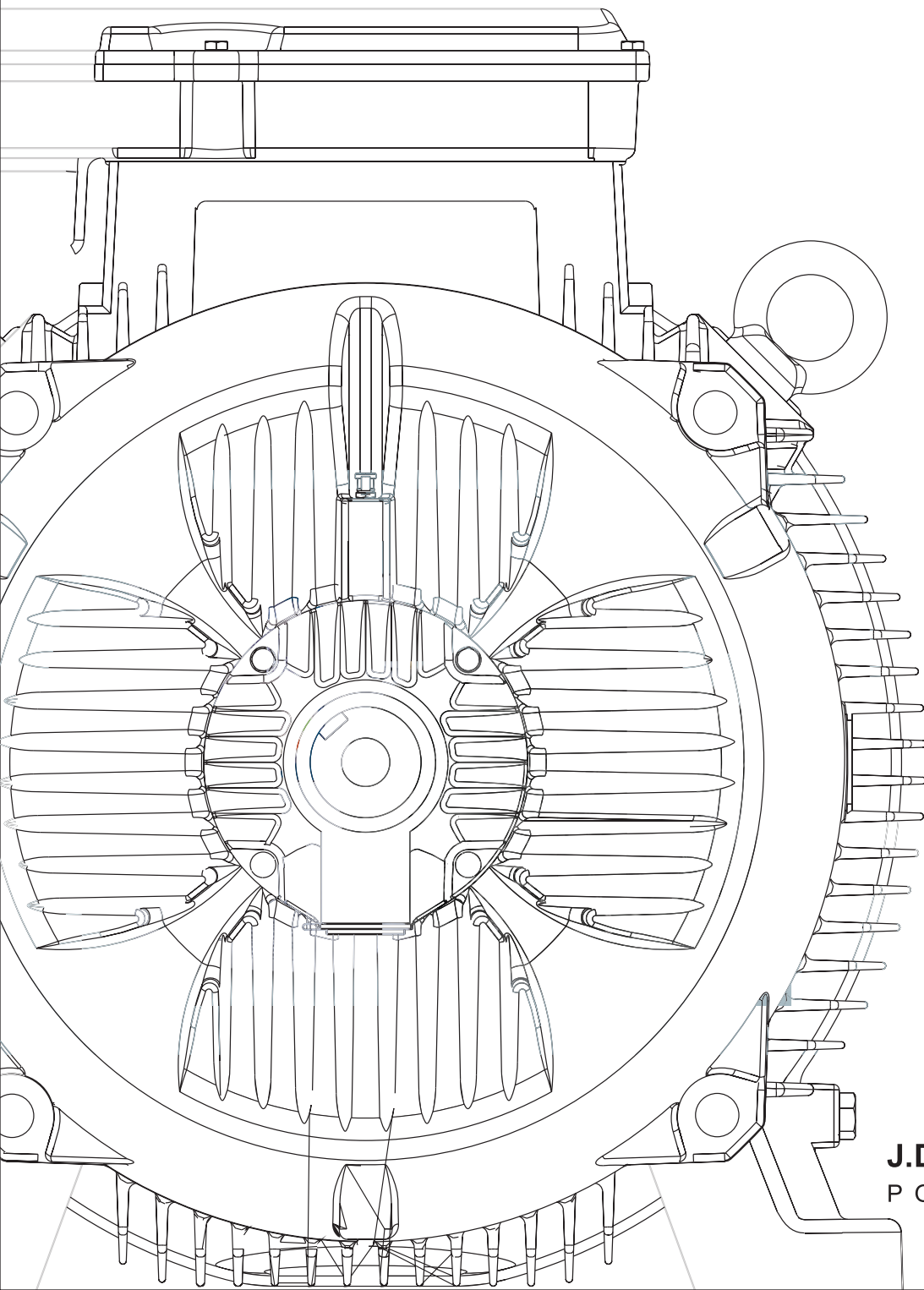


# JD39 PMSM

## Synchronous Machine



# JD PMSM Drive System

**JD39** Permanent Magnet Synchronous Motor Drive Machine, consists Of Ultra-premium Efficiency Motors With Permanent Magnets Driven By Frequency Inverters. Perfect For Applications Where Speed Variation, Precise Control At Low Speeds, Low Noise Levels And Compact Design Are Critical.



## THE HIGHEST EFFICIENCIES MOTOR IN THE MARKET

JD39 Magnet Motors Consists Of Rotors With Permanent Magnets. This Technology Provides The Motor With Significant Advantages Such As Higher Efficiency And A Greater Power Density Per Frame. They Are Driven By Frequency Inverters, Which Offer Constant Torque Across A Wide Speed Range, Operating Even At Low Speeds With Efficiency Levels Above Induction Motors Without Requiring Forced Ventilation. JD39 Magnet Motors Are Available In Ultra Premium (ie4) Versions – The Highest Efficiency Available On The Market Today.

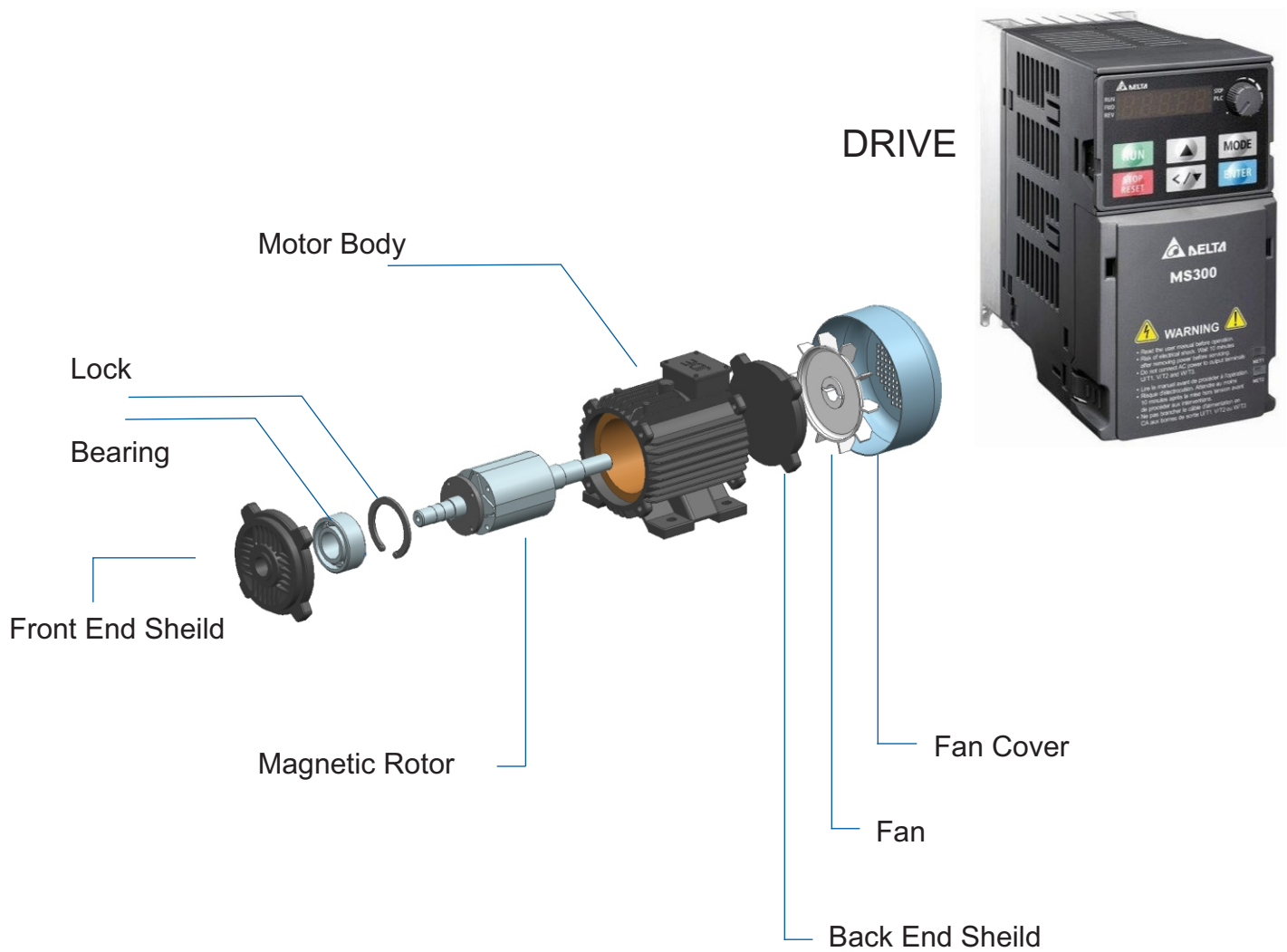
## DRIVE SYSTEM (INVERTER)

Due To The Dedicated Software Application Technology Which Incorporates The Vector Control Technology For Driving Permanent Magnet.

Synchronous Motors, The Use Together Of The Delta Drivefrequency Inverter And JD39 Magnet Motor Is an Obligation.

## Applications

Cooling Towers, Bag Filters, Paper Machines, Paper Coil Winders, Conveyors, Pumps, Looms, Direct Current (dc) Motor Replacements, Extruders, Compressors, Fans, Etc.



## Characteristics Of The JD39 Magnet Motor

Output: 3 To 315 Kw  
 Frame: 132s To 315s/m  
 Speed: 3000, 1500 And 1000 Rpm  
 Voltage: 415 V  
 Degree Of Protection: Ip55  
 Bearing Seal:  
 V'ring (frames 132s To 200l)  
 Insulation: F ( $\delta t$  80k)  
 Service Factor: 1.0  
 Insulation Class H  
 Insulated Nde Bearing Hub And SS Shaft Grounding  
 (from Frames 225s/m And Above)  
 Mounting: Foot  
**TEFC (IC 411) PER IEC 60034-6**



## ENERGY SAVING

When replacing an IE1 induction motor with a JD39 PMSM Ultra-Premium, the energy saved in one year would power a 120 W light bulb for 30 years.

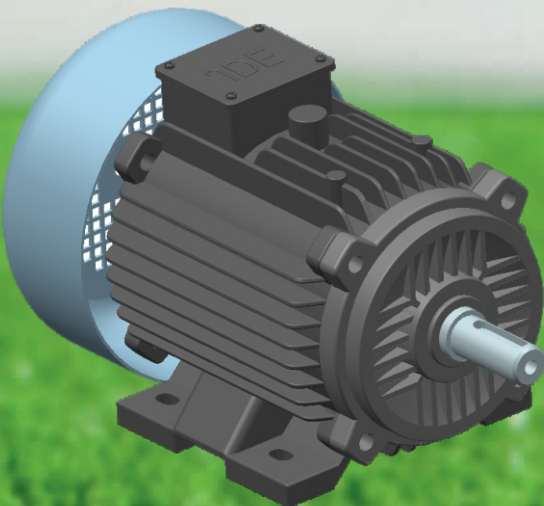
### JD39 PMSM ULTRA-PREMIUM

The highest efficiency level

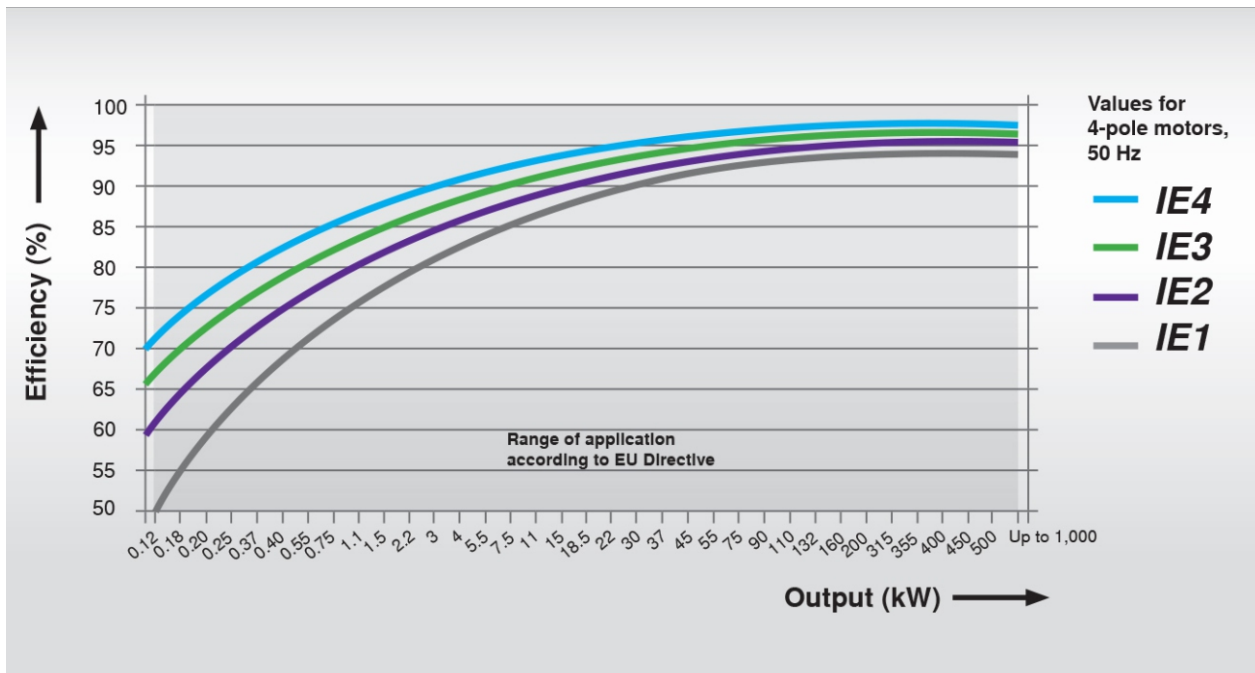
Interchangeability and high performance

JD39 PMSM Ultra-Premium motors offer the highest efficiency levels in the market and meet the envisaged levels for IE4 as defined in the IEC standard 60034. With a loss reduction of 20% when compared to the Super Premium, JD39 Magnet Ultra Premium motors feature the same frame size to kW ratio as equivalent induction motors, combining therefore interchangeability with existing installed motors and the benefit of improved product performance.

JD39 Magnet Ultra Premium is one more example of technology providing to Industry high efficiency, quality, energy saving and lower overall cost of ownership

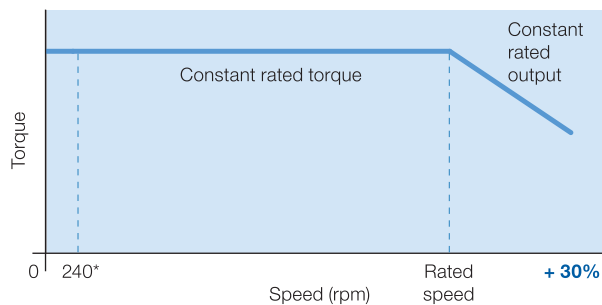
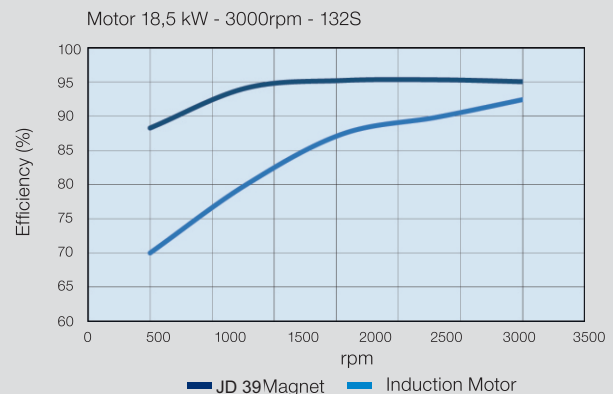


# EFFICIENCY COMPARISON



## Efficiency x Speed

JD39Magnet motors present superior efficiency regardless of speed or load, saving up to 30% in comparison to induction motors driven by frequency inverters.



\*Continuous duty at speeds lower than 240rpm under request

## Torque x Speed

JD39Magnet motors can operate over a wide speed range at constant torque, without the use of forced ventilation. This characteristic makes them ideal for applications requiring speed variation and constant torque, even at low speeds, without the need for an encoder.

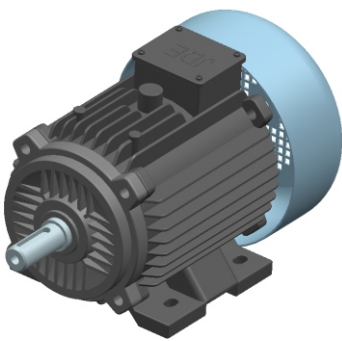
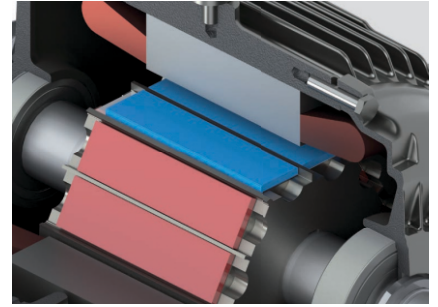
JD39Magnet motors (1000 rpm and 1500 rpm) are able to operate at up to 30% above their rated speed without the necessity to utilise special components.

## Insulation System

insulation system, Aiming at maximizing the durability and reliability of the motors when operated with a frequency inverter, resulting in improvement of the materials in all productive stages related to the motor insulation system, such as wires, insulating films, impregnation system, impregnating material, cables and other components present in the process.

### Permanent Magnets

The JD39 PMSM utilises powerful permanent magnets made from a combination of neodymium, iron and boron (NdFeB), and called as rare-earths magnets. These magnets are some twenty times stronger than traditional Ferrite Magnets. In order to provide superior mechanical strength and corrosion resistance, the Neodymium/Iron/Boron magnets are covered with a protective nicklecoating .



### Innovation

The new JD39 PMSM incorporates the same innovative features of the highly successful than induction motor line:

- Frame structure that reduces air dispersion and improves the cooling
- Terminal box with greater internal space for easier cable management
- Solid feet that simplify the motor alignment and installation
- Robust cast iron construction providing high mechanical strength and low vibration levels

-Take the picture from pictures given in attachment

### Endshields

The JD39 Magnet motors are equipped with bearings offering an L10 life of up to 100,000 hours. All motors feature open bearings and endshields with grease nipples which permit re-lubrication lubrication and consequently a reduction in stoppages for maintenance.



### Bearings

As JD39 Magnet motors are supplied with long-life bearings, the maximum permissible radial loads differ from those of general purpose induction motors, as shown in the following table.

Axial loads are as per JD39 general purpose induction motors on horizontal application.

# TECHNICAL DATA

## JDPM Permanent magnet ultra-premium efficiency series

| 2P        |              | Synchronous speed 3000 Rpm/min |                   |          |              |         |                      |
|-----------|--------------|--------------------------------|-------------------|----------|--------------|---------|----------------------|
| Model     | Rated Output |                                | Rated Current (A) |          | Speed<br>rpm | Eff (%) | Power factor<br>COSφ |
|           | HP           | KW                             | 230/415V          | 415/690V |              |         |                      |
| JDPM80M2  | 1            | 0.75                           | 2.27/1.20         | /        | 3000         | 90.0    | 0.96                 |
| JDPM90M2  | 2            | 1.5                            | 3.40/2.41         | /        | 3000         | 90.0    | 0.96                 |
| JDPM100M2 | 3            | 2.5                            | 7.26/4.02         | /        | 3000         | 91.0    | 0.96                 |
| JDPM112M2 | 5            | 3.7                            | 11.35/6.20        | /        | 3000         | 92.0    | 0.96                 |
| JDPM132M2 | 7.5          | 5.5                            | 17.02/9.30        | /        | 3000         | 92.1    | 0.96                 |
| JDPM132M2 | 10           | 7.5                            | 22.70/12.13       | /        | 3000         | 92.1    | 0.96                 |
| JDPM160M2 | 15           | 11                             | 33.05/17.85       | /        | 3000         | 93.6    | 0.96                 |
| JDPM160M2 | 20           | 15                             | 44.20/23.80       | /        | 3000         | 92.1    | 0.96                 |

*Ld* - Direct axis inductance  
*Lq* - Quadrature axis inductance  
*Ke* - Generated voltage at 1000 rpm

# TECHNICAL DATA

## JDPM Permanent magnet ultrapremium efficiency series

### 4P Synchronous speed 1500 Rpm/min

| Model     | Rated Output |      | Rated Current (A) |          | Speed<br>rpm | Eff (%) | Power factor<br>COSφ |
|-----------|--------------|------|-------------------|----------|--------------|---------|----------------------|
|           | HP           | KW   | 230/415V          | 415/690V |              |         |                      |
| JDPM80M4  | 1            | 0.75 | 2.27/1.20         | /        | 1500         | 90.0    | 0.96                 |
| JDPM90M4  | 2            | 1.5  | 3.40/2.41         | /        | 1500         | 91.0    | 0.96                 |
| JDPM100M4 | 3            | 2.5  | 7.26/4.02         | /        | 1500         | 91.0    | 0.96                 |
| JDPM112M4 | 5            | 3.7  | 11.35/6.20        | /        | 1500         | 92.0    | 0.96                 |
| JDPM132M4 | 7.5          | 5.5  | 17.02/9.30        | /        | 1500         | 92.1    | 0.96                 |
| JDPM132M4 | 10           | 7.5  | 22.70/12.13       | /        | 1500         | 92.6    | 0.96                 |
| JDPM160M4 | 15           | 11   | 33.05/17.85       | /        | 1500         | 94.0    | 0.96                 |
| JDPM160M4 | 20           | 15   | 44.20/23.80       | /        | 1500         | 93.6    | 0.96                 |

*Ld - Direct axis inductance*  
*Lq - Quadrature axis inductance*  
*Ke - Generated voltage at 1000 rpm*



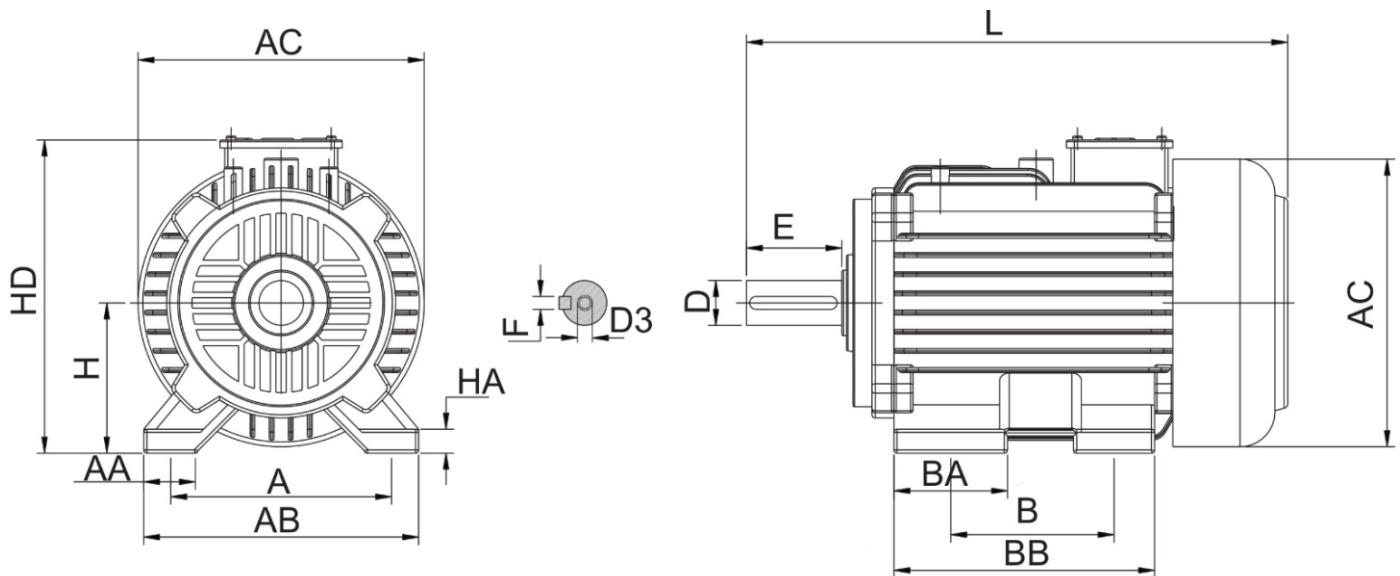
# TECHNICAL DATA

## JDPM Permanent magnet ultra-premium efficiency series

| 6P        | Synchronous speed 1000 Rpm/min |      |                   |          |                  |         |                      |
|-----------|--------------------------------|------|-------------------|----------|------------------|---------|----------------------|
| Model     | Rated Output                   |      | Rated Current (A) |          | Speed<br><br>rpm | Eff (%) | Power factor<br>COSφ |
|           | HP                             | KW   | 230/415V          | 415/690V |                  |         |                      |
| JDPM80M6  | 1                              | 0.75 | 2.27/1.20         | /        | 1000             | 90.0    | 0.96                 |
| JDPM90M6  | 2                              | 1.5  | 3.40/2.41         | /        | 1000             | 90.0    | 0.96                 |
| JDPM100M6 | 3                              | 2.5  | 7.26/4.02         | /        | 1000             | 91.0    | 0.96                 |
| JDPM112M6 | 5                              | 3.7  | 11.35/6.20        | /        | 1000             | 92.0    | 0.96                 |
| JDPM132M6 | 7.5                            | 5.5  | 17.02/9.30        | /        | 1000             | 93.1    | 0.96                 |
| JDPM132M6 | 10                             | 7.5  | 22.70/12.13       | /        | 1000             | 93.7    | 0.96                 |
| JDPM160M6 | 15                             | 11   | 33.05/17.85       | /        | 1000             | 94.3    | 0.96                 |
| JDPM160M6 | 20                             | 15   | 44.20/23.80       | /        | 1000             | 94.7    | 0.96                 |

# TECHNICAL DATA

## FOOT MOUNTING AND OVERALL DIMENSION



| IM-B3-H80-160 |     |         |     |    |     |    |     |        |         |    |     |     |    |         |    |     |
|---------------|-----|---------|-----|----|-----|----|-----|--------|---------|----|-----|-----|----|---------|----|-----|
| FRAME SIZE    | A   | B       | C   | D  | E   | F  | H   | D3     | L       | AA | AB  | AC  | BA | BB      | HA | HD  |
| 80            | 125 | 100     | 50  | 19 | 40  | 6  | 80  | M6X16  | 270     | 38 | 155 | 156 | 40 | 130     | 13 | 158 |
| 90S/L         | 140 | 100/125 | 56  | 24 | 50  | 8  | 90  | M8X19  | 290/315 | 35 | 170 | 176 | 48 | 130/155 | 13 | 178 |
| 100           | 160 | 140     | 63  | 28 | 60  | 8  | 100 | M10X22 | 358     | 43 | 195 | 212 | 50 | 170     | 15 | 234 |
| 112           | 190 | 140     | 70  | 28 | 60  | 8  | 112 | M10X28 | 378     | 55 | 230 | 234 | 55 | 175     | 15 | 268 |
| 132S/M        | 216 | 140/178 | 89  | 38 | 80  | 10 | 132 | M12X28 | 440/478 | 62 | 265 | 274 | 70 | 185/225 | 20 | 304 |
| 160 M/L       | 254 | 210/254 | 108 | 42 | 110 | 12 | 160 | M16X36 | 582/626 | 72 | 320 | 335 | 78 | 260/305 | 25 | 370 |

## Application

### Pumps and Ventilation Systems

JD39PMSM are widely used in pumps and ventilation systems which operate under variable load conditions, benefitting from the speed variation capability of these motors which ensures their use at the best duty point. The size and weight reduction of the PMSM Super Premium efficient motor also presents an important advantage in ventilation systems, where their design permits more compact installations to be achieved.

Extruders, Looms and Wiredrawing Machines By working together with the frequency inverter, the JD39 Magnet motor offers precise speed control. Therefore, it is perfectly suited to drive continuous processing machines such as extruders, looms and wiredrawing machines. They offer precise constant torque control even at low speeds, fully satisfying the requirements of these demanding applications

## Compressors

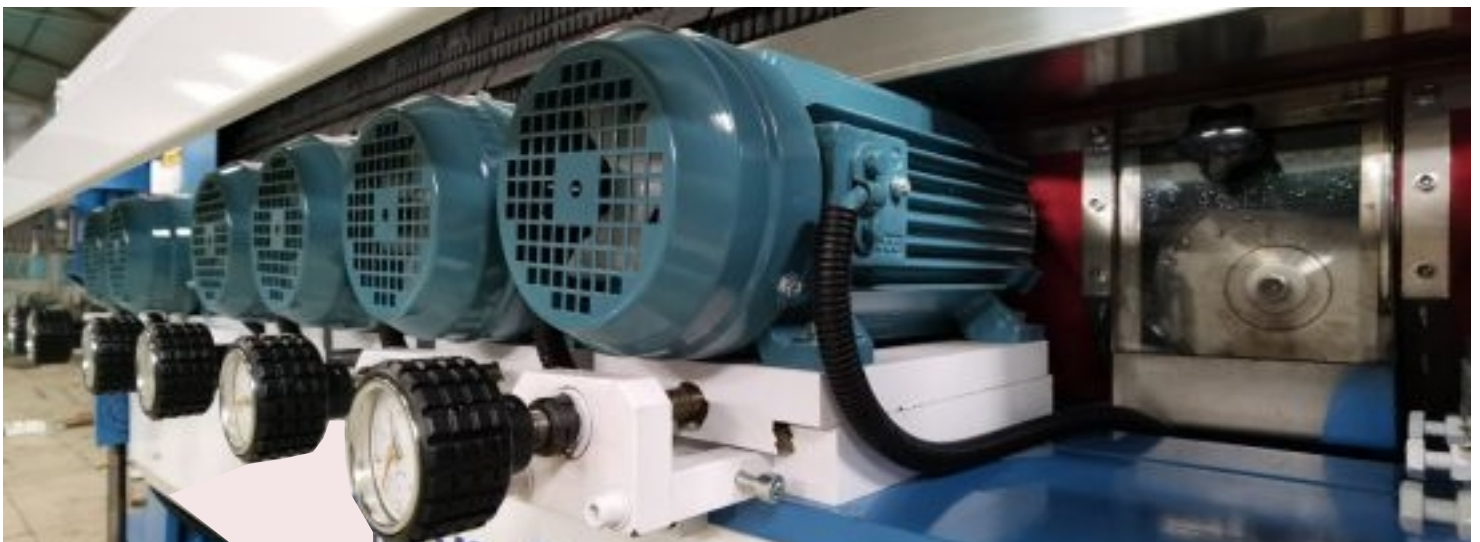
JD39 Magnet permanent magnet motors are particularly suited for compressor applications, due to their constructional features, flexibility and efficiency. In the case of the Super Premium efficient motor design, their reduced size and ability  
Conveyors On conveyor applications, JD39 Magnet motors stand out due to their capacity to offer high starting torques. Their low operating temperatures allow more starts per hour without oversizing of the motor or use of forced ventilation

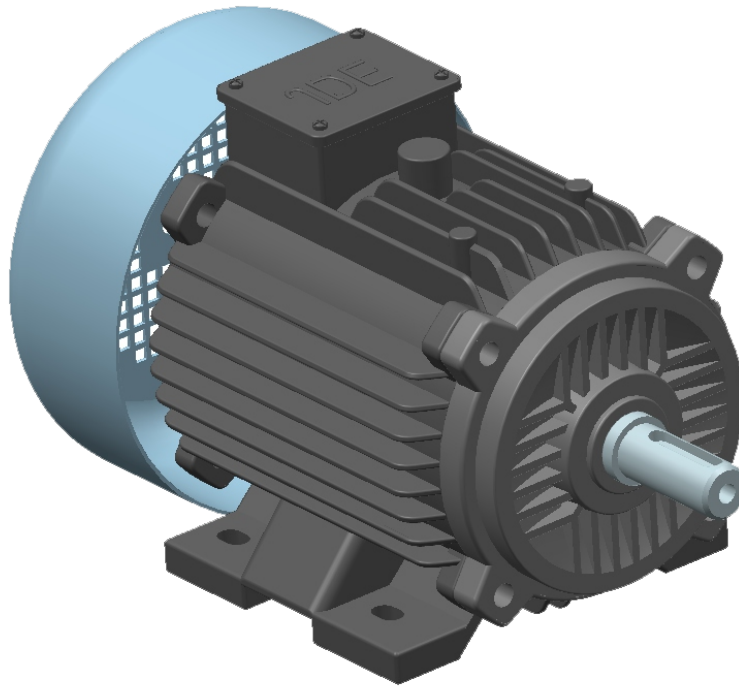
## Paper Coil Winders

JD39 PMSM are also highly recommended for applications within the paper and cellulose industry, for example, paper coil winders. Variable speed, precise control and high and constant torques are essential requirements for these applications, therefore the use of PMSM , together with the drive inverter , offers the perfect solution to meet these demands.

## Injection moulding machines

These machines use maximum consumption of energy , one having JD39 PMSM machines one can increase the production with increased rpm with consumption of less energy.





**JD ENGINEERING WORKS  
POWER GENERATION**

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Web - [www.pmsgen.com](http://www.pmsgen.com)