High efficiency aluminium induction motors

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**Cooling System**

**Fan Cover**
- Better air flow distribution over frame
- Increased mechanical strength
- Provisions for encoder and drip cover

**Fan**
- Reinforced fan hub structure
- Reduced noise levels
- Increased air flow

**Frame**
- Reduced temperature on windings and bearings
- Reduced noise levels

**Two Eyebolts**
- Easier handling
- Higher mechanical resistance

**Solid Feet**
- More impact resistance
- Ideal for high vibration
- Easier installation and alignment

**Terminal Box**
- Better connection quality
- Easier cable handling during installation
- Easier maintenance

**Sealing System**
- The exclusive WSeal® for frame sizes 225S/M to 355A/B
- Increased dust and moisture protection
- Increased protection to high-pressure cleaning

**Bearing Caps**

**External**
- Ribbed surface for improvement of bearing heat dissipation

**Internal**
- Improved bearing lubrication
- Reduced bearing temperature extending lubrication times
IE3 Premium efficiency aluminium induction motors

This range of motors have been designed to operate with maximum energy efficiency, high performance reliability, eliminating unplanned stops and delays in production.

The exclusive WISE insulation system increases the dielectric resistance, allowing variable speed drive operation up to 575V without further modification, which results in flexibility and extended motor life.

Features
- IE3 High efficiency construction
- Class ‘F’ insulation
- WISE (Weg Insulation System Evolution) suitable for inverter duty applications
- Steel fan covers
- Metric cable entries

Technical specification

<table>
<thead>
<tr>
<th>Rated motor power</th>
<th>Frame size</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25kW</td>
<td>D63</td>
</tr>
<tr>
<td>0.37kW</td>
<td>D71</td>
</tr>
<tr>
<td>0.55kW</td>
<td>D71</td>
</tr>
<tr>
<td>0.75kW</td>
<td>D80</td>
</tr>
<tr>
<td>1.1kW</td>
<td>D80</td>
</tr>
<tr>
<td>1.5kW</td>
<td>D90S</td>
</tr>
<tr>
<td>2.2kW</td>
<td>D90L</td>
</tr>
<tr>
<td>3.0kW</td>
<td>D100L</td>
</tr>
<tr>
<td>4.0kW</td>
<td>D112M</td>
</tr>
<tr>
<td>5.5kW</td>
<td>D132S</td>
</tr>
<tr>
<td>7.5kW</td>
<td>D132S</td>
</tr>
</tbody>
</table>

Options available
- Encoder modules
- Brake units
- Range of mountings – Flange FF, C, C-DIN
- Thermal protection thermostats, RTD (PT100)
- Protection ratings of IP56, IP65 or IP66
- Space heaters
- Stainless steel shafts
- Vibration monitoring

For higher kW ratings please contact sales
**IE4 Super premium efficiency cast iron induction motors**

The super premium efficiency (IE4) level established in IEC 60034-30-1:2014 is considered the highest efficiency class which a squirrel cage induction motor can achieve whilst remaining economically viable.

It is also the optimum solution to increase the efficiency of an existing application through direct replacement.

### Features
- IE4 Super premium efficiency construction
- Class ‘F’ insulation
- WISE (Weg Insulation System Evolution) suitable for inverter duty applications
- Steel fan covers
- Metric cable entries

### Technical specification
- **Rated motor power**: 3.0 to 55kW
- **Number of poles**: 2, 4 or 6
- **Frame sizes**: 132S-250S/M
- **Material**: Cast iron
- **Frequency**: 50Hz
- **Voltage**: 220/380V a.c.
- **Service factor**: 1.00
- **Ambient temperature**: -20 to +40°C
- **Protection rating**: IP55
- **Vibration level**: Grade A and B
- **Continuous duty**: S1

### Options available
- Encoder modules
- Brake units
- Range of mountings – Flange FF, C, C-DIN
- Thermal protection thermostats, RTD (PT100)
- Protection ratings of IP56, IP65 or IP66
- Space heaters
- Stainless steel shafts
- Vibration monitoring

---

**2 Pole**

3000rpm @ 50Hz

<table>
<thead>
<tr>
<th>Rated Motor Power</th>
<th>Frame Size</th>
<th>Order Code</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5kW</td>
<td>132S</td>
<td>5-52B3WIE4</td>
<td>£932.00</td>
</tr>
<tr>
<td>7.5kW</td>
<td>132S</td>
<td>7-52B3WIE4</td>
<td>£1,064.00</td>
</tr>
<tr>
<td>9.2kW</td>
<td>L132M/L</td>
<td>9-22B3WIE4</td>
<td>£1,336.00</td>
</tr>
<tr>
<td>11.0kW</td>
<td>160M</td>
<td>11B3WIE4</td>
<td>£1,805.00</td>
</tr>
<tr>
<td>15.0kW</td>
<td>160M</td>
<td>15B3WIE4</td>
<td>£2,000.00</td>
</tr>
<tr>
<td>18.5kW</td>
<td>160L</td>
<td>18-52B3WIE4</td>
<td>£2,316.00</td>
</tr>
<tr>
<td>22.0kW</td>
<td>180M</td>
<td>22B3WIE4</td>
<td>£3,020.00</td>
</tr>
<tr>
<td>30.0kW</td>
<td>200L</td>
<td>30B3WIE4</td>
<td>£4,260.00</td>
</tr>
<tr>
<td>37.0kW</td>
<td>200L</td>
<td>37B3WIE4</td>
<td>£4,504.00</td>
</tr>
<tr>
<td>45.0kW</td>
<td>225S/M</td>
<td>45B3WIE4</td>
<td>£7,136.00</td>
</tr>
<tr>
<td>55.0kW</td>
<td>250S/M</td>
<td>55B3WIE4</td>
<td>£8,420.00</td>
</tr>
</tbody>
</table>

---

**4 Pole**

1500rpm @ 50Hz

<table>
<thead>
<tr>
<th>Rated Motor Power</th>
<th>Frame Size</th>
<th>Order Code</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5kW</td>
<td>L132S</td>
<td>5-54B3WIE4</td>
<td>£932.00</td>
</tr>
<tr>
<td>7.5kW</td>
<td>L132M/L</td>
<td>7-54B3WIE4</td>
<td>£1,040.00</td>
</tr>
<tr>
<td>9.2kW</td>
<td>160M</td>
<td>9-24B3WIE4</td>
<td>£1,580.00</td>
</tr>
<tr>
<td>11.0kW</td>
<td>160M</td>
<td>114B3WIE4</td>
<td>£2,020.00</td>
</tr>
<tr>
<td>15.0kW</td>
<td>160M</td>
<td>154B3WIE4</td>
<td>£2,336.00</td>
</tr>
<tr>
<td>18.5kW</td>
<td>180M</td>
<td>18-54B3WIE4</td>
<td>£3,308.00</td>
</tr>
<tr>
<td>22.0kW</td>
<td>180L</td>
<td>22B3WIE4</td>
<td>£3,476.00</td>
</tr>
<tr>
<td>30.0kW</td>
<td>200L</td>
<td>30B3WIE4</td>
<td>£4,368.00</td>
</tr>
<tr>
<td>37.0kW</td>
<td>225S/M</td>
<td>37B3WIE4</td>
<td>£5,788.00</td>
</tr>
<tr>
<td>45.0kW</td>
<td>225S/M</td>
<td>45B3WIE4</td>
<td>£6,624.00</td>
</tr>
<tr>
<td>55.0kW</td>
<td>250S/M</td>
<td>55B3WIE4</td>
<td>£8,116.00</td>
</tr>
</tbody>
</table>

---

**6 Pole**

1000rpm @ 50Hz

<table>
<thead>
<tr>
<th>Rated Motor Power</th>
<th>Frame Size</th>
<th>Order Code</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0kW</td>
<td>132S</td>
<td>36B3WIE4</td>
<td>£972.00</td>
</tr>
<tr>
<td>4.0kW</td>
<td>132M</td>
<td>46B3WIE4</td>
<td>£1,112.00</td>
</tr>
<tr>
<td>5.5kW</td>
<td>L132M/L</td>
<td>5-56B3WIE4</td>
<td>£1,332.00</td>
</tr>
<tr>
<td>7.5kW</td>
<td>160M</td>
<td>7-56B3WIE4</td>
<td>£1,904.00</td>
</tr>
<tr>
<td>9.2kW</td>
<td>160L</td>
<td>9-26B3WIE4</td>
<td>£2,624.00</td>
</tr>
<tr>
<td>11.0kW</td>
<td>160L</td>
<td>116B3WIE4</td>
<td>£2,440.00</td>
</tr>
</tbody>
</table>

---

**For higher kW ratings please contact sales**

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**NEW**
Pujol gearboxes

The parameters used in the design, manufacture and quality control have allowed Pujol to produce a range of high quality products with the versatility to meet most customer applications. Standardisation of product sizes permits the use of Pujol gearboxes and flanges to be used with other electrical motor manufacturer products under the IEC-20 42677/42948.

Right angle or in line gearboxes are available with worm or bevel helical mechanisms. Units are constructed in either aluminium or cast iron. Reduction ratios, speeds, torque and shaft sizes can be configured to customer requirements.

With such a diverse range of products it is not possible to list all options and configurations in this catalogue. The following information provides an overview of the Pujol range. To determine an accurate specification or discuss an application please contact our Head Office Sales Department on 01254 685900.

Our sales advisors will be able to assist you with your enquiry or arrange for site visit to help specify the correct unit for your application.

Your guide to selecting the right Pujol gearbox

In order to specify the right gearbox, you need to find the answers to these questions:

**Application:**
- Where will the gearbox be used?
- Find the load service factor for your application (see the table on page 166)
- Gearbox mounting details

**Inputs:**
- Motor power (kW)
- Motor speed (rpm)

**Outputs:**
- Output speed (rpm)
- Output torque (Nm)
- Shaft dimensions

What happens next . . .

You now have most of the information you need to select the correct Pujol gearbox. Take a note of all the information above and call the LC Automation Head Office Sales Department on 01254 685900, they will run through all the different options available, make sure you have chosen the right unit and provide an accurate quote for your gearbox.

Calculating motor power, torque and output speed

Motor power - P (kW), torque - T (Nm) and output speed - N (rpm) are important variables in selecting gearbox. But if you have two, it is easy to work out the third variable using the following equations;

\[
\text{Power (P)} = \frac{N \times T}{9550}
\]

\[
\text{Torque (T)} = \frac{9550 \times P}{N}
\]

\[
\text{Speed (N)} = \frac{9550 \times P}{T}
\]
Types of load and their service factors

The service factor shows the workload placed on the gearbox in everyday usage. The colour on this selection table relates to our service factor information booklet.

### Fans
- Centrifugal (balanced) . . . . Uniform Load
- For cooling towers . . . . Moderate Load
- For forced air flow . . . . Moderate Load
- For mines . . . . Moderate Load

### Cranes
- Derrick . . . . . . . . Uniform Load
- Slew ing . . . . . . . . Uniform Load
- Transfer movement . . . . Moderate Load
- Drum movement . . . . Heavy Load

### Metal industry
- Drawing benches . . . . Heavy Load
- Stamping presses . . . . Heavy Load
- Cutting machines . . . . Heavy Load
- Small rolling machines . . . Heavy Load

### Mixers
- Constant density . . . . Uniform Load
- Irregular density . . . . Moderate Load
- Concrete . . . . Moderate Load

### Crushers
- Mineral . . . . Moderate Load
- Stone . . . . Moderate Load

### Transmissions for industrial;
- Equipment machines . . . Moderate Load
- Sub-group movement . . . Moderate Load
- Secondary transmissions . . . Uniform Load

### Mills (rotary type)
- Ball . . . . Heavy Load
- Ring roll . . . . Heavy Load
- For cement . . . . Moderate Load

### Washing machines
- Washing machines/pumps . . Moderate Load

---

**Service factors**

<table>
<thead>
<tr>
<th>Operating Time</th>
<th>Type of Load</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uniform Load</td>
</tr>
<tr>
<td>0.5 hours</td>
<td>0.5</td>
</tr>
<tr>
<td>3 hours</td>
<td>0.8</td>
</tr>
<tr>
<td>8 - 10 hours</td>
<td>1.0</td>
</tr>
<tr>
<td>24 hours</td>
<td>1.25</td>
</tr>
</tbody>
</table>

---

**Download the service factor information booklet from www.lcautomation.com**

The table here is taken from the service factor information booklet available to download from the Pujol PDF download page of our website. Each model in the Pujol range has its own section, to help you select the right size unit for your requirements. First find the service factor for your application from the table above, which will give the colour of the column you need to look at. Then find the correct model type, select the power of your motor and the closest output speed to your requirements. This will show which size of gearbox you need.

**Example application**

A washing machine, used for 8 hours a day, with a 0.55kW motor and an output speed of 35rpm.

The service factor table (above), gives the service factor for this application as 1.25 (i.e. between one and two - which relates to the white columns).

The motor being used is 0.55kW and the application requires a gearbox with an output speed of 35rpm. Looking at the service factor tables, the LAC61 version is the only one which will connect a 0.55kW motor to give an output speed of 35rpm.
LAC – Aluminum right angle worm gearboxes for low power applications (up to 1.5kW)

Although the LAC is housed in a lightweight aluminium casing, the use of quality components and hard wearing two-part baked epoxy coating ensure that the LAC is hard wearing and durable.

The cubic design and a range of output flange and reaction arm configurations also offer a variety of potential mounting options. In fact, because it has been lubricated for life, it can be mounted in any position.

The modular design offers many assembly configurations, with a wide range of output speeds and mounting operations, as well as the option to fit both standard B5 or B14 motors.

Features
- Ideal for low power applications such as small powered conveyors
- Lightweight aluminium case
- Hollow shaft outputs (plug-in shaft available)
- Output shaft diameters of 18, 25 and 30mm

Technical specification
- For motors from 0.09kW to 1.5kW
- Available in 3 sizes: 40, 49 & 61 (size 40 available as speed reducer)
- Ratios: 5, 10, 15, 19, 29, 40, 50, 65, 80 and 100:1
- Accepts standard B5 and B14 (flange) IEC frame motors

Call us on 01254 685900 for help selecting the correct unit and an accurate quote

LXC – Cast iron right angle worm gearboxes for heavy duty applications (up to 18.5kW)

Rigid unibox construction, protected by a two-part baked epoxy coating helps ensure long product life.

The cubic design and a range of output flange and reaction arm configurations also offer a variety of potential mounting options. Just like the LAC above, it has also been lubricated for life, allowing it to be mounted in any position.

Modular design affords many assembly configurations, giving a wide range of output speeds and mounting operations, as well as the facility to fit standard B5 or B14 motors.

Features
- Ideal for heavy duty applications
- Extremely strong cast iron unibox construction
- Hollow shaft outputs (plug-in shaft available)
- Output shaft diameters of 18, 25 and 30mm

Technical specification
- For motors from 0.09kW to 18.5kW
- Available in 3 sizes: 87, 110 & 130
- Ratios: 5, 10, 15, 19, 29, 40, 50, 65, 80 and 100:1
- Accepts standard B5 and B14 (flange) IEC frame motors

Cast-iron LXC worm gear units are ideal for arduous applications which require total reliability over the long life of the gearbox, but where competitive price is still important.

Call us on 01254 685900 for help selecting the correct unit and an accurate quote

Go to pages 165-166 for our guide on selecting the correct gearbox

Check latest prices and stock availability @ www.lcautomation.com
**KXC - High efficiency right angle bevel helical gearboxes (up to 45kW)**

Features:
- Ideal for applications that use new high efficiency motors
- Typically over 95% efficient
- Extremely strong cast iron unibox construction
- Also available as a speed reducer
- Wide range of mounting options

Technical specification:
- For motors from 0.09kW to 45kW
- Available in sizes from 30 to 90
- Ratios from 4.2 to 273.41:1
- Accepts standard IEC frame motors (B5 flange)

This range of Pujol cast-iron bevel-helical gear units are tough, efficient and reliable.

Constructed in stiff unibox design, and protected with a durable two-part baked epoxy coating.

When fitting the latest generation of high efficiency motors, it is important to also consider the efficiency of the gear unit employed. Typically over 95% efficient, the KX series with its helical gear train is the logical choice for your right-angle drive solution.

The modular design offers many assembly configurations, giving a wide range of output speeds and mounting operations, as well as the facility to fit standard B5 motors.

**DXC - High efficiency parallel helical gearboxes (up to 55kW)**

Features:
- Ideal for applications that use new high efficiency motors
- Typically over 95% efficient
- Extremely strong cast iron unibox construction
- Also available as a speed reducer
- Wide range of mounting options

Technical specification:
- For motors from 0.09kW to 55kW
- Available in sizes from 30 to 90
- Ratios from 6.1 to 174.82:1
- Accepts standard IEC frame motors (B5 flange)

Manufactured with the same technology as the KX series above, this range of gear units provides all the benefits but with a parallel configuration.

The DX series therefore compliments the range, in order to ensure our customers have drive solutions to suit the widest possible spectrum of applications.

Call us on 01254 685900 for help selecting the correct unit and an accurate quote
I series/S series - Coaxial with in-line helical gearboxes for heavy duty applications (up to 55kW)

The I Series and S Series comprise a range of helical in-line gear units which are constructed in tough cast iron for longevity, further enhanced with Pujols two-part baked epoxy coating.

**Common features**
- Ideal for applications that use new high efficiency motors
- Typically over 95% efficient
- Tough cast iron construction
- Foot or flange mounting

**I Series specification**
- For motors from 0.09kW to 55kW
- Available in sizes from 84 to 162
- Ratios from 4.8 to 379.5:1
- Accepts standard IEC frame motors (B5 flange)

**S Series specification**
- For motors from 0.09kW to 55kW
- Available in sizes from 160 to 360
- Ratios from 4.8 to 379.5:1
- Accepts standard IEC frame motors (B5 flange)

SXC series - High performance coaxial in-line helical gearboxes (up to 9.2kW)

Pujol’s latest generation of helical in-line gear units. Constructed with the same tough unibox design, together with the latest technology gear manufacturing techniques ensure that this range of gear units affords the highest performance for size in the current marketplace.

**Technical specification**
- For motors 0.12kW to 9.2kW
- Available in sizes from 202 to 403
- Available in ratios of 3.8:1 to 210:1
- Accepts standard B5 flange motors

**Features**
- Extremely strong cast iron unibox construction
- High transmitted torque per volume unit
- Interchangeable standard fitting dimensions
- Elastic coupling integrated to input shaft
- Input shaft and flange interchangeable without disassembly
- Housing ready for different output flange adaptors
- Input flanges compatible with some servo motors

See selection guide on pages 165-166

Call us on 01254 685900 for help selecting the correct unit and an accurate quote

Call us on 01254 685900 for help selecting the correct unit and an accurate quote
We supply high quality products from these world leading suppliers...