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ELK MOTOR

ELK 0601-0319

# PRODUCT CATALOGUE

elkmotor.com.tr


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تهران، کیلومتر۲۱ بزرگراه لشگری (جاده مخصوص کرج)
روبـروی پالایشگاه نفت پـارس، پلاک ۱۲

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# THREE PHASE SQUIRREL CAGE ASYNCHRONOUS MOTORS


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# ELK MOTOR

ELK Motor has been founded by major shareholders of Yılmaz Reduktor, as a continuation of the product family. ELK Motor manufactures electric motors from 71 up to 280 frame size in a 40.000$m^2$ closed area built on a 100.000 $m^2$ open area.

All motor series are designed and manufactured in accordance with European standards and in IE2 and IE3 efficiency classes.

The main design and technology of ELK Motor is completely suitable to the IE3 efficiency class. Since the outside dimensions of the IE3 and IE2 design are completely same, the replacement of the IE2 motor with IE3 motors will be done easily.

In addition to the motors according to the European standards, ELK Motor also manufactures special motors for its customers to decrease the cost and increase the productivity.

ELK Motors, from engineering to manufacturing processes, are completely manufactured in our factory located in Çerkezköy. Motor shafts and end shields are manufactured by fully automatic CNC machines under a continuous quality control. The rotor and stator cores are manufactured in our fully automatic punching and interlocking lines.

After injecting the pure aluminum into the rotor cores in a fully automatic rotor injection line, the rotor cores become ready for assembly. In automatic winding lines, stator cores are wound and varnished either by automatic dipping method or VPI (Vacuum Pressure Impregnation) method according to the needs and usage area. So the products are always in the best levels of quality and performance.

After all of these operations, our motors which are assembled in accordance with product prescriptions are being tested and controlled fully for the last time and shipped to the customers after packaging.

In addition, ELK Motor has the quality management system and final product certificates, that customers need. Our quality system is certified with ISO 9001 and our products have UL approval.

CE cULus TÜV NORD ISO 9001 TÜV NORD OHSAS 18001


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# CONTENTS




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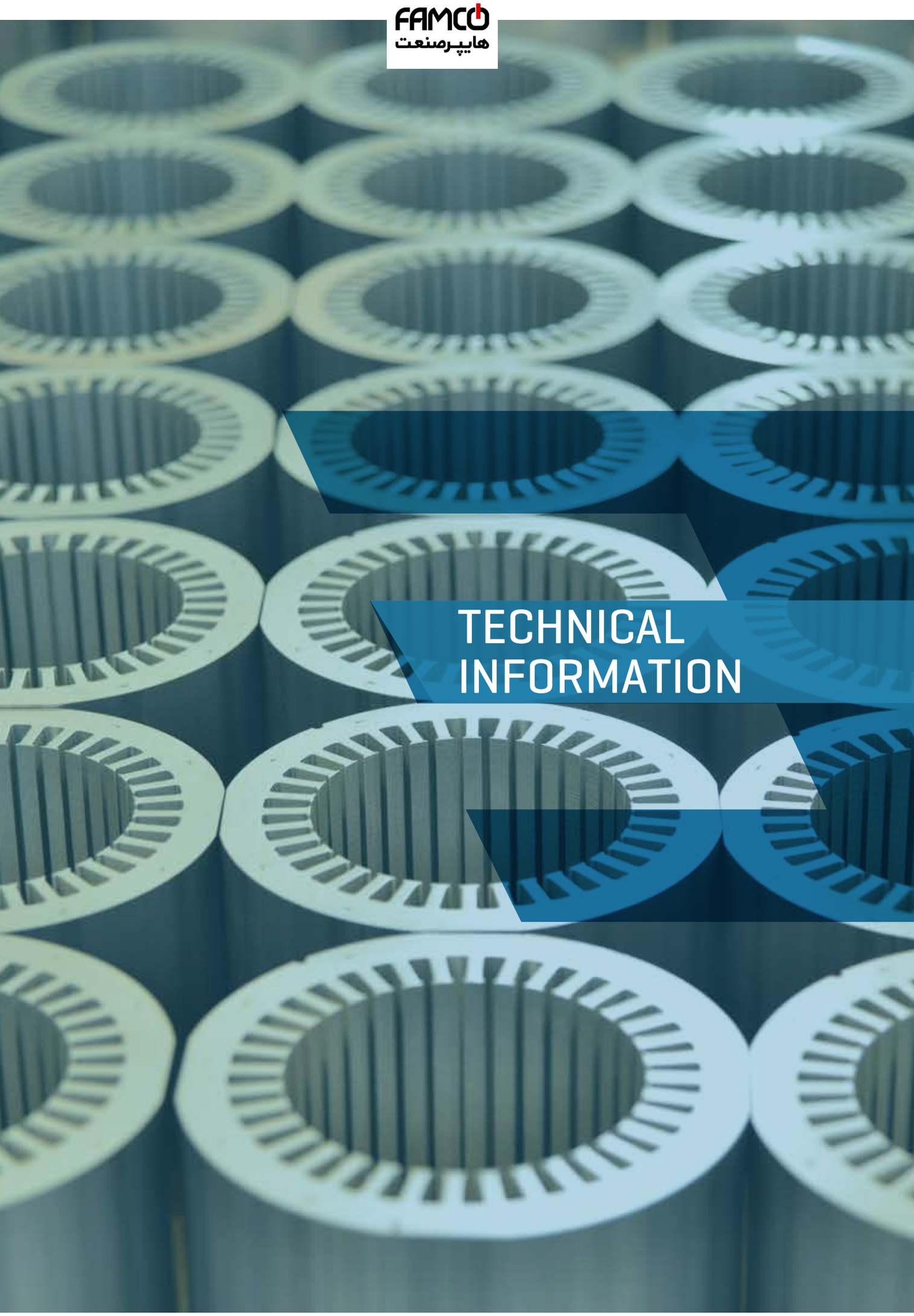

# TECHNICAL INFORMATION


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# IEC / EN / UL Compatibility

All of standard ELK Motors are designed, manufactured and tested according to the IEC and EN standards given below.

| | |
|---|---|
| IEC 60034-1 | Rating and performance |
| IEC 60034-2-1 | Methods for determining losses and efficiency |
| IEC 60034-5 | Classification of degrees of protection |
| IEC 60034-6 | Methods of cooling |
| IEC 60034-7 | Symbols of construction and mounting arrangements |
| IEC 60034-8 | Terminal markings and direction of rotation |
| IEC 60034-9 | Noise limits |
| IEC 60034-11 | Built-in thermal protection |
| IEC 60034-14 | Vibration limits |
| IEC 60034-18-1 | Functional evaluation of insulation system |
| IEC 60034-30 | Efficiency classes (IE Code) |
| IEC 60038 | Standard voltages |
| EN 50347 | Dimensions and output for electrical machines |
| EN 55014-1 | Electromagnetic compatibility |
| EN 61000-3-2 | |
| EN 61000-3-3 | |
| UL1004-1 | Rotating Electrical Machines – General Requirements |
| CSA C22.2 No. 100 | Motors ve Generators |

All of our motors, which have that UL logo on nameplate are approved by UL and manufactured according to UL1004-1 and CSA C22.2 No. 100 standards with E496161 file number.

According to IEC 60034-1, catalogue values are permitted to deviate from the real values as follows:

| | |
|---|---|
| **Speed (n)** | $\Delta n = \pm 20\% (n_s - n_N)$ , $P_N > 1$ kW<br>$\Delta n = \pm 30\% (n_s - n_N)$ , $P_N <= 1$ kW |
| **Efficiency %(η)** | $\Delta \eta = -15\% (100 - \eta_N)$, $P_N <= 150$ kW<br>$\Delta \eta = -10\% (100 - \eta_N)$ , $P_N >$ 150 kW |
| **Power Factor ( Cosφ)** | $\cos\varphi = -1/6 (1 - \cos\varphi)$ |
| **Locked rotor current ($I_{LN}$)** | $\Delta (I_{LN}) = +20\% (I_{LN})$ |
| **Starting torque ($M_L/M_N$)** | min. $(M_L/M_N) = -15\% (M_L/M_N)$<br>max. $(M_L/M_N) = +25\% (M_L/M_N)$ |
| **Break down torque ($M_K/M_N$)** | $(M_K/M_N) = -10\% (M_K/M_N)$ |
| **Moment of inertia (J) [kgm²]** | $\Delta J = \pm 10\% J$ |
| **Sound pressure level ($L_{PA}$) [dB(A)]** | $L_{PA} = +3$ dB (A) |



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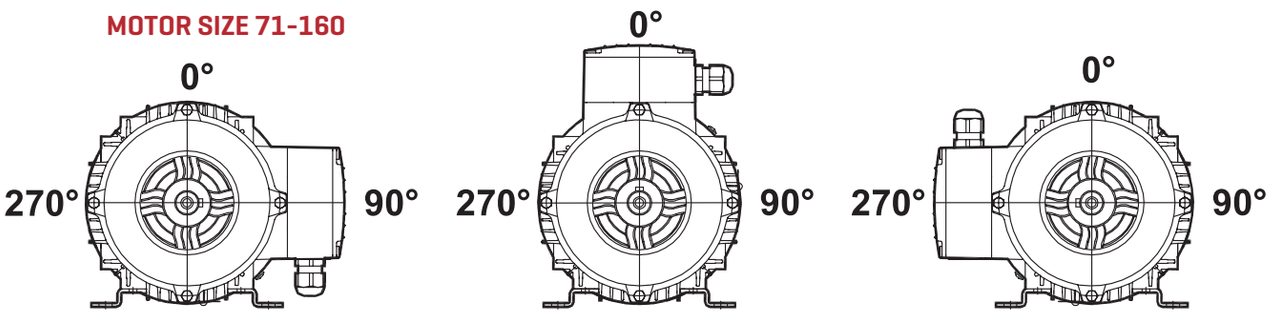
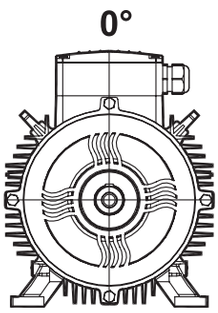
# Mechanical Construction

71-160 frame size ELK Motors provides flexibility for different mounting types through their detachable feet which can be mounted on three sides. This feature allows terminal box assembly on the desired side. Terminal box is on the top for standard motors. 180-280 frame size motors have fixed feet construction.

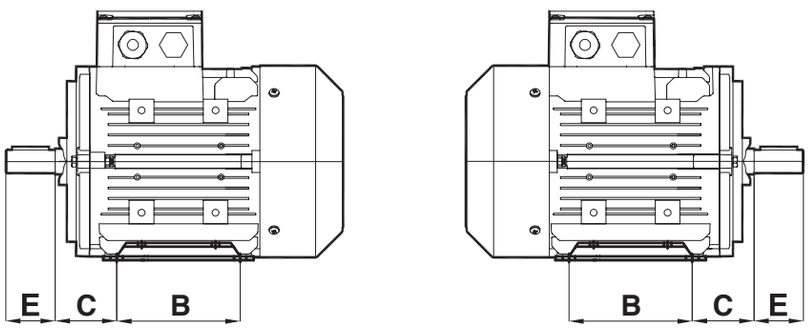
**MOTOR SIZE 71-160**




**MOTOR SIZE 180-280**




Additionally the housing and end shields are designed symmetrically for all the frame sizes, so that the drive and non-drive side end shields can be replaced and the direction of the rotor shaft group can be changed. By making this end shields and rotor shaft group modifications, the user can have a motor with terminal box is at the non-drive side keeping the distance C according to the standards.




The raw materials that are used in our motors depending on the frame size are listed below.

| Frame Size | Housing | End Shield DE | End Shield NDE | Terminal Box & Cover | Feet | Fan Cover | Fan |
|---|---|---|---|---|---|---|---|
| 71 | Aluminum | Aluminum | Aluminum | Aluminum | Steel Sheet | Steel Sheet | Plastic |
| 80 | Aluminum | Aluminum | Aluminum | Aluminum | Steel Sheet | Steel Sheet | Plastic |
| 90 | Aluminum | Aluminum | Aluminum | Aluminum | Steel Sheet | Steel Sheet | Plastic |
| 100 | Aluminum | Aluminum | Aluminum | Aluminum | Steel Sheet | Steel Sheet | Plastic |
| 112 | Aluminum | Aluminum | Aluminum | Aluminum | Steel Sheet | Steel Sheet | Plastic |
| 132 | Aluminum | Aluminum | Aluminum | Aluminum | Steel Sheet | Steel Sheet | Plastic |
| 160 | Aluminum | Aluminum | Aluminum | Aluminum | Aluminum | Steel Sheet | Plastic |
| 180 | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Steel Sheet | Plastic |
| 200 | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Steel Sheet | Plastic |
| 225 | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Steel Sheet | Plastic |
| 250 | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Steel Sheet | Plastic |
| 280 | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Cast Iron | Steel Sheet | Plastic |



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# Electrical Construction

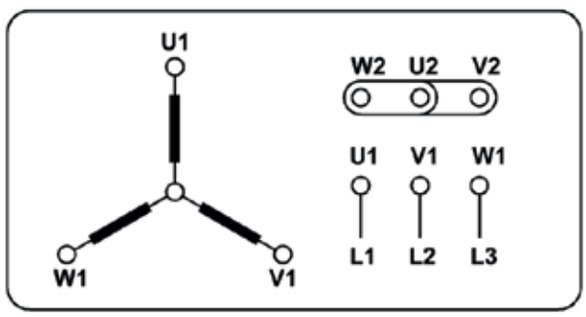
Standard ELK Motors have insulation Class F while the temperature rise is Class B. This means the motors will have a longer service life and work under hard conditions. Upon the customer's request, Class H insulation motors are manufactured.

# Electrical Connections

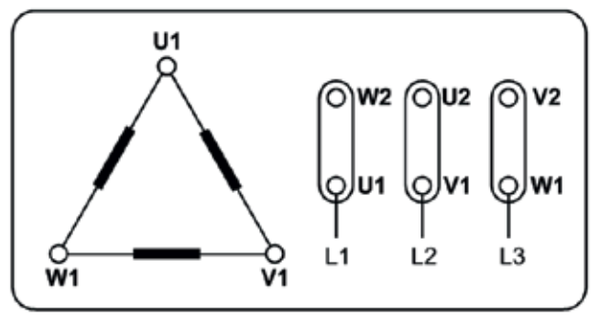
| Cable Gland and Blind Cap | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frame Size | 071 | 080 | 090 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Cable Glands | M20x1,5 | | | M25x1,5 | | | 2 x M32x1,5 | | 2 x M40x1,5 | 2 x M50x1,5 | | 2 x M63x1,5 |
| Blind Cap | M16x1,5 | | | M25x1,5 | | | - | | - | - | | - |

| Terminal Connections | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frame Size | 071 | 080 | 090 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | 250 | 280 |
| Terminal Size | M4 | | | M5 | | | M6 | | | M8 | M10 | |

The motors shall be connected in star or delta according to rated voltage given in their nameplate and the network voltage that they will be connected. For phase to phase 400V supply the motors with 230/400V nameplate values shall be connected in star and the motors with 400/690V nameplates values shall be connected in delta.




Y Star Connection




Δ Delta Connection

# Motors at 60Hz Network

Standard ELK Motors that have been manufactured for 50 Hz power supply can be used at 60Hz network. The ratios given below indicate changes in the given rated values.

| 50 Hz Rated Voltage | 60 Hz Rated Voltage | Rated Speed | Rated Power | Rated Torque | Rated Current | Starting Torque | Break Down Torque | Starting Current |
|---|---|---|---|---|---|---|---|---|
| 230V | 220V | 1.193 | 1 | 0.84 | 0.97 | 0.77 | 0.8 | 0.8 |
| 400V | 380V | 1.193 | 1 | 0.84 | 0.97 | 0.77 | 0.8 | 0.8 |
| 400V | 440V | 1.20 | 1.16 | 0.97 | 0.98 | 0.87 | 0.9 | 0.9 |



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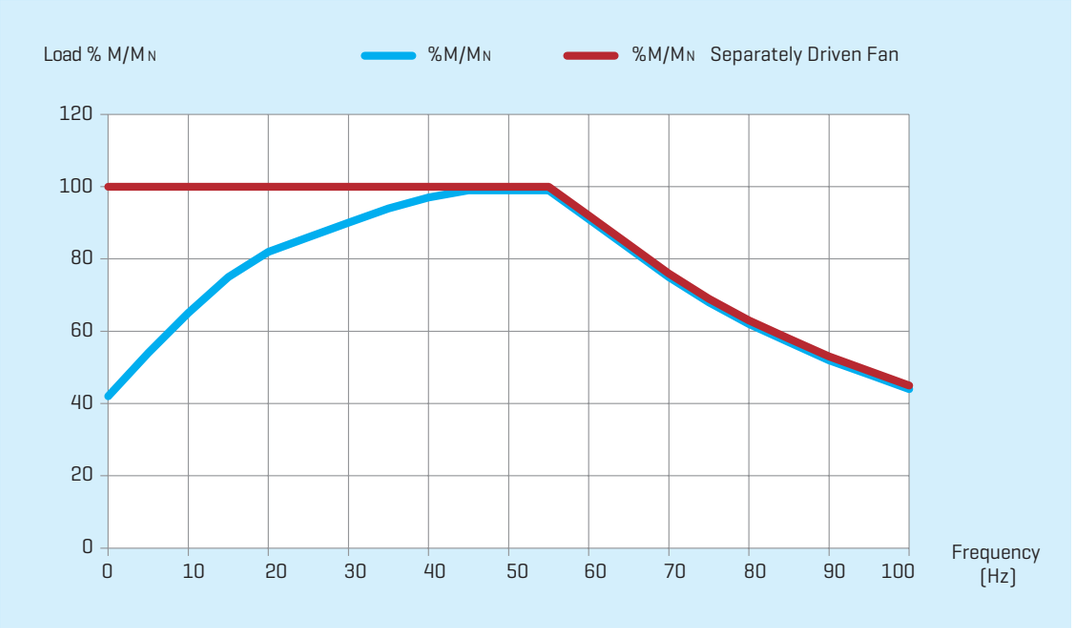
# Motors With Variable Speed Drives

Standard ELK Motors are suitable for variable speed drives. The frequency range that the motor can be driven with their fan is given below with blue line. If the motor will be driven in a wider range then a separately driven fan is necessary. By using a separately driven fan, the motors can be driven in the range defined by red line.




# Motors In Several Environmental Conditions

ELK Motors are designed to operate at ambient temperature up to 40°C according to IEC 60034-1. Rated output will change at the % ratings given below for different ambient temperatures.

| Ambient Temperature | <30 °C | 35 °C | 40 °C | 45 °C | 50 °C | 55 °C | 60 °C |
|---|---|---|---|---|---|---|---|
| % Power Ratio | 105 | 102 | 100 | 97 | 93 | 87 | 82 |



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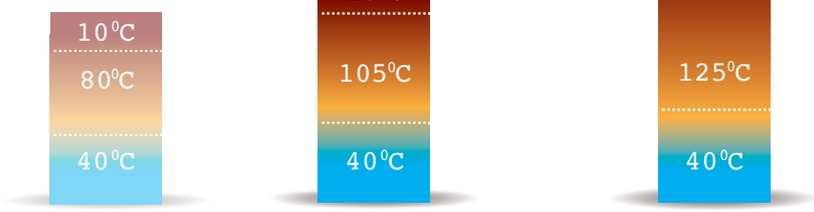
# Winding Insulation / Temperature Rise Classes

All standard motors in the ELK Motor range have F (155 ° C) class electrical insulation system. However, by means of its superior design features, the temperature rise of all standard motors remain within the Class B temperature rise limits when operating under rated conditions. Depending on the safety margin of the temperature rise class provided, our motors can provide 15% higher rated output power with a service factor of 1.15 (SF).

INSULATION CLASS

| | B | F | H |
|---|---|---|---|
| Maximum Winding Temperature | 130°C | 155°C | 180°C |
| Tolerance | 10°C | 10°C | 15°C |
| Limits of Winding Temperature | 80°C | 105°C | 125°C |
| Ambient Temperature | 40°C | 40°C | 40°C |




### B

Class B insulation system is shown for referance purposes only. Class B insulation system is not used in ELK motors.

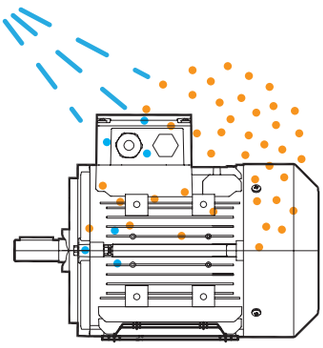
### F (Standard)

Our standard motors have class F electrical insulation system. The maximum permissible winding temperature at 40°C ambient temperature is 155°C.

### H (Optional)

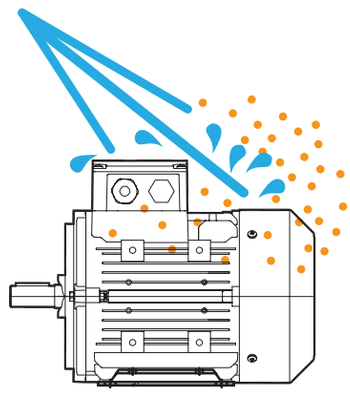
H class insulation is provided on special request. At 40°C ambient temperature, the maximum permissible winding temperature is 180°C

# Protection Classes



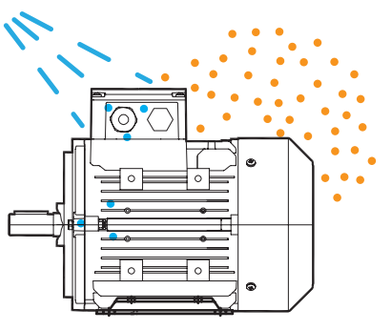
### IP55 (Standard)

Limited protection against dust ingress and protected against low pressure water jets from any direction.



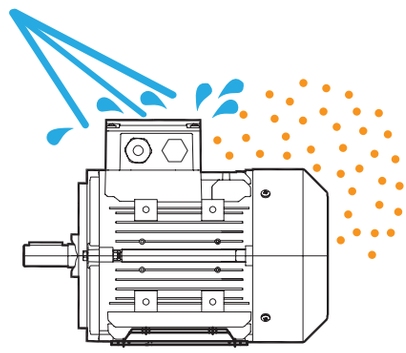
### IP56

Limited protection against dust ingress and protected against high pressure water jets from any direction.



### IP65

Totally protected against dust ingress and protected against low pressure water jets from any direction.



### IP66

Totally protected against dust ingress and protected against high pressure water jets from any direction.



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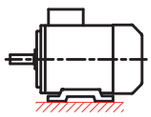
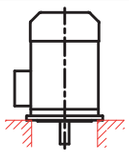
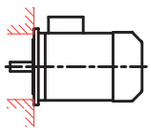
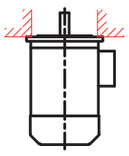
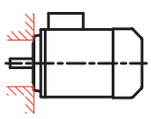
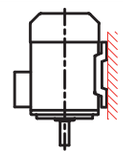
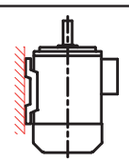
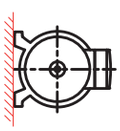
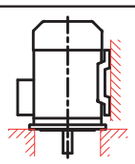
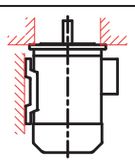
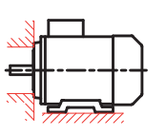
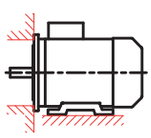
# Construction Types

ELK Motors are manufactured according to International Mounting Standard IEC 60034-7.

| Mounting codes and diagrams according to IEC 60034-7 | | | | | |
|---|---|---|---|---|---|
| | Horizontal Mounting Codes | | | Vertical Mounting Codes | |
| | I | II | | I | II |
|  | IM B3 | IM 1001 |  | IM V1 | IM 3011 |
|  | IM B5 | IM 3001 |  | IM V3 | IM 3031 |
|  | IM B14 | IM 3601 |  | IM V5 | IM 1011 |
|  | IM B7 | IM 1061 |  | IM V6 | IM 1031 |
|  | IM B6 | IM 1051 |  | IM V15 | IM 2011 |
|  | IM B8 | IM 1071 |  | IM V35 | IM 2031 |
|  | IM B34 | IM 2101 | | | |
|  | IM B35 | IM 2001 | | | |



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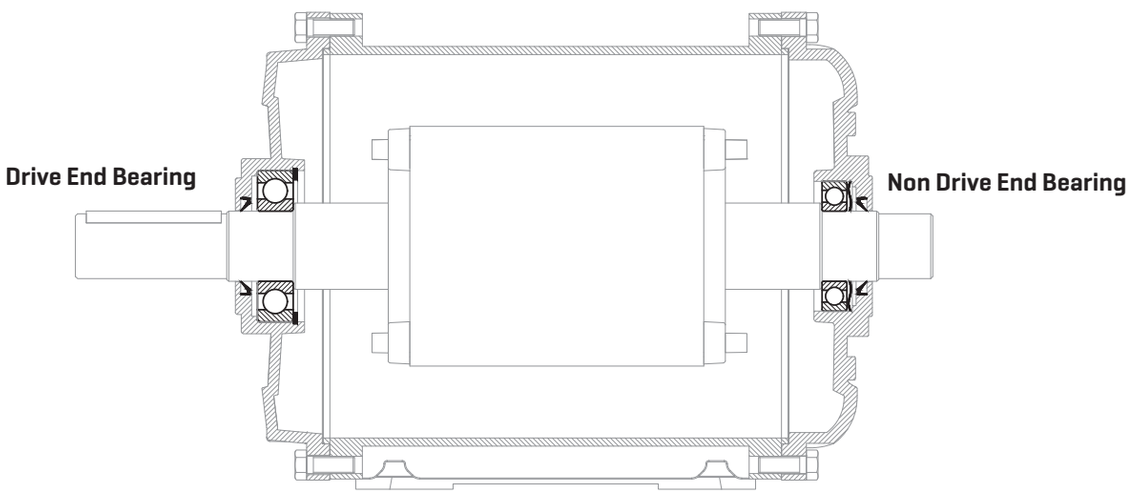
# Bearings

Standard ELK Motors are equipped with ball bearings with ZZ shields as listed below, according to frame size. NU-NJ bearings are optional.

| Frame Size | Drive End Bearing | Non Drive End Bearing |
|---|---|---|
| 71 | 6202 ZZ | 6202 ZZ |
| 80 | 6204 ZZ | 6204 ZZ |
| 90 | 6205 ZZ | 6205 ZZ |
| 100 | 6206 ZZ | 6206 ZZ |
| 112 | 6206 ZZ | 6206 ZZ |
| 132 | 6208 ZZ | 6208 ZZ |
| 160 | 6309 ZZ | 6209 ZZ |
| 180 | 6310 ZZ | 6210 ZZ |
| 200 | 6312 ZZ | 6212 ZZ |
| 225 | 6313 ZZ | 6213 ZZ |
| 250 | 6315 ZZ | 6215 ZZ |
| 280 | 6317 | 6317 |



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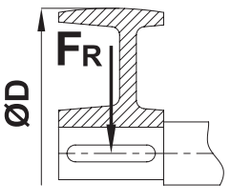
# Radial Loads

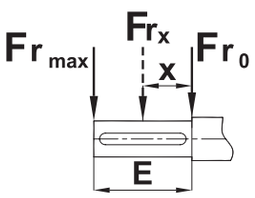
Radial Load ($F_R$):
Radial load can be calculated according to below written formulae.
Calculated radial load must be below permissible radial loads given at tables.
If above, please contact with us.

$$F_R = k \cdot \frac{P}{D \cdot n} \cdot 10^7 \ (N)$$




Correction of Permissible Radial Load
If the radial load is applied between points $x_0$ and $x_{max}$, the permissible radial load can be corrected with the following formulae.

$$Fr_X = Fr_0 - \frac{x}{E}(Fr_0 - Fr_{max})$$




P: Motor Power (kW)
D: Pulley Diameter (mm)
n: Motor speed (rpm)
k: Radial load factor
- Spur Gears, chain drives with low speed = 2,1
- Trigger Belts = 2,5
- V type belts = 5

$F_R < Fr_x$ : Calculated radial load must be below permissible radial loads given at tables.

Fa: Axial load
$Fr_0$: Permissible radial load at shaft spigot.
$Fr_{max}$: Permissible radial load at shaft end point.
Permissible loads are calculated for $L_{h10}$ 20000 h bearing lifetimes according to ISO 281.



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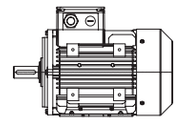
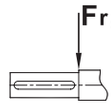
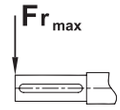
# Radial Loads

HORIZONTAL MOUNTING - Permissible Radial Loads
Mounting Positions IM: B3, B5, B6, B7, B8, B14, B34, B35



| Frame Size | Fa = 0 | |
|---|---|---|
| |  $Fr_0$ |  $Fr_{max}$ |
| **2 Poles 3000 d/d** | **$Fr_o$ [N]** | **$Fr_{max}$ [N]** |
| 71 | 380 | 340 |
| 80 | 640 | 550 |
| 90 | 750 | 660 |
| 100 | 1050 | 900 |
| 112 | 1050 | 910 |
| 132 | 1520 | 1220 |
| 160 | 2800 | 2300 |
| 180 | 3250 | 2650 |
| 200 | 4340 | 3560 |
| 225 | 4950 | 4000 |
| 250 | 6050 | 4800 |
| 280 | 6800 | 5500 |
| **4 Poles 1500 d/d** | **$Fr_o$ [N]** | **$Fr_{max}$ [N]** |
| 71 | 520 | 440 |
| 80 | 800 | 700 |
| 90 | 950 | 780 |
| 100 | 1300 | 1050 |
| 112 | 1300 | 1050 |
| 132 | 1950 | 1600 |
| 160 | 3540 | 2825 |
| 180 | 4100 | 3400 |
| 200 | 5500 | 4550 |
| 225 | 6200 | 4900 |
| 250 | 7500 | 6000 |
| 280 | 8200 | 7500 |
| **6 Poles 1000 d/d** | **$Fr_o$ [N]** | **$Fr_{max}$ [N]** |
| 71 | 580 | 500 |
| 80 | 870 | 800 |
| 90 | 1090 | 900 |
| 100 | 1500 | 1250 |
| 112 | 1500 | 1250 |
| 132 | 2200 | 1800 |
| 160 | 4050 | 3190 |
| 180 | 4720 | 3830 |
| 200 | 6350 | 5150 |
| 225 | 7350 | 5650 |
| 250 | 8950 | 7200 |
| 280 | 9500 | 8500 |

$Fa_0$ : Permissible axial load
Fr : Radial load
$Fr_0$ : Permissible radial load at shaft spigot.
$Fr_{max}$ : Permissible radial load at shaft end point.

Permissible loads are calculated for $L_{h10}$ 20000 h bearing lifetimes according to ISO 281.



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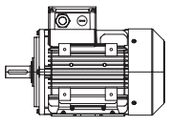
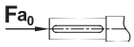
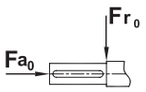
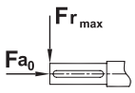
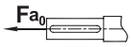
# Axial Loads

HORIZONTAL MOUNTING – Permissible Axial Loads
Mounting Positions IM: B3, B5, B6, B7, B8, B14, B34, B35



| Frame Size | Push | | | Pull |
|---|---|---|---|---|
| | Fr = 0 | Fr = $Fr_0$ | Fr = $Fr_{max}$ | Fr = 0 |
| |  |  |  |  |
| **2 Poles 3000 d/d** | **$Fa_0$ [N]** | **$Fa_0$ [N]** | **$Fa_0$ [N]** | **$Fa_0$ [N]** |
| 71 | 110 | 110 | 110 | 250 |
| 80 | 190 | 190 | 190 | 395 |
| 90 | 210 | 210 | 210 | 400 |
| 100 | 270 | 270 | 270 | 580 |
| 112 | 270 | 270 | 270 | 580 |
| 132 | 380 | 380 | 370 | 800 |
| 160 | 2280 | 1060 | 1020 | 1670 |
| 180 | 2660 | 1250 | 1250 | 1970 |
| 200 | 3150 | 1500 | 1390 | 2600 |
| 225 | 3850 | 1850 | 1760 | 2750 |
| 250 | 4150 | 2180 | 2250 | 3350 |
| 280 | 5000 | 2500 | 2500 | 4000 |
| **4 Poles 1500 d/d** | | **Push** | | **Pull** |
| | **$Fa_0$ [N]** | **$Fa_0$ [N]** | **$Fa_0$ [N]** | **$Fa_0$ [N]** |
| 71 | 110 | 110 | 110 | 360 |
| 80 | 190 | 190 | 190 | 560 |
| 90 | 210 | 210 | 210 | 585 |
| 100 | 300 | 300 | 300 | 830 |
| 112 | 300 | 300 | 300 | 830 |
| 132 | 400 | 400 | 400 | 1200 |
| 160 | 2280 | 1400 | 1400 | 2350 |
| 180 | 3100 | 1570 | 1500 | 2800 |
| 200 | 4400 | 1770 | 1770 | 3810 |
| 225 | 4950 | 2150 | 2200 | 4300 |
| 250 | 6050 | 2400 | 2400 | 4500 |
| 280 | 7200 | 3000 | 3000 | 5500 |
| **6 Poles 1000 d/d** | | **Push** | | **Pull** |
| | **$Fa_0$ [N]** | **$Fa_0$ [N]** | **$Fa_0$ [N]** | **$Fa_0$ [N]** |
| 71 | 110 | 110 | 110 | 430 |
| 80 | 190 | 190 | 190 | 700 |
| 90 | 210 | 210 | 210 | 740 |
| 100 | 290 | 290 | 290 | 1020 |
| 112 | 290 | 290 | 290 | 1020 |
| 132 | 380 | 380 | 380 | 1470 |
| 160 | 3050 | 1540 | 1520 | 2900 |
| 180 | 3540 | 1780 | 1700 | 3410 |
| 200 | 4800 | 2200 | 2250 | 4400 |
| 225 | 5050 | 2580 | 2800 | 5200 |
| 250 | 6050 | 3100 | 3150 | 6500 |
| 280 | 7000 | 3700 | 3400 | 7150 |

$Fa_0$ : Permissible axial load
Fr : Radial load
$Fr_0$ : Permissible radial load at shaft spigot.
$Fr_{max}$ : Permissible radial load at shaft end point.

Permissible loads are calculated for $L_{h10}$ 20000 h bearing lifetimes according to ISO 281.



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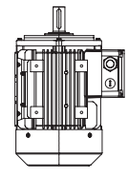
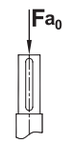
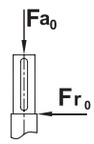
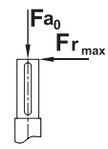
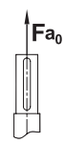
# Axial Loads



VERTICAL MOUNTING- Shaft Pointing Upwards – Permissible Axial Loads
Mounting Positions IM: V3, V6, V19, V35, V37

| Frame Size | Push | | | Pull |
|---|---|---|---|---|
| | Fr = 0 | Fr = $Fr_0$ | Fr = $Fr_{max}$ | Fr = 0 |
| |  |  |  |  |
| 2 Poles 3000 d/d | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] |
| 71 | 100 | 100 | 100 | 265 |
| 80 | 170 | 170 | 170 | 425 |
| 90 | 180 | 180 | 180 | 450 |
| 100 | 250 | 250 | 250 | 650 |
| 112 | 250 | 250 | 250 | 660 |
| 132 | 300 | 300 | 300 | 970 |
| 160 | 2080 | 1060 | 990 | 1950 |
| 180 | 2410 | 1190 | 1050 | 2350 |
| 200 | 2900 | 1265 | 1265 | 3000 |
| 225 | 3250 | 1310 | 1295 | 3575 |
| 250 | 3950 | 1460 | 1450 | 4350 |
| 280 | 4500 | 1600 | 1500 | 5250 |
| 4 Poles 1500 d/d | Push | | | Pull |
| | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] |
| 71 | 95 | 95 | 95 | 380 |
| 80 | 160 | 160 | 160 | 600 |
| 90 | 170 | 170 | 170 | 650 |
| 100 | 210 | 210 | 210 | 930 |
| 112 | 210 | 210 | 210 | 950 |
| 132 | 240 | 240 | 240 | 1430 |
| 160 | 2500 | 1250 | 1220 | 2160 |
| 180 | 2900 | 1400 | 1370 | 2570 |
| 200 | 3900 | 1360 | 1530 | 3500 |
| 225 | 4450 | 1570 | 1680 | 4000 |
| 250 | 5400 | 1870 | 1910 | 4300 |
| 280 | 5800 | 2000 | 1600 | 7100 |
| 6 Poles 1000 d/d | Push | | | Pull |
| | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] |
| 71 | 95 | 95 | 95 | 455 |
| 80 | 160 | 160 | 160 | 745 |
| 90 | 170 | 170 | 170 | 800 |
| 100 | 230 | 230 | 230 | 1120 |
| 112 | 210 | 210 | 210 | 1150 |
| 132 | 250 | 250 | 250 | 1690 |
| 160 | 2980 | 1490 | 1450 | 3300 |
| 180 | 3400 | 1670 | 1670 | 3800 |
| 200 | 4250 | 1850 | 1860 | 5100 |
| 225 | 4800 | 1980 | 2080 | 5800 |
| 250 | 5300 | 2200 | 2260 | 6200 |
| 280 | 6300 | 2200 | 2050 | 7500 |

$Fa_0$ : Permissible axial load
Fr : Radial load
$Fr_0$ : Permissible radial load at shaft spigot.
$Fr_{max}$ : Permissible radial load at shaft end point.

Permissible loads are calculated for $L_{h10}$ 20000 h bearing lifetimes according to ISO 281.



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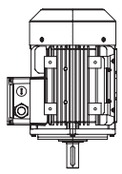
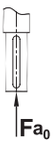
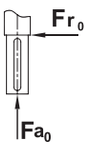
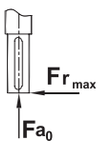
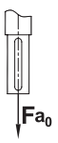
# Axial Loads



VERTICAL MOUNTING-Shaft Pointing Downwards- Permissible Axial Loads
Mounting Positions IM: V1, V5, V15, V17, V18

| Frame Size | Push | | | Pull |
|---|---|---|---|---|
| | Fr = 0 | Fr = $Fr_0$ | Fr = $Fr_{max}$ | Fr = 0 |
| |  |  |  |  |
| 2 Poles 3000 d/d | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] |
| 71 | 130 | 130 | 130 | 235 |
| 80 | 220 | 220 | 220 | 385 |
| 90 | 250 | 250 | 250 | 375 |
| 100 | 330 | 330 | 330 | 535 |
| 112 | 340 | 340 | 340 | 520 |
| 132 | 490 | 550 | 550 | 680 |
| 160 | 2600 | 1550 | 1500 | 1500 |
| 180 | 3070 | 1850 | 1750 | 1700 |
| 200 | 3550 | 2300 | 2300 | 2315 |
| 225 | 4250 | 2680 | 2670 | 2630 |
| 250 | 5200 | 3200 | 3280 | 3100 |
| 280 | 6500 | 3750 | 3750 | 3300 |
| 4 Poles 1500 d/d | | Push | | Pull |
| | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] |
| 71 | 130 | 130 | 130 | 340 |
| 80 | 220 | 220 | 220 | 540 |
| 90 | 260 | 260 | 260 | 545 |
| 100 | 380 | 370 | 370 | 760 |
| 112 | 410 | 400 | 400 | 740 |
| 132 | 580 | 570 | 570 | 1040 |
| 160 | 3500 | 1910 | 1840 | 2100 |
| 180 | 4000 | 2300 | 2170 | 2450 |
| 200 | 4250 | 2870 | 2850 | 2200 |
| 225 | 5000 | 3350 | 3380 | 3740 |
| 250 | 6200 | 4200 | 4000 | 4440 |
| 280 | 8900 | 4850 | 4850 | 4400 |
| 6 Poles 1000 d/d | | Push | | Pull |
| | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] | $Fa_0$ [N] |
| 71 | 130 | 130 | 130 | 415 |
| 80 | 220 | 220 | 220 | 675 |
| 90 | 250 | 250 | 250 | 700 |
| 100 | 360 | 360 | 360 | 960 |
| 112 | 390 | 390 | 390 | 930 |
| 132 | 560 | 560 | 560 | 1310 |
| 160 | 3100 | 2130 | 2120 | 2650 |
| 180 | 3600 | 2600 | 2490 | 3030 |
| 200 | 5000 | 3260 | 3300 | 4000 |
| 225 | 5550 | 3710 | 3810 | 4650 |
| 250 | 6200 | 4510 | 4550 | 5500 |
| 280 | 7500 | 5300 | 5200 | 5750 |

$Fa_0$ : Permissible axial load
Fr : Radial load
$Fr_0$ : Permissible radial load at shaft spigot.
$Fr_{max}$ : Permissible radial load at shaft end point.

Permissible loads are calculated for $L_{h10}$ 20000 h bearing lifetimes according to ISO 281.



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روبروی پالایشگاه نفت پارس، پلاک ۱۲

FAMCO
هایپرصنعت

# PRODUCT TYPE CODES


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# PRODUCT TYPE CODES

| 2 | EL | 132 | M | 4 | C | FC | 00 | 000 |
|---|---|---|---|---|---|---|---|---|

**2 ----->**
Motor Efficiency Classes
2: IE2
3: IE3
4: IE4

**EL ----->**
Basic Motor Type
EL : Aluminum housing standard motors
EG : Cast iron housing standard motors
EC : Aluminum housing compact motors
ED : Cast iron housing compact motors

**132 ----->**
Frame Size: 71, 80, 90, 100, 112, 132, 160, 180, 200, 225,250,280
Height of the shaft axis from feet base of motor (mm)

**M ----->**
Housing Length
S : Short
M: Medium
L : Long

**4 ----->**
Number of Poles
2:2 poles 3000 rpm
4:4 poles 1500 rpm
6:6 poles 1000 rpm
D: dahlander 4/2 poles constant torque 1500/3000 rpm
E: dahlander 4/2 poles constant torque 1500/3000 rpm
F: dahlander 8/4 poles constant torque 750/1500 rpm
G: dahlander 8/4 poles constant torque 750/1500 rpm
S: seperate windings 6/4 poles 1000/1500 rpm
T: seperate windings 12/4 poles 500/1500 rpm
U: seperate windings 12/2 poles 500/3000 rpm
Z: 12 poles 500 rpm

**C ----->**
Core Length: A, B, C, D, E

**FC ----->**
Construction Types / Flange Types
PD : B3 Foot Mounted
FA : B5 Flange
FC : B14 Flange
FS : Special Flange
PA : B35
PC : B34
PS : Foot mounted with special flange
Y0..Y9: With flange for gearbox connection
PX : Foot mounted without drive end shield
XX : Without foot and drive end shield
Z0-Z9: Foot mounted Yılmaz type

**00 ----->**
Electrical Specifications
AA..ZZ Voltage, Frequency and electrical features

**2nd digit :** Additional electrical features
0: Standard motor, basic version
A: Motors with thermistor
B: Motors with anti-condensation heater
C: Motors with thermal switch
K: Motors with thermistor anti-condensation heater

**1st digit:** Voltage and Frequency
A : 230/400V 50Hz
B : 400/690V 50Hz
C : 240/415V 50Hz
D : 415/720V 50Hz
E : 230/400V 60Hz 1,16 increased rated output power
F : 400/690V 60Hz 1,16 increased rated output power
G : 220V 60Hz
H : 290/500V 50Hz
I : 220/380V 60Hz 1,16 increased rated output power
J : 380/660V 60Hz 1,16 increased rated output power

**000 ----->**
Additional Motor Features
000.....999
000 : Standard Motor



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# IE2 MOTORS

IE2


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روبروی پالایشگاه نفت پارس، پلاک ۱۲

# Electrical Characteristics

## 400V 50Hz 3000 rpm

Duty Cycle : S1 (Continuous Operation)
Insulation Class : F (155°C)
Temperature Rise : B (80°K)

cULus IE2

| Voltage (V) | Type | Rated Values | | | | | | | | Starting Values | | Break Down Torque | Moment of Inertia | B3 Motor Weight | Sound Pressure Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Power | Speed | Current | Torque | Power Factor | Efficiency % η | | | Current | Torque | | | | |
| | | kW | rpm | A | Nm | Cos φ | 4/4 | 3/4 | 1/2 | $I_A/I_N$ | $M_A/M_N$ | $M_K/M_N$ | $kgm^2$ | kg | dB(A) |
| 230/400 | 2EL071M2A | 0,37 | 2790 | 0,90 | 1,26 | 0,80 | 74,2 | 74,5 | 72,5 | 5,0 | 2,5 | 2,8 | 0,00031 | 5,5 | 54 |
| | 2EL071M2B | 0,55 | 2790 | 1,27 | 1,88 | 0,82 | 75,8 | 77,0 | 76,0 | 5,0 | 2,8 | 2,9 | 0,00037 | 6,3 | 54 |
| | 2EL080M2A | 0,75 | 2850 | 1,67 | 2,51 | 0,83 | 78,0 | 79,0 | 77,5 | 5,7 | 2,5 | 3,0 | 0,00089 | 8,7 | 56 |
| | 2EL080M2B | 1,10 | 2850 | 2,36 | 3,69 | 0,84 | 80,1 | 81,3 | 80,7 | 5,8 | 2,7 | 3,1 | 0,00103 | 9,7 | 56 |
| | 2EL090S2A | 1,50 | 2880 | 3,17 | 4,98 | 0,83 | 82,5 | 82,6 | 82,0 | 6,0 | 2,6 | 3,3 | 0,00152 | 14,1 | 60 |
| | 2EL090L2B | 2,20 | 2860 | 4,48 | 7,35 | 0,85 | 83,2 | 85,0 | 85,0 | 6,0 | 2,6 | 3,1 | 0,00178 | 15,5 | 60 |
| | 2EL100L2B | 3,00 | 2890 | 5,80 | 9,91 | 0,88 | 84,8 | 85,2 | 84,7 | 7,0 | 2,6 | 3,4 | 0,00380 | 20,8 | 63 |
| 400/690 | 2EL112M2A | 4,00 | 2910 | 7,60 | 13,13 | 0,88 | 86,5 | 87,1 | 86,8 | 7,0 | 2,4 | 3,6 | 0,00530 | 25,7 | 66 |
| | 2EL132S2A | 5,50 | 2935 | 10,20 | 17,90 | 0,88 | 88,2 | 88,4 | 87,6 | 7,9 | 2,8 | 3,9 | 0,01550 | 41,0 | 68 |
| | 2EL132S2B | 7,50 | 2925 | 13,60 | 24,50 | 0,90 | 88,5 | 88,8 | 88,6 | 7,6 | 2,6 | 3,9 | 0,01730 | 45,2 | 68 |
| | 2EL160M2A | 11,00 | 2940 | 19,60 | 35,73 | 0,90 | 89,8 | 90,0 | 89,0 | 7,4 | 2,7 | 3,6 | 0,02920 | 71,4 | 70 |
| | 2EL160M2B | 15,00 | 2935 | 26,90 | 48,80 | 0,89 | 90,3 | 91,0 | 90,7 | 7,0 | 2,6 | 3,5 | 0,03320 | 77,0 | 70 |
| | 2EL160L2C | 18,50 | 2935 | 32,20 | 60,19 | 0,91 | 91,1 | 91,5 | 91,0 | 8,2 | 2,9 | 3,8 | 0,03910 | 89,0 | 70 |
| | 2EG180M2A | 22,00 | 2955 | 39,00 | 71,10 | 0,89 | 91,4 | 91,6 | 90,6 | 7,9 | 2,6 | 3,6 | 0,06300 | 163 | 71 |
| | 2EG200L2A | 30,00 | 2965 | 52,00 | 96,63 | 0,90 | 92,4 | 92,7 | 92,2 | 8,0 | 2,9 | 3,1 | 0,14600 | 230 | 74 |
| | 2EG200L2B | 37,00 | 2965 | 64,00 | 119,20 | 0,90 | 92,7 | 93,2 | 93,0 | 8,4 | 3,1 | 3,3 | 0,16200 | 240 | 75 |
| | 2EG225M2B | 45,00 | 2970 | 77,40 | 144,70 | 0,90 | 93,2 | 93,5 | 93,0 | 8,6 | 2,7 | 3,7 | 0,22000 | 310 | 75 |
| | 2EG250M2B | 55,00 | 2970 | 94,50 | 176,80 | 0,90 | 93,3 | 93,6 | 93,1 | 7,9 | 2,7 | 3,6 | 0,32800 | 388 | 77 |
| | 2EG280S2A | 75,00 | 2978 | 128,0 | 240,50 | 0,90 | 93,8 | 94,0 | 93,0 | 7,9 | 2,7 | 3,0 | 0,70000 | 510 | 77 |
| | 2EG280M2B | 90,00 | 2980 | 153,0 | 288,40 | 0,90 | 94,1 | 94,2 | 93,1 | 7,5 | 2,8 | 3,2 | 0,7900 | 570 | 77 |

## 400V 50Hz 1500 rpm

Duty Cycle : S1 (Continuous Operation)
Insulation Class : F (155°C)
Temperature Rise : B (80°K)

cULus IE2

| Voltage (V) | Type | Rated Values | | | | | | | | Starting Values | | Break Down Torque | Moment of Inertia | B3 Motor Weight | Sound Pressure Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Power | Speed | Current | Torque | Power Factor | Efficiency % η | | | Current | Torque | | | | |
| | | kW | rpm | A | Nm | Cos φ | 4/4 | 3/4 | 1/2 | $I_A/I_N$ | $M_A/M_N$ | $M_K/M_N$ | $kgm^2$ | kg | dB(A) |
| 230/400 | 2EL071M4B | 0,25 | 1425 | 0,71 | 1,68 | 0,69 | 74,0 | 73,5 | 70,5 | 4,4 | 2,0 | 3,0 | 0,00067 | 5,9 | 46 |
| | 2EL071M4C | 0,37 | 1425 | 1,00 | 2,47 | 0,70 | 76,1 | 75,5 | 71,5 | 4,6 | 2,0 | 3,0 | 0,00082 | 6,7 | 46 |
| | 2EL080M4B | 0,55 | 1440 | 1,45 | 3,65 | 0,71 | 77,1 | 76,7 | 75,0 | 5,2 | 2,0 | 3,0 | 0,00175 | 9,7 | 50 |
| | 2EL080M4C | 0,75 | 1440 | 1,95 | 4,97 | 0,70 | 79,6 | 79,2 | 77,0 | 5,2 | 2,0 | 3,0 | 0,00200 | 10,5 | 50 |
| | 2EL090S4B | 1,10 | 1440 | 2,60 | 7,30 | 0,75 | 81,4 | 81,4 | 80,5 | 5,6 | 2,2 | 3,1 | 0,00281 | 14,4 | 52 |
| | 2EL090L4C | 1,50 | 1440 | 3,40 | 9,95 | 0,77 | 82,8 | 83,0 | 82,0 | 6,0 | 2,3 | 3,2 | 0,00356 | 17,2 | 52 |
| | 2EL100L4B | 2,20 | 1445 | 4,85 | 14,60 | 0,78 | 84,3 | 85,3 | 84,2 | 6,0 | 2,4 | 3,2 | 0,00634 | 22,7 | 54 |
| | 2EL100L4C | 3,00 | 1440 | 6,42 | 19,89 | 0,79 | 85,5 | 85,7 | 84,6 | 6,3 | 2,4 | 3,3 | 0,00775 | 24,2 | 54 |
| 400/690 | 2EL112M4C | 4,00 | 1450 | 8,20 | 26,35 | 0,81 | 86,8 | 87,4 | 86,5 | 6,6 | 2,5 | 3,4 | 0,01220 | 32,0 | 58 |
| | 2EL132S4B | 5,50 | 1455 | 11,20 | 36,10 | 0,81 | 87,7 | 88,6 | 88,0 | 6,7 | 2,6 | 3,2 | 0,02520 | 47,8 | 62 |
| | 2EL132M4C | 7,50 | 1460 | 15,10 | 49,00 | 0,81 | 88,7 | 89,0 | 89,0 | 7,0 | 2,7 | 3,3 | 0,03060 | 54,8 | 62 |
| | 2EL160M4B | 11,00 | 1465 | 21,30 | 71,70 | 0,83 | 89,8 | 90,3 | 89,5 | 6,9 | 2,4 | 3,0 | 0,05800 | 76,8 | 65 |
| | 2EL160L4C | 15,00 | 1460 | 28,80 | 98,12 | 0,83 | 90,6 | 91,3 | 90,9 | 6,9 | 2,6 | 3,0 | 0,07000 | 88,6 | 65 |
| | 2EG180M4B | 18,50 | 1465 | 34,90 | 120,60 | 0,84 | 91,2 | 91,5 | 91,4 | 6,9 | 2,5 | 3,0 | 0,11100 | 158 | 65 |
| | 2EG180L4C | 22,00 | 1465 | 41,40 | 143,40 | 0,84 | 91,6 | 91,7 | 91,5 | 7,1 | 2,6 | 3,2 | 0,12900 | 174 | 65 |
| | 2EG200L4C | 30,00 | 1475 | 55,50 | 194,24 | 0,85 | 92,3 | 93,0 | 93,2 | 7,6 | 3,0 | 3,1 | 0,23300 | 241 | 65 |
| | 2EG225S4B | 37,00 | 1475 | 66,00 | 239,50 | 0,87 | 93,0 | 93,8 | 93,8 | 7,8 | 3,0 | 3,1 | 0,33900 | 297 | 66 |
| | 2EG225M4C | 45,00 | 1475 | 80,00 | 291,40 | 0,87 | 93,1 | 94,0 | 94,3 | 7,8 | 3,0 | 3,0 | 0,38200 | 333 | 66 |
| | 2EG250M4C | 55,00 | 1478 | 95,50 | 355,40 | 0,89 | 93,5 | 94,3 | 94,4 | 7,9 | 3,2 | 3,0 | 0,62400 | 430 | 68 |
| | 2EG280S4B | 75,00 | 1483 | 130,8 | 482,97 | 0,88 | 94,0 | 94,5 | 94,4 | 7,9 | 3,0 | 3,0 | 1,25000 | 618 | 69 |
| | 2EG280M4C | 90,00 | 1484 | 156,0 | 579,20 | 0,88 | 94,2 | 94,6 | 94,5 | 7,9 | 3,2 | 3,1 | 1,40000 | 648 | 70 |

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روبروی پالایشگاه نفت پارس، پلاک ۱۲

# Electrical Characteristics

## 400V 50Hz 1000 rpm

Duty Cycle : S1 (Continuous Operation)
Insulation Class : F (155°C)
Temperature Rise : B (80°K)

cULus IE2

| Voltage (V) | Type | Rated Values | | | | | | | | Starting Values | | Break Down Torque | Moment of Inertia | B3 Motor Weight | Sound Pressure Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Power | Speed | Current | Torque | Power Factor | Efficiency % η | | | Current | Torque | | | | |
| | | kW | rpm | A | Nm | Cos φ | 4/4 | 3/4 | 1/2 | $I_A/I_N$ | $M_A/M_N$ | $M_K/M_N$ | $kgm^2$ | kg | dB(A) |
| 230/400 | 2EL071M6B | 0,18 | 920 | 0,60 | 1,87 | 0,67 | 64,5 | 63,0 | 57,0 | 3,2 | 1,9 | 2,3 | 0,00076 | 5,9 | 42 |
| | 2EL071M6C | 0,25 | 920 | 0,78 | 2,59 | 0,69 | 66,5 | 66,0 | 61,0 | 3,3 | 1,9 | 2,3 | 0,00096 | 6,6 | 42 |
| | 2EL080M6A | 0,37 | 925 | 1,08 | 3,82 | 0,69 | 71,4 | 71,5 | 70,0 | 4,0 | 2,0 | 2,6 | 0,00176 | 9,1 | 45 |
| | 2EL080M6B | 0,55 | 932 | 1,50 | 5,64 | 0,72 | 73,5 | 74,0 | 71,0 | 4,2 | 2,1 | 2,6 | 0,00202 | 9,9 | 45 |
| | 2EL090S6A | 0,75 | 940 | 2,00 | 7,62 | 0,71 | 75,9 | 76,1 | 73,1 | 4,1 | 2,0 | 2,6 | 0,00229 | 13,3 | 48 |
| | 2EL090L6B | 1,10 | 940 | 2,90 | 11,18 | 0,70 | 78,1 | 78,3 | 75,0 | 4,3 | 2,1 | 2,6 | 0,00354 | 14,8 | 48 |
| | 2EL100L6A | 1,50 | 950 | 3,72 | 15,00 | 0,73 | 79,8 | 80,2 | 79,5 | 4,5 | 2,1 | 2,6 | 0,00680 | 20,2 | 52 |
| | 2EL112M6A | 2,20 | 960 | 5,32 | 21,90 | 0,73 | 81,8 | 82,0 | 81,5 | 5,3 | 2,1 | 2,7 | 0,01170 | 25,0 | 56 |
| 400/690 | 2EL132S6A | 3,00 | 970 | 6,85 | 29,60 | 0,76 | 83,3 | 84,0 | 83,0 | 5,6 | 2,0 | 2,8 | 0,02610 | 42,0 | 60 |
| | 2EL132M6B | 4,00 | 970 | 8,80 | 39,38 | 0,77 | 85,2 | 85,7 | 85,3 | 5,2 | 2,1 | 2,6 | 0,03050 | 46,0 | 60 |
| | 2EL132M6C | 5,50 | 965 | 12,00 | 54,40 | 0,77 | 86,0 | 87,2 | 87,0 | 5,7 | 2,1 | 2,7 | 0,03500 | 51,0 | 60 |
| | 2EL160M6B | 7,50 | 972 | 16,30 | 73,68 | 0,76 | 87,2 | 88,1 | 87,7 | 5,6 | 2,4 | 2,7 | 0,05700 | 77,8 | 63 |
| | 2EL160L6D | 11,00 | 970 | 22,95 | 108,30 | 0,78 | 88,7 | 90,0 | 89,9 | 6,0 | 2,5 | 2,9 | 0,07870 | 97,8 | 63 |
| | 2EG180L6D | 15,00 | 972 | 31,00 | 147,40 | 0,78 | 89,7 | 90,5 | 90,2 | 6,2 | 2,5 | 2,9 | 0,13500 | 175 | 64 |
| | 2EG200L6B | 18,50 | 977 | 36,50 | 180,80 | 0,81 | 90,4 | 90,5 | 90,7 | 6,3 | 2,5 | 2,6 | 0,30100 | 205 | 64 |
| | 2EG200L6C | 22,00 | 978 | 43,00 | 214,80 | 0,81 | 91,1 | 91,3 | 91,2 | 6,2 | 2,5 | 2,6 | 0,33400 | 215 | 64 |
| | 2EG225S6B | 30,00 | 980 | 57,60 | 292,20 | 0,82 | 91,7 | 91,8 | 90,8 | 6,6 | 2,6 | 2,7 | 0,52000 | 314 | 65 |
| | 2EG250M6B | 37,00 | 982 | 69,60 | 359,80 | 0,83 | 92,3 | 92,6 | 92,5 | 6,8 | 2,7 | 2,8 | 0,68000 | 395 | 66 |
| | 2EG280S6A | 45,00 | 985 | 84,50 | 436,00 | 0,83 | 92,7 | 93,1 | 92,2 | 6,8 | 2,8 | 2,8 | 1,15000 | 490 | 66 |
| | 2EG280M6B | 55,00 | 985 | 101,5 | 533,20 | 0,84 | 93,1 | 93,2 | 92,5 | 6,9 | 2,9 | 2,8 | 1,45000 | 545 | 66 |

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روبروی پالایشگاه نفت پارس، پلاک ۱۲

# Electrical Characteristics

## 400V 50Hz 3000 rpm

Duty Cycle : S1 (Continuous Operation)
Insulation Class : F (155°C)
Temperature Rise : B (80°K)

**Compact IE2**

| Voltage (V) | Type | Rated Values | | | | | | | | Starting Values | | Break Down Torque | Moment of Inertia | B3 Motor Weight | Sound Pressure Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Power | Speed | Current | Torque | Power Factor | Efficiency % η | | | Current | Torque | | | | |
| | | kW | rpm | A | Nm | Cos φ | 4/4 | 3/4 | 1/2 | $I_A/I_N$ | $M_A/M_N$ | $M_K/M_N$ | $kgm^2$ | kg | dB(A) |
| 230/400 | 2EC071M2C | 0,75 | 2810 | 1,70 | 2,55 | 0,82 | 77,7 | 78,4 | 76,5 | 5,0 | 2,6 | 3,1 | 0,00046 | 7,3 | 54 |
| | 2EC080M2C | 1,50 | 2840 | 3,18 | 5,04 | 0,84 | 81,3 | 82,7 | 81,8 | 5,6 | 2,7 | 3,2 | 0,00124 | 11,1 | 55 |
| | 2EC090L2C | 3,00 | 2850 | 6,10 | 10,05 | 0,84 | 84,6 | 85,6 | 85,0 | 6,2 | 2,6 | 3,3 | 0,00221 | 17,3 | 60 |
| 400/690 | 2EC100L2C | 4,00 | 2875 | 7,75 | 13,29 | 0,87 | 85,8 | 86,8 | 86,2 | 6,5 | 2,7 | 3,5 | 0,00450 | 23,5 | 63 |
| | 2EC112M2C | 5,50 | 2905 | 10,35 | 18,08 | 0,88 | 87,0 | 87,8 | 87,5 | 7,3 | 2,6 | 3,5 | 0,00620 | 29,5 | 66 |
| | 2EC132S2C | 11,00 | 2920 | 19,73 | 35,97 | 0,90 | 89,4 | 90,5 | 90,6 | 8,1 | 2,6 | 3,6 | 0,02100 | 52,0 | 68 |
| | 2EC160L2D | 22,00 | 2940 | 38,40 | 71,50 | 0,91 | 91,5 | 91,8 | 91,4 | 8,3 | 3,1 | 3,9 | 0,07000 | 103 | 70 |
| | 2ED180M2B | 30,00 | 2950 | 52,70 | 97,10 | 0,89 | 92,2 | 92,7 | 92,3 | 8,2 | 2,9 | 3,8 | 0,08200 | 180 | 71 |
| | 2ED200L2C | 45,00 | 2960 | 77,80 | 145,20 | 0,90 | 92,9 | 93,2 | 93,0 | 8,1 | 2,7 | 2,9 | 0,17500 | 273 | 74 |
| | 2ED225M2C | 55,00 | 2965 | 94,70 | 177,20 | 0,90 | 93,2 | 93,3 | 93,3 | 7,8 | 2,7 | 2,9 | 0,25400 | 382 | 75 |
| | 2ED250M2D | 75,00 | 2970 | 128,0 | 241,20 | 0,90 | 93,8 | 93,9 | 93,5 | 7,0 | 2,3 | 2,5 | 0,42000 | 449 | 77 |
| | 2ED280M2D | 110,00 | 2975 | 187,00 | 353,10 | 0,90 | 94,3 | 94,5 | 94,2 | 8,0 | 2,6 | 3,2 | 0,95000 | 660 | 78 |

## 400V 50Hz 1500 rpm

Duty Cycle : S1 (Continuous Operation)
Insulation Class : F (155°C)
Temperature Rise : B (80°K)

**Compact IE2**

| Voltage (V) | Type | Rated Values | | | | | | | | Starting Values | | Break Down Torque | Moment of Inertia | B3 Motor Weight | Sound Pressure Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Power | Speed | Current | Torque | Power Factor | Efficiency % η | | | Current | Torque | | | | |
| | | kW | rpm | A | Nm | Cos φ | 4/4 | 3/4 | 1/2 | $I_A/I_N$ | $M_A/M_N$ | $M_K/M_N$ | $kgm^2$ | kg | dB(A) |
| 230/400 | 2EC071M4D | 0,55 | 1405 | 1,45 | 3,74 | 0,72 | 77,1 | 77,5 | 75,0 | 4,3 | 2,3 | 2,5 | 0,00093 | 7,7 | 46 |
| | 2EC080M4D | 1,10 | 1430 | 2,64 | 7,32 | 0,74 | 81,4 | 79,3 | 77,0 | 5,0 | 2,2 | 2,9 | 0,00227 | 11,9 | 51 |
| | 2EC090L4D | 2,20 | 1430 | 4,95 | 14,69 | 0,76 | 84,3 | 83,7 | 81,0 | 5,5 | 2,6 | 3,0 | 0,00410 | 18,4 | 52 |
| | 2EC100L4D | 4,00 | 1430 | 8,25 | 26,71 | 0,81 | 86,6 | 87,1 | 86,0 | 5,9 | 2,4 | 3,1 | 0,00890 | 27,1 | 54 |
| 400/690 | 2EC112M4D | 5,50 | 1440 | 11,06 | 36,47 | 0,83 | 87,7 | 88,5 | 87,5 | 6,5 | 2,4 | 3,1 | 0,01430 | 34,5 | 59 |
| | 2EC132M4E | 11,00 | 1445 | 21,35 | 72,69 | 0,83 | 89,8 | 90,1 | 89,3 | 7,2 | 2,8 | 3,2 | 0,03510 | 63.2 | 62 |
| | 2EC160L4E | 18,50 | 1450 | 35,30 | 121,80 | 0,83 | 91,2 | 91,8 | 91,5 | 6,6 | 2,7 | 3,2 | 0,08600 | 104 | 64 |
| | 2ED180L4D | 30,00 | 1460 | 56,70 | 196,23 | 0,83 | 92,3 | 92,8 | 92,8 | 6,8 | 2,8 | 3,0 | 0,14700 | 189 | 65 |
| | 2ED200L4D | 37,00 | 1470 | 66,20 | 240,37 | 0,87 | 92,7 | 93,5 | 93,6 | 7,6 | 3,0 | 3,2 | 0,28400 | 263 | 66 |
| | 2ED225M4D | 55,00 | 1470 | 96,40 | 357,30 | 0,88 | 93,5 | 93,7 | 93,9 | 6,9 | 2,8 | 2,9 | 0,44100 | 355 | 68 |
| | 2ED250M4D | 75,00 | 1475 | 129,6 | 485,60 | 0,89 | 94,0 | 94,9 | 95,2 | 8,0 | 3,2 | 2,9 | 0,73400 | 474 | 69 |
| | 2ED280M4D | 110,00 | 1485 | 189,00 | 707,40 | 0,89 | 94,5 | 94,8 | 94,7 | 8,0 | 3,2 | 3,0 | 1,50000 | 670 | 70 |



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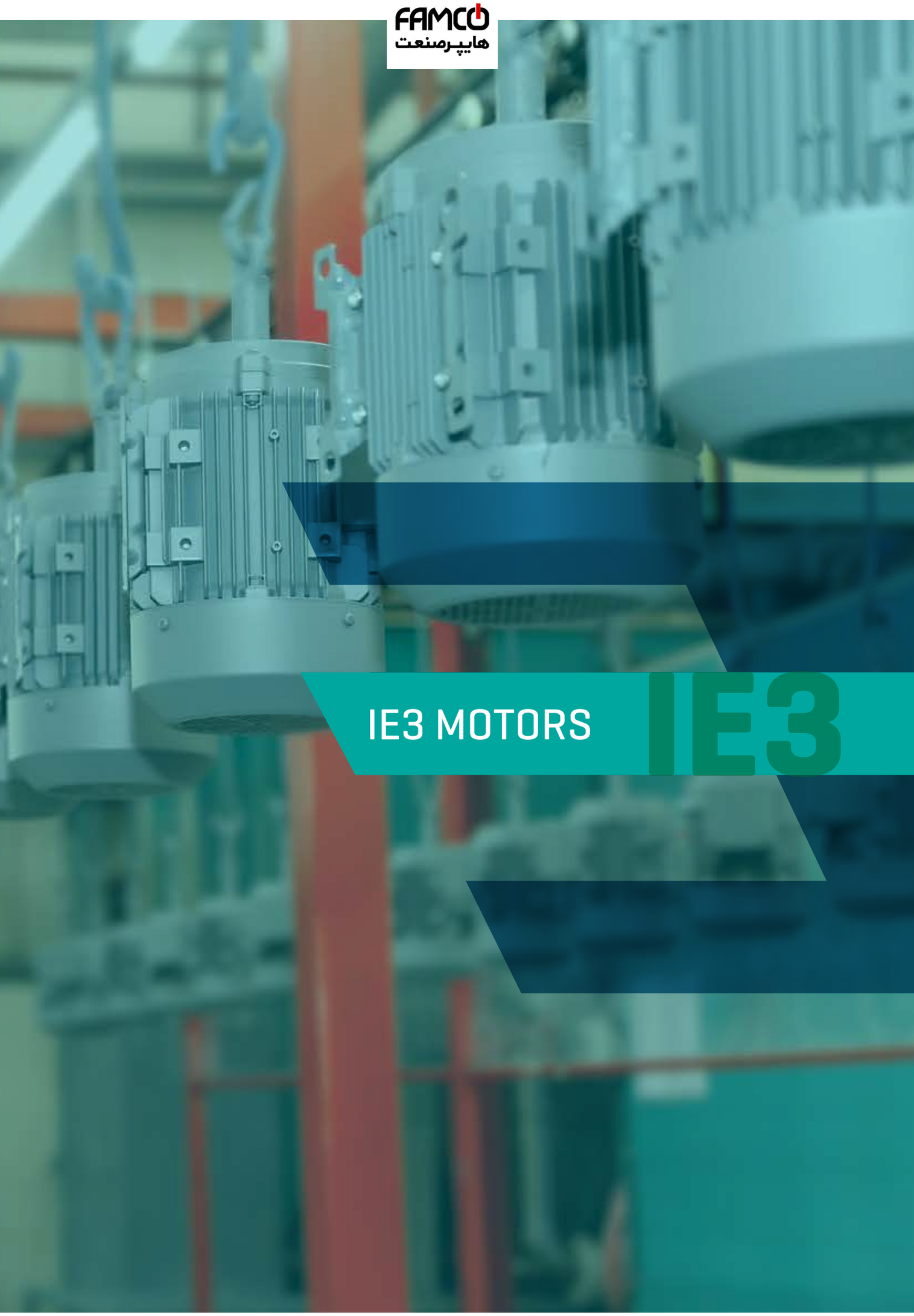

# IE3 MOTORS

IE3


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روبروی پالایشگاه نفت پارس، پلاک ۱۲

# Electrical Characteristics

## 400V 50Hz 3000 rpm

Duty Cycle : S1 (Continuous Operation)
Insulation Class : F (155°C)
Temperature Rise : B (80°K)

IE3

| Voltage (V) | Type | Rated Values | | | | | | | | Starting Values | | Break Down Torque | Moment of Inertia | B3 Motor Weight | Sound Pressure Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Power | Speed | Current | Torque | Power Factor | Efficiency % η | | | Current | Torque | | | | |
| | | kW | rpm | A | Nm | Cos φ | 4/4 | 3/4 | 1/2 | $I_A/I_N$ | $M_A/M_N$ | $M_K/M_N$ | $kgm^2$ | kg | dB[A] |
| 230/400 | 3EL071M2B | 0,37 | 2830 | 0,86 | 1,25 | 0,81 | 76,6 | 77,0 | 75,0 | 6,0 | 2,8 | 3,0 | 0,00037 | 6,2 | 53 |
| | 3EL071M2C | 0,55 | 2830 | 1,19 | 1,86 | 0,84 | 79,4 | 80,2 | 78,8 | 6,1 | 2,9 | 3,3 | 0,00046 | 7,2 | 53 |
| | 3EL080M2B | 0,75 | 2880 | 1,59 | 2,49 | 0,84 | 80,7 | 82,0 | 81,5 | 6,7 | 3,0 | 3,6 | 0,00103 | 9,6 | 54 |
| | 3EL080M2C | 1,10 | 2880 | 2,26 | 3,64 | 0,85 | 82,7 | 83,0 | 82,4 | 6,8 | 3,1 | 3,8 | 0,00124 | 10,9 | 54 |
| | 3EL090S2B | 1,50 | 2900 | 2,97 | 4,94 | 0,86 | 84,8 | 85,4 | 84,2 | 7,6 | 3,1 | 3,9 | 0,00178 | 15,6 | 59 |
| | 3EL090L2C | 2,20 | 2900 | 4,25 | 7,24 | 0,87 | 85,9 | 86,8 | 86,1 | 7,2 | 3,0 | 3,8 | 0,00221 | 17,0 | 59 |
| | 3EL100L2C | 3,00 | 2910 | 5,58 | 9,85 | 0,89 | 87,1 | 87,6 | 86,9 | 7,9 | 3,0 | 4,1 | 0,00450 | 23,3 | 62 |
| 400/690 | 3EL112M2C | 4,00 | 2915 | 7,28 | 13,10 | 0,90 | 88,1 | 88,8 | 88,2 | 7,5 | 2,6 | 3,9 | 0,00620 | 29,1 | 65 |
| | 3EL132S2B | 5,50 | 2945 | 9,90 | 17,83 | 0,90 | 89,2 | 89,0 | 88,6 | 8,9 | 2,9 | 3,9 | 0,01730 | 44,4 | 67 |
| | 3EL132S2C | 7,50 | 2945 | 13,20 | 24,32 | 0,91 | 90,1 | 90,5 | 89,7 | 8,4 | 2,6 | 4,0 | 0,02100 | 51,5 | 67 |
| | 3EL160M2B | 11,00 | 2950 | 19,70 | 35,60 | 0,88 | 91,2 | 91,0 | 90,5 | 8,0 | 2,6 | 3,9 | 0,03320 | 79,7 | 69 |
| | 3EL160M2C | 15,00 | 2950 | 25,90 | 48,55 | 0,91 | 91,9 | 92,1 | 91,6 | 8,9 | 3,1 | 4,2 | 0,03910 | 86,0 | 69 |
| | 3EL160L2D | 18,50 | 2945 | 31,70 | 60,00 | 0,91 | 92,4 | 92,7 | 92,3 | 8,9 | 3,1 | 4,2 | 0,04410 | 96,8 | 69 |
| | 3EG180M2B | 22,00 | 2957 | 38,10 | 71,05 | 0,90 | 92,7 | 92,9 | 92,0 | 8,6 | 2,6 | 3,9 | 0,06300 | 178 | 70 |
| | 3EG200L2B | 30,00 | 2970 | 52,00 | 96,46 | 0,89 | 93,6 | 93,8 | 93,6 | 8,9 | 3,2 | 3,5 | 0,16200 | 245 | 72 |
| | 3EG200L2C | 37,00 | 2970 | 62,60 | 119,00 | 0,91 | 93,7 | 93,8 | 93,4 | 9,3 | 3,2 | 3,4 | 0,17500 | 270 | 72 |
| | 3EG225M2C | 45,00 | 2975 | 75,60 | 144,40 | 0,91 | 94,3 | 94,6 | 94,0 | 9,8 | 3,5 | 3,9 | 0,25400 | 335 | 74 |
| | 3EG250M2C | 55,00 | 2970 | 93,30 | 176,90 | 0,90 | 94,4 | 94,8 | 94,5 | 8,9 | 3,3 | 3,4 | 0,38000 | 422 | 75 |
| | 3EG280S2B | 75,00 | 2980 | 127,0 | 240,35 | 0,90 | 94,7 | 94,7 | 94,0 | 7,5 | 2,7 | 3,2 | 0,79000 | 560 | 76 |
| | 3EG280M2C | 90,00 | 2985 | 150,0 | 287,94 | 0,91 | 95,0 | 95,1 | 94,5 | 7,6 | 2,7 | 3,1 | 0,90000 | 630 | 76 |

## 400V 50Hz 1500 rpm

Duty Cycle : S1 (Continuous Operation)
Insulation Class : F (155°C)
Temperature Rise : B (80°K)

IE3

| Voltage (V) | Type | Rated Values | | | | | | | | Starting Values | | Break Down Torque | Moment of Inertia | B3 Motor Weight | Sound Pressure Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Power | Speed | Current | Torque | Power Factor | Efficiency % η | | | Current | Torque | | | | |
| | | kW | rpm | A | Nm | Cos φ | 4/4 | 3/4 | 1/2 | $I_A/I_N$ | $M_A/M_N$ | $M_K/M_N$ | $kgm^2$ | kg | dB[A] |
| 230/400 | 3EL071M4C | 0,25 | 1435 | 0,67 | 1,66 | 0,71 | 76,0 | 75,4 | 71,5 | 5,4 | 2,2 | 3,0 | 0,00082 | 6,8 | 45 |
| | 3EL071M4D | 0,37 | 1435 | 0,97 | 2,46 | 0,70 | 78,5 | 78,2 | 75,0 | 5,5 | 2,2 | 3,1 | 0,00093 | 7,5 | 45 |
| | 3EL080M4C | 0,55 | 1450 | 1.34 | 3,62 | 0,73 | 80,8 | 80,4 | 77,0 | 5,9 | 2,1 | 3,1 | 0,00200 | 10,5 | 50 |
| | 3EL080M4D | 0,75 | 1450 | 1,77 | 4,94 | 0,74 | 82,5 | 82,3 | 80,0 | 6,2 | 2,5 | 3,4 | 0,00227 | 11,6 | 50 |
| | 3EL090S4C | 1,10 | 1450 | 2,46 | 7,25 | 0,76 | 84,5 | 84,3 | 82,0 | 7,0 | 2,6 | 3,6 | 0,00355 | 16,3 | 51 |
| | 3EL090L4D | 1,50 | 1450 | 3,30 | 9,88 | 0,77 | 85,3 | 85,2 | 83,0 | 7.2 | 2,8 | 3,8 | 0,00410 | 18,0 | 51 |
| | 3EL100L4C | 2,20 | 1450 | 4,65 | 14,49 | 0,79 | 86,7 | 87,2 | 86,0 | 7,2 | 2,8 | 3,6 | 0,00780 | 24.4 | 53 |
| | 3EL100L4D | 3,00 | 1450 | 6,26 | 19,76 | 0,79 | 87,7 | 88,0 | 87,0 | 7,2 | 2,8 | 3,6 | 0,00890 | 26,7 | 53 |
| 400/690 | 3EL112M4D | 4,00 | 1460 | 8,05 | 26,16 | 0,81 | 88,6 | 88,4 | 87,5 | 7,4 | 2,8 | 3,8 | 0,01430 | 33,9 | 58 |
| | 3EL132S4C | 5,50 | 1460 | 10,65 | 36,00 | 0,83 | 89,6 | 90,2 | 90,0 | 7,4 | 2,8 | 3,4 | 0,03060 | 53,4 | 61 |
| | 3EL132M4D | 7,50 | 1465 | 14,40 | 48,90 | 0,83 | 90,4 | 90,4 | 89,4 | 7,9 | 3,0 | 3,8 | 0,03420 | 59,5 | 61 |
| | 3EL160M4C | 11,00 | 1470 | 21,00 | 71,46 | 0,83 | 91,5 | 92,1 | 91,7 | 7,6 | 2,8 | 3,3 | 0,07010 | 89,2 | 63 |
| | 3EL160L4D | 15,00 | 1470 | 28,70 | 97,45 | 0,82 | 92,1 | 92,4 | 91,9 | 7,8 | 2,8 | 3,6 | 0,08600 | 97,5 | 63 |
| | 3EG180M4C | 18,50 | 1475 | 35,00 | 119,80 | 0,82 | 92,6 | 93,2 | 92,9 | 7,7 | 3,0 | 3,3 | 0,12900 | 173 | 64 |
| | 3EG180L4D | 22,00 | 1470 | 41,40 | 142,92 | 0,82 | 93,0 | 93,7 | 93,7 | 8,0 | 3,0 | 3,4 | 0,14700 | 187 | 64 |
| | 3EG200L4D | 30,00 | 1475 | 54,50 | 194,20 | 0,85 | 93,6 | 94,1 | 94,0 | 8,0 | 3,0 | 3,4 | 0,28400 | 258 | 65 |
| | 3EG225S4C | 37,00 | 1478 | 65,70 | 239,00 | 0,87 | 93,9 | 94,5 | 94,5 | 8,3 | 3,2 | 3,3 | 0,38200 | 320 | 66 |
| | 3EG225M4D | 45,00 | 1477 | 80,00 | 290,90 | 0,86 | 94,2 | 94,7 | 94,7 | 8,6 | 3,3 | 3,2 | 0,44100 | 352 | 67 |
| | 3EG250M4D | 55,00 | 1482 | 95,30 | 354,40 | 0,88 | 94,6 | 95,1 | 95,2 | 8,7 | 3,3 | 3,2 | 0,73400 | 470 | 68 |
| | 3EG280S4C | 75,00 | 1485 | 129,50 | 482,30 | 0,88 | 95,0 | 95,3 | 95,1 | 7,9 | 3,0 | 3,2 | 1,40000 | 646 | 69 |
| | 3EG280M4D | 90,00 | 1485 | 155,50 | 578,80 | 0,88 | 95,2 | 95,7 | 95,7 | 7,9 | 3,1 | 3,2 | 1,50000 | 670 | 70 |

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روبروی پالایشگاه نفت پارس، پلاک ۱۲

## Electrical Characteristics

Duty Cycle : S1 (Continuous Operation)
Insulation Class : F (155°C)
Temperature Rise : B (80°K)

### 400V 50Hz 1000 rpm

cULus IE3

| Voltage (V) | Type | Rated Values | | | | | | | | Starting Values | | Break Down Torque | Moment of Inertia | B3 Motor Weight | Sound Pressure Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Power | Speed | Current | Torque | Power Factor | Efficiency % η | | | Current | Torque | | | | |
| | | kW | rpm | A | Nm | Cos φ | 4/4 | 3/4 | 1/2 | $I_A/I_N$ | $M_A/M_N$ | $M_K/M_N$ | $kgm^2$ | kg | dB[A] |
| 230/400 | 3EL071M6C | 0,18 | 930 | 0,55 | 1,85 | 0,69 | 68,0 | 67,4 | 62,6 | 3,6 | 2,0 | 2,4 | 0,00096 | 6,7 | 41 |
| | 3EL071M6D | 0,25 | 930 | 0,77 | 2,57 | 0,67 | 70,0 | 69,7 | 66,0 | 3,6 | 2,2 | 2,5 | 0,00116 | 7,5 | 41 |
| | 3EL080M6B | 0,37 | 930 | 1,03 | 3,80 | 0,70 | 74,0 | 73,8 | 70,0 | 4,4 | 2,1 | 2,6 | 0,00202 | 9,8 | 43 |
| | 3EL080M6C | 0,55 | 935 | 1,47 | 5,62 | 0,70 | 77,2 | 77,3 | 74,4 | 4,3 | 2,2 | 2,7 | 0,00228 | 10,6 | 43 |
| | 3EL090S6B | 0,75 | 945 | 1,96 | 7,58 | 0,70 | 78,9 | 79,2 | 77,6 | 4,7 | 2,2 | 2,7 | 0,00354 | 14,6 | 46 |
| | 3EL090L6C | 1,10 | 940 | 2,75 | 11,20 | 0,71 | 81,0 | 80,8 | 79,4 | 5,0 | 2,2 | 2,7 | 0,00428 | 17,0 | 46 |
| | 3EL100L6B | 1,50 | 955 | 3,50 | 15,00 | 0,75 | 82,5 | 82,7 | 81,4 | 5,3 | 2,1 | 2,8 | 0,00820 | 22,5 | 50 |
| | 3EL112M6B | 2,20 | 960 | 4,95 | 21,90 | 0,76 | 84,3 | 84,5 | 83,5 | 5,5 | 2,2 | 3,0 | 0,01320 | 27,2 | 56 |
| 400/690 | 3EL132S6B | 3,00 | 970 | 6,55 | 29,40 | 0,77 | 85,6 | 85,5 | 84,5 | 6,2 | 2,1 | 3,0 | 0,03050 | 46,5 | 58 |
| | 3EL132M6C | 4,00 | 970 | 8,52 | 39,40 | 0,78 | 86,8 | 87,0 | 85,5 | 6,2 | 2,2 | 3,0 | 0,03500 | 51,0 | 58 |
| | 3EL132M6D | 5,50 | 965 | 11,55 | 54,40 | 0,78 | 88,0 | 88,9 | 88,5 | 6,2 | 2,2 | 3,0 | 0,03940 | 56,0 | 58 |
| | 3EL160M6D | 7,50 | 972 | 15,55 | 73,68 | 0,78 | 89,1 | 89,4 | 88,4 | 6,3 | 2,6 | 3,0 | 0,07870 | 96,0 | 61 |
| | 3EL160L6E | 11,00 | 972 | 22,90 | 108,07 | 0,77 | 90,3 | 90,9 | 90,5 | 6,6 | 2,9 | 3,3 | 0,08580 | 104 | 62 |
| | 3EG180L6E | 15,00 | 975 | 30,80 | 146,92 | 0,77 | 91,2 | 91,6 | 91,0 | 6,7 | 2,9 | 3,1 | 0,15300 | 187 | 63 |
| | 3EG200L6C | 18,50 | 977 | 36,40 | 180,80 | 0,80 | 91,7 | 91,8 | 91,8 | 6,1 | 2,6 | 2,6 | 0,36100 | 225 | 64 |
| | 3EG200L6D | 22,00 | 978 | 42,50 | 214,80 | 0,81 | 92,2 | 92,9 | 93,0 | 6,2 | 2,6 | 2,7 | 0,39400 | 245 | 64 |
| | 3EG225S6C | 30,00 | 985 | 57,60 | 290,80 | 0,81 | 92,9 | 92,9 | 92,6 | 6,6 | 2,6 | 2,7 | 0,60000 | 326 | 65 |
| | 3EG250M6C | 37,00 | 988 | 68,80 | 357,60 | 0,83 | 93,4 | 93,6 | 93,5 | 6,8 | 2,7 | 2,8 | 0,82000 | 432 | 65 |
| | 3EG280S6B | 45,00 | 989 | 82,50 | 434,50 | 0,84 | 93,7 | 93,9 | 93,2 | 6,8 | 2,9 | 2,8 | 1,45000 | 540 | 65 |
| | 3EG280M6C | 55,00 | 989 | 100,40 | 531,00 | 0,84 | 94,1 | 94,4 | 93,5 | 6,9 | 2,9 | 2,9 | 1,65000 | 575 | 65 |

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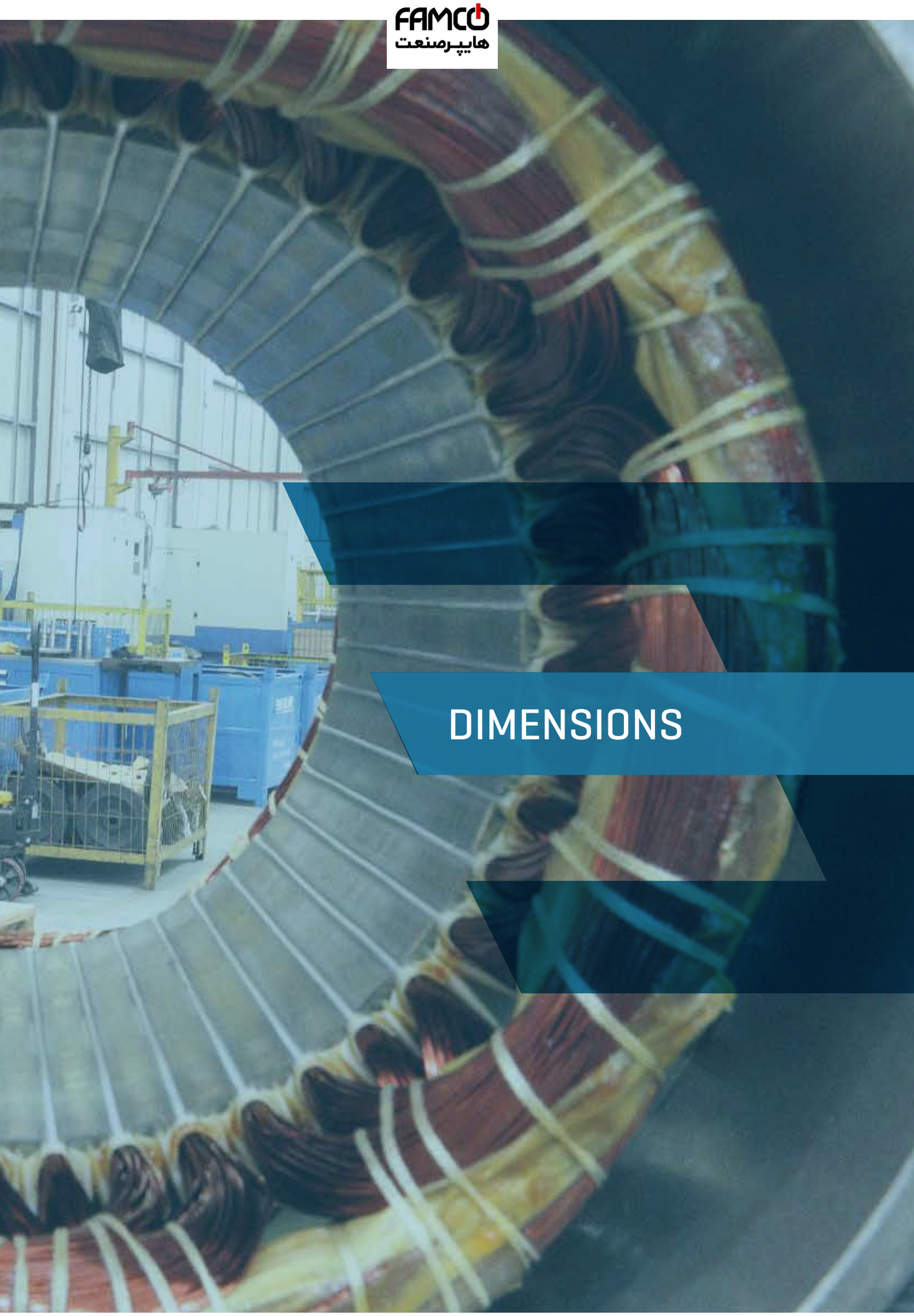

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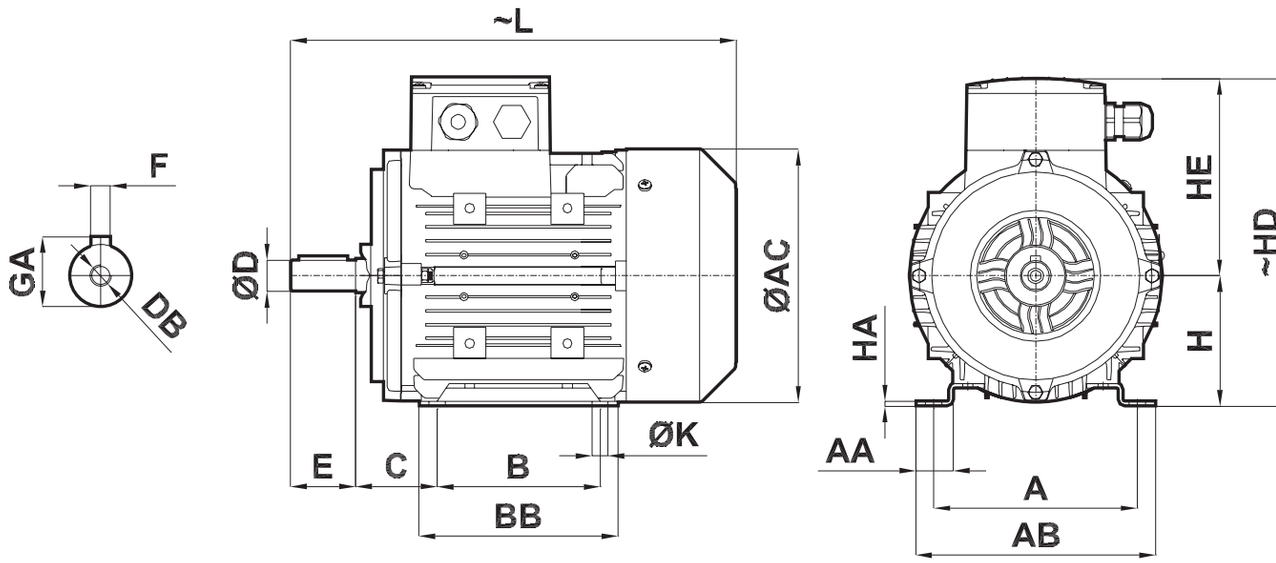
# B3 Construction Type




| Frame Size | Number of Poles | D [1] | E | L | AC | H [2] | HE | HD | F | GA | DB | C | ØK | B | BB | HA | AA | A | AB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 071 | 2-4-6-8 | 14 | 30 | 244 | 137 | 71 | 112 | 183 | 5 | 16 | M5 | 45 | 7 | 90 | 110 | 3 | 19 | 112 | 128 |
| 080 | 2-4-6-8 | 19 | 40 | 274 | 155 | 80 | 123 | 203 | 6 | 21,5 | M6 | 50 | 10 | 100 | 122 | 3 | 25 | 125 | 148 |
| 090S | 2-4-6-8 | 24 | 50 | 325 | 176 | 90 | 132 | 222 | 8 | 27 | M8 | 56 | 10 | 100 | 151 | 4 | 27 | 140 | 167 |
| 090L | 2-4-6-8 | 24 | 50 | 325 | 176 | 90 | 132 | 222 | 8 | 27 | M8 | 56 | 10 | 125 | 151 | 4 | 27 | 140 | 167 |
| 100 | 2-4-6-8 | 28 | 60 | 370,5 | 193 | 100 | 149 | 249 | 8 | 31 | M10 | 63 | 12 | 140 | 170 | 4 | 31 | 160 | 192 |
| 112 | 2-4-6-8 | 28 | 60 | 390 | 215 | 112 | 161 | 273 | 8 | 31 | M10 | 70 | 12 | 140 | 177 | 4 | 36 | 190 | 217 |
| 132S | 2-4-6-8 | 38 | 80 | 495 | 257 | 132 | 181 | 313 | 10 | 41 | M12 | 89 | 12 | 140 | 212 | 5 | 34 | 216 | 254 |
| 132M | 2-4-6-8 | 38 | 80 | 495 | 257 | 132 | 181 | 313 | 10 | 41 | M12 | 89 | 12 | 178 | 212 | 5 | 34 | 216 | 254 |
| 160M | 2-4-6-8 | 42 | 110 | 605 | 316 | 160 | 224 | 384 | 12 | 45 | M16 | 108 | 14,5 | 210 | 323 | 15 | 49,5 | 254 | 295 |
| 160L | 2-4-6-8 | 42 | 110 | 605 | 316 | 160 | 224 | 384 | 12 | 45 | M16 | 108 | 14,5 | 254 | 323 | 15 | 49,5 | 254 | 295 |
| 180M | 2-4-6-8 | 48 | 110 | 697 | 348 | 180 | 250 | 430 | 14 | 51,5 | M16 | 121 | 14,5 | 241 | 319 | 15 | 50 | 279 | 326 |
| 180L | 2-4-6-8 | 48 | 110 | 697 | 348 | 180 | 250 | 430 | 14 | 51,5 | M16 | 121 | 14,5 | 279 | 319 | 15 | 50 | 279 | 326 |
| 200 | 2-4-6-8 | 55 | 110 | 740 | 396 | 200 | 287 | 487 | 16 | 59 | M20 | 133 | 18,5 | 305 | 350 | 18 | 62,5 | 318 | 381 |
| 225S | 4-6-8 | 60 | 140 | 825 | 438 | 225 | 315,5 | 540,5 | 18 | 64 | M20 | 149 | 18,5 | 286 | 370 | 20 | 70 | 356 | 428 |
| | 2 | 55 | 110 | 795 | | | | | 16 | 59 | | | | | | | | | |
| 225M | 4-6-8 | 60 | 140 | 825 | 438 | 225 | 315,5 | 540,5 | 18 | 64 | M20 | 149 | 18,5 | 311 | 370 | 20 | 70 | 356 | 428 |
| | 2 | 55 | 110 | 795 | | | | | 16 | 59 | | | | | | | | | |
| 250M | 4-6-8 | 65 | 140 | 896 | 481 | 250 | 335 | 585 | 18 | 69 | M20 | 168 | 24 | 349 | 420 | 32,5 | 80 | 406 | 490 |
| | 2 | 60 | | | | | | | | 64 | | | | | | | | | |
| 280M | 4-6-8 | 75 | 140 | 1019,5 | 547 | 280 | 402 | 682 | 20 | 79,5 | M20 | 190 | 24 | 419 | 500 | 36 | 121 | 457 | 558 |
| | 2 | 65 | | | | | | | 18 | 69 | | | | | | | | | |

[1] Tolerance “j6” up to 28mm, “k6” from 28 to 48mm, “m6” over 48mm TS EN 50347
[2] Tolerance “-0.5mm” TS EN 50347



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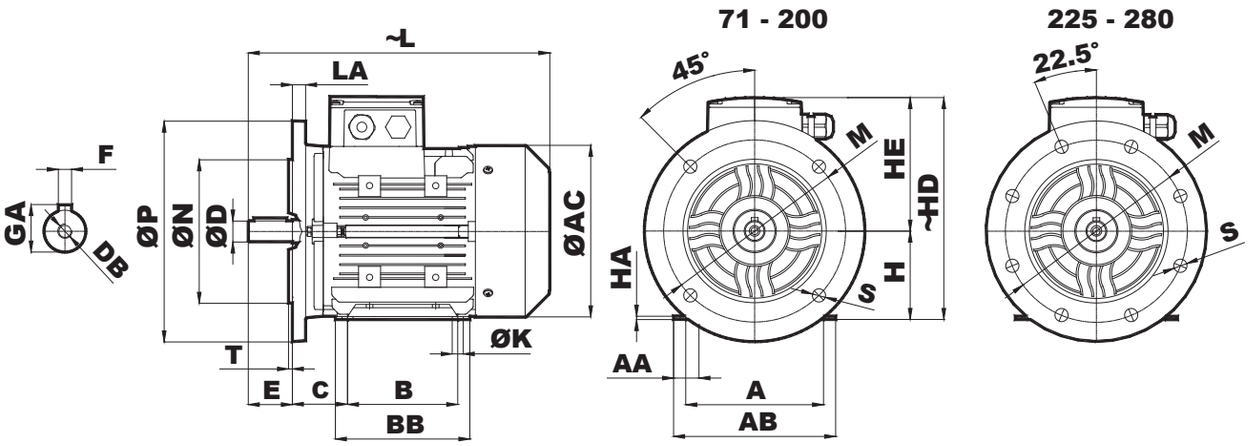
# B5- B35 Construction Types




| Frame Size | Number of Poles | D [1] | E | N [2] | P | T | LA | L | AC | S | M | H [3] | HE | HD | F | GA | DB | C | ØK | B | BB | HA | AA | A | AB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 071 | 2-4-6-8 | 14 | 30 | 110 | 160 | 3,5 | 8 | 244 | 137 | 10 | 130 | 71 | 112 | 183 | 5 | 16 | M5 | 45 | 7 | 90 | 110 | 3 | 19 | 112 | 128 |
| 080 | 2-4-6-8 | 19 | 40 | 130 | 200 | 3,5 | 12 | 274 | 155 | 12 | 165 | 80 | 123 | 203 | 6 | 21,5 | M6 | 50 | 10 | 100 | 122 | 3 | 25 | 125 | 148 |
| 090S | 2-4-6-8 | 24 | 50 | 130 | 200 | 3,5 | 12 | 325 | 176 | 12 | 165 | 90 | 132 | 222 | 8 | 27 | M8 | 56 | 10 | 100 | 151 | 4 | 27 | 140 | 167 |
| 090L | 2-4-6-8 | 24 | 50 | 130 | 200 | 3,5 | 12 | 325 | 176 | 12 | 165 | 90 | 132 | 222 | 8 | 27 | M8 | 56 | 10 | 125 | 151 | 4 | 27 | 140 | 167 |
| 100 | 2-4-6-8 | 28 | 60 | 180 | 250 | 4 | 15 | 370,5 | 193 | 14,5 | 215 | 100 | 149 | 249 | 8 | 31 | M10 | 63 | 12 | 140 | 170 | 4 | 31 | 160 | 192 |
| 112 | 2-4-6-8 | 28 | 60 | 180 | 250 | 4 | 15 | 390 | 215 | 14,5 | 215 | 112 | 161 | 273 | 8 | 31 | M10 | 70 | 12 | 140 | 177 | 4 | 36 | 190 | 217 |
| 132S | 2-4-6-8 | 38 | 80 | 230 | 300 | 4 | 20 | 495 | 257 | 14,5 | 265 | 132 | 181 | 313 | 10 | 41 | M12 | 89 | 12 | 140 | 212 | 5 | 34 | 216 | 254 |
| 132M | 2-4-6-8 | 38 | 80 | 230 | 300 | 4 | 20 | 495 | 257 | 14,5 | 265 | 132 | 181 | 313 | 10 | 41 | M12 | 89 | 12 | 178 | 212 | 5 | 34 | 216 | 254 |
| 160M | 2-4-6-8 | 42 | 110 | 250 | 350 | 5 | 20 | 605 | 316 | 18,5 | 300 | 160 | 224 | 384 | 12 | 45 | M16 | 108 | 14,5 | 210 | 323 | 15 | 49,5 | 254 | 295 |
| 160L | 2-4-6-8 | 42 | 110 | 250 | 350 | 5 | 20 | 605 | 316 | 18,5 | 300 | 160 | 224 | 384 | 12 | 45 | M16 | 108 | 14,5 | 254 | 323 | 15 | 49,5 | 254 | 295 |
| 180M | 2-4-6-8 | 48 | 110 | 250 | 350 | 5 | 14 | 697 | 348 | 18,5 | 300 | 180 | 250 | 430 | 14 | 51,5 | M16 | 121 | 14,5 | 241 | 319 | 15 | 50 | 279 | 326 |
| 180L | 2-4-6-8 | 48 | 110 | 250 | 350 | 5 | 14 | 697 | 348 | 18,5 | 300 | 180 | 250 | 430 | 14 | 51,5 | M16 | 121 | 14,5 | 279 | 319 | 15 | 50 | 279 | 326 |
| 200 | 2-4-6-8 | 55 | 110 | 300 | 400 | 5 | 14 | 740 | 396 | 18,5 | 350 | 200 | 287 | 487 | 16 | 59 | M20 | 133 | 18,5 | 305 | 350 | 18 | 62,5 | 318 | 381 |
| 225S | 4-6-8 | 60 | 140 | 350 | 450 | 5 | 20 | 825 | 438 | 18,5 | 400 | 225 | 315,5 | 540,5 | 18 | 64 | M20 | 149 | 18,5 | 286 | 370 | 20 | 70 | 356 | 428 |
| | 2 | 55 | 110 | | | | | 795 | | | | | | | 16 | 59 | | | | | | | | | |
| 225M | 4-6-8 | 60 | 140 | 350 | 450 | 5 | 20 | 825 | 438 | 18,5 | 400 | 225 | 315,5 | 540,5 | 18 | 64 | M20 | 149 | 18,5 | 311 | 370 | 20 | 70 | 356 | 428 |
| | 2 | 55 | 110 | | | | | 795 | | | | | | | 16 | 59 | | | | | | | | | |
| 250M | 4-6-8 | 65 | 140 | 450 | 550 | 5 | 20 | 896 | 481 | 18,5 | 500 | 250 | 335 | 585 | 18 | 69 | M20 | 168 | 24 | 349 | 420 | 32,5 | 80 | 406 | 490 |
| | 2 | 60 | | | | | | | | | | | | | | 64 | | | | | | | | | |
| 280M | 4-6-8 | 75 | 140 | 450 | 550 | 5 | 20 | 1019,5 | 547 | 18,5 | 500 | 280 | 402 | 682 | 20 | 79,5 | M20 | 190 | 24 | 419 | 500 | 36 | 121 | 457 | 558 |
| | 2 | 65 | | | | | | | | | | | | | 18 | 69 | | | | | | | | | |

[1] Tolerance "j6" up to 28mm, "k6" from 28 to 48mm, "m6" over 48mm TS EN 50347
[2] Tolerance "j6" up to 250mm, "h6" over 250mm TS EN 50347
[3] Tolerance "-0.5mm" TS EN 50347



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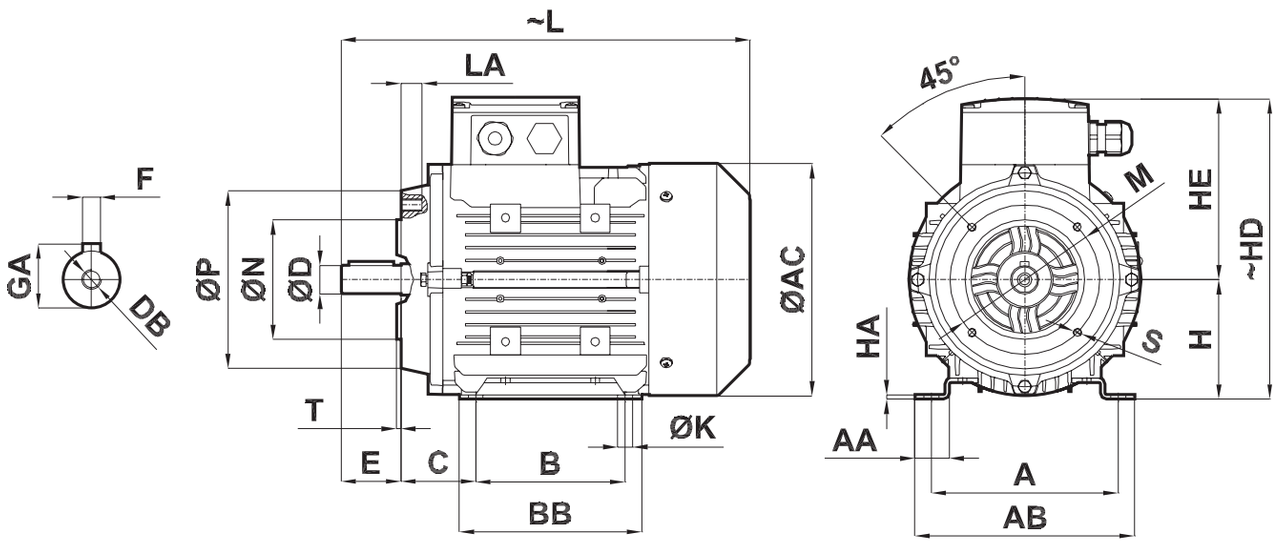
# B14- B34 Construction Types




| Frame Size | Number of Poles | D [1] | N [2] | P | E | T | LA | L | AC | S | M | H [3] | HE | HD | F | GA | DB | C | ØK | B | BB | HA | AA | A | AB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 071 | 2-4-6-8 | 14 | 70 | 105 | 30 | 2,5 | 12 | 244 | 137 | M6 | 85 | 71 | 112 | 183 | 5 | 16 | M5 | 45 | 7 | 90 | 110 | 3 | 19 | 112 | 128 |
| 080 | 2-4-6-8 | 19 | 80 | 118,5 | 40 | 3 | 12 | 274 | 155 | M6 | 100 | 80 | 123 | 203 | 6 | 21,5 | M6 | 50 | 10 | 100 | 122 | 3 | 25 | 125 | 148 |
| 090S | 2-4-6-8 | 24 | 95 | 136,5 | 50 | 3 | 15 | 325 | 176 | M8 | 115 | 90 | 132 | 222 | 8 | 27 | M8 | 56 | 10 | 100 | 151 | 4 | 27 | 140 | 167 |
| 090L | 2-4-6-8 | 24 | 95 | 136,5 | 50 | 3 | 15 | 325 | 176 | M8 | 115 | 90 | 132 | 222 | 8 | 27 | M8 | 56 | 10 | 125 | 151 | 4 | 27 | 140 | 167 |
| 100 | 2-4-6-8 | 28 | 110 | 159,5 | 60 | 3,5 | 17 | 371 | 193 | M8 | 130 | 100 | 149 | 249 | 8 | 31 | M10 | 63 | 12 | 140 | 170 | 4 | 31 | 160 | 192 |
| 112 | 2-4-6-8 | 28 | 110 | 159,5 | 60 | 3,5 | 17 | 390 | 215 | M8 | 130 | 112 | 161 | 273 | 8 | 31 | M10 | 70 | 12 | 140 | 177 | 4 | 36 | 190 | 217 |
| 132S | 2-4-6-8 | 38 | 130 | 200 | 80 | 3,5 | 20 | 495 | 257 | M10 | 165 | 132 | 181 | 313 | 10 | 41 | M12 | 89 | 12 | 140 | 212 | 5 | 34 | 216 | 254 |
| 132M | 2-4-6-8 | 38 | 130 | 200 | 80 | 3,5 | 20 | 495 | 257 | M10 | 165 | 132 | 181 | 313 | 10 | 41 | M12 | 89 | 12 | 178 | 212 | 5 | 34 | 216 | 254 |
| 160M | 2-4-6-8 | 42 | 180 | 250 | 110 | 4 | 28 | 605 | 316 | M12 | 215 | 160 | 224 | 384 | 12 | 45 | M16 | 108 | 14,5 | 210 | 323 | 15 | 49,5 | 254 | 295 |
| 160L | 2-4-6-8 | 42 | 180 | 250 | 110 | 4 | 28 | 605 | 316 | M12 | 215 | 160 | 224 | 384 | 12 | 45 | M16 | 108 | 14,5 | 254 | 323 | 15 | 49,5 | 254 | 295 |

[1] Tolerance “j6” up to 28mm, “k6” over 28mm TS EN 50347
[2] Tolerance “j6” TS EN 50347
[3] Tolerance “-0.5mm” TS EN 50347



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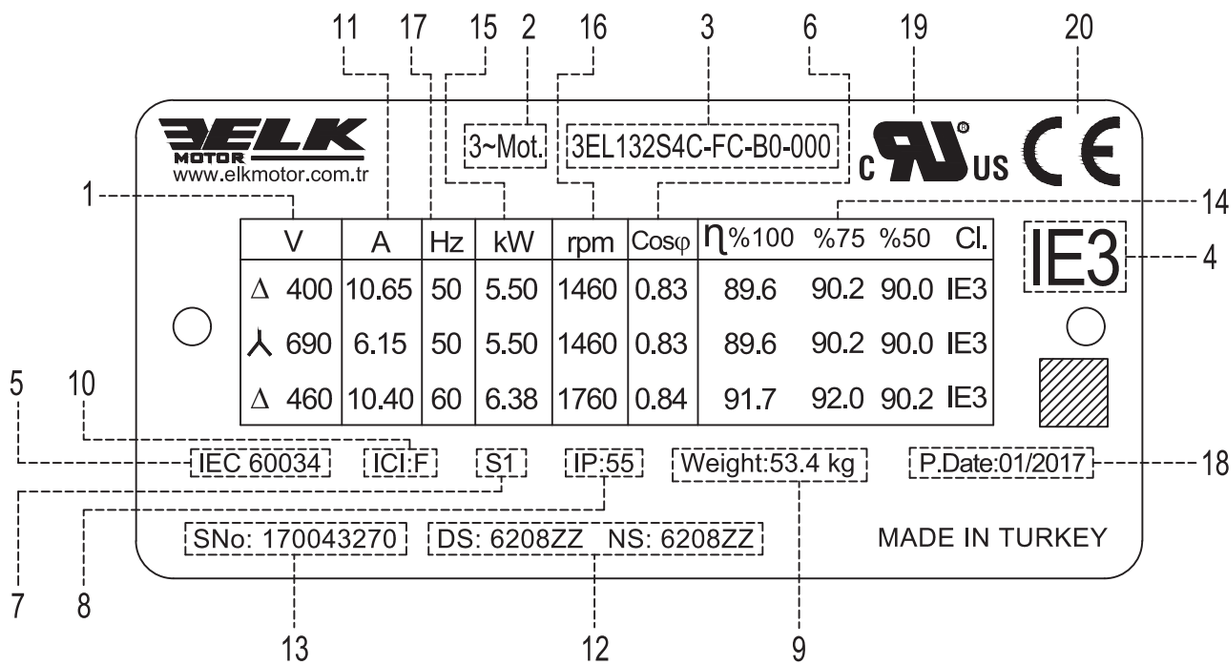
# Nameplate Description




| | | | |
|---|---|---|---|
| 1. | Rated Voltage | 11. | Rated Current |
| 2. | Motor Type: 3 Phase Asynchronous | 12. | Bearing Type |
| 3. | Motor Code | 13. | Serial Number |
| 4. | Efficiency Class (IEC 60034-30) | 14. | Efficiency |
| 5. | Manufacture Standard | 15. | Output Power |
| 6. | Power Factor | 16. | Speed |
| 7. | Duty Cycle | 17. | Frequency |
| 8. | Protection Class | 18. | Production Date |
| 9. | Motor Weight | 19. | UL Logo |
| 10. | Insulation Class | 20. | CE Mark |

The nameplate shows the identification, and the most important technical data. The nameplate also defines the limits of proper usage, and manufacturing year of the motors. The first two digits in the serial number, shows the manufacturing year. For example, 17XXXXXXX shows that the product is manufactured in 2017.



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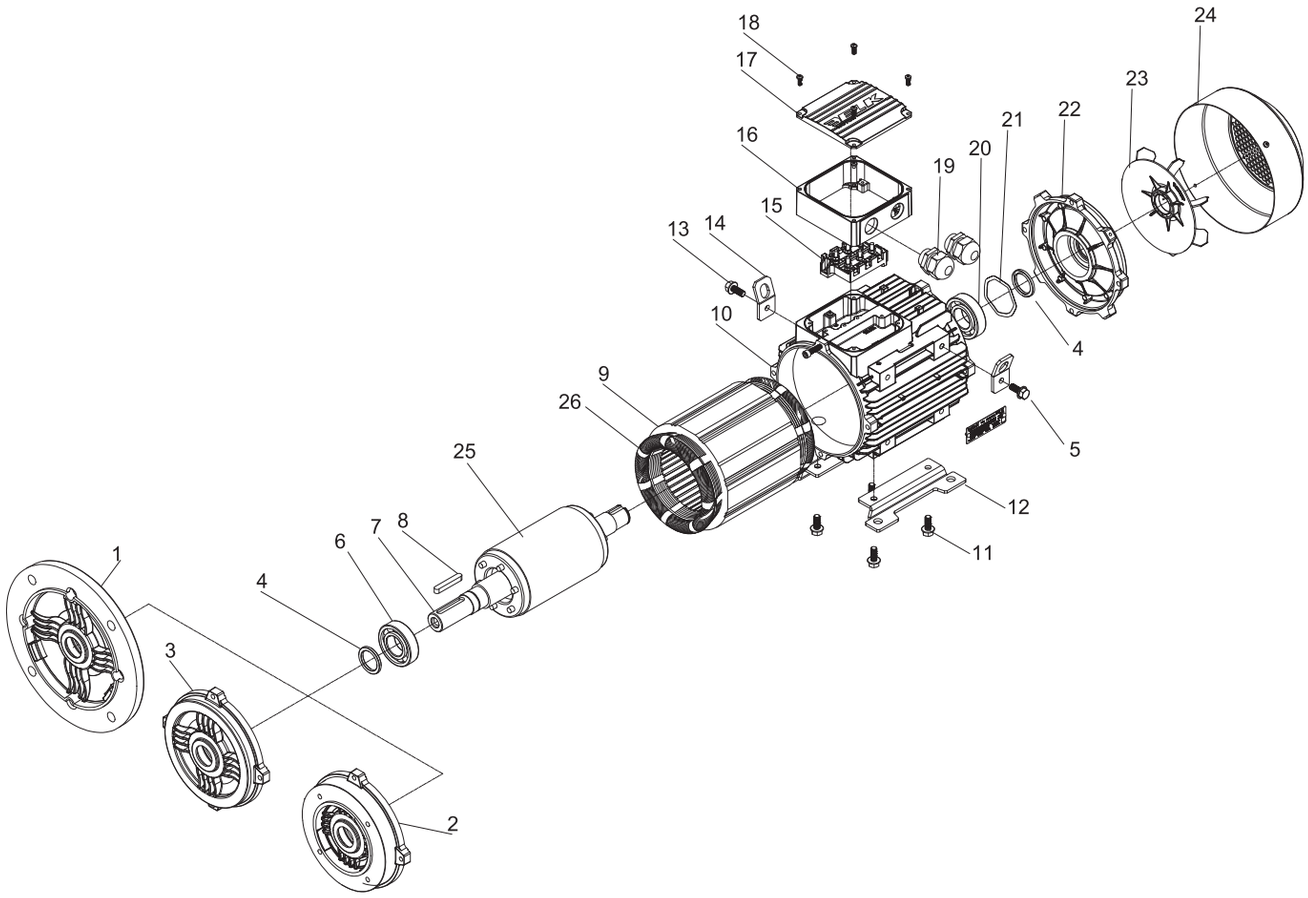
# Spare Parts

2EL, 3EL, 2EC, 2EG, 3EG, 2ED Series motors consist of the following main parts;




| | |
|---|---|
| 1. Flange B5 | 14. Lifting Lug |
| 2. Flange B14 | 15. Terminal |
| 3. End Shield (DE) | 16. Terminal Box |
| 4. Shaft sealing | 17. Terminal Box Cover |
| 5. Screw | 18. Bolt |
| 6. Bearing | 19. Cable Gland |
| 7. Shaft | 20. Bearing |
| 8. Key | 21. Spring Washer |
| 9. Stator Core | 22. End Shield (NDE) |
| 10. Housing | 23. Fan |
| 11. Screw | 24. Fan cover |
| 12. Mounting foot | 25. Squirrel cage rotor |
| 13. Screw | 26. Winding |

When ordering spare parts, the motor serial number, full type designation, and product code, as stated on the nameplate, must be specified. For field service, spare parts and additional information, please contact with us.



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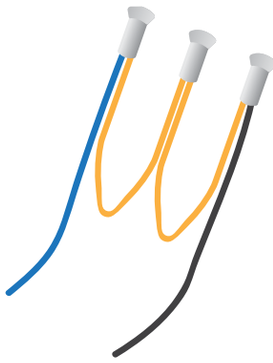
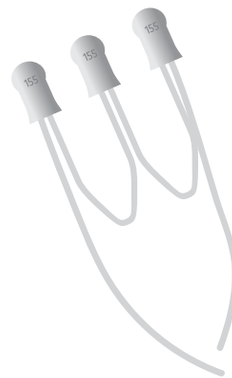
# PTC Thermistor and Thermal Switch






### PTC Thermistor

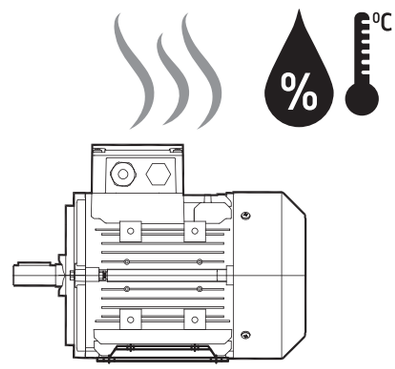
If the motor is exposed to excessive load, the internal resistance of the thermistor attached to the motor windings increases due to the heating of the motor windings and opens the circuit when the insulation class limit value is reached. This prevents the winding from being damaged by cutting off the current in the windings. Only can be used with an electronic circuit.

### Thermal Switch

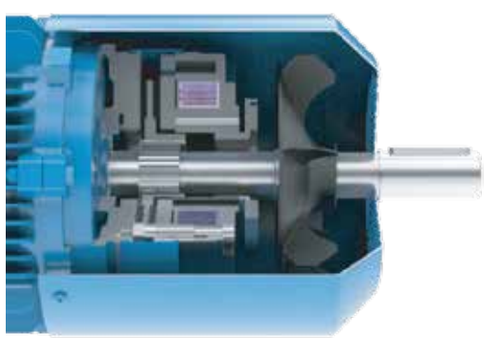
When the motor is overloaded winding temperature exceeds the insulation class limit value, and the thermal switch assembled to the winding opens the circuit. In many applications, thermal switch can be connected in series to the main contactor coil.
Depending on the opening of the thermal switch, the main contactor is released and damage to the motor is prevented

# Anti-Condensation Heater and Drain Hole

Water condensation inside the motor can occur in high humidity environments. To prevent this, heaters anti-condensation heaters are assembled to the motor windings to maintain a certain temperature.
In addition, drain holes are opened to prevent water from accumulating in the motor body in the event of water condensation inside the motor.




# Non Drive End Shaft Extension and Canopy



### Non Drive End Shaft Extension

Non drive end shaft is used when it is desired to transfer the motor power to a second load or to manually rotate it when the motor is not energized.

### Canopy

It is used for operation in the outside environment where the motor fan is pointing upwards. This prevents the rainwater from entering the motor housing.



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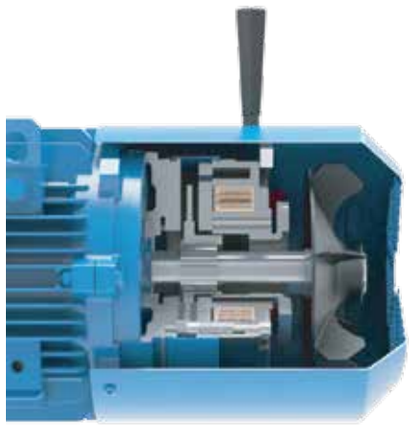
# Brake, Hand Release, Separately Driven Fan Encoder and Backstop

## Electromagnetic Brake

For each motor size we have the option of electromagnetic brake. Brakes with 24 Volt, 230 Volt and 400 Volt DC from 5Nm to 1600Nm are alternatively can be used as needed.



## Brake with Hand Release

Hand release on the brake is used to release the system when the power is cut off or the power is not turned on.

## Separately Driven Fan

Separately driven fan is used particularly in applications where the motor is driven by variable speed drives to keep the air flow at a constant level.

## Separately Driven Fan with Encoder

In applications where synchronous operation is desired, encoder application is used. The motor fan cannot be used since the encoder is mounted on the non drive end cover. For this reason, the motor is cooled by a separately driven fan.

## Separately driven fan with brake and encoder

In applications where both brake and synchronous operation are desired, brake, encoder and separately driven fan options are all mounted to the non drive side of the motor.

## Backstop

Backstop is used when the motor should rotate only in one direction and the motor should not rotate in the other direction. The backstop option in the fan cover is widely used.



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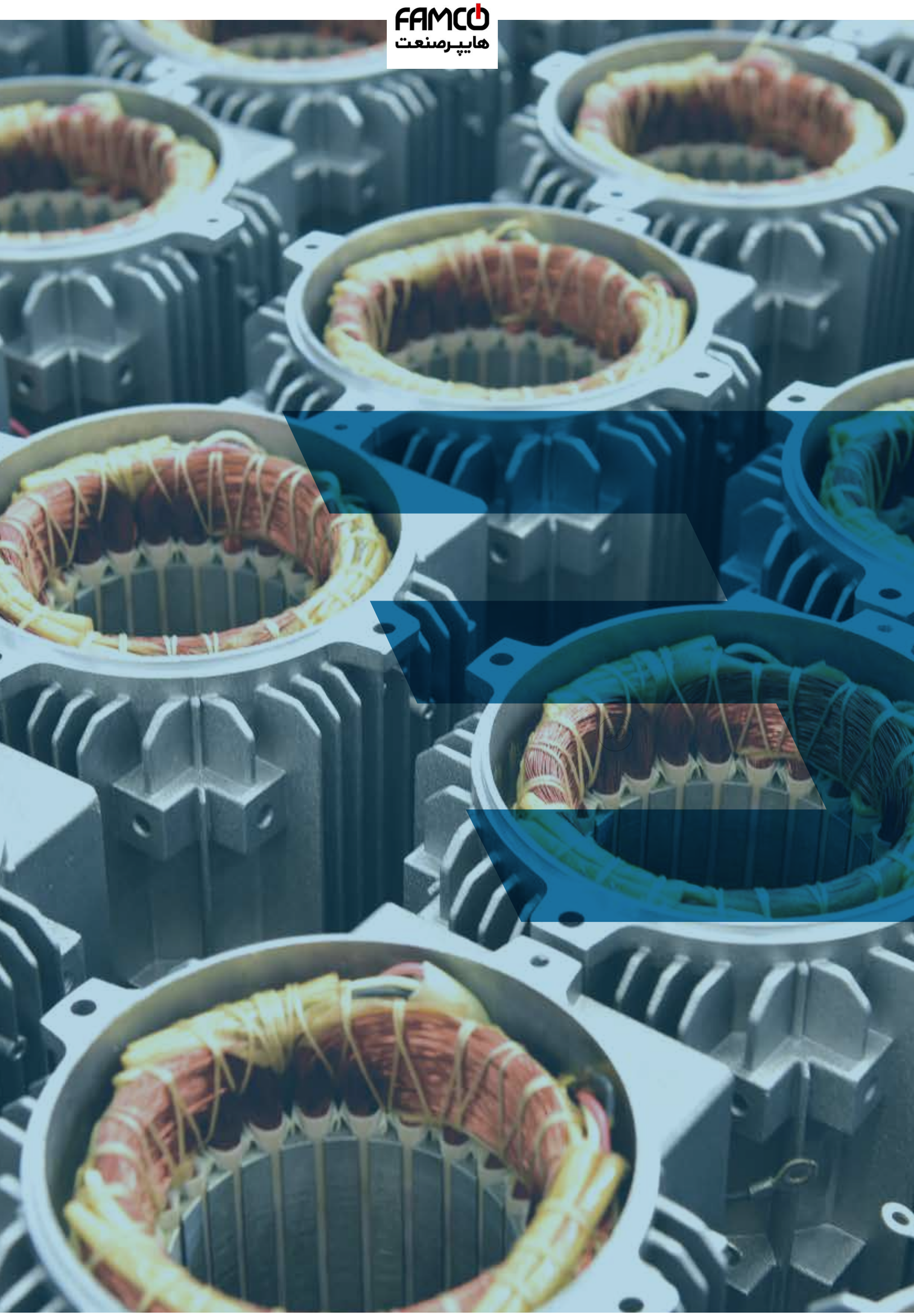


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