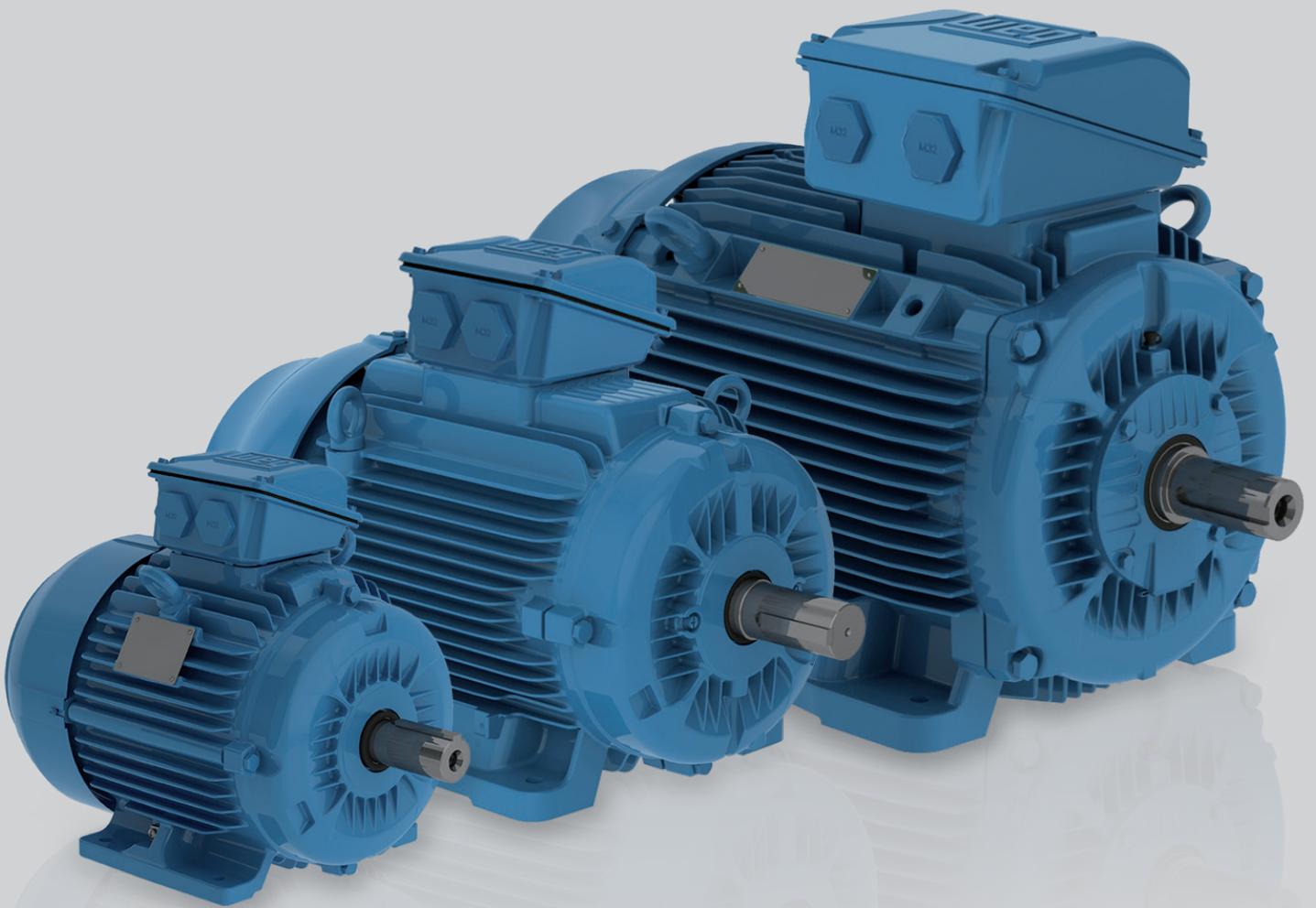


# W22

Three-phase Motor



Motors | Automation | Energy | Transmission & Distribution | Coatings

# W22

High performance with maximum energy efficiency, this is what defines the WEG electric motor. High efficiency coupled with low cost of ownership throughout the motor's lifetime have been the basis for the W22 development. A design created to anticipate concepts in performance and energy savings.



## Lower Total Operational Costs

A product which can operate throughout its lifetime consuming the minimum amount of energy whilst delivering high levels of productivity under continuous operation, without unplanned stops and with optimum performance, thus generating the maximum value to the user - this is the philosophy of the W22 design.



## Energy Saving

Energy costs account for over 90% of the total operating expenditure of an electric motor throughout its lifetime, with the remainder attributed to acquisition, installation and maintenance.

W22 motors are supplied with efficiency levels exceeding the IE2, IE3 and IE4 minimum requirements, thus assuring even greater energy savings and reduced return on investment



## Versatility

The W22 concept permits the terminal box to be assembled on the top or either side of the motor. For frame sizes 225S/M to 355A/B, a top mounted terminal box can, with the use of an adaptor, be relocated to the left or right side without disassembly of the complete motor, thus reducing modification times and reducing inventories.



## Built to Last

W22 motors are constructed using high quality FC-200 (EN GJL 200) cast iron in WEG's own foundries, assuring maximum durability and high performance in arduous environments. Fan covers were designed to provide greater resistance to impacts, whilst the endshields were developed to maximise bearing heat dissipation.



## Inverter Duty Applications

The exclusive WISE® insulation system utilised on the W22 motor range increases the dielectric resistance of the windings, and extends the motor lifetime when operating with variable frequency drives (VFD) at voltages up to 575V.

*Special designs for voltages up to 690V are available upon request - please contact your nearest WEG sales office.*

# Product Overview

## Standard Features

- Efficiency levels: High Efficiency (IE2), Premium Efficiency (IE3), Super Premium Efficiency (IE4)
- Cooling method: TEFC (Totally enclosed fan cooled) - IC411
- Rated output: 0.12 to 500 kW
- Number of poles: 2, 4, 6 and 8
- Frame sizes: 63 up to 355A/B
- Frequency: 50 Hz and 60 Hz
- Voltage: 50 Hz: 220-240/380-415 V (up to 100L) 380-415/660 V (112M to 355A/B) 60 Hz: 220/380 V (up to frame size 100L) 380/660 V (112M to 355A/B)
- Color: RAL 5009 (IE2 and IE3) RAL 6002 (Super Premium Efficiency - IE4)
- Design N
- Service factor: 50 Hz: 1.00 60 Hz (IE2): 1.15 (63 up to 355M/L) / 1.00 (355A/B) 60 Hz (IE3): 1.25 (63 up to 315S/M) / 1.15 (315L and 355M/L) / 1.00 (355A/B)
- Ambient temperature: 40 °C, at 1000 m.a.s.l.
- Class "F" insulation ( $\Delta T=80$  K)
- Degree of protection: IP55
- Mounting: B3T
- Vibration level: Grade A
- Continuous duty: S1
- Thermistors (1 per phase) for frames 160M to 355A/B
- Squirrel cage rotor / Aluminium die cast
- Shaft seal: V-Ring seal for frames 63 to 200L WSeal® for frames 225S/M to 355A/B
- Stainless steel nameplate
- Fan cover: Steel for frames 63 to 132M/L Cast iron for frames 160M to 355A/B
- Grease nipple for frames 225S/M to 355A/B
- Metric threaded cable entries
- WISE® (WEG Insulation System Evolution)\*\*
- Insulated non-drive endshield for frames 315S/M to 355A/B

\* For further details regarding inverter operation, please contact WEG technical support.  
\*\* Suitable for VFD use up to 575V\*

## Optional Available

- Efficiency level: Standard Efficiency (IE1)
- Number of poles: 10 or 12, multi-speed
- Other mounting forms: Flange FF, C-DIN, NEMA C or D
- Other voltages
- Design H
- Class "H" insulation
- Vibration level: Grade B
- Suitable to SPM adaptors
- Degree of protection: IP56, IP65, IP66
- Bearing seals: Lip seal, Oil seal, Taconite labyrinth or W3 Seal®
- Space heaters
- Thermal protection: thermostats or RTD (Pt-100) in windings and bearings
- Additional terminal box for accessories
- Fans: aluminum, cast iron and bronze
- Canopy for vertical applications
- Non standard or double shaft extensions
- Stainless steel shaft
- Encoder
- Cable glands
- Cooling method: TEBC (Totally enclosed blower cooled) - IC 416
- Roller bearing (160M to 355A/B)
- Insulated non-drive endshield for frames 225S/M to 280S/M
- Special insulation for voltage above 575 V
- Insulated bearing / shaft grounding for frames 225S/M and above.



- Excellent cost versus benefit ratio
- Optimisation of environmental resources
- Updated electrical features
- Low noise levels
- Reduced vibration
- Easier maintenance
- Improved efficiency levels

For electrical and mechanical data, see on our website [www.weg.net](http://www.weg.net)

# Components Design

## Cooling System

### Fan Cover

- Aerodynamic concept
- Easier assembly
- Better air flow distribution over frame
- Increased mechanical strength
- Provisions for encoder and canopy

### Fan

- Reduction of fan blades
- Reinforced fan hub structure
- Noise level reduction
- Increased air flow

## Frame

- Terminal box positioned at DE to improve heat dissipation (frames 225S/M to 355A/B)
- Reduced winding and bearing temperatures

### Vibration Monitoring

- Flat areas at both ends for placement of accelerometers

### Eyebolts

- Safer and easier handling
- High mechanical resistance

### Solid Feet

- Higher resistance to impacts
- Suitable for applications with high vibration
- Easier installation and alignment

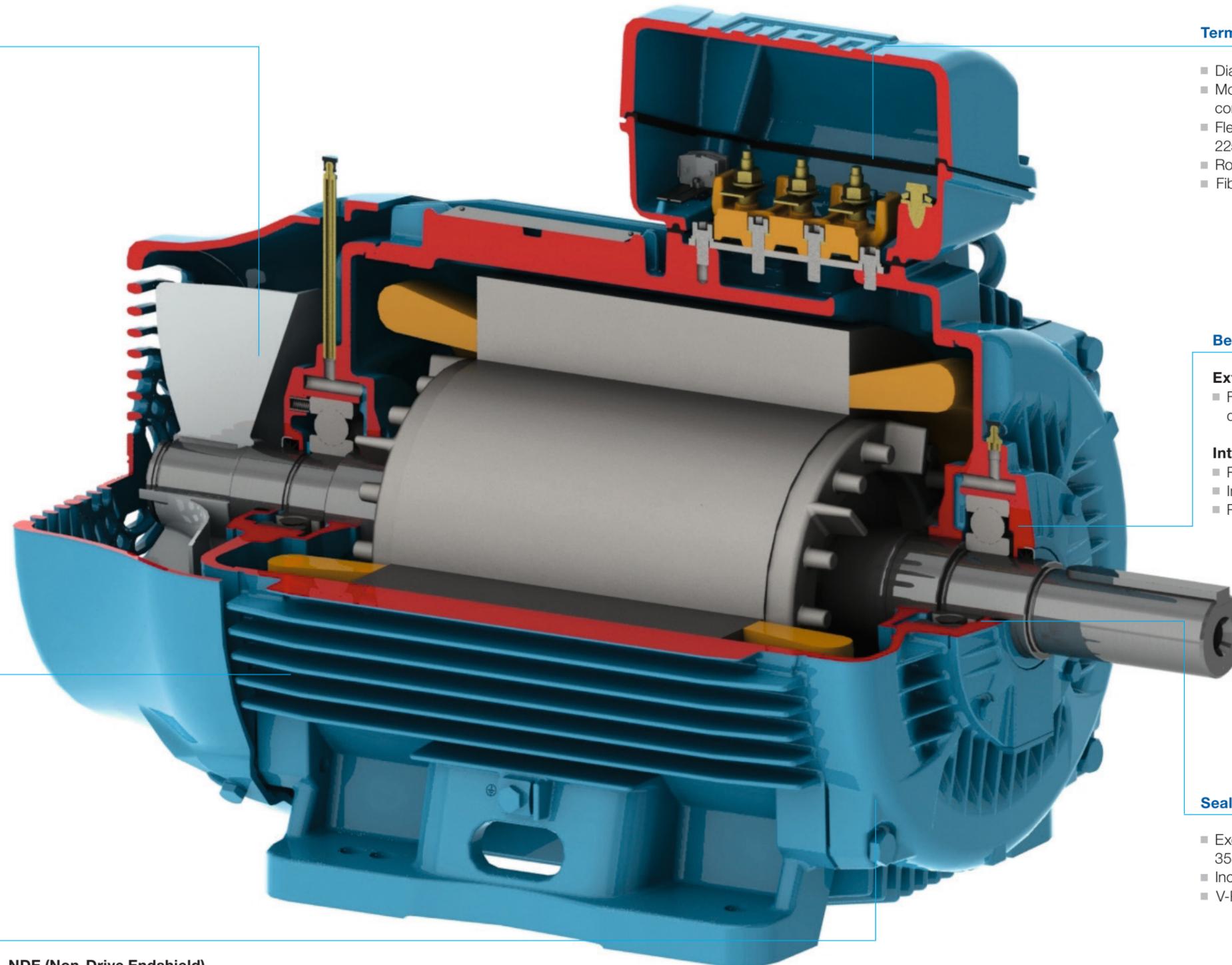
## Endshields Subsystem

### DE (Drive Endshield)

- Cooling fins for improved heat dissipation
- Reduced bearing operating temperature
- Reinforced endshield structure
- Bolt protection

### NDE (Non-Drive Endshield)

- Designed with smooth surface to improve airflow
- Noise level reduction
- Structure stiffening to avoid machining deformation



## Terminal Box

- Diagonally split for easier cable installation
- More space available for accessory connections
- Flexible mounting (B3T, B3R, B3L) for frames 225S/M to 355A/B
- Rotation 4 x 90°
- Fibre glass reinforced terminal block (BMC)

## Bearing Caps

### External

- Finned surface for improved bearing heat dissipation

### Internal

- Redesigned grease path
- Improvement in lubrication quality
- Reduced grease operating temperatures

## Sealing System

- Exclusive WSeal® for frame sizes 225S/M to 355A/B
- Increased dust and moisture protection
- V-Ring sealing for frames 63-200



## Design Details

### Cooling System

Designed to provide efficient airflow distribution across the motor frame, keeping operational temperatures low and assuring reliability and extended lifetime. The aerodynamic concept of the fan cover increases the effective airflow, and minimises recirculation losses between the fan and fan cover, whilst the robust design of the fan itself offers reduced noise levels. Motor terminal boxes (for frame sizes 225S/M to 355A/B) and eyebolts were repositioned in order to minimise obstructions and provide better airflow. This cooling system also contributes to:

- Cooler bearing temperatures resulting in extended relubrication intervals.
- Reduced noise levels fulfilling the most demanding Health & Safety regulations.
- Lower overall operating temperatures resulting in a more efficient material usage.

### Terminal Box

Increased internal volume and more accessible terminal blocks provide the user with safe and straightforward cable handling and connections. Diagonally split, the dimensions of the terminal boxes were designed to provide greater space for the incoming power and auxiliary supply cables, resulting in easier assembly.

For frame sizes 225S/M to 355A/B, the terminal box is located on top as standard, and can be mounted on the left or right side through modification using an adaptor.

### Frame

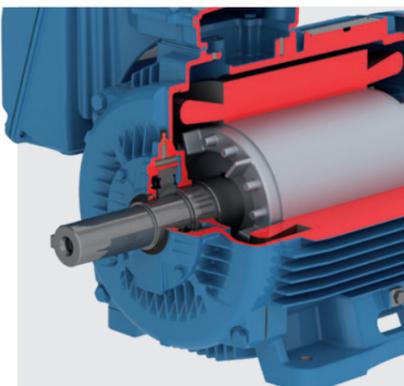
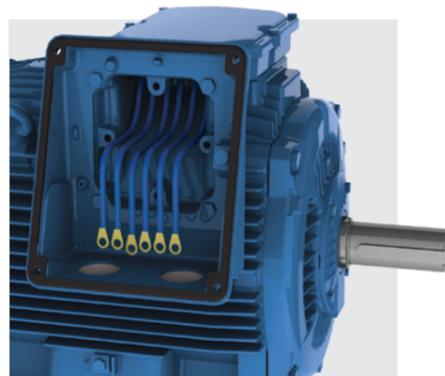
Motor feet are solid providing a more resistant structure against vibration. For frame sizes 160M to 355A/B, the frame design incorporates flat surfaces at the DE and NDE which can be used as points for applying hand held vibration detectors.

Benefits of the frame design:

- Reduced motor temperature
- Eyebolts positioned to provide safer and easier handling
- Simple and reliable vibration analysis
- Solid and integrated feet providing high mechanical stiffness particularly in heavy duty applications and also trouble free alignment during installation

### Bearing Sealing System WSeal®

Composed of a double lipped V-Ring with metallic cap, the WSeal® (fitted to motors in frame sizes 225S/M to 355A/B) protects the motor from contamination by the ingress of liquids and dusts, thus guaranteeing the correct degree of protection in aggressive environments.



## W22 Super Premium - IE4

Presenting the world's most comprehensive range of energy efficient induction motors, meeting the IE4 efficiency levels defined in IEC 60034-30-1:2014.

High overall performance which is translated into a lower Total Cost of Ownership, due to its reliability, easy maintenance and energy savings!

### Did you know?

The majority of electric motors consume the equivalent costs in energy to their initial purchase price in less than 6 months!



## Calculate your savings

$$\text{Energy Savings kW} = \frac{\text{Output}_{\text{old motor}}(\text{kW})}{\left(\frac{\text{Efficiency}_{\text{old motor}}(\%)}{100}\right)} - \frac{\text{Output}_{\text{Super Premium}}(\text{kW})}{\left(\frac{\text{Efficiency}_{\text{Super Premium}}(\%)}{100}\right)}$$

$$\text{Annual Energy Savings kWh} = \text{Energy Savings kW} \times \text{Operating days per year} \times \text{Operating hours per day}$$

$$\text{Annual Savings (€)} = \text{Annual Energy Savings kWh} \times \text{Energy Cost} \frac{\text{€}}{\text{kWh}}$$

For WEG's worldwide  
operations visit our website



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The values shown are subject to change without prior notice.

The information contained is reference values.