

W22

Three-Phase Electric Motors
High Efficiency IE3

**Technical Catalogue
Australia & New Zealand**

W22 Mining



W22 Industrial



W22

Much more **reliability, robustness,**
and **quality** for your industry.

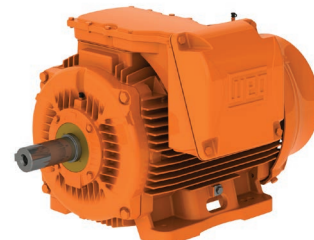




Line W22. High reliability for all applications.

WEG W22 line of electric motors reduces energy consumption, offers excellent cost effectiveness and, consequently, greater productivity and lower costs for the industry.

Available in different efficiency levels – IE1, IE2, IE3 and IE4 – the W22 low voltage motors meet the IE1, IE2 and IE3 efficiency levels according to IEC 60034-30-1:2014 standard.



Frames 63 to 132
Low Voltage

Frames 160 to 200
Low Voltage

Frames 225 to 355
Low Voltage

The **W22 IE3 Premium** can achieve one of the highest efficiency levels for a squirrel cage induction motor, ensuring savings and lower energy consumption.

It is the ideal solution to increase the competitiveness of industrial sites by replacing old motors with highly efficient motors.

Sustainability and reduction in carbon emissions

The use of more efficient electric motors is an extremely effective way to reduce electricity costs and, consequently, carbon emissions to the atmosphere. Visit our Payback Tool* and check out the potential for energy savings, reduction in CO₂ emissions and return on investment with the W22 IE3 Premium.

W22 IE3 Premium

More than offering greater reliability, simple maintenance, and lower overall cost of ownership, in addition to reducing energy consumption, noise and vibration levels, the WEG W22 IE3 Premium was designed to offer extremely high efficiency levels for many different industries, low operating cost and fast return on investment.

WEG has the most complete portfolio on the market, from the standard to the top efficiency levels, and services that make the difference for your business.

* Payback tool: https://ecatalog.weg.net/tec_cat/retornoinvestautomation.asp?cd_mercado=000U

Minimum Energy Performance Standards

With the advent of global climate changes, governments across the globe are seeking innovative ways to reduce energy consumption and forge a path towards sustainability. A significant percentage of the electrical energy utilised in facilities around the world is transformed by electric motors. Consequently, governments implemented Energy Efficiency Programs in order to enforce the use of high efficiency motors.

The Australian government legislated the Greenhouse and Energy Minimum Standard Act, establishing the minimum efficiency for three-phase electric motors.

The three-phase cage induction motor - Determination 2019 mandates the minimum efficiency levels as per IEC60034-30-1

Scope

The Scope covers single speed, three-phase, 50Hz, squirrel cage induction motors that:

- have 2 to 8 poles
- have a rated voltage up to 1,100V
- have a rated output P_N between 0.75kW and 160kW
- are rated on the basis of continuous duty operation

Rated Output kW	IE2 Test Method 2-1-1-B*				IE3 Test Method 2-1-1B*			
	POLE				POLE			
	2	4	6	8	2	4	6	8
0.73	77.4	79.6	75.9	66.2	80.7	82.5	78.9	75.0
0.75	77.4	79.6	75.9	66.2	80.7	82.5	78.9	75.0
1.1	79.6	81.4	78.1	70.8	82.7	84.1	81.0	77.7
1.5	81.3	82.8	79.8	74.1	84.2	85.3	82.5	79.7
2.2	83.2	84.3	81.8	77.6	85.9	86.7	84.3	81.9
3	84.6	85.5	83.3	80.0	87.1	87.7	85.6	83.5
4	85.8	86.6	84.6	81.9	88.1	88.6	86.8	84.8
5.5	87.0	87.7	86.0	83.8	89.2	89.6	88.0	86.2
7.5	88.1	88.7	87.2	85.3	90.1	90.4	89.1	87.3
11	89.4	89.8	88.7	86.9	91.2	91.4	90.3	88.6
15	90.3	90.6	89.7	88.0	91.9	92.1	91.2	89.6
18.5	90.9	91.2	90.4	88.6	92.4	92.6	91.7	90.1
22	91.3	91.6	90.9	89.1	92.7	93.0	92.2	90.6
30	92.0	92.3	91.7	89.8	93.3	93.6	92.9	91.3
37	92.5	92.7	92.2	90.3	93.7	93.9	93.3	91.8
45	92.9	93.1	92.7	90.7	94.0	94.2	93.7	92.2
55	93.2	93.5	93.1	91.0	94.3	94.6	94.1	92.5
75	93.8	94.0	93.7	91.6	94.7	95.0	94.6	93.1
90	94.1	94.2	94.0	91.9	95.0	95.2	94.9	93.4
110	94.3	94.5	94.3	92.3	95.2	95.4	95.1	93.7
132	94.6	94.7	94.6	92.6	95.4	95.6	95.4	94.0
160	94.8	94.9	94.8	93.0	95.6	95.8	95.6	94.3
185	95.0	95.1	94.9	93.3	95.7	95.9	95.7	94.5

Table 1 - Efficiency levels as per IEC 60034-30-1

Notes:

*Based on IEC 60034-2-1

**For intermediate values of rated output, the efficiency shall be determined by linear interpolation



Visual Index

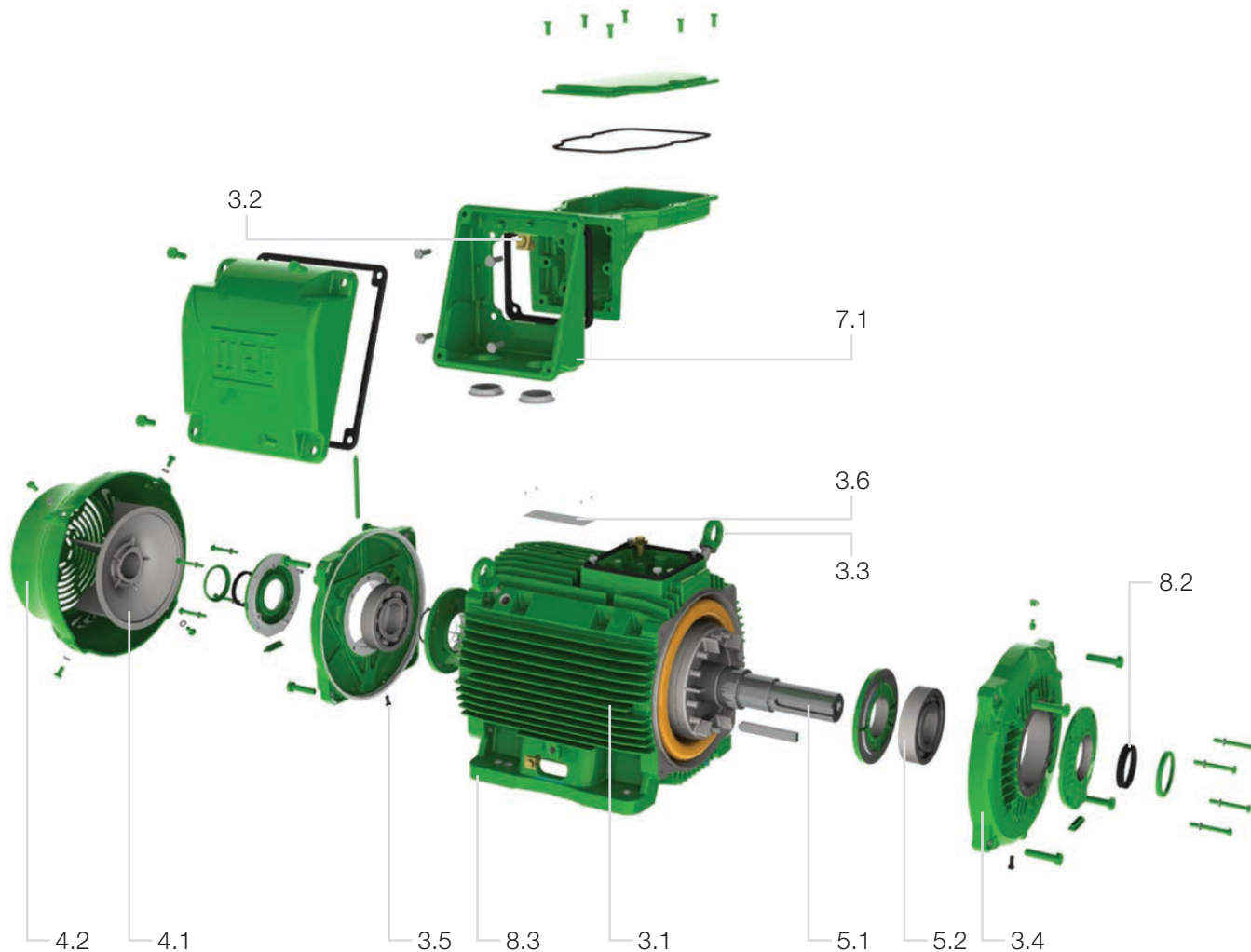


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1. Applicable Standards

W22 motors meet the requirements and regulations of latest version of the following Standards:

- AS 60034.1
Rotating electrical machines - Rating and Performance
- IEC 60034-2-1
Rotating electrical machines – Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)
- AS 60034.5
Rotating electrical machines - Degrees of protection provided by the integral design of rotating electrical machines (IP code) – Classification
- IEC 60034-6
Rotating electrical machines – Methods of cooling (IC code)
- AS 60034.7
Rotating electrical machines - Classification of types of construction, mounting arrangements and terminal box position (IM code)
- AS 60034.8
Rotating electrical machines - Terminal markings and direction of rotation
- AS 60034.9
Rotating electrical machines - Noise limits
- AS 60034.11
Rotating electrical machines - Thermal protection
- AS 60034.12
Rotating electrical machines - Starting performance of single-speed three-phase cage induction motors
- IEC 60034-14
Rotating electrical machines – Mechanical vibration of certain machines – Limits of vibration
- IEC 60034-30
Rotating electrical machines – Efficiency classes for single-speed three-phase cage induction motors
- IEC 60072-1
Dimensions and output series for rotating electrical machines – Frame numbers 56 to 400 and flange numbers 55 to 1080

For compliance with other standards or technical specifications, please contact WEG.

2. Construction details

The information included in this document refers to standard construction features and the most common variations for W22 motors. Where specified, some features may apply to a range of frame sizes, e.g. IEC 225S/M to 355M/L. Customised W22 motors for special applications are available on request. For more information, please contact your nearest WEG office or WEG business partner.

2.1 Frame



Figure 3 - W22 Frame

WEG motors are made of high grade cast iron material. There are basically three densities used in manufacturing electric motors: FC-100 (the industry standard), FC-150 and FC-200. **WEG uses exclusively FC-200, the same grade mandated by international standards for explosion proof motors,** providing high levels of mechanical strength, adequate for the most severe applications.

The frame was designed in such a way as to minimize air flow dispersion and improve heat dissipation (see figure 4) resulting in less hot spots on the frame and longer bearing lubrication intervals.

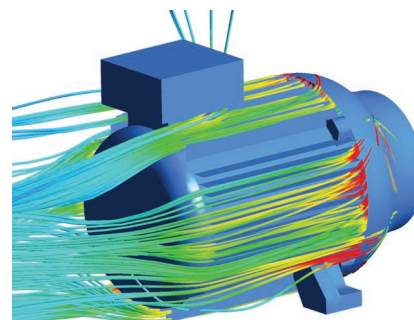


Figure 4 - Air flow demonstration for W22 motors.

The cooling fins have been designed to avoid accumulation of liquids and solid particles over the motor. The motor feet are completely solid for enhanced mechanical strength and easy alignment and installation.

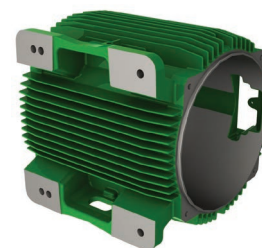


Figure 5 - Solid feet

To facilitate condition monitoring, frames 225 to 355 have been designed with flat areas on both ends for better placement of accelerometers. These are available in both vertical and horizontal planes (figure 6). In addition, mining motors have SPM mounting studs in frames 160 to 355 (figure 7).

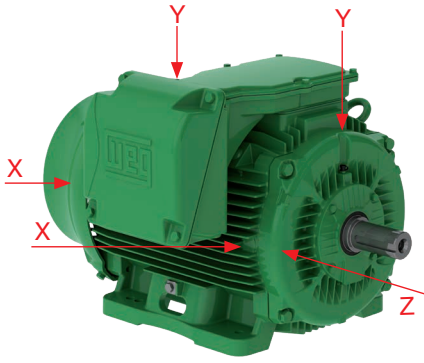


Figure 6 - Flat surfaces for vibration checking on the DE side (frames 225 to 355)

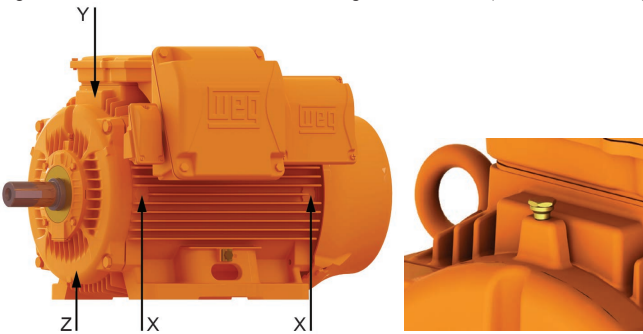


Figure 7 - Flat surfaces for vibration checking (frames 225 to 355)

2.2 Earth terminals

All frames from 63 to 355A/B are provided with an earth terminal located inside the terminal box (see figure 7). Motors on frames 225S/M to 355A/B and W22 IE3 Premium Efficiency motors in all frames are also fitted with an earth terminal on the frame. It is located on the same side of the main terminal box cable entry (see figure 7) and is responsible to equalize electrical potential and provide greater safety for operators. Capable of terminating cables from 25 mm² to 185 mm².

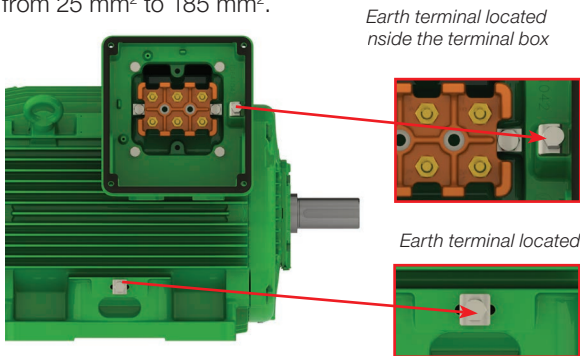


Figure 7 - Earth terminal inside the terminal box and on the frame

Optionally, an external earth terminal can be provided for motors in frame sizes 63 to 200, and, for frame sizes 80 to 355A/B a second external earth terminal as indicated in figure 8.

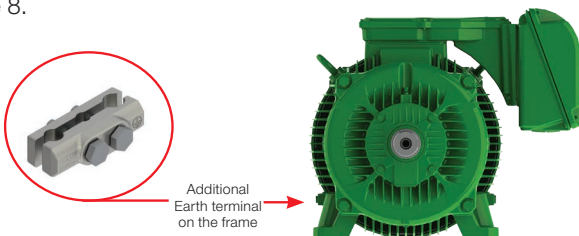


Figure 8 - Additional earth terminal position on the frame.

2.3 Eyebolts

Eyebolts are provided as standard from frame size 100L and above and have been designed so as not to interfere with the motor's IP66 rating. The W22 frame, version B3, is fitted with two eyebolts for lifting on its uppermost face. These have been designed not to interfere with the air flow. The position of the eyebolts is shown in table 4.

Number of eyebolts	Description
1	Frames 100L to 200L Motors with feet and with side mounted terminal box
2	Frames 100L to 200L Motors with feet and with top mounted terminal box
2	Frames 100L to 200L – Motors without feet and with C or FF flange
2	Frames 225S/M to 355 – Motors with feet and side or top mounted terminal box. These motors have four threaded holes in the upper part of the frame for fastening of the eyebolts (figure 10)
2	Frames 225S/M to 355 – Motors without feet and with C or FF flange. These motors have four threaded holes in the upper part of the frame for fastening of the eyebolts and two more threaded holes in the bottom part

Table 4 - Eyebolts

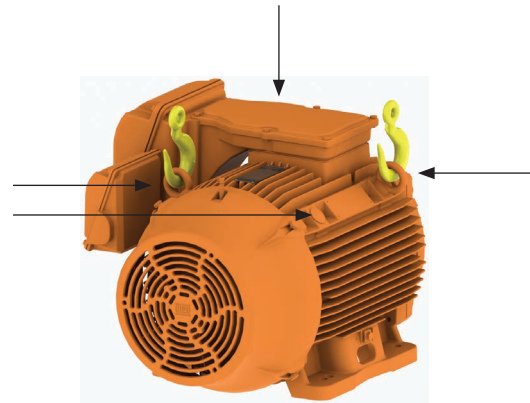


Figure 10 - Fastening locations for the eyebolts

2.4 Endshields

The drive endshield is designed with fins and reinforced structure for better heat dissipation and to ensure low bearing operating temperatures. This results in extended lubrication intervals and subsequently lower on-going costs.

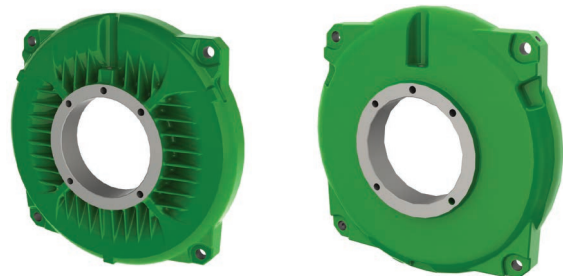


Figure 11 - Drive and non-drive endshields

2.5 Drain plugs

All endshields have been designed with drain holes to allow drainage of condensed water. Drain holes are fitted with rubber plugs and comply with IP55 degree of protection in conformance with IEC 60034-5 (when opened). The same plugs can also be closed to ensure a higher IP66 degree of protection.

These plugs leave the factory in the closed position and must be opened periodically to allow drainage of condensed water. Drain plugs in frames 63 to 132 are of the automatic type and made of plastic. Alternatively, porous drain plugs are available.

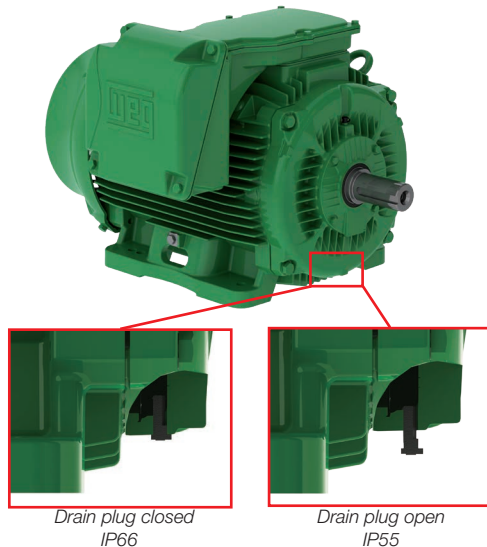


Figure 13 - Detail of the drain plug position on the drive endshield (frames 160-355)

2.6 Nameplate

The nameplate contains complete information on motor construction and performance characteristics. It is made of stainless steel AISI 304 as shown in figure 14.

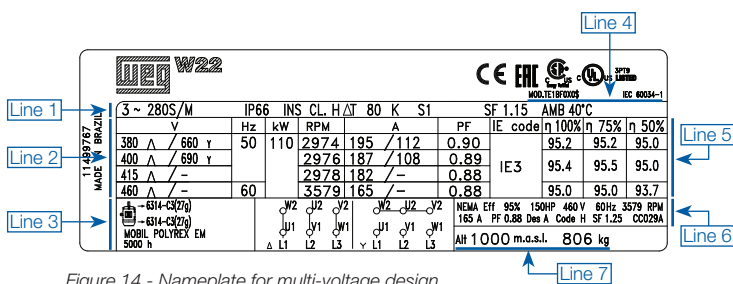


Figure 14 - Nameplate for multi-voltage design

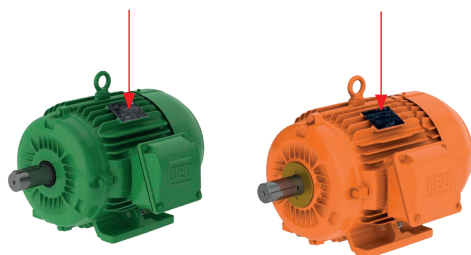


Figure 15 - Nameplate for multi-voltage design.

Line 1:

~	AC
3	Three phase
280S/M	Frame size
IP66	Degree of protection
INS. CL.	Insulation class: H
Δt	Temperature rise: ≤ 80 K
S1	Duty
SF	Service factor
Amb 40	Ambient temperature

Line 2:

V	Rated operating voltage
Hz	Frequency
kW	Motor rated power
RPM	Motor rated speed RPM
A	Rated operating current
PF	Power factor
IE code	Efficiency levels

Line 3:

6314-C3	Non-drive end bearing specification
6314-C3	Drive end bearing specification
MOBIL POLYREX EM	103 Type of grease
27 g 1400 hrs	Amount of grease (g) and re-lubrication interval in hours (hrs)
Δ	Connection diagram for rated voltage of 380, 400, 415, 440, 460 V
Y	Connection diagram for 690 V
Alt	Altitude: 1000 m.a.s.l.
WEIGHT	Motor weight: 806 kg

Line 4:

Manufacturing date, serial number & IEC standard

Line 5:

Efficiency Level at 100%, 75% & 50%

Line 6:

Motor details

Line 7:

Alt	Altitude: 1000 m.a.s.l.
WEIGHT	Motor weight: 806 kg

3. Cooling System / Noise Level / Vibration Level / Impact Resistance

3.1 Cooling system

W22 motors are totally enclosed fan cooled (IC411), as per IEC 60034-6. Other versions such as non-ventilated (TENV), air over (TEAO) or forced ventilated TEFV (IC416) are available on request. More information about IC416 option can be found in chapter 14, which describes operation with variable frequency drives.

Fans are bidirectional and made of polypropylene (W22 Industrial) or cast iron (W22 mining range), as per table 5.

	Pole	Fan Material		
		63-315S/M	315L-355M/L	355A/B
W22 General Purpose	2	Plastic	Plastic	Aluminium
	4		Aluminium	
	6	Plastic	Aluminium	
	8			
W22 Mining	2-8 pole	FC-200 Cast Iron		

Table 5 - Fan material

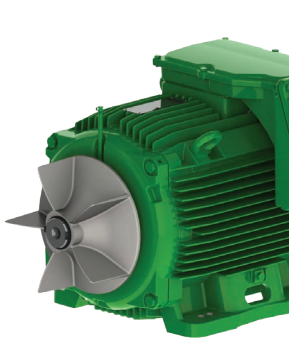


Figure 16 - Cooling system

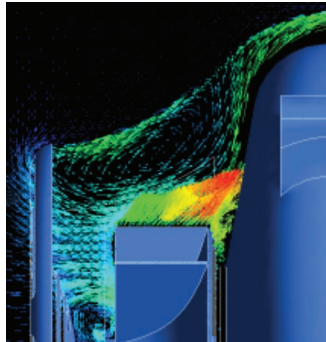


Figure 17 - Cooling system operation

The cooling system (fan, non drive endshield and fan cover) was designed to minimize the noise level and improve thermal efficiency.

3.2 Fan cover

Made of FC-200 cast iron or pressed steel, the fan cover has an aerodynamic design, which results in a significant reduction of noise level and optimized air flow for improved heat dissipation (see figure 18).



Figure 18 - Fan cover

Patented Design

- Benefits:**
- Superior mechanical rigidity
 - Corrosion-resistant
 - Low noise operation

Frames	Fan Cover Material		
	63 - 80	90 - 132	160 - 355
W22 Industrial	Steel	Steel	Cast Iron
W22 Mining	Steel	Cast Iron	Cast Iron

Table 6 - Fan cowl material

3.3 Impact resistance

W22 motors with cast iron fan cover comply with impact level IK08 – mechanical impact of 5J as per EN 50102 (Degree of protection provided by enclosures for electrical equipment against external mechanical impacts IK code), ensuring superior mechanical strength for the most demanding applications.

3.4 Noise level

W22 motors comply with AS 60034.9 Standard and its corresponding sound pressure levels. Tables 7 and 8 show sound pressure levels, in dB(A), obtained from tests at 50 and 60 Hz.

Frame	IEC 50 Hz			
	Sound pressure level - dB(A)			
	2 Poles	4 Poles	6 Poles	8 Poles
63	52	44	43	-
71	56	43	43	41
80	59	44	43	42
90	62	49	45	43
100	67	53	44	50
112	64	56	48	46
132	67	56	52	48
160	67	61	56	51
180	67	61	56	51
200	69	63	60	53
225	74	63	61	56
250	74	64	61	56
280	77	69	65	59
315S/M	77	71	67	61
315 L	78	73	68	61
355M/L	80	74	73	70

Table 7 - Sound pressure levels for 50Hz motors, tested as per AS 60034.9.

Frame	IEC 60 Hz			
	Sound pressure level - dB(A)			
	2 Poles	4 Poles	6 Poles	8 Poles
63	56	48	47	-
71	60	47	47	45
80	62	48	47	46
90	68	51	49	47
100	71	54	48	54
112	69	58	52	50
132	72	61	55	52
160	72	64	59	54
180	72	64	59	54
200	74	66	62	56
225	79	67	64	60
250	79	68	64	60
280	81	73	69	63
315S/M	81	75	70	64
315 L	82	77	71	64
355M/L	84	78	77	75

Table 8 - Sound pressure levels for 60Hz motors.

The noise level figures shown in tables 7 and 8 are taken at no load. Under load AS 60034.9 standard estimates an increase in the sound pressure levels as shown in table 9.

Frame (mm)	2 poles	4 poles	6 poles	8 poles
90 ≤ H ≤ 160	2	5	7	8
180 ≤ H ≤ 200	2	4	6	7
225 ≤ H ≤ 280	2	3	6	7
H = 315	2	3	5	6
H ≥ 355	2	2	4	5

Table 9 - Maximum expected increase in sound pressure level for motors at full load.

Noise levels can be further reduced by up to 2 dB(A) with the installation of a rainhood/canopy.

3.5 Vibration level

W22 motors are dynamically balanced with half key to Grade A as per IEC 60034-14 standard. As an option, motors can be supplied in conformance with Grade B. The RMS vibration levels in mm/s of Grades A and B are shown in table 10.

	Frame	56 ≤ H ≤ 132	132 < H ≤ 280	H > 280
	Assembly	Vibration level RMS (mm/s)	Vibration level RMS (mm/s)	Vibration level RMS (mm/s)
Grade A	Free suspension	1.6	2.2	2.8
Grade B	Free suspension	0.7	1.1	1.8

Table 10 - Maximum vibration levels.

4. Shaft / Bearings / Thrusts

4.1 Shaft

The shaft of W22 Industrial motors is made of AISI 1040/45 Steel or AISI 4140 (355 frame). When supplied with roller bearings (factory ordered), the shaft material is AISI 4140.

All W22 **Mining motors** in frames 225 to 355 **have high tensile AISI 4140 shaft** by default.

Shafts are supplied with open profile keyway (type B) and with dimensions shown in section 16 – Mechanical data.

Standard Shaft Material			
Frames	63 - 200	225 - 315	355
W22 Industrial	1040 / 1045	1040 / 1045	4140
W22 Mining	1040 / 1045	4140	4140

Table 11 - Shaft material

4.2 Bearings

W22 Industrial motors are supplied with ball bearings in all frames.



Figure 19 - Bearing View

W22 mining motors, in frames 225 to 355, have roller bearings, making them suitable for heavy duty applications including pulley and belts. Information about maximum allowable radial and axial loads on shaft ends is given in tables 14, 15 and 16.

D.E. Bearing		
Frames	63 - 200	225 - 355
W22 Industrial	Ball Bearing	Ball Bearing
W22 Mining	Ball Bearing	Roller Bearing *

Table 12

*Excluding 2 pole motors which are supplied with ball bearings.

Bearing life L10 is as described in tables 14, 15 and 16. When direct coupled to the load (without axial or radial thrusts), the L10 bearing life exceeds 100,000 hours.

Note: The radial force value Fr can be inferred from information in catalogues of pulley/belt manufacturers. When this information is not available, the force Fr under operation can be calculated based on the output power, coupling design characteristics and application.

$$Fr = \frac{19.1 \times 10^6 \times P_n}{n_n \times dp} \times ka \text{ (N)}$$

Where:

Fr is the radial force exerted by the pulley and belt coupling [N];

P_n is the motor rated power [kW];

n_n is the motor rated speed [rpm];

dp is the pitch diameter of the driven pulley [mm];

ka is a factor that depends on the extent of pulley elongation and type of application.

Groups and Basic Types of Application		ka Factor of the application	
		V-Belts	Plain Belts
1	(Fans and Blowers. Centrifugal Pumps. Winding machines. Compressors. Machine tools) with outputs up to 30 HP (22 kW)	2.0	3.1
2	(Fans and Blowers, Centrifugal Pumps, Winding machines, Compressors, Machine tools) with outputs higher than 30 HP (22 kW), Mixers, Plungers, Printer Machines.	2.4	3.3
3	Presses, vibrating screens, Piston and screw compressor, pulverisers, helicoidal conveyors, woodworking machines, Textile machines, Kneading machines, Ceramic machines, Pulp and paper industrial grinders.	2.7	3.4
4	Overhead cranes, Hammer mills, Metal laminators, Conveyors, Gyrotory Crushers, Jaw Crusher, Cone Crushers, Cage Mills, Ball Mills, Rubber Mixers, Mining machines, Shredders.	3.0	3.7

Table 13 - ka factor

Bearing life depends upon several factors such as on the type and size of the bearing, on the radial and axial mechanical loads applied to the bearing, on the operating conditions (ambient temperature), on the quality and amount of grease, the speed at which the bearing is used, and the maintenance and re-lubrication procedures in place.

W22 motors (frames 160 to 355) are supplied with greasing system on drive end and non-drive end shields for in service bearing lubrication. The quantity of grease to be used and lubrication intervals are given on the nameplate; they are also shown in tables 17 and 18.

Note: Excessive amount of grease can increase bearing temperature and consequently reduce bearing life.

When fitted with ball bearings, the drive end bearing is located axially and the non-drive end bearing is fitted with pre-loading springs. When supplied with roller bearing, the non-drive end bearing is located and the thermal expansion takes place within the axial clearance of the drive end roller bearing.

Notes:

1 - Special applications

Non-standard motor operation such as low/high ambient temperatures, high altitude, high axial or radial loads require specific lubrication measures and different lubrication intervals from those provided in the tables included in this technical catalogue.

2 - Roller bearings

Roller bearings require a minimum radial load to ensure correct operation. They are not suitable for direct coupling arrangements or for 2 pole motors.

3 - VSD driven motors

Bearing life may be reduced when a motor is driven by frequency drive above its rated speed. Speed itself is one of the factors taken into consideration when determining bearing life. Bearing insulation may be needed, please refer to item 14.5 for more information.

4 - Motors with modified mounting configurations

For motors supplied for horizontal mounting but installed vertically, lubrication intervals must be reduced by half.

5 - Figures for radial thrusts

The figures given in the tables below for radial thrusts take into consideration the point where the load is applied which is on the centre of the shaft end length (L/2), or on the very end of the shaft end (L)

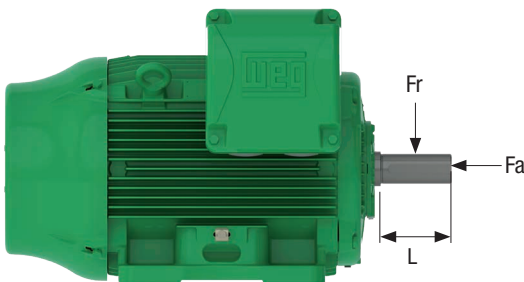


Figure 20 - Radial and axial thrust on motor shaft

4.3 Thrusts

Radial thrust - Ball bearing on drive end

Maximum permissible radial thrust - 50 Hz - Fr in (kN) L10 ≥ 20,000 hours								
Frame	2 poles		4 poles		6 poles		8 poles	
	L	L/2	L	L/2	L	L/2	L	L/2
63	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3
71	0.5	0.5	0.6	0.5	0.6	0.5	0.7	0.6
80	0.6	0.6	0.7	0.7	0.8	0.7	1.0	0.8
90	0.7	0.6	0.8	0.7	0.9	0.8	1.0	0.9
100	0.9	1.0	1.0	1.1	1.2	1.3	1.3	1.4
112	1.2	1.3	1.4	1.5	1.6	1.8	1.7	1.9
132	1.8	2.0	2.2	2.4	2.4	2.7	2.6	2.9
160	2.3	2.6	2.6	2.9	2.7	3.3	2.7	3.7
180	3.1	3.5	3.6	4.0	4.2	4.7	4.2	5.2
200	3.7	4.0	4.2	4.7	4.9	5.4	5.7	6.2
225	5.1	5.5	5.2	6.3	5.3	7.0	5.7	8.1
250	4.9	5.3	5.2	5.7	6.5	7.1	6.0	8.2
280	5.0	5.4	6.7	7.2	7.8	8.4	8.7	9.4
315S/M	4.3	4.7	7.0	7.7	8.1	8.8	9.0	9.8
315 L	4.6	5.0	4.0	7.3	6.2	8.2	9.1	9.8
355M/L	4.8	5.1	8.5	9.3	9.6	10.4	11.6	12.6

Table 14.1 - Maximum permissible radial thrusts for ball bearings

Radial thrust - Ball bearing on drive end

Maximum permissible radial thrust - 50 Hz - Fr in (kN) L10 ≥ 40,000 hours								
Frame	2 poles		4 poles		6 poles		8 poles	
	L	L/2	L	L/2	L	L/2	L	L/2
63	0.2	0.2	0.3	0.3	0.4	0.3	0.4	0.3
71	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.5
80	0.5	0.5	0.6	0.5	0.6	0.6	0.7	0.7
90	0.5	0.5	0.6	0.5	0.7	0.6	0.8	0.7
100	0.7	0.7	0.7	0.8	0.9	1.0	1.0	1.1
112	0.9	1.0	1.0	1.1	1.2	1.4	1.3	1.4
132	1.4	1.6	1.6	1.8	1.8	2.0	2.0	2.2
160	1.8	2.0	1.9	2.1	2.2	2.4	2.5	2.7
180	2.4	2.7	2.7	3.0	3.2	3.5	3.6	3.9
200	2.8	3.0	3.2	3.5	3.7	4.0	4.3	4.7
225	3.9	4.3	4.3	4.7	4.7	5.2	5.6	6.2
250	3.7	4.1	3.8	4.2	4.9	5.4	5.7	6.3
280	3.8	4.1	4.9	5.4	5.8	6.3	6.5	7.0
315S/M	3.1	3.4	4.9	5.4	5.7	6.2	6.3	6.9
315 L	3.4	3.6	4.0	4.9	5.1	5.5	6.4	6.9
355M/L	3.3	3.6	5.8	6.3	6.5	7.1	8.2	8.9

Table 14.2 - Maximum permissible radial thrusts for ball bearings

Radial thrust - Roller bearing on drive end

Maximum permissible radial thrust - 50 Hz - Fr in (kN) L10 ≥ 40,000 hours						
Frame	4 poles		6 poles		8 poles	
	L/2	L	L/2	L	L/2	L
160	5	3.2	5.1	3.3	5.1	3.3
180	8.8	5.5	8.8	5.6	8.8	5.6
200	11.2	7.3	11.2	7.4	11.3	7.4
225S/M	12.9	7.6	12.9	7.6	13	7.8
250S/M	20.9	12.9	22.8	13	25.2	13.1
280S/M	25.4	14	27.5	14.2	27.5	14.3
315S/M	25.4	15.3	27.4	15.4	27.6	16.2
315 L	25.2	13	26.1	12.5	27	14.7
355M/L	34	17.3	33.5	16.4	33.5	16.1
355A/B	31.4	14.9	35.4	12	28.4	13.5

Table 15 - Maximum permissible radial thrusts for roller bearings

Note: the figures given for roller bearings take into consideration shaft supplied with steel AISI 4140

Axial thrust - Ball bearing on drive end

Maximum permissible axial thrust - 50 Hz - Fa in (kN) - L10 ≥ 20,000 hours							
Frame	Poles	Horizontal		Vertical with shaft upwards		Vertical with shaft downwards	
		Pushing	Pulling	Pushing	Pulling	Pushing	Pulling
63	2	0.2	0.2	0.2	0.2	0.2	0.2
	4	0.3	0.3	0.3	0.3	0.3	0.3
	6	0.3	0.4	0.3	0.4	0.4	0.3
	8	0.3	0.4	0.3	0.4	0.4	0.3
71	2	0.2	0.3	0.2	0.3	0.2	0.3
	4	0.3	0.4	0.3	0.4	0.3	0.4
	6	0.4	0.5	0.4	0.5	0.4	0.5
	8	0.5	0.6	0.4	0.6	0.5	0.6
80	2	0.3	0.4	0.3	0.4	0.3	0.4
	4	0.4	0.6	0.3	0.6	0.4	0.5
	6	0.5	0.7	0.4	0.7	0.5	0.7
	8	0.6	0.8	0.5	0.9	0.6	0.8
90	2	0.4	0.4	0.3	0.5	0.4	0.4
	4	0.5	0.6	0.5	0.7	0.5	0.6
	6	0.6	0.7	0.6	0.8	0.6	0.7
	8	0.8	0.9	0.7	0.9	0.8	0.8
100	2	0.4	0.6	0.3	0.7	0.4	0.6
	4	0.5	0.8	0.4	0.9	0.5	0.8
	6	0.7	1.0	0.6	1.1	0.7	1.0
	8	0.8	1.2	0.7	1.3	0.8	1.1
112	2	0.5	0.8	0.5	0.9	0.6	0.7
	4	0.7	1.1	0.7	1.2	0.8	1.0
	6	1.0	1.4	0.9	1.5	1.0	1.3
	8	1.1	1.5	1.0	1.7	1.1	1.4
132	2	0.7	1.3	0.6	1.5	0.8	1.2
	4	1.0	1.8	0.8	2.1	1.0	1.7
	6	1.2	2.2	1.1	2.5	1.3	2.1
	8	1.4	2.5	1.2	2.8	1.4	2.3
160	2	2.4	1.7	0.2	2.1	2.8	1.5
	4	3.0	2.3	2.7	2.7	3.4	2.0
	6	3.4	2.7	3.1	3.3	4.0	2.4
	8	3.9	3.2	3.6	3.7	4.4	2.9
180	2	3.2	2.3	2.9	2.8	3.7	2.0
	4	3.9	3.0	3.6	3.7	4.6	2.7
	6	4.7	3.8	4.2	4.5	5.3	3.3
	8	5.2	4.4	4.8	5.1	6.0	3.9
200	2	3.6	2.6	3.1	3.3	4.3	2.1
	4	4.5	3.5	4.0	4.3	5.3	3.0
	6	5.2	4.2	4.7	5.1	6.1	3.7
	8	6.0	5.0	5.5	5.9	6.9	4.5
225	2	4.6	3.8	3.8	4.9	5.7	3.1
	4	5.8	5.0	5.0	6.3	7.1	4.2
	6	6.7	5.9	5.7	7.6	8.4	4.9
	8	7.8	7.0	6.9	8.5	9.3	6.1
250	2	4.5	3.7	3.7	4.9	5.6	3.0
	4	5.4	4.7	4.2	6.6	7.4	3.4
	6	6.8	6.0	5.4	8.0	8.8	4.6
	8	7.8	7.1	6.6	8.9	9.7	5.9
280	2	4.4	3.7	3.2	5.4	6.2	2.4
	4	6.3	5.5	4.6	8.0	8.8	3.9
	6	7.6	6.8	5.8	9.4	10.2	5.0
	8	8.5	7.8	6.6	10.6	11.4	5.8
315S/M	2	4.1	3.3	2.4	5.9	6.7	1.6
	4	6.8	6.0	4.3	10.0	10.7	3.5
	6	8.0	7.2	5.2	11.9	12.7	4.5
	8	9.1	8.3	6.2	13.2	14.0	5.5
315 L	2	3.0	2.2	1.1	5.0	5.7	0.4
	4	4.5	3.7	1.4	8.2	8.9	0.6
	6	5.2	4.4	1.9	9.5	10.3	1.2
	8	6.3	5.5	3.4	10.0	10.8	2.6
355M/L	2	4.4	3.7	1.1	8.8	9.5	0.3
	4	7.7	7.0	3.2	13.9	14.7	2.5
	6	9.1	8.4	4.7	15.3	16.0	3.9
	8	10.9	10.2	6.4	17.2	17.9	5.7

Table 16.1 - Maximum permissible axial thrusts for ball bearings.
Higher thrust levels can be achieved with thrust bearings.

Axial thrust - Ball bearings

Maximum permissible axial thrust - 50 Hz - Fa in (kN) - L10 ≥ 40,000 hours							
Frame	Poles	Horizontal		Vertical with shaft upwards		Vertical with shaft downwards	
		Pushing	Pulling	Pushing	Pulling	Pushing	Pulling
63	2	0.1	0.1	0.1	0.1	0.1	0.1
	4	0.2	0.2	0.2	0.2	0.2	0.2
	6	0.2	0.2	0.2	0.2	0.2	0.2
	8	0.2	0.2	0.2	0.2	0.2	0.2
71	2	0.1	0.2	0.1	0.2	0.1	0.2
	4	0.2	0.3	0.2	0.3	0.2	0.2
	6	0.2	0.3	0.2	0.3	0.2	0.3
	8	0.3	0.4	0.3	0.4	0.3	0.4
80	2	0.2	0.3	0.1	0.3	0.2	0.3
	4	0.2	0.4	0.2	0.4	0.2	0.3
	6	0.3	0.5	0.3	0.5	0.3	0.4
	8	0.4	0.6	0.3	0.6	0.4	0.5
90	2	0.2	0.3	0.2	0.3	0.2	0.2
	4	0.3	0.4	0.3	0.4	0.3	0.3
	6	0.4	0.5	0.4	0.5	0.4	0.4
	8	0.5	0.6	0.5	0.6	0.5	0.5
100	2	0.2	0.4	0.2	0.4	0.2	0.3
	4	0.3	0.5	0.2	0.6	0.3	0.5
	6	0.4	0.7	0.3	0.8	0.4	0.6
	8	0.5	0.8	0.4	0.9	0.5	0.7
112	2	0.3	0.5	0.3	0.6	0.3	0.4
	4	0.4	0.7	0.4	0.8	0.5	0.6
	6	0.6	0.9	0.5	1.1	0.6	0.8
	8	0.7	1.0	0.6	1.2	0.7	0.9
132	2	0.4	0.9	0.3	1.1	0.5	0.8
	4	0.6	1.2	0.5	1.4	0.6	1.1
	6	0.8	1.5	0.6	1.8	0.8	1.3
	8	0.9	1.7	0.7	2.0	0.9	1.5
160	2	1.8	1.1	1.6	1.5	2.2	0.9
	4	2.2	1.5	1.9	1.9	2.6	1.2
	6	2.5	1.8	2.2	2.3	3.1	1.5
	8	2.9	2.2	2.5	2.7	3.4	1.8
180	2	2.4	1.5	2.1	2.0	2.9	1.2
	4	2.9	2.0	2.5	2.6	3.5	1.6
	6	3.4	2.5	3.0	3.2	4.1	2.1
	8	3.9	3.0	3.5	3.7	4.6	2.6
200	2	2.7	1.7	2.2	2.4	3.4	1.2
	4	3.3	2.3	2.8	3.1	4.1	1.8
	6	3.8	2.8	3.3	3.8	4.8	2.3
	8	4.4	3.4	3.9	4.3	5.3	2.9
225	2	3.4	2.6	2.7	3.7	4.5	1.9
	4	4.2	3.5	3.4	4.7	5.5	2.6
	6	4.8	4.0	3.8	5.7	6.5	3.0
	8	5.7	4.9	4.8	6.4	7.1	4.1
250	2	3.4	2.5	2.5	3.7	4.5	1.8
	4	3.9	3.1	2.6	5.0	5.9	1.8
	6	4.9	4.1	3.6	6.2	7.0	2.8
	8	5.8	4.9	4.5	6.8	7.6	3.8
280	2	3.3	2.5	2.0	4.3	5.1	1.2
	4	4.6	3.8	2.9	6.2	7.0	2.1
	6	5.4	4.7	3.6	7.3	8.0	2.8
	8	6.1	5.4	4.2	8.2	9.0	3.4
315	2	2.9	2.2	1.2	4.8	5.5	0.4
	4	4.7	4.0	2.2	7.9	8.6	1.4
	6	5.6	4.8	2.8	9.4	10.2	2.0
	8	6.4	5.6	3.4	10.4	11.2	2.6
315 L	2	3.0	2.2	1.1	5.0	5.7	0.4
	4	4.5	3.7	1.4	8.2	8.9	0.6
	6	5.2	4.4	1.9	9.5	10.3	1.2
	8	6.3	5.5	3.4	10.0	10.8	2.6
355M/L	2	3.1	2.4	0.6	6.7	7.5	0.2
	4	5.5	4.7	1.9	1.1	11.6	1.2
	6	6.3	5.6	2.8	11.8	12.7	2.0
	8	7.6	6.8	3.8	13.2	13.7	2.9

Table 16.2 - Maximum permissible axial thrusts for ball bearings.
Higher thrust levels can be achieved with thrust bearings.

Lubrication intervals - Horizontal mounting

Frame	Poles	Bearing	Lubrication intervals (hours)	
			50 Hz	60 Hz
160	2	6309	22,000	20,000
	4		25,000	25,000
	6			
	8			
180	2	6311	17,000	14,000
	4		25,000	25,000
	6			
	8			
200	2	6312	15,000	12,000
	4		25,000	25,000
	6			
	8			
225	2	6314	5,000	4,000
	4		14,000	12,000
	6			
	8			
250	2	6314	5,000	4,000
	4		14,000	12,000
	6			
	8			
280	2	6314	5,000	4,000
	4	6316	13,000	10,000
	6			
	8			
315	2	6314	5,000	4,000
	4	6319	11,000	8,000
	6			
	8			
355	2	6314	5,000	4,000
	4	6316	4,000	N/A
	6	6322	9,000	6,000
	8			

Table 17 - Lubrication intervals for ball bearings at 70°C

Lubrication intervals - Horizontal mounting

Frame	Poles	Bearing	Lubrication intervals (hours)	
			50 Hz	60 Hz
160	4	NU309	25,000	25,000
	6			
	8			
180	4	NU311	25,000	25,000
	6			
	8			
200	4	NU312	25,000	21,000
	8			25,000
	225		4	NU314
6		16,000	13,000	
8		20,000	19,000	
250	4	NU314	11,000	9,000
	6		16,000	13,000
	8		20,000	19,000
280	4	NU316	9,000	7,000
	6		14,000	12,000
	8		19,000	17,000
315	4	NU319	7,000	5,000
	6		12,000	9,000
	8		17,000	15,000
355	4	NU322	5,000	4,000
	6		9,000	7,000
	8		14,000	13,000

Table 18 - Lubrication intervals for roller bearings at 70°C

Note 1 - This bearing must not operate in 2 pole motors at 60 Hz speed
 2 - Halve lubrication interval for vertical mounting
 3 - Halve lubrication interval for each 15°C above 70°C

Bearing monitoring

Optionally, bearing temperature detectors can be installed for condition monitoring. The most commonly used is the PT-100 (RTD), which is recommended for critical applications, for temperature affects re-greasing intervals and bearing life.

5. Mounting

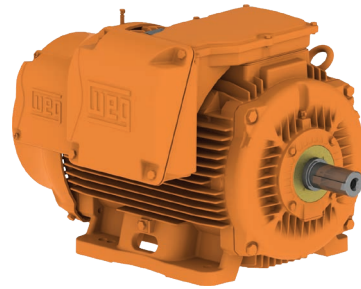


Figure 21 - Mounting

The mounting configuration complies with IEC 60034-7. Standard mountings and their variations are shown in figure 22. A number code is used to define the mounting and terminal box position. The terminal box position is defined as viewed from the motor drive end shaft.

- B3R Terminal box on right side of the frame viewing the motor from D.E.
- B3L Terminal box on left side of the frame viewing motor from D.E.
- B3T Terminal box on top of the frame.

Standard Mounting Configurations

Foot Mount

B3 (IM1001) V5 (IM1011) V6 (IM1031) B6 (IM1051) B7 (IM1061) B8 (IM1071)

Flange Mount
FF Flange

B5 (IM3001) V1 (IM3011) V3 (IM3031)

Foot & Flange Mount
FF Flange

B35 (IM2001) V15 (IM2011) V36 (IM2031)

Flange Mount
FC (NEMA) & C-DIN Flange

B14 (IM3601) V18 (IM3611) V19 (IM3631)

Foot & Flange Mount
FC (NEMA) & C-DIN Flange

B34 (IM2101) IM2111 IM2131

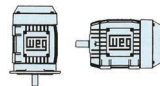
Figure 22 - Mountings

Important:

1. Mountings IM B34 and IM B14 (with C flange) in frames 160 to 355M/L comply with NEMA MG1 Part 4 dimensions.
2. For vertically shaft down mounted motors, a canopy (rainhood) is recommended to prevent ingress of water and small objects into the fan cover (refer section 20).

As WEG motors are manufactured with high density cast iron and designed to provide the highest mechanical strength, they can be mounted in all possible configurations. **Every low voltage, off the shelf WEG W22 motor from 63 to 355M/L frame can be mounted in any position, horizontal or vertical**, providing the maximum axial and radial thrusts, as stated in WEG's catalogues, are not exceeded.

Benefits: Reduces inventory costs, increases motor life expectancy



Multi-mounting

6. Terminal Box/Terminal Block

6.1 Main terminal box

The main terminal box of W22 motors is IP66 and made of FC-200 cast iron. It is diagonally split for easier handling of leads and connections.

For frame sizes IEC 225S/M to 355M/L the terminal box is displaced forward on the frame. This design allows improvement of air flow through the fins in addition to reducing operating temperatures. For this range of frames, the motor leads come out on the top of the frame. A side mounted terminal box position is achieved with the addition of an adapting device, supplied as standard for side mounted box motors (see figure 23).



Figure 23 - Terminal box mounted on the left side viewing from shaft end

In frames 225 to 355, the terminal box can be changed from the left to right and vice-versa just by changing the position of the adapting plate. Removing the adapting plate and adjusting the leads length, the terminal box can be mounted on top of the frame (B3T), as shown in figure 24a. This procedure allows change of the terminal box position without disassembling the motor, resulting in a major reduction of inventory holdings and the time required to get the desired mounting.

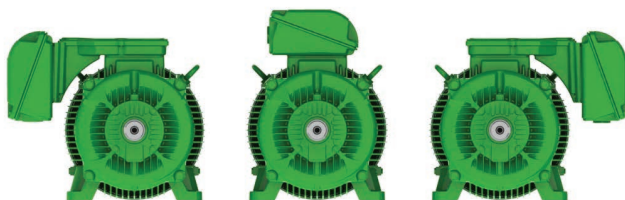


Figure 24a - Terminal box mounted on both sides and on top (frames 225 to 355)

Factory-supplied motors fitted with terminal box on top can be modified to left or right mounted terminal box. To do that, a specific kit consisting of an adapting device and connection leads must be ordered. Contact the WEG office closest to you for more information.

Note: Vertical motors are supplied without goose neck, see figure 24b.

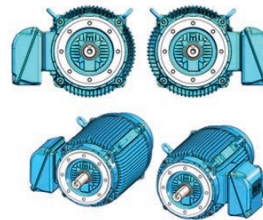


Figure 24b - Terminal box mounting on vertical motors IEC 225 to 355A/B

The terminal box can be rotated at 90° intervals. W22 mining motors in frames IEC 225S/M to 355M/L are supplied with cast iron removable gland plate. As an optional feature, the removable base can be supplied undrilled.

For frame sizes 63 to 200 the terminal box position is centralized on the motor frame and can be supplied in two configurations – left / right side (standard) or top (optional). A motor with a side mounted terminal box (B3R or B3L) can have the terminal box position located on the opposite side through modification.

Different configurations are available on request.

Frame	Main terminal box cable entry holes
63	1 x M20 x 1.5
71	1 x M20 x 1.5
80	1 x M20 x 1.5
90	1 x M20 x 1.5
100	1 x M20 x 1.5
112	1 x M25 x 1.5
132	1 x M25 x 1.5
160	2 x M32 x 1.5
180	2 x M40 x 1.5
200	2 x M50 x 1.5
225S/M	2 x M50 x 1.5
250S/M	2 x M63 x 1.5
280S/M	2 x M63 x 1.5
315S/M	2 x M63 x 1.5
315L	2 x M63 x 1.5
355M/L	2 x M80 x 2.0

Table 19 - Cable entry dimensions

Cable entry holes for W22 motors are in accordance with table 19. Threaded plastic plugs are provided to prevent water ingress during transportation and storage.

In order to guarantee the degree of protection, the incoming power lead termination must comply with the same requirements of the degree of protection shown on the motor nameplate.

6.2 Main terminal block

Motor power connection leads are marked in accordance with IEC 60034-8 and are connected to a terminal block which is made of polyester-based resin BMC (Bulk Moulding Compound) reinforced with fiber glass (see figure 25). Motors fitted with three or six connection leads are connected to a six-pin terminal block, while motors with nine or twelve connection leads are connected to two six-pin terminal blocks.

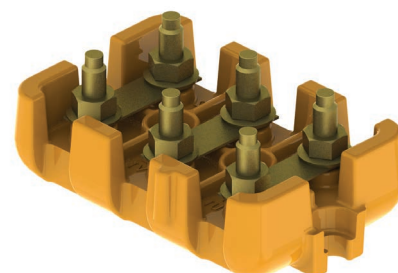


Figure 25 - Six-pin terminal block

6.3 Accessories terminal block

Accessory leads are mounted on quick-connection terminals as shown in figure 26. They are mounted in either the main terminal box (W22 Industrial) or additional terminal box (standard in W22 mining frames 160 to 355).

The additional terminal box is pre-drilled with one M20 x 1.5 cable entry hole.



Figure 26 - Terminals for accessories connection

For frames 132 to 355, an optional dedicated space heaters terminal box can be provided as shown in figure 27.



Figure 27 - Two accessory terminal boxes attached to main terminal box

7. Degree of Protection / Sealing System / Painting

7.1 Degree of protection

In accordance to IEC 60034-5 standard, the degree of protection of a rotating electrical machine consists of the letters IP followed by two characteristic numerals with the following meaning:

- a) First characteristic numeral: referred to protection of people against live parts and contact with moving parts (other than smooth rotating shafts and the like) inside the enclosure and protection of the machine against ingress of solid and foreign objects.
- b) Second characteristic numeral: protection of machines against harmful effects due to ingress of water.

W22 motors are supplied with IP66 degree of protection in conformance with IEC 60034-5, which means:

- a) First characteristic numeral 6: dust-tight machine. The enclosure provides full protection against ingress of dust.
- b) Second characteristic numeral 6: machine protected against heavy seas. Water from heavy seas or water projected in powerful jets shall not enter the machine in harmful quantities.

7.2 Sealing system

W22 motors are supplied with oil seal or W3Seal® (160 to 355 in W22 mining), or WSeal® (225 to 355 frame in the Industrial range).

The patented WSeal® seal consists of a V-ring with double lip enclosed by a metallic cap (see figure 28). The W3Seal® comprises of a V-ring, taconite labyrinth and O-ring seal. This is the best ever conceived seal for harsh, dusty mining environments.

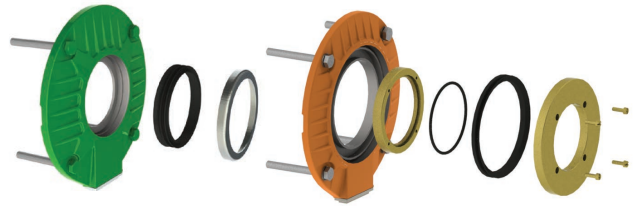


Figure 28 - WSeal®

Figure 29 - W3Seal® for Mining

Mechanical Seal for B3 Foot Mounted Motors			
Frames	63 - 132	160 - 200	225 - 355
W22 Industrial	Oil Seal	Oil Seal	WSeal®
W22 Mining	Oil Seal	W3Seal®	W3Seal®

Table 20 - Types of seal

7.3 Painting

W22 motors are supplied as standard with a painting plan 203A / 207A consisting of:

- Primer: one coat with 20 to 55 µm of alkyd primer;
- Finishing: one coat with 60 to 80 µm of alkyd synthetic enamel.

This painting plan is suitable for normal, protected or unprotected, industrial applications and environments containing SO₂ (sulfur dioxide). W22 Industrial standard colour is green, whilst W22 mining is electric orange. Other colours are available upon request.

Other painting plans are available even for the most aggressive environments, as per table 21.

Painting Plan	Description
202E	Primer: one coat with 20 to 55µm of alkyd oxide red Intermediate: one coat with 20 to 30µm of isocyanate epoxy paint Finishing: one coat with 100 to 140µm of epoxy paint N2628 Recommended for pulp and paper, mining and chemical industries
202P	Primer: one coat with 20 to 55µm of alkyd oxide red Intermediate: one coat with 20 to 30µm of isocyanate epoxy paint Finishing: one coat with 70 to 100µm of polyurethane paint N2677 Recommended for food processing industries
211E	Primer: one coat with 100 to 140µm of epoxy paint N2630 Finishing: one coat with 100 to 140µm of epoxy paint N2628 Recommended for applications in refineries and petrochemical industries
211P	Primer: one coat with 100 to 140µm of epoxy paint N2630 Finishing: one coat with 70 to 100µm of PU paint N2677 Recommended for applications in refineries and petrochemical industries
212E	Primer: one coat with 75 to 105µm of epoxy paint N1277 Intermediate: one coat with 100 to 140µm of epoxy paint N2630 Finishing: one coat with 100 to 140µm of epoxy paint N2628 Recommended for applications in pulp and paper, mining, chemical and petrochemical industries
212P	Primer: one coat with 75 to 105µm of epoxy paint N1277 Intermediate: one coat with 100 to 140µm of epoxy paint N2630 Finishing: one coat with 70 to 100µm of PU paint N2677 Recommended for applications in pulp and paper, mining, chemical and petrochemical industries

Table 21 - Painting plans

Tropicalized painting

An ambient with relative humidity up to 95% does not require additional protection, other than space heaters to avoid water condensation inside the motor. However, for applications with relative humidity above 95%, an epoxy paint is applied to the motor internal parts, known as tropicalized painting.

8. Voltage / Frequency

The WEG W22 ranges are designed based on a multi-voltage concept, ie. the motors are suitable to operate at a combination of voltages and frequencies as follows:

Up to 100 frame (inclusive)			From 112 to 355 frame		
Connection	50Hz	60Hz	Connection	50Hz	60Hz
Δ	220-240V	254-276V	Δ	380-415V	440-460V
Y	380-415V	440-460V	Y	660-720V	760-830V

WEG also manufactures motors from 110V up to 13,800V, available on request.

Voltage and frequency variations are classified as Zone A or Zone B as per IEC 60034-1, the combination is depicted below in figure 30.

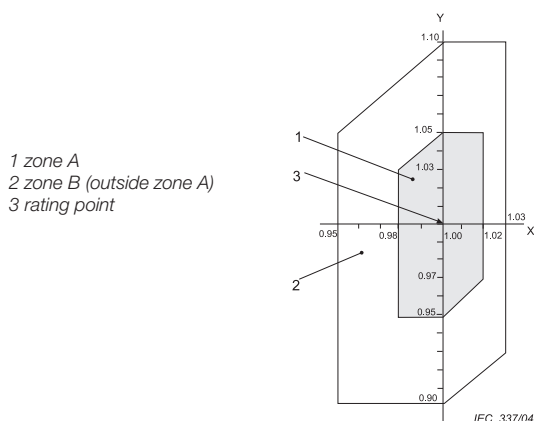


Figure 30 - Rated voltage and frequency variation limits for electric motors

IEC 60034-1 states an electric motor must be suitable to perform its main function (supply torque) continuously in Zone A. However, under this condition the motor may operate at a temperature rise above it's rated value, due to power supply voltage and frequency variation.

The motor must also be suitable to perform its main function (supply torque) in Zone B, however significant performance changes will occur. Temperature rise will also be higher in Zone A than at rated voltage and frequency. Long term operation within Zone B is not recommended.

9. Overload Capacity

9.1 Constant overload

It is not unusual to see motors being overloaded for long periods of time. The most common causes are load and voltage fluctuations. To ensure trouble free operation, WEG W22 motors are designed with a 1.15 or higher service factor, hence with the capacity to cope with a 15% continuous overload when installed in a maximum ambient temperature of 40°C.

9.2 Momentary overload capacity of 150%

In the course of their lives, electric motors may be subject to momentary overloads. These can originate from voltage sags, load variations etc. If not properly selected, motors can stall or even fail prematurely. WEG motors are designed to withstand a momentary overload of 150% for up to 2 minutes (as per IEC 60034-1).

Benefits: Reliable operation, longer life

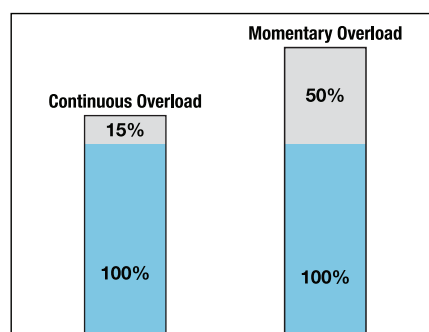


Figure 31 - WEG motor overload capacity

10. Ambient x Altitude

According to IEC 60034-1, the rated motor output power of an S1 duty motor is the continuous duty operation at the following ambient conditions (unless otherwise specified)

- With temperature varying between -20°C to +40°C
- With altitudes up to 1000 meters above sea level

For other temperature and altitude conditions the derating figures of table 22 must be applied in order to calculate the new maximum motor power (Pmax).

Electric motors are installed in many different environments, where the ambient temperature may vary widely, commonly from 5 to 40°C. The mining industry, however, sets forth a more demanding requirement; the suitability to operate at higher ambient temperatures, usually around 45 or 55°C.

The WEG W22 Mining motor are designed with low temperature rise, high temperature grease, low bearing temperature and high grade insulation, and hence are mechanically and electrically sound to operate at ambient temperatures of up to 55°C (at SF=1.0).

All low voltage motors are also guaranteed to operate down to -20°C and lower. Contact your local WEG office to confirm application demands and motor suitability.

T (°C)	Altitude (m)								
	1000	1500	2000	2500	3000	3500	4000	4500	5000
10							0.97	0.92	0.88
15						0.98	0.94	0.90	0.86
20					1.00	0.95	0.91	0.87	0.83
25				1.00	0.95	0.93	0.89	0.85	0.81
30			1.00	0.96	0.92	0.90	0.86	0.82	0.78
35		1.00	0.95	0.93	0.90	0.88	0.84	0.80	0.75
40	1.00	0.97	0.94	0.90	0.86	0.82	0.80	0.76	0.71
45	0.95	0.92	0.90	0.88	0.85	0.81	0.78	0.74	0.69
50	0.92	0.90	0.87	0.85	0.82	0.80	0.77	0.72	0.67
55	0.88	0.85	0.83	0.81	0.78	0.76	0.73	0.70	0.65
60	0.83	0.82	0.80	0.77	0.75	0.73	0.70	0.67	0.62
65	0.79	0.76	0.74	0.72	0.70	0.68	0.66	0.62	0.58
70	0.74	0.71	0.69	0.67	0.66	0.64	0.62	0.58	0.53
75	0.70	0.68	0.66	0.64	0.62	0.60	0.58	0.53	0.49
80	0.65	0.64	0.62	0.60	0.58	0.56	0.55	0.48	0.44

Table 21 - Correction factors for altitude and ambient temperature

11. WISE® Insulation System

11.1 Spike Resistant Wire

Spike-resistant wire is a technology that was developed as a result of studies on the effect of modern IGBT drives on AC motors. The secret is in the enamelling process, which ensures superior insulation in order to protect all turns against rapid voltage rise times (dV/dt).

The industry has traditionally utilized 2 types of wire insulation: grade 2 (8 layers of standard enamel) and grade 3 (12 layers of standard enamel). This technology no longer meets the demands of modern drives, which created the need for advances in wire insulation. With the support of its chemical division, WEG has developed its own inverter rated enamel, resulting in the superior dielectric and mechanical properties of WEG's insulation.

Benefits: Guaranteed performance with latest drives, reliability, longer life expectancy



Figure 32 - spike resistant wire

All W22 motors are supplied with WISE® (WEG insulation system evolution) insulation which includes spike-resistant enameled wire 200°C rated. The WISE® insulation system ensures long motor life when operated with variable frequency drive (see section 14).

The high voltage spikes and dV/dt generated by IGBT drives can reduce the life of a standard insulation by as much as 75%. Different to mains operation, where voltage surges may occur once in a while, VSD spikes can be impressed onto motor insulation thousands of times per second. A proper insulation system must be rated for use under continuous stress.

WEG's WISE® insulation system is capable of withstanding voltage impulses of 1,600V peak and 5,200V/μs at a repetition rate of 5,000 times per second (5kHz), far superior to today's industry standard. The WISE® insulation standard in all WEG W22 motors, is the result of WEG's extensive research of the effects of drives on electric motors. No doubt the benefits of this superior insulation are also invaluable for applications where voltage surges are a concern. For more information consult our technical papers.

11.2 Class H

In addition to WEG's unique spike resistant WISE® insulation, WEG motors use class H enamel and are impregnated with class H epoxy resin. The percentage of retained solids of a resin-based impregnation is on average 2 to 2.5 times better than that of varnish, the industry standard material. High voltage motors are VPI impregnated. For superior results with low voltage random-wound motors the continuous resin flow process is adopted.

Benefits: Higher corona inception voltage, better heat transfer, longer life

11.3 Temperature Rise

W22 motors are supplied with class H insulation with a temperature rise no higher than that of class B under normal operating conditions (unless otherwise specified).

The difference between the rated temperature of the class H insulation (125 K) and the motor full load temperature rise means that, in practice, W22 motors are suitable to operate at ratings (service factor) up to a limit where the temperature rise reaches the maximum value of their insulation class.

The ratio between temperature rise and service factor (SF) is given by the equation below:

$$\Delta T_{FINAL} \cong (SF)^2 \times \Delta T_{RATED KW}$$

W22 line SF may reach 1.25. This reserve of temperature also allows W22 motors with class B temperature rise (80 K) to operate continuously:

- Up to 25% above their rated output power, considering 40°C ambient temperature and 1000 m.a.s.l.
- Up to 55°C ambient temperature, maintaining the rated output power (standard for W22 mining)
- Up to 3000 m.a.s.l., keeping the rated output power

Bearing lubrication interval will change at different application conditions. Contact WEG for more information.

12. Motor Protection

Electric motor thermal protection can be classified as follows:

- Based on temperature
- Based on current
- Against condensation

12.1 Space heaters

The use of space heaters is recommended in two situations:

- Motors installed in environments with relative air humidity up to 95% in which the motor may remain idle for periods greater than 24 hours;
- Motors installed in environments with relative air humidity greater than 95%, regardless of the operating duty. It should be highlighted that in this situation it is strongly recommended that an epoxy paint, known as tropicalized painting, is applied in the internal components of the motor. More information can be obtained in section 8.3.

The supply voltage for space heaters must be specified on the purchase order. For all frame sizes, W22 motors can be provided with space heaters suitable for 110-127 V, 220-240 V and 380-480 V. As an option, dual voltage heaters of 110-127 / 220-240 V can be supplied for motor frame sizes 112 to 355.

The power rating and number of space heaters fitted depend on the size of the motor as indicated in table 23 below:

Frame	Power rating (W)
63 to 80	7.5
90 and 100	11
112	22
132 and 160	30
180 and 200	38
225 and 250	56
280 and 315	140
355	174

Table 23 - Power rating of space heaters

Heaters (240V) are standard for W22 Mining in frames 225 to 355.

12.2 Protection based on operating temperature

Continuous duty motors must be protected from overloads by a device embedded into the motor insulation or an independent protection system (usually a thermal overload relay with setting equal to or below the value obtained when multiplying the motor service factor by its rated current (In) as per table 24).

Service factor	Relay setting current
1.0 up to 1.15	$I_n \times SF$
≥ 1.15	$(I_n \times SF) - 5\%$

Table 24 - Suggested relay setting current

PT-100 (RTD's)



Figure 33 - PT-100 (RTD)

These are temperature detectors (usually made of platinum, nickel or copper) with operating principle based on variation of their electrical resistance with temperature. These calibrated resistances vary linearly with temperature, allowing continuous monitoring of motor heating process through an RTD relay with high precision rate and response sensitivity.

The same detector can be used for alarm (with operation above the regular operating temperature) and trip (usually set to the maximum temperature of the insulation class).

	Recommended Settings	
	Alarm	Trip
Winding	155°C	180°C
Bearing	110°C	120°C

Table 25 - Recommended thermal protection settings for W22 range.

Thermistor (PTC)



Figure 34 - Thermistor (PTC)

These are semi-conductor type thermal protectors with hyperbolic resistance variation when its set temperature is reached. This abrupt resistance increase blocks the PTC current, making the PTC relay operate, tripping the motor circuit breaker.

Thermistors are of small dimensions, do not wear out and have quicker response time if compared to other thermal protectors. They do not, however, allow continuous motor temperature monitoring.

Together with their relays, thermistors and RTD's provide full protection against overheating caused by single phasing, overload, under or over-voltage or frequent reversing operations.

WEG RPW - PTCE05 is an electronic relay intended to interface with PTC signals. For more information refer to our website www.weg.net/au.

Bimetallic thermal protectors

These are silver-contact thermal sensors, normally closed, that operate at a certain temperature. When their temperature decreases below set point, they return to the original shape, allowing the silver contact to close again.

Bimetallic thermal protectors are series-connected with the main contactor coil, and they can be used either as alarm or trip.

There are also other types of thermal protectors such as PT-1000, KTY and thermocouples. Please contact WEG for more information.

Complete, simple to use, electronic motor protection can be achieved by using WEG smart relay.



Figure 35 - Smart relay

12.3 Protection based on operating current

Motor overload results in gradual temperature increase, to which RTD's, PTC's and bimetallic sensors offer suitable protection. However, to protect motors against short-circuit and locked rotor currents fuses must be used. This type of protection is highly effective for locked rotor conditions. Alternatively electro-magnetic motor protection circuit breakers (MPCB's) can be used.

WEG has a range of fuses to protect your electric motor, as well as MPCB's (see figure 36).



Figure 36 - MPCB's to 100A

13. Applications with Variable Frequency Drives

13.1 Considerations regarding rated voltage

W22 motors are built with WEG's patented WISE® insulation system (WEG Insulation System Evolution) – which ensures superior electrical insulation.

The stator winding is designed and tested to withstand the voltage impulse and transients inherent to VSD's. Different grades of insulation are used according to motor rated voltage and inverter-generated dV/dt. Refer to details in table 26.

Motor rated voltage	Peak voltage on motor terminals	dV/dt on motor terminals	Rise time	Time between pulses
	(phase to phase)	(phase to phase)		
Vn ≤ 460 V	≤ 1600 V	≤ 5200 V/μs	≥ 0.1 μs	≥ 6 μs

Table 26 - For VSD applications within above limits, no additional filters are required

Notes:

- 1 – To minimise insulation stress it is recommended the switching frequency is set to 5 kHz or below.
- 2 – If the above conditions are met (including the switching frequency) there is no need for filters on VSD output.

13.2 Torque restrictions on variable frequency drive applications

When driving constant torque loads, self-ventilated variable frequency driven motors have their torque limited at sub-rated frequency due to ventilation reduction. The following derating must be applied (refer to figure 37 and IEC 60034-17).

Constant torque condition

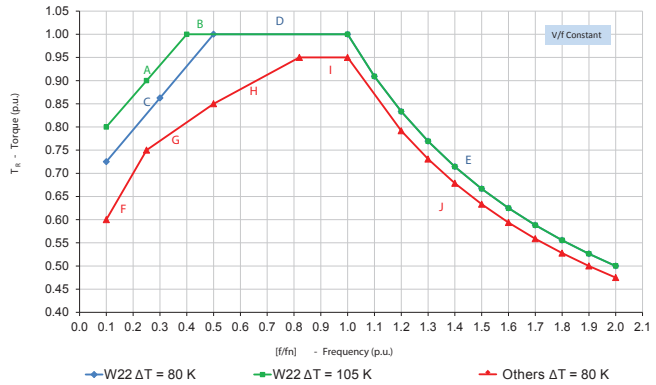


Figure 37 - Derating curve for constant torque applications - W22 IE3 motors (blue and green curves) and non-WEG E2 motors (red curve) in accordance with IEC 60034-17.

Derating to limit temperature rise to maximum temperature of insulation system applicable to W22 motors (Green Curve)*		
Interval	Limited by	Apply this equation
A	$0.10 \leq f/f_n < 0.40$	$T_R = 0.6667 (f/f_n) + 0.7333$
B	$0.40 \leq f/f_n < 1.0$	$T_R = 1.0$
E	$f/f_n > 1.0$	$T_R = 1/(f/f_n) = f_n/f$

Derating to keep temperature rise equal to mains operation applicable to W22 motors (Blue Curve)**		
Interval	Limited by	Apply this equation
C	$0.10 \leq f/f_n < 0.50$	$T_R = 0.6875 (f/f_n) + 0.6563$
D	$0.50 \leq f/f_n < 1.0$	$T_R = 1.0$
E	$f/f_n > 1.0$	$T_R = 1/(f/f_n) = f_n/f$

Derating to keep temperature rise equal to mains operation applicable to other motors (Red Curve)**		
Interval	Limited by	Apply this equation
F	$0.10 \leq f/f_n < 0.25$	$T_R = (f/f_n) + 0.50$
G	$0.25 \leq f/f_n < 0.50$	$T_R = 0.40(f/f_n) + 0.65$
H	$0.50 \leq f/f_n < 0.83$	$T_R = 0.30(f/f_n) + 0.70$
I	$0.83 \leq f/f_n \leq 1.0$	$T_R = 0.95$
J	$f/f_n > 1.0$	$T_R = 0.95 / (f/f_n)$

Table 27 - Torque derating for constant torque operation below rated speed

(*) When the top green curve is applied the motor temperature rise will be limited by the temperature class of its insulation material. For example, for class F motors, the temperature rise will be limited at 105 K. This curve can only be used for class F insulation and class B temperature rise W22 motors in order to ensure that, when driven by frequency drive, the temperature rise remains within class F limits (below 105 K rise).

(**) When the lower blue curve is applied the motor temperature rise in a variable frequency drive will be the same as when driven by sinusoidal supply. In other words, class F insulation motors with class B temperature rise will remain with class B temperature rise (≤ 80 K) even when driven by variable frequency drives, which increases motor losses due to harmonics. This curve only applies to W22 motors.

13.3 Optimal Flux®

What is Optimal Flux®

Combining a WEG Variable Frequency Drive (VFD) with a WEG Motor results in Optimal Flux (patented).

The Optimal Flux control algorithm increases motor flux at low speeds, thereby allowing the same torque to be developed with lower current. The results are optimal motor flux at low speeds to produce full torque while minimising motor losses.

Why Optimal Flux® was developed

The air flow (cooling) from the shaft mounted fan used on a TEFC motor is dramatically reduced as speed decreases. If the load remains constant, as speed decreases the reduced cooling will result in motor overheating. Variable torque loads (centrifugal fans and pumps) require significantly less torque as speed decreases, however most other equipment is of the constant torque type.

WEG developed Optimal Flux (patented) to specifically address the needs of the broader constant torque (CT) VSD market. Specially those applications with +/-0.5% speed regulation without an encoder and a speed range greater than 10:1. Optimal Flux (patented) allows the operation of WEG W22 motors from a speed range approaching 5Hz upwards, without thermal damage, without the need for speed feedback from a shaft mounted encoder, without derating or the fitting of forced ventilation.

How does Optimal Flux® achieve lower motor losses

In an electric motor, most of the heat is the result of I²R losses. If motor current can be reduced even slightly, the resultant losses will be significantly reduced.

Constant torque loads require full torque at low speeds. Merely reducing the current would reduce both losses and torque, which would be unacceptable. The design characteristics of WEG W22 motors are loaded into the CFW11 VFDs which allows the Optimal Flux (patented) control algorithm to adjust motor flux at low speeds thereby allowing the same torque to be developed at lower current. For more information consult our technical papers.



13.4 Torque derating with Optimal Flux®

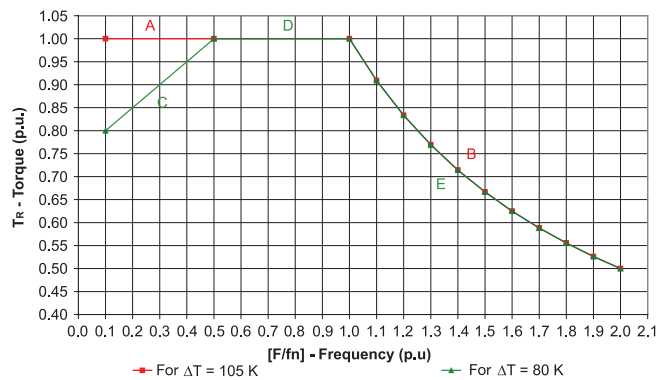


Figure 38 - Derating curve with Optimal Flux®

Derating for max. temperature rise with Optimal Flux®		
Interval	Limited by	Apply this equation
A	$0.10 \leq f/fn \leq 1.0$	$T_R = 1.0$ (constant torque)
B	$f/fn > 1.0$	$T_R = 1/(f/fn) = fn/f$

Derating to maintain rated temperature rise using Optimal Flux®		
Interval	Limited by	Apply this equation
C	$0.10 \leq f/fn < 0.50$	$T_R = 0.5(f/fn) + 0.75$
D	$0.50 \leq f/fn \leq 1.0$	$T_R = 1.0$ (constant torque)
E	$f/fn > 1.0$	$T_R = 1/(f/fn) = fn/f$

Table 28 - Equation for torque determination available with WEG patented Optimal Flux® applicable to W22 IEC Motor Series (TEFC Only)

13.5 Bearing currents

Common mode voltage, high dv/dt and high speed switching frequencies, inherent to any PWM drive, can generate shaft currents which circulate or discharge through the motor bearings. This electric current may also circulate through the driven load bearings. Left unchecked, the motor and/or driven equipment bearings may fail prematurely. There are three distinct mechanisms which may result in these destructive bearing currents, each requires specific mitigation measures.

This phenomenon is more noticeable in larger frame sizes (315 and above), and is less likely to occur in small motors. IEC 60034-17 recommends special bearing protection devices for motors of frame size 315 and above. Other entities, e.g. CSA and GAMBICA, suggest similar measures from frame 280. WEG offers the use of an insulated bearing housing and shaft grounding brush, as well as proper Motor and Variable Speed Drive earthing recommendations, which effectively prevents PWM drive-induced bearing damage. When VSD use is specified by the customer, these additional protective devices are supplied as standard from 280 frame.

In all cases it is essential that the user adheres to the motor and VSD supplier's recommendations, especially with regards to installation, cabling and grounding. For a comprehensive guide, please refer to the WEG Technical Guide - Induction motors fed by PWM frequency converters, available from all WEG offices.

The use of an insulated bearing housing rather than insulated bearing provides many advantages such as the ability to use standard bearings throughout the motor life. This significantly decreases maintenance and logistic costs.

13.6 Forced ventilation kit

For those cases where independent cooling system is required, e.g. use of non-WEG VSD's driving a motor below rated speed with a constant torque load, W22 motors can be supplied with forced ventilation kit, as shown in figure 39.

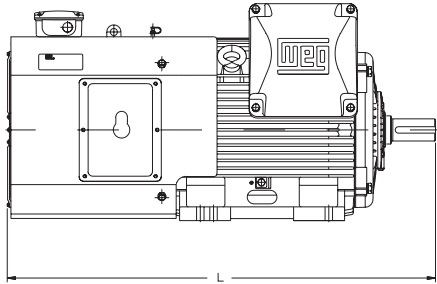


Figure 39 - Forced ventilation kit for W22 motors

When the forced ventilation kit is installed, the total motor length will be as shown in table 29.

Frame size	Poles	Total motor length (L) in mm	
		Without forced ventilation	With forced ventilation
90S	All	304	548
90L	All	329	573
100L	All	376	646
112M	All	393	660
132S	All	452	715
132M	All	490	753
160M	All	598	855
160L	All	642	899
180M	All	664	908
180L	All	702	946
200M	All	729	976
200L	All	767	1014
225S/M	2	856	1140
	4 to 8	886	1170
250S/M	2	965	1217
	4 to 8	965	1217
280S/M	2	1071	1348
	4 to 8	1071	1348
315S/M	2	1244	1459
	4 to 8	1274	1489
315 L	2	1353	1568
	4 to 8	1383	1598
355M/L	2	1412	1786
	4 to 8	1482	1856

Table 29 - Motor length with forced ventilation (mm)

13.7 Encoders

W22 motors can be supplied with encoders. Encoders can be fitted to motors with either forced ventilation or with shaft mounted cooling fan (TEFC). When encoders are fitted to TEFC machines, motors cannot have a second shaft end or be fitted with a raincover.

The following encoder models are available:

- Kübler - Model 5020 - 1024ppr (hollow shaft)
- Hengstler - RI58 - 1024ppr (hollow shaft)
- Line & Linde - XH861 - 1024ppr (hollow shaft)
- Hubner Berlin - HOG 10 - 1024ppr (hollow shaft)
- Hubner Guinsen - FGH4 - 1024ppr (shaft)

Other models can be supplied on request.

Note: The encoders described above are 1024 ppr. Models of 2048 pulses per revolution are available on request.

13.8 Minimum distance between fan cover and wall

Having the back of an electric motor facing against a wall can be detrimental to motor cooling, if a minimum distance between the fan cover and wall is not kept.

The minimum distance between a wall and motor fan cover is shown in table 30.

Frame	D (mm)
63 / 71 / 80	20
90 / 100 / 112	29
132 / 160	35
180	37
200	43
225 / 250	69
280 / 315 / 355	81

Table 30 - Minimum distance between motor fan cover and wall (mm)

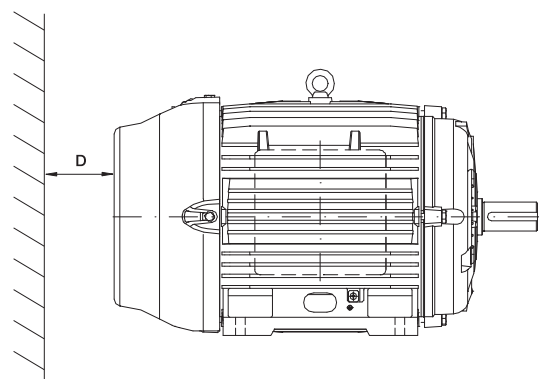


Figure 40 - Minimum distance to wall

14. W22 High Efficiency IE3 Performance Data - 2 Pole

Part No.	Output kW	IEC Frame	Rated speed (rpm)	Full load current I _L (A)	Locked rotor current I _L /I _r	Full load torque T _L (Nm)	Locked rotor torque T _L /T _r	Break-down torque T _b /T _r	415 V						Sound pressure level dB (A)	Moment of Inertia J (kgm ²)	Max. locked rotor time(s)		Approx Weight (kg)
									% of full load										
									Efficiency η			Power factor (Cos φ)							
									50	75	100	50	75	100					
2 Pole - 3000 rpm - 50 Hz																			
K07 W22	0.18	63	2870	0.535	5.2	0.600	3.0	3.2	59.6	65.2	65.9	0.49	0.62	0.71	52.0	0.0002	48	22	8.0
K1 W22	0.25	63	2820	0.674	5.5	0.850	3.8	3.3	61.5	67.2	69.7	0.51	0.64	0.74	52.0	0.0002	37	17	7.9
K3 W22	0.37	71	2825	0.840	6.0	1.25	2.5	2.5	72.4	73.8	73.8	0.63	0.76	0.83	56.0	0.0004	26	12	10.5
K5 W22	0.55	71	2845	1.17	5.9	1.86	2.7	2.7	74.4	76.0	77.8	0.64	0.77	0.84	56.0	0.0005	33	15	11.0
K7 W22	0.75	80	2870	1.63	7.5	2.51	3.2	3.2	79.1	81.0	81.1	0.56	0.70	0.79	59.0	0.0008	40	18	14.1
K9 W22	1.1	80	2850	2.35	7.2	3.71	4.1	3.7	80.0	83.0	83.4	0.56	0.69	0.78	59.0	0.0009	51	23	15.0
K11 W22	1.5	90S	2895	3.18	7.0	4.97	2.5	3.0	81.5	83.5	84.2	0.57	0.70	0.78	62.0	0.0020	22	10	21.5
K15 W22	2.2	90L	2880	4.37	7.5	7.32	3.4	3.4	85.3	86.4	86.5	0.60	0.73	0.81	62.0	0.0026	26	12	24.5
K22 W22	3	100L	2905	5.70	8.0	9.88	3.1	3.6	84.5	86.5	87.2	0.66	0.78	0.84	67.0	0.0064	33	15	35.0
K192 W22	4	112M	2910	7.49	7.7	13.2	2.5	3.5	87.5	88.0	88.4	0.65	0.77	0.84	62.0	0.0081	31	14	41.0
K20 W22	5.5	132S	2945	10.6	7.9	17.9	2.4	3.5	86.1	88.3	89.2	0.61	0.74	0.81	63.0	0.0180	26	12	62.0
K24 W22	7.5	132S	2930	13.9	8.5	24.5	2.8	3.3	87.9	89.7	90.3	0.63	0.76	0.83	63.0	0.0234	22	10	70.0
K27 W22	9.2	132M	2930	16.1	8.5	30.1	2.8	3.1	90.1	91.0	91.3	0.71	0.82	0.87	63.0	0.0303	35	16	84.0
K29 W22	11	160M	2950	20.2	8.0	35.6	2.7	3.4	89.9	91.3	91.4	0.65	0.77	0.83	67.0	0.0482	26	12	115
K31 W22	15	160M	2950	27.7	8.3	48.7	2.8	3.6	90.3	91.6	91.9	0.63	0.76	0.82	67.0	0.0551	18	8	120
K33 W22	18.5	160L	2950	33.6	8.5	60.0	3.1	3.7	91.0	92.2	92.4	0.64	0.77	0.83	67.0	0.0663	13	6	135
K35 W22	22	180M	2965	39.3	8.3	71.0	3.2	3.2	91.5	92.5	92.7	0.66	0.78	0.84	67.0	0.0968	20	9	170
K37 W22	30	200L	2975	53.9	7.8	96.5	3.3	3.2	91.8	93.0	93.3	0.64	0.77	0.83	72.0	0.1703	35	16	235
K39 W22	37	200L	2970	67.0	7.7	119	3.1	3.2	92.0	93.2	93.7	0.63	0.76	0.82	72.0	0.2368	24	11	250
K41 W22	45	225S/M	2965	77.4	7.5	145	2.4	3.1	93.5	94.0	94.0	0.73	0.82	0.86	74.0	0.2861	29	13	380
K43 W22	55	250S/M	2965	95.4	8.0	177	2.8	3.3	93.1	94.0	94.4	0.72	0.81	0.85	74.0	0.3736	42	19	460
K45 W22	75	250S/M	2965	125	8.5	242	3.0	3.2	94.0	94.7	94.9	0.80	0.86	0.88	74.0	0.5132	24	11	500
K47 W22	90	280S/M	2978	149	7.6	289	2.1	2.9	94.2	95.2	95.2	0.78	0.86	0.88	77.0	1.12	59	27	710
K49 W22	110	280S/M	2978	182	7.5	353	2.2	2.8	94.9	95.4	95.4	0.79	0.86	0.88	77.0	1.33	44	20	790
K61 W22	132	315S/M	2982	218	7.6	423	2.2	3.1	94.3	95.4	95.6	0.75	0.84	0.88	77.0	1.96	75	34	950
K51 W22	150	315S/M	2981	245	7.8	481	2.3	3.0	94.3	95.3	95.6	0.78	0.85	0.89	77.0	2.18	44	20	1050
K162 W22	160	315S/M	2980	264	7.5	513	2.2	2.9	94.9	95.8	95.8	0.77	0.85	0.88	77.0	2.24	62	28	1080
K53 W22	185	315S/M	2980	305	7.6	594	2.3	3.1	95.2	95.8	95.8	0.77	0.85	0.88	77.0	2.46	48	22	1110
K202 W22	200	315S/M	2980	326	7.6	642	2.3	2.9	95.6	96.2	96.0	0.80	0.87	0.89	77.0	2.68	51	23	1200
K55 W22	220	355M/L	2985	350	7.3	704	1.9	2.6	95.1	95.6	96.0	0.85	0.90	0.91	80.0	4.18	77	35	1600
K57 W22	250	355M/L	2985	398	7.9	801	2.5	2.7	95.0	95.6	96.0	0.85	0.89	0.91	80.0	4.93	44	20	1750
High-Output Design - Special Frame																			
K20/1 W22	5.5	112M*	2885	10.3	7.5	18.2	2.9	3.3	85.9	86.8	87.2	0.67	0.79	0.85	64.0	0.0088	27	15	44.0
K29/1 W22	11	132M*	2930	19.2	8.2	35.9	2.7	3.0	90.2	91.1	91.4	0.72	0.82	0.87	63.0	0.0303	24	11	84.0
K55/1 W22	220	315L	2983	358	8.5	705	2.7	3.1	95.8	96.0	96.0	0.79	0.86	0.89	78.0	3.13	51	23	1320
K57/1 W22	250	315L	2980	398	7.5	802	2.4	2.7	95.5	96.0	96.0	0.83	0.89	0.91	78.0	3.57	46	21	1350

Mounting Configurations and order codes

Refer to page 27 for mounting configuration and details of order codes.

Other kW/frame combinations available on request.

Please consult your nearest WEG office for details.

Notes:

- 1) The values shown are subject to change without prior notice. To obtain actual values prior to order placement contact your nearest WEG office.
- 2) Efficiency test method 2-1-1B as per IEC 60034-30-1.
- 3) Noise level is mean sound pressure at 1 meter as per AS 60034.9 standard.

* Output available in reduced frame; meeting efficiency level E2.

14. W22 High Efficiency IE3 Performance Data - 4 Pole

Part No.	Output kW	IEC Frame	Rated speed (rpm)	Full load current I _L (A)	Locked rotor current I _L /I _r	Full load torque T _L (Nm)	Locked rotor torque T _L /T _r	Break-down torque T _B /T _r	415 V						Sound pressure level dB (A)	Moment of Inertia J (kgm ²)	Max. locked rotor time(s)		Approx Weight (kg)
									% of full load								Cold	Hot	
									Efficiency η			Power factor (Cos φ)							
									50	75	100	50	75	100					
4 Pole - 1500 rpm - 50 Hz																			
K08 W22	0.18	63	1395	0.512	4.6	1.25	2.2	2.2	65.0	67.0	69.9	0.50	0.61	0.70	44.0	0.0006	66	30	7.2
K2 W22	0.25	71	1420	0.686	4.8	1.69	2.4	2.4	65.1	68.6	73.5	0.50	0.62	0.69	43.0	0.0009	66	30	8.0
K4 W22	0.37	71	1395	0.979	4.8	2.55	2.8	2.7	73.0	75.0	77.3	0.47	0.59	0.68	43.0	0.0008	66	30	9.5
K6 W22	0.55	80	1430	1.23	6.6	3.69	2.7	3.0	76.0	78.9	80.8	0.57	0.71	0.77	44.0	0.0027	44	20	12.5
K8 W22	0.75	80	1440	1.66	7.3	4.97	3.9	3.9	77.0	81.0	82.5	0.50	0.65	0.76	44.0	0.0032	43	24	16.2
K10 W22	1.1	L90S	1450	2.34	7.0	7.27	2.3	2.7	82.0	84.1	84.8	0.55	0.69	0.77	49.0	0.0055	33	15	19.5
K12 W22	1.5	L90L	1455	3.35	7.4	9.88	2.9	3.2	83.1	85.0	85.3	0.50	0.63	0.73	49.0	0.0066	29	13	23.0
K16 W22	2.2	100L	1440	4.56	7.8	14.7	3.5	3.4	85.7	86.8	87.2	0.55	0.68	0.77	53.0	0.0090	40	18	31.5
K23 W22	3	L100L	1445	6.07	7.8	19.9	3.9	3.2	86.3	87.7	88.1	0.56	0.70	0.78	53.0	0.0120	33	15	37.5
K194 W22	4	112M	1455	8.35	7.0	26.4	2.6	3.1	88.0	88.9	88.9	0.56	0.69	0.75	56.0	0.0180	33	15	44.0
K21 W22	5.5	132S	1470	10.4	8.3	35.9	2.3	3.3	89.4	89.6	89.8	0.63	0.75	0.82	56.0	0.0491	26	12	66.0
K25 W22	7.5	132M	1465	13.9	8.3	49.1	2.4	3.5	89.2	90.3	90.4	0.60	0.73	0.83	56.0	0.0563	15	7	74.0
K30 W22	11	160M	1475	20.6	7.5	71.3	2.8	3.2	90.6	91.4	91.5	0.61	0.74	0.81	61.0	0.1191	24	11	113
K32 W22	15	160L	1475	28.0	7.6	97.5	2.8	3.1	91.6	92.3	92.1	0.62	0.75	0.81	61.0	0.1534	18	8	140
K34 W22	18.5	180M	1475	34.7	7.5	120	3.0	3.2	91.8	92.6	92.6	0.61	0.73	0.80	61.0	0.1740	29	13	188
K36 W22	22	180L	1475	40.6	7.3	143	3.4	3.4	91.9	92.8	93.0	0.62	0.74	0.81	61.0	0.2097	24	11	185
K38 W22	30	200L	1480	56.4	7.5	194	2.8	3.1	92.3	93.3	93.6	0.59	0.72	0.79	63.0	0.3202	26	12	228
K40/1 W22	37	225S/M	1482	68.5	7.7	239	2.8	3.3	93.1	93.9	93.9	0.61	0.73	0.80	63.0	0.5177	29	13	365
K42 W22	45	225S/M	1480	80.9	7.5	291	2.8	3.1	93.5	94.1	94.4	0.66	0.77	0.82	63.0	0.6733	37	17	400
K44 W22	55	250S/M	1482	97.5	7.5	355	2.7	3.0	94.0	94.6	94.6	0.66	0.78	0.83	64.0	1.05	31	14	500
K46 W22	75	250S/M	1482	127	8.0	484	2.8	3.0	94.7	95.0	95.2	0.70	0.81	0.86	64.0	1.22	18	8	530
K48 W22	90	280S/M	1485	156	7.0	579	2.2	2.5	95.0	95.4	95.4	0.72	0.81	0.84	69.0	2.17	44	20	700
K50 W22	110	280S/M	1485	191	7.7	708	2.5	2.9	95.2	95.6	95.6	0.71	0.80	0.84	69.0	3.25	42	19	800
K62 W22	132	315S/M	1491	229	7.5	846	2.5	2.7	94.8	95.6	95.6	0.71	0.80	0.84	71.0	3.79	44	20	1010
K52 W22	150	315S/M	1492	262	8.0	962	2.9	2.9	95.0	95.9	96.0	0.68	0.78	0.83	71.0	3.77	59	27	1030
K164 W22	160	315S/M	1491	277	7.7	1026	2.6	2.7	95.3	95.8	95.8	0.71	0.80	0.84	71.0	3.99	62	28	1080
K54 W22	185	315S/M	1492	323	7.8	1186	2.9	2.9	95.2	96.0	96.0	0.68	0.78	0.83	71.0	4.42	55	25	1150
K204 W22	200	315S/M	1489	337	6.7	1284	2.5	2.4	95.9	96.0	96.1	0.76	0.83	0.86	71.0	4.64	46	21	1250
K56 W22	220	355M/L	1493	389	7.4	1409	2.4	2.8	95.7	96.0	96.0	0.68	0.78	0.82	74.0	7.34	44	20	1510
K58 W22	250	355M/L	1490	424	7.3	1603	2.3	2.5	95.8	96.2	96.4	0.71	0.80	0.85	74.0	7.70	57	26	1550
K60 W22	300	355M/L	1490	523	7.6	1924	2.3	2.5	95.8	96.2	96.2	0.68	0.78	0.83	74.0	8.95	42	19	1650
K3554 W22	355	355M/L	1490	603	7.2	2277	2.4	2.5	95.8	96.3	96.4	0.72	0.82	0.85	74.0	11.6	33	15	1878
High-Output Design - Special Frame																			
K8/1 W22	0.75	90S	1460	1.67	7.8	4.93	2.7	3.3	81.8	83.8	84.6	0.50	0.65	0.74	49.0	0.0049	55	25	18.5
K28 W22	9.2	132M/L	1470	17.6	8.6	60.0	2.8	3.5	89.5	90.6	91.0	0.60	0.73	0.80	56.0	0.0698	22	10	82.0
K40 W22	37	200L	1480	68.5	7.5	239	2.9	3.0	93.0	93.5	94.0	0.60	0.73	0.80	63.0	0.3994	31	14	284
K56/1 W22	220	315L	1491	379	7.5	1411	2.8	2.7	95.5	96.2	96.2	0.69	0.79	0.84	73.0	5.30	26	12	1340
K58/1 W22	250	315L	1490	424	7.3	1605	2.9	2.7	96.0	96.2	96.4	0.71	0.80	0.85	75.0	5.75	42	19	1430

Mounting Configurations and order codes

Refer to page 27 for mounting configuration and details of order codes.

Other kW/frame combinations available on request. Please consult your nearest WEG office for details.

Notes:

- 1) The values shown are subject to change without prior notice. To obtain actual values prior to order placement contact your nearest WEG office.
- 2) Efficiency test method 2-1-1B as per IEC 60034-30-1.
- 3) Noise level is mean sound pressure at 1 meter as per AS 60034.9 standard.

* Output available in reduced frame; meeting efficiency level E2.

14. W22 High Efficiency IE3 Performance Data - 6 Pole

Part No.	Output kW	IEC Frame	Rated speed (rpm)	Full load current I _L (A)	Locked rotor current I _L /I _r	Full load torque T _r (Nm)	Locked rotor torque T _L /T _r	Break-down torque T _b /T _r	415 V						Sound pressure level dB (A)	Moment of Inertia J (kgm ²)	Max. locked rotor time(s)		Approx Weight (kg)
									% of full load										
									Efficiency η			Power factor (Cos φ)							
									50	75	100	50	75	100			Cold	Hot	
6 Pole - 1000 rpm - 50 Hz																			
K08A W22	0.18	71	910	0.688	3.2	1.91	2.0	2.1	54.5	61.2	63.9	0.38	0.48	0.57	43.0	0.0009	66	30	11.5
K2A W22	0.25	80	960	0.766	4.3	2.50	2.0	2.4	61.7	68.2	68.8	0.45	0.57	0.66	43.0	0.0029	55	25	12.0
K4A W22	0.37	80	935	0.973	4.2	3.82	2.1	2.1	64.3	68.8	73.5	0.48	0.62	0.72	43.0	0.0025	55	25	12.5
K6A W22	0.55	L80	950	1.52	5.1	5.56	2.9	3.1	67.9	75.0	77.2	0.42	0.55	0.65	43.0	0.0037	44	20	15.5
K8A W22	0.75	L90S	955	1.91	5.2	7.54	2.5	2.6	75.3	78.6	79.1	0.46	0.59	0.69	45.0	0.0060	68	31	22.0
K10A/1 W22	1.1	100L	950	2.68	4.9	11.1	2.2	2.4	79.9	80.9	81.5	0.48	0.62	0.70	44.0	0.0110	70	32	28.5
K12A W22	1.5	100L	960	3.71	5.5	15.0	2.7	2.7	80.6	82.3	82.8	0.46	0.59	0.68	44.0	0.0143	68	31	32.0
K16A W22	2.2	112M	965	5.24	6.5	21.9	2.7	2.7	82.3	84.3	84.7	0.45	0.58	0.69	49.0	0.0257	57	26	46.0
K23A W22	3	132S	975	6.87	6.1	29.6	1.9	2.4	85.2	85.8	85.6	0.49	0.63	0.71	53.0	0.0416	88	40	65.0
K196 W22	4	132M	970	9.03	6.5	39.6	2.1	2.6	85.4	86.5	86.8	0.49	0.62	0.71	53.0	0.0492	44	20	70.0
K21A W22	5.5	132M/L	975	13.0	7.3	54.2	2.6	2.8	85.8	87.7	88.0	0.47	0.60	0.67	53.0	0.0755	57	26	78.0
K25A W22	7.5	160M	975	14.8	6.3	73.5	2.2	2.5	88.0	89.0	89.1	0.58	0.71	0.79	57.0	0.1404	35	16	118
K28A W22	9.2	160L	975	18.0	6.5	90.2	2.3	2.9	89.6	90.0	90.0	0.61	0.73	0.79	57.0	0.1756	40	18	135
K30A W22	11	160L	980	22.9	7.1	107	2.8	3.0	88.3	89.8	90.5	0.53	0.67	0.74	57.0	0.1931	26	12	140
K32A W22	15	180L	980	27.8	8.2	147	2.8	3.2	91.3	91.6	91.6	0.62	0.75	0.82	56.0	0.2970	18	8	185
K34A W22	18.5	200L	985	36.0	6.3	180	2.4	2.8	90.3	91.4	91.7	0.59	0.72	0.78	60.0	0.3510	35	16	215
K36A W22	22	200L	980	42.0	6.4	215	2.4	2.8	90.8	91.8	92.2	0.60	0.72	0.79	60.0	0.4212	33	15	225
K38A W22	30	225S/M	985	54.7	7.0	291	2.3	2.6	92.8	93.4	93.0	0.64	0.75	0.82	63.0	0.8194	55	25	380
K40A W22	37	250S/M	985	65.5	7.2	359	2.5	2.7	93.3	93.5	93.5	0.68	0.78	0.84	64.0	1.24	44	20	430
K42A W22	45	250S/M	987	77.5	8.0	437	2.8	2.8	91.9	93.9	93.9	0.73	0.82	0.86	64.0	1.43	40	18	490
K44A W22	55	280S/M	989	100	6.8	532	2.2	2.5	94.0	94.3	94.3	0.63	0.75	0.81	65.0	2.69	53	24	665
K46A W22	75	280S/M	990	139	7.9	724	2.7	3.2	93.8	94.6	94.7	0.60	0.72	0.79	65.0	4.48	37	17	725
K48A W22	90	315S/M	990	162	6.4	869	2.2	2.5	95.0	95.1	95.2	0.65	0.76	0.81	67.0	5.42	77	35	990
K50A W22	110	315S/M	990	196	6.2	1062	2.1	2.4	94.8	95.1	95.1	0.68	0.78	0.82	67.0	6.15	68	31	1040
K62A W22	132	315S/M	992	240	7.0	1271	2.4	2.7	95.4	95.8	95.6	0.65	0.75	0.80	67.0	7.23	55	25	1100
K52A W22	150	315S/M	990	269	6.5	1448	2.3	2.5	94.6	95.1	95.6	0.65	0.76	0.81	67.0	7.96	44	20	1180
K166 W22	160	355M/L	993	302	5.5	1540	1.8	2.1	95.0	95.8	95.8	0.60	0.72	0.77	73.0	8.80	73	33	1500
K54A W22	185	355M/L	995	358	6.6	1778	2.1	2.4	94.8	95.6	95.8	0.57	0.69	0.75	73.0	9.26	75	34	1550
K206 W22	200	355M/L	993	367	6.1	1924	1.9	2.1	95.3	95.9	95.9	0.63	0.74	0.79	73.0	10.4	86	39	1620
K56A W22	220	355M/L	995	414	6.5	2115	2.1	2.4	95.0	95.5	96.1	0.61	0.72	0.77	73.0	12.0	79	36	1710
K58A W22	250	355M/L	994	464	6.4	2406	2.2	2.3	95.5	96.0	96.0	0.61	0.73	0.78	73.0	13.9	84	38	1830
K60A W22	300	355M/L	993	557	5.8	2890	1.9	2.0	95.8	96.0	96.0	0.61	0.73	0.78	73.0	15.0	55	25	2493
High-Output Design - Special Frame																			
K10A W22	1.1	90L*	940	2.80	5.3	11.2	2.5	2.4	74.3	77.3	78.1	0.46	0.59	0.70	45.0	0.0066	42	23	24.7
K166/1 W22	160	315L	990	287	7.1	1544	2.5	2.8	95.3	95.8	95.8	0.64	0.75	0.81	68.0	6.87	48	22	1230

Mounting Configurations and order codes

Refer to page 27 for mounting configuration and details of order codes.

Other kW/frame combinations available on request. Please consult your nearest WEG office for details.

Notes:

- 1) The values shown are subject to change without prior notice. To obtain actual values prior to order placement contact your nearest WEG office.
- 2) Efficiency test method 2-1-1B as per IEC 60034-30-1.
- 3) Noise level is mean sound pressure at 1 meter as per AS 60034.9 standard.

* Output available in reduced frame; meeting efficiency level E2.

14. W22 High Efficiency IE3 Performance Data - 8 Pole

Part No.	Output kW	IEC Frame	Rated speed (rpm)	Full load current I _L (A)	Locked rotor current I _L /I _L	Full load torque T _L (Nm)	Locked rotor torque T _L /T _L	Break-down torque T _B /T _L	415 V						Sound pressure level dB (A)	Moment of Inertia J (kgm ²)	Max. locked rotor time(s)		Approx Weight (kg)
									% of full load								Cold	Hot	
									Efficiency η			Power factor (Cos φ)							
									50	75	100	50	75	100					
8 Pole - 750 rpm - 50 Hz																			
K08B W22	0.18	80	685	0.688	3.3	2.53	2.0	2.2	49.3	56.0	58.7	0.43	0.53	0.62	42.0	0.0029	66	30	13.5
K2B W22	0.25	80	705	0.902	3.5	3.44	2.0	2.2	56.0	62.0	64.3	0.39	0.50	0.60	42.0	0.0034	66	30	14.5
K4B W22	0.37	90S	710	1.26	3.7	5.05	2.0	2.3	62.0	67.0	69.5	0.38	0.50	0.59	44.0	0.0055	66	30	19.0
K6B W22	0.55	90L	705	1.64	3.8	7.56	1.9	2.2	65.0	70.0	73.0	0.42	0.55	0.64	44.0	0.0066	64	29	23.0
K8B W22	0.75	100L	715	2.34	4.3	10.1	1.8	2.1	71.1	74.8	75.5	0.38	0.50	0.59	50.0	0.0127	66	30	30.5
K10B W22	1.1	100L	710	3.34	4.6	14.8	1.9	2.0	71.1	76.0	77.7	0.38	0.50	0.59	50.0	0.0143	66	30	33.0
K12B W22	1.5	112M	710	4.02	5.0	20.3	2.5	2.8	77.9	79.7	79.9	0.42	0.56	0.65	46.0	0.0238	62	28	43.0
K16B W22	2.2	132S	715	5.32	6.2	29.6	2.3	2.5	81.0	82.0	82.2	0.48	0.62	0.70	48.0	0.0690	59	27	69.0
K23B W22	3	132M	720	7.12	6.5	40.1	2.4	2.6	81.5	83.2	83.7	0.48	0.61	0.70	48.0	0.0838	46	21	75.0
K198 W22	4	160M	735	9.71	5.0	52.4	2.1	2.3	84.4	86.6	86.8	0.44	0.58	0.66	51.0	0.1229	75	34	114
K21B W22	5.5	160M	730	12.3	5.0	72.5	2.1	2.3	85.2	87.0	87.8	0.49	0.62	0.71	51.0	0.1492	62	28	123
K25B W22	7.5	160L	732	18.1	5.5	98.0	2.2	2.5	86.0	88.0	88.5	0.44	0.56	0.65	51.0	0.2199	48	22	145
K28B W22	9.2	180M	730	18.2	6.0	121	2.0	2.6	88.6	89.3	90.0	0.60	0.73	0.78	52.0	0.2575	33	15	173
K30B W22	11	180L	731	23.0	6.5	144	2.3	2.7	89.0	89.5	90.0	0.52	0.65	0.74	52.0	0.2846	26	12	185
K32B W22	15	200L	730	32.1	4.9	196	1.8	2.0	89.4	90.1	90.2	0.53	0.65	0.72	56.0	0.4571	73	33	220
K34B W22	18.5	225S/M	735	35.6	6.5	241	1.7	2.5	89.8	90.3	90.3	0.60	0.73	0.80	56.0	0.8219	62	28	377
K36B W22	22	225S/M	735	43.8	7.0	286	2.1	2.7	90.3	90.8	90.8	0.57	0.70	0.77	56.0	0.9574	44	20	402
K38B W22	30	250S/M	730	53.7	7.4	393	1.9	2.8	91.0	91.5	91.5	0.63	0.75	0.85	56.0	1.43	40	18	490
K40B/1 W22	37	280S/M	741	74.6	5.5	478	1.8	2.3	91.5	92.0	92.0	0.58	0.69	0.75	59.0	2.82	70	32	673
K42B W22	45	280S/M	740	86.9	6.0	581	1.8	2.2	91.9	92.4	92.4	0.60	0.71	0.78	59.0	3.49	66	30	720
K44B W22	55	280S/M	745	110	5.8	710	2.0	2.1	92.2	92.7	92.7	0.57	0.69	0.75	59.0	3.38	57	26	812
K46B W22	75	315S/M	740	142	6.0	968	1.8	2.2	92.8	93.3	93.3	0.62	0.73	0.79	62.0	6.56	88	40	1025
K48B W22	90	315S/M	743	171	6.5	1159	2.1	2.3	93.1	93.6	93.6	0.61	0.72	0.78	62.0	7.84	88	40	1100
K50B W22	110	355M/L	745	209	6.1	1411	1.3	2.3	93.4	93.9	93.9	0.61	0.73	0.78	70.0	11.6	139	63	1450
K62B W22	132	355M/L	745	253	6.5	1693	1.3	2.3	93.7	94.2	94.2	0.60	0.71	0.77	70.0	12.6	106	48	1587
K52B W22	150	355M/L	745	291	6.5	1926	1.6	2.5	93.8	94.2	94.2	0.58	0.70	0.76	70.0	13.2	99	45	1540
K168 W22	160	355M/L	745	306	6.4	2055	1.4	2.3	93.5	94.5	94.5	0.61	0.73	0.77	70.0	17.4	66	30	1747
K54B W22	185	355M/L	745	357	6.9	2373	2.0	2.9	93.2	94.8	94.8	0.60	0.70	0.76	70.0	18.5	123	56	1819
K208 W22	200	355M/L	745	376	6.2	2565	1.3	2.3	94.3	94.8	94.8	0.61	0.73	0.78	70.0	18.9	123	56	1891
K56B W22	220	355M/L	745	429	7.0	2825	1.8	2.6	94.8	95.1	95.2	0.58	0.73	0.75	70.0	19.8	66	30	2020
High-Output Design - Special Frame																			
K40B W22	37	250S/M*	735	72.7	8.0	484	2.3	3.0	91.5	92.0	92.0	0.57	0.70	0.77	56.0	1.61	26	12	550

Mounting Configurations

Part numbers for alternative mounting configurations

W22 Industrial

K07 W22 = W22 IE3 Industrial, B3 (Foot Mounted)
 L07 W22 = W22 IE3 Industrial, B35 (Foot & Flange Mounted)
 M07 W22 = W22 IE3 Industrial, B5 (Flange Mounted)

W22 Mining

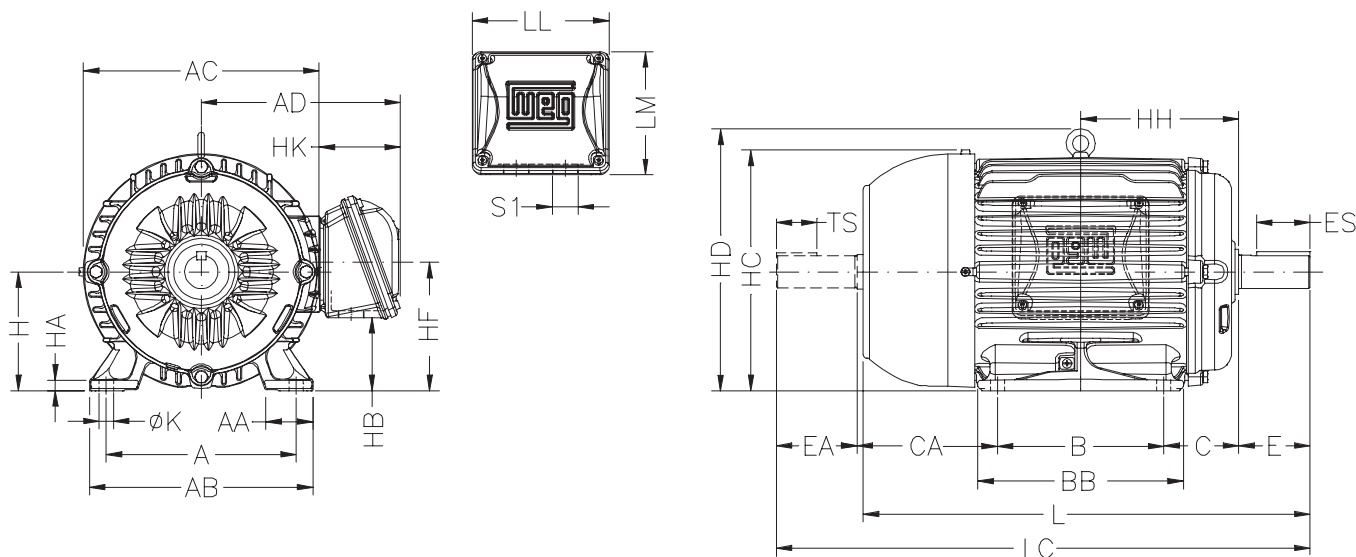
KTE07 W22M = W22 IE3 Mining, B3 (Foot Mounted)
 LTE07 W22M = W22 IE3 Mining, B35 (Foot & Flange Mounted)
 MTE07 W22M = W22 IE3 Mining, B5 (Flange Mounted)

Notes:

- 1) The values shown are subject to change without prior notice. To obtain actual values prior to order placement contact your nearest WEG office.
- 2) Efficiency test method 2-1-1B as per IEC 60034-30-1.
- 3) Noise level is mean sound pressure at 1 meter as per AS 60034.9 standard.
- 4) Part numbers shown are for W22 IE3 Industrial Line (Foot Mounted).
 * Output available in reduced frame; meeting efficiency level IE2.

**Other kW/frame combinations available on request.
 Please consult your nearest WEG office for details.**

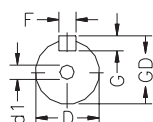
15. W22 Mechanical data - frames 63 to 132



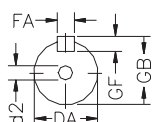
Main Dimensions (mm)																									Bearings	
IEC Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	H	HA	HB	HC	HD	HF	HH	HK	LL	LM	K	L	LC	S1	D.E.	N.D.E.
63	100	25.5	116	125	122	80	N/A	95	40	78	63	7	25.5	129	N/A	68.5	80	59	108	98	7	216	241	M20x1.5	6201 ZZ	6201 ZZ
71	112	28.5	132	141	130	90	N/A	113.5	45	88	71	7	33	145	N/A	76	90	59	108	98	7	248	276	M20x1.5	6202 ZZ	6202 ZZ
80	125	30.5	149	159	139	100	N/A	125.5	50	93	80	8	43.5	163	N/A	87	100	59	108	98	10	276	313	M20x1.5	6204 ZZ	6203 ZZ
L80	125	30.5	149	159	139	100	N/A	125.5	50	93	80	8	43.5	163	N/A	87	100	59	108	98	10	325	362	M20x1.5	6204 ZZ	6203 ZZ
90S	140	36.5	164	179	157	100	N/A	131	56	104	90	9	45	182	N/A	90	106	67	115	104	10	304	350	M20x1.5	6205 ZZ	6204 ZZ
L90S	140	36.5	164	179	157	100	N/A	131	56	104	90	9	45	182	N/A	90	106	67	115	104	10	355	381	M20x1.5	6205 ZZ	6204 ZZ
90L	140	36.5	164	179	157	125	N/A	156	56	104	90	9	45	182	N/A	90	118.5	67	115	104	10	329	375	M20x1.5	6205 ZZ	6204 ZZ
L90L	140	36.5	164	179	157	125	N/A	156	56	104	90	9	45	182	N/A	90	118.5	67	115	104	10	360	406	M20x1.5	6205 ZZ	6204 ZZ
100L	160	40	188	199	167	140	N/A	173	63	118	100	10	61.5	205	244	106.4	133	67	115	104	12	376	431	M20x1.5	6206 ZZ	6205 ZZ
L100L	160	40	188	199	167	140	N/A	173	63	118	100	10	61.5	205	244	106.4	133	67	115	104	12	420	475	M20x1.5	6206 ZZ	6205 ZZ
112M	190	40.5	220	222	192	140	N/A	177	70	128	112	10	54.5	235	280	112	140	80	140	130.5	12	393	448	M25x1.5	6207 ZZ	6206 ZZ
132S	216	45	248	272	218	140	N/A	187	89	150	132	16	75	266	319	132	159	80	140	130.5	12	452	519	M25x1.5	6308 ZZ	6207 ZZ
132M	216	51	248	271	218	178	55	225	89	150	132	20	75	266	319	132	178	79	140	133	12	490	557	2xM32x1.5	6308 ZZ	6207 ZZ

Shaft dimensions

Drive End (D.E.)

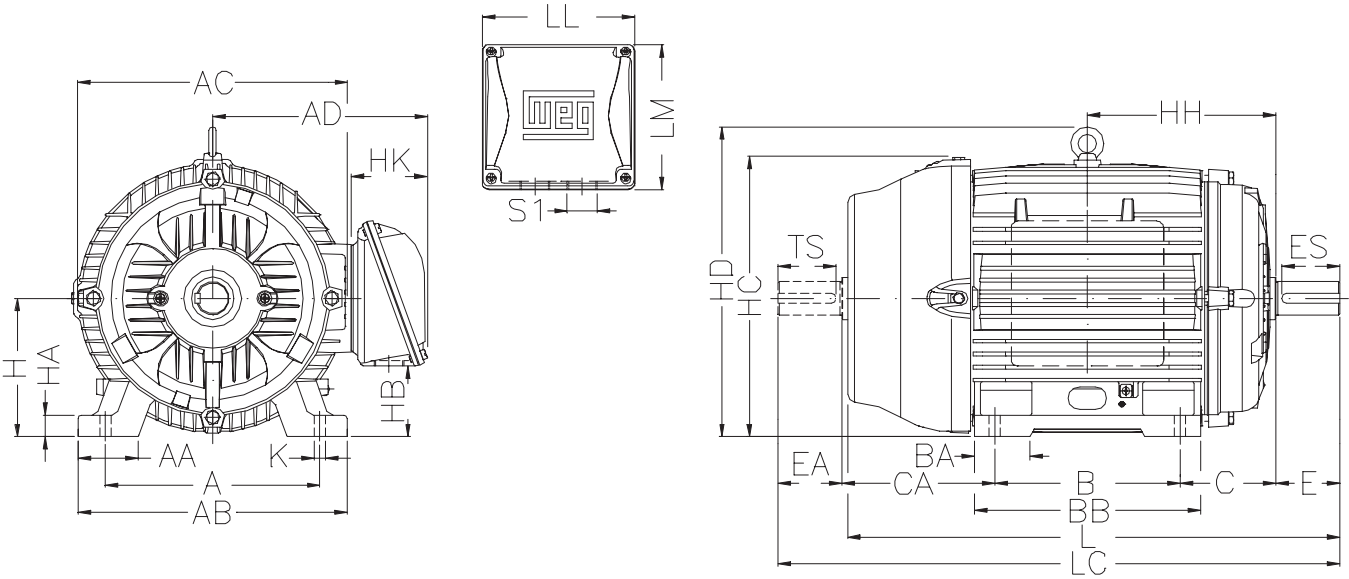


Non Drive End (N.D.E.)



IEC Frame	Shaft Dimensions (mm)													
	D.E. shaft dimensions							N.D.E. shaft dimensions						
	ϕD	E	ES	F	GD	G	d1	ϕDA	EA	TS	FA	GB	GF	d2
63	11j6	23	14	4	8.5	4	EM4	9j6	20	12	3	7.2	3	EM3
71	14j6	30	18	5	11	5	DM5	11j6	23	14	4	8.5	4	EM4
80	19j6	40	28	6	15.5	6	DM6	14j6	30	18	5	11	5	DM4
90	24j6	50	36	8	20	7	DM8	16j6	40	28	5	13	5	DM6
100	28j6	60	45	8	24	7	DM10	22j6	50	36	6	18.5	6	DM8
112	28j6	60	45	8	24	7	DM10	24j6	50	36	8	20	7	DM8
132	38k6	80	63	10	33	8	DM12	28j6	60	45	8	24	7	DM10

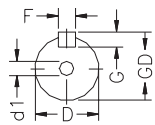
15. W22 Mechanical data - frames 160 to 200



Main Dimensions (mm)																									Bearings	
IEC Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	H	HA	HB	HC	HD	HF	HH	HK	LL	LM	K	L	LC	S1	D.E.	N.D.E.
160M	254	64	308	329	264	210	63	254	108	174	160	22	79	327	374	168	213	100.5	198	188	14.5	598	712	2xM32x1.5	6309 C3	6209 Z-C3
160L	254	64	308	329	264	254	63	298	108	174	160	22	79	327	374	168	235	100.5	198	188	14.5	642	756	2xM32x1.5	6309 C3	6209 Z-C3
180M	279	78	350	360	279	241	70	294	121	200	180	28	92	363	413	180	241.5	100.5	198	188	14.5	664	782	2xM40x1.5	6311 C3	6211 C3
180L	279	78	350	360	279	279	70	332	121	200	180	28	92	363	413	180	260.5	100.5	198	188	14.5	702	820	2xM40x1.5	6311 C3	6211 Z-C3
200L	318	82	385	402	317	305	82	370	133	222	200	30	119	405	464	218	285.5	118	228	217	18.5	767	880	2xM50x1.5	6312 C3	6212 Z-C3

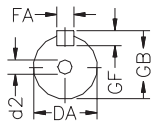
Shaft dimensions

Drive End (D.E.)

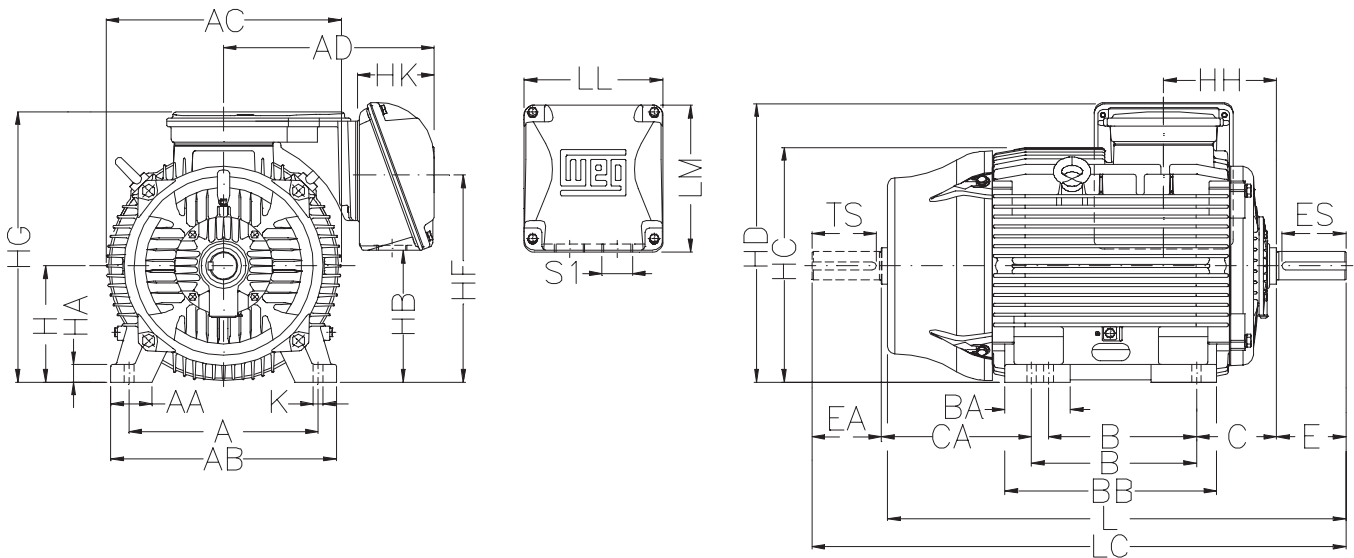


IEC Frame	Shaft Dimensions (mm)													
	D.E. shaft dimensions							N.D.E. shaft dimensions						
	Ø D	E	ES	F	GD	G	d1	Ø DA	EA	TS	FA	GB	GF	d2
160	42k6	110	80	12	37	8	DM16	42k6	110	80	12	37	8	DM16
180	48k6	110	80	14	42.5	9	DM16	48k6	110	80	14	42.5	9	DM16
200	55m6	110	80	16	49	10	DM20	48k6	110	80	14	42.5	9	DM20

Non Drive End (N.D.E.)



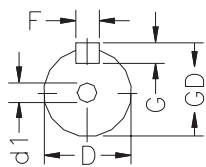
15. W22 Mechanical data - frames 225 to 355



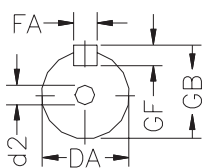
IEC Frame	Main Dimensions (mm)																							Bearings			
	A	AA	AB	AC	AD	B	BA	BB	C	CA	H	HA	HB	HC	HD	HF	HG	HH	HK	LL	LM	K	L	LC	S1	D.E. ¹	N.D.E.
225S/M 2P	356	80	436	455	408	286/311	124	412	149	319/294	225	34	255	453	550	403	523	212	153	269	285	18.5	856	974	2xM50x1.5	6314 C3	6314 C3
225S/M *	356	80	436	455	408	286/311	124	412	149	319/294	225	34	255	453	550	403	523	212	153	269	285	18.5	886	1004	2xM50x1.5	6314 C3	6314 C3
250S/M 2P	406	100	506	486	408	311/349	146	467	168	354/316	250	43	290	493	583	449	566	214	153	269	285	24	965	1113	2xM63x1.5	6314 C3	6314 C3
250S/M *	406	100	506	486	408	311/349	146	467	168	354/316	250	43	290	493	583	449	566	214	153	269	285	24	965	1113	2xM63x1.5	6316 C3	6314 C3
280S/M 2P	457	100	557	599	442	368/419	151	517	190	385/334	280	42	383	580	696	556	667	266	153	314	312	24	1071	1223	2xM63x1.5	6314 C3	6314 C3
280S/M *	457	100	557	599	442	368/419	151	517	190	385/334	280	42	383	580	696	556	667	266	153	314	312	24	1101	1253	2xM63x1.5	6319 C3	6316 C3
315S/M 2P	508	120	630	657	525	406/457	184	621	216	494/443	315	48	386	644	768	615	744	264	180	372	382	28	1244	1396	2xM63x1.5	6314 C3	6314 C3
315S/M *	508	120	630	657	525	406/457	184	621	216	494/443	315	48	386	644	768	615	744	264	180	372	382	28	1274	1426	2xM63x1.5	6319 C3	6316 C3
315L 2P	508	120	630	657	589	508	219	752	216	497	315	48	336	644	774	575	760	284	215	404	438	28	1353	1505	2xM63x1.5	6314 C3	6314 C3
315L *	508	120	630	657	589	508	219	752	216	497	315	48	336	644	774	575	760	284	215	404	438	28	1353	1505	2xM63x1.5	6314 C3	6314 C3
355M/L 2P	610	140	750	736	609	560/630	230	760	254	483/413	355	50	461	723	898	700	850	340	225	404	436	28	1412	1577	2xM80x2.0	6316 C3	6314 C3
355M/L *	610	140	750	736	609	560/630	230	760	254	483/413	355	50	461	723	898	700	850	340	225	404	436	28	1482	1647	2xM80x2.0	6322 C3	6319 C3

Shaft dimensions

Drive End (D.E.)



Non Drive End (N.D.E.)



IEC Frame	Shaft Dimensions (mm)													
	D.E. shaft dimensions							N.D.E. shaft dimensions						
	Ø D	E	ES	F	GD	G	d1	Ø DA	EA	TS	FA	GB	GF	d2
225S/M 2P	55m6	110	100	16	49	10	DM20	55m6	110	100	16	49	10	DM20
225S/M *	60m6	140	125	18	53	11	DM20	60m6	140	125	18	53	11	DM20
250S/M 2P	60m6	140	125	18	53	11	DM20	60m6	140	125	18	53	11	DM20
250S/M *	70m6	140	125	20	62.5	12	DM20	60m6	140	125	18	53	11	DM20
280S/M 2P	65m6	140	125	18	58	11	DM20	60m6	140	125	18	53	11	DM20
280S/M *	80m6	170	160	22	71	14	DM20	65m6	140	125	18	58	11	DM20
315S/M 2P	65m6	140	125	18	58	11	DM20	60m6	140	125	18	53	11	DM20
315S/M *	85m6	170	160	22	76	14	DM20	65m6	140	125	18	58	11	DM20
315L 2P	65m6	140	125	18	58	11	DM20	60m6	140	125	18	53	11	DM20
315L *	85m6	170	160	22	76	14	DM20	65m6	140	125	18	58	11	DM20
355M/L 2P	75m6	140	125	20	67.5	12	DM20	60m6	140	125	18	53	11	DM20
355M/L *	100m6	210	200	28	90	16	DM24	80m6	170	160	22	71	14	DM20

Notes applicable to pages 28, 29 & 30:

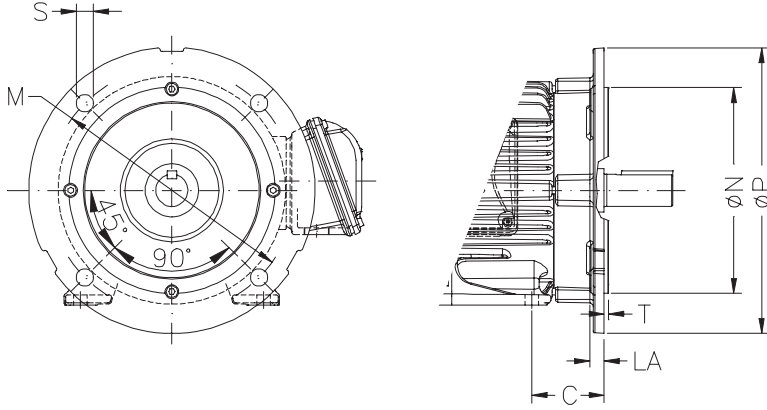
1. W22 mining motors frames 225 to 355 4, 6 and 8 pole have NU roller bearings on D.E.

(*) Dimensions are applicable to 4, 6 and 8 pole motors.

15. W22 Flange dimensions

FF Flange (IEC) - frames 63 to 132

Mounting configurations B35, B5, V1, V3, V15, V36

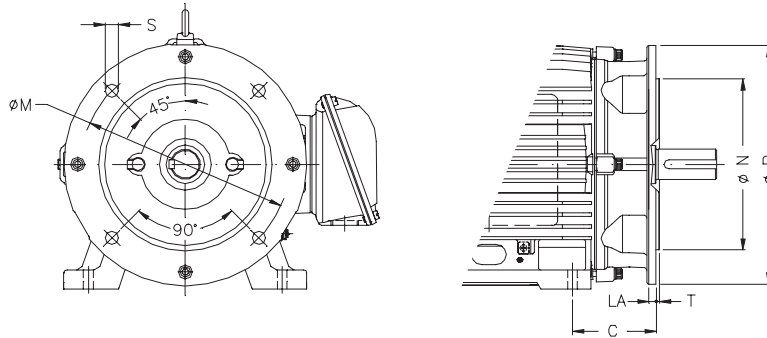


FF Flange (IEC)

IEC Frame	"FF" flange dimensions (mm)							No. of holes
	Flange	C	ØM	ØN	ØP	S	T	
63	FF-115	40	115	95	140	10	3	4
71	FF-130	45	130	110	160	10	3.5	4
80	FF-165	50	165	130	200	12	3.5	4
90	FF-165	56	165	130	200	12	3.5	4
100	FF-215	63	215	180	250	15	4	4
112	FF-215	70	215	180	250	15	4	4
132	FF-265	89	265	230	300	15	4	4

FF Flange (IEC) - frames 160 to 200

Mounting configurations B35, B5, V1, V3, V15, V36

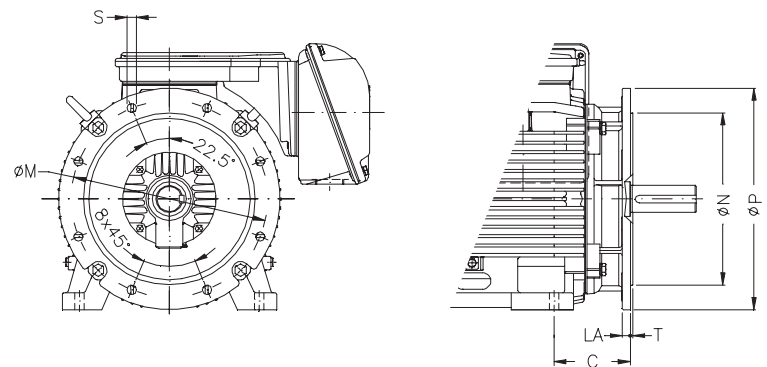


FF Flange (IEC)

IEC Frame	"FF" flange dimensions (mm)							No. of holes
	Flange	C	ØM	ØN	ØP	S	T	
160	FF-300	108	300	250	350	19	5	4
180	FF-300	121	300	250	350	19	5	4
200	FF-350	133	350	300	400	19	5	4

FF Flange (IEC) - frames 225 to 355

Mounting configurations B35, B5, V1, V3, V15, V36



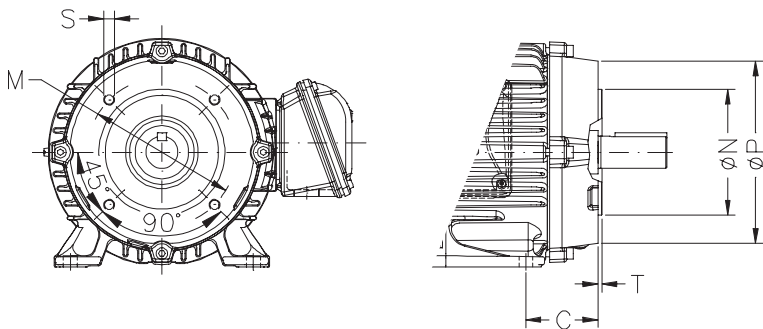
FF Flange (IEC)

IEC Frame	"FF" flange dimensions (mm)							No. of holes
	Flange	C	ØM	ØN	ØP	S	T	
225	FF-400	149	400	350	450	19	5	8
250	FF-500	168	500	450	550	19	5	8
280	FF-500	190	500	450	550	19	5	8
315	FF-600	216	600	550	660	24	6	8
355	FF-740	254	740	680	800	24	6	8

15. W22 Flange dimensions

C-DIN Flange (DIN 42677) (B14A) - frames 63 to 132

Mounting configurations B14, B34, V18, V19

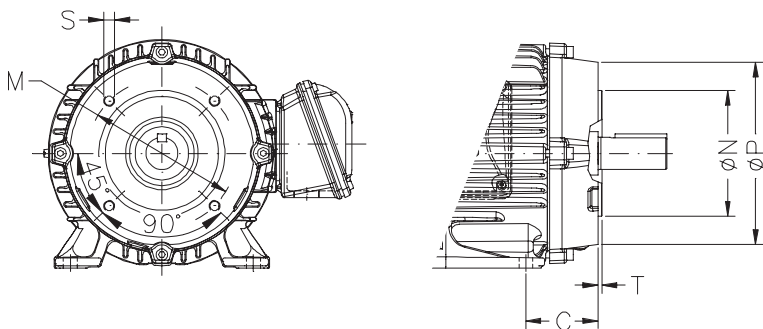


C-DIN Flange (DIN 42677) (B14A)

IEC Frame	"C" DIN flange dimensions (mm)							No. of holes
	Flange	C	ØM	ØN	ØP	S	T	
63	C-90	40	75	60	90	M5	2.5	4
71	C-105	45	85	70	105	M6	2.5	4
80	C-120	50	100	80	120	M6	3	4
90	C-140	56	115	95	140	M8	3	4
100	C-160	63	130	110	160	M8	3.5	4
112	C-160	70	130	110	160	M8	3.5	4
132	C-200	89	165	130	200	M10	3.5	4

C-DIN Flange "Higher" (DIN 42677) (B14B) - frames 63 to 112

Mounting configurations B14, B34, V18, V19

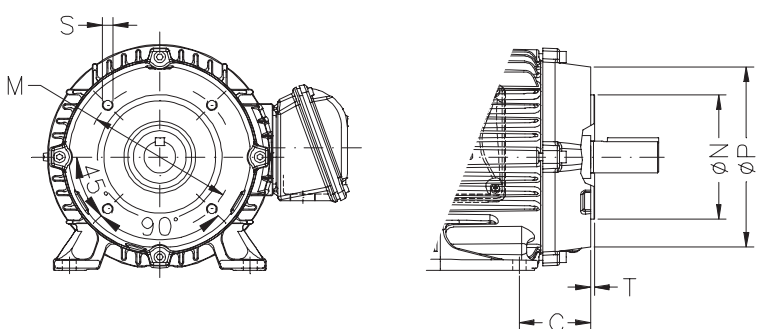


C-DIN Flange "Higher" (DIN 42677) (B14B)

IEC Frame	"C" DIN flange dimensions (mm)							No. of holes
	Flange	C	ØM	ØN	ØP	S	T	
63	FG 063CD120GG	40	100	80	120	M6	3	4
71	FG 071CD140GG	45	115	95	140	M8	3	4
80	FG 080CD160GG	50	130	110	160	M8	3.5	4
90	FG 090CD160GG	56	130	110	160	M8	3.5	4
100	FG 100CD200GG	63	165	139	200	M10	3.5	4
112	FG 112CD200GG	70	165	130	200	M10	3.5	4

FC Flange (NEMA) - frames 63 to 132

Mounting configurations B14, B34, V18, V19

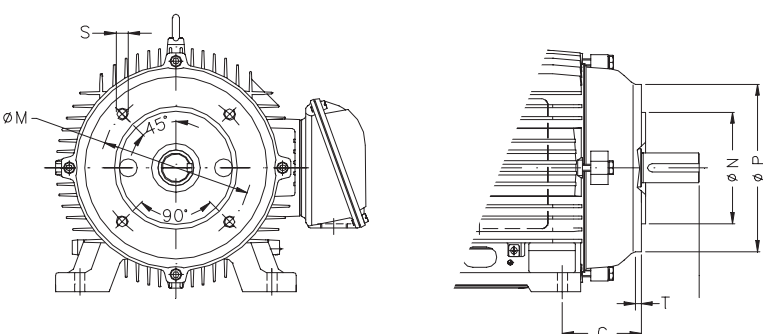


FC Flange (NEMA)

IEC Frame	"FC" flange dimensions (mm)							No. of holes
	Flange	C	ØM	ØN	ØP	S	T	
63	FC-95	40	95.2	76.2	143	UNC 1/4x20	4	4
71	FC-95	45	95.2	76.2	143	UNC 1/4x20	4	4
80	FC-95	50	95.2	76.2	143	UNC 1/4x20	4	4
90	FC-149	56	149.2	114.3	165	UNC 3/8x16	4	4
100	FC-149	63	149.2	114.3	165	UNC 3/8x16	4	4
112	FC-184	70	184.2	151.9	225	UNC 1/2x13	6.3	4
132	FC-184	89	184.2	151.9	225	UNC 1/2x13	6.3	4

FC Flange (NEMA) - frames 160 to 200

Mounting configurations B14, B34, V18, V19



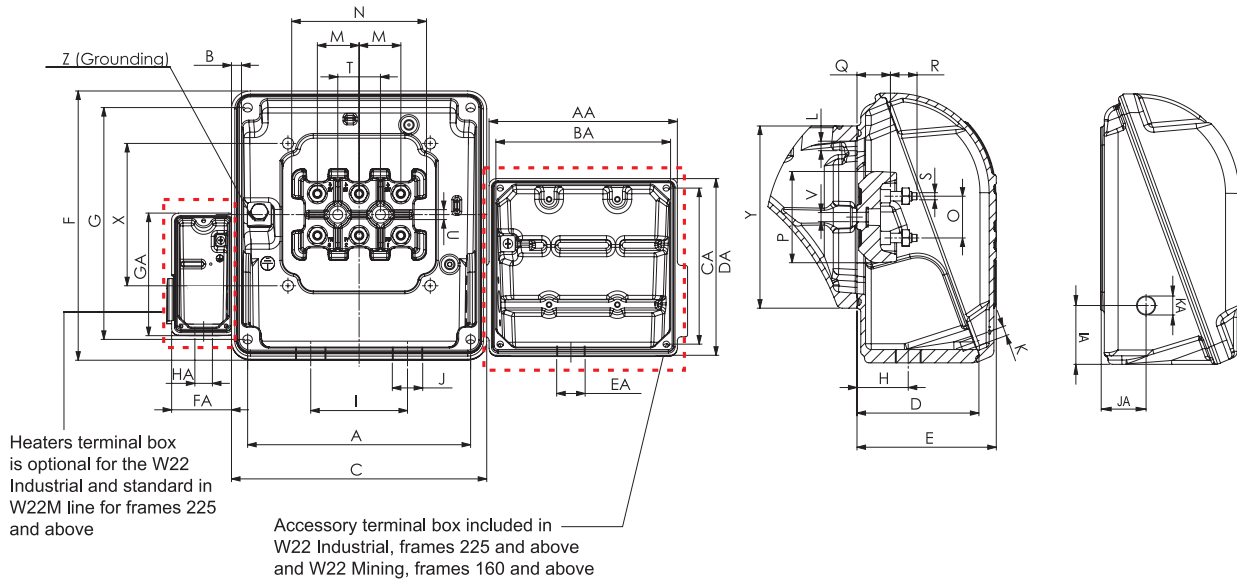
FC Flange (NEMA)

IEC Frame	"FC" flange dimensions (mm)							No. of holes
	Flange	C	ØM	ØN	ØP	S	T	
160	FC-184	108	184.2	151.9	225	UNC 1/2x13	6.3	4
180	FC-228	121	228.6	266.7	280	UNC 1/2x13	6.3	4
200	FC-228	133	228.6	266.7	280	UNC 1/2x13	6.3	4

Notes applicable to pages 28, 29, 30, 31 & 32:

* For certified dimensions, please contact your nearest WEG office or business partner.

16. Terminal box drawings



Frame	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
63	90	8	108.5	50	59	96	85	27	42	M20x1.5	M5x0.8	M5x0.8	16	53	16	35	15.5	12	M4x0.7	20	5.8
71	90	8	108.5	50	59	96	85	27	42	M20x1.5	M5x0.8	M5x0.8	16	53	16	35	15.5	12	M4x0.7	20	5.8
80	90	8	108.5	50	59	96	85	27	42	M20x1.5	M5x0.8	M5x0.8	16	53	16	35	15.5	12	M4x0.7	20	5.8
90	98	7	114	58	67	101	91	31	42	M20x1.5	M5x0.8	M5x0.8	16	53	16	35	15.5	12	M4x0.7	20	5.8
100	98	7	114	58	67	101	91	31	42	M20x1.5	M5x0.8	M5x0.8	16	53	16	35	15.5	12	M4x0.7	20	5.8
112	117	7	138.5	69	80	130.5	117	36	54	M25x1.5	M6x1.0	M6x1.0	23	75	23	52	17	16	M5x0.8	23	6.5
132	117	7	138.5	69	80	130.5	117	36	54	M25x1.5	M6x1.0	M6x1.0	23	75	23	52	17	16	M5x0.8	23	6.5
160	175	8.5	198	86	100.5	188	175	46	84	2xM32x1.5	M8x1.25	M8x1.25	28	90	28	60	21.5	20.5	M6x1.0	28	6.6
180	175	8.5	198	86	100.5	188	175	46	84	2xM40x1.5	M8x1.25	M8x1.25	28	90	28	60	21.5	20.5	M6x1.0	28	6.6
200	204	9.5	228	101.5	118	216	204	56	94	2xM50x1.5	M8x1.25	M8x1.25	35	112	35	74	24	24	M8x1.25	35	9.5
225S/M	235	12.5	269	127	153	284	260	68	110	2xM50x1.5	M10x1.5	M10x1.5	44	140	44	94	32.5	28	M10x1.5	45	10.5
250S/M	235	12.5	269	127	153	284	260	68	110	2xM63x1.5	M10x1.5	M10x1.5	44	140	44	94	32.5	28	M10x1.5	45	10.5
280S/M	275	13.5	314	130	153	311	275	68	126	2xM63x1.5	M12x1.75	M12x1.75	45	153	45	108	35.5	40	M12x1.75	45	10.5
315S/M	340	14.5	379	156	180	380.5	345	82	160	2xM63x1.5	M12x1.75	M12x1.75	45	153	45	108	35.5	40	M12x1.75	45	10.5
315L	365	14.5	404	202	226	422	390	97	200	2xM63x1.5	M12x1.75	M14x2.0	65	210	65	146	48	48	M16x2.0	65	10.5
355M/L	365	14.5	404	195.5	225	424	390	97	200	2xM80x2.0	M12x1.75	M14x2.0	65	210	65	146	51	45	M16x2.0	65	10.5

Frame	V	X	Y	Z	Auxiliary Box					Heaters Box			IA	JA	KA	Max number of connectors		
					AA	BA	CA	DA	EA	FA	GA	HA				Main	Accessories	Space Heater
63	M5x0.8	56	77	0.5-6mm ²	109	90	85	96	M20x1.5	-	-	-	-	-	-	4	16	-
71	M5x0.8	56	78	0.5-6mm ²	109	90	85	96	M20x1.5	-	-	-	-	-	-	4	16	-
80	M5x0.8	56	81	0.5-6mm ²	109	90	85	96	M20x1.5	-	-	-	-	-	-	4	16	-
90	M5x0.8	56	77	0.5-6mm ²	109	90	85	96	M20x1.5	-	-	-	-	-	-	4	16	-
100	M5x0.8	56	81	0.5-6mm ²	109	90	85	96	M20x1.5	-	-	-	-	-	-	4	16	-
112	M5x0.8	70	107	2-10mm ²	109	90	85	96	M20x1.5	-	-	-	-	-	-	6	16	-
132	M5x0.8	70	107	2-10mm ²	109	90	85	96	M20x1.5	68	102	M20x1.5	-	-	-	6	16	4
160	M6x1.0	110	144	5.2-25mm ²	139	117	117	130	M20x1.5	68	102	M20x1.5	47	40	M20x1.5	12	26	4
180	M6x1.0	110	140	5.2-25mm ²	139	117	117	130	M20x1.5	68	102	M20x1.5	47	40	M20x1.5	12	26	4
200	M8x1.25	120	155	5.2-35mm ²	139	117	117	130	M20x1.5	68	102	M20x1.5	47	45	M20x1.5	12	26	4
225S/M	M10x1.5	150	192	25-50mm ²	139	117	117	130	M20x1.5	68	133	M20x1.5	62	48	M20x1.5	12	26	4
250S/M	M10x1.5	150	192	25-50mm ²	139	117	117	130	M20x1.5	68	133	M20x1.5	62	48	M20x1.5	16	26	4
280S/M	M10x1.5	150	207	35-70mm ²	139	117	117	130	M20x1.5	68	133	M20x1.5	77	56	M20x1.5	16	26	4
315S/M	M10x1.5	200	260	35-70mm ²	139	117	117	130	M20x1.5	68	133	M20x1.5	82	69	M20x1.5	16	26	4
315L	M10x1.5	260	300	85-120mm ²	139	117	117	130	M20x1.5	68	133	M20x1.5	97	79	M20x1.5	16	26	4
355M/L	M10x1.5	260	305	85-120mm ²	139	117	117	130	M20x1.5	68	133	M20x1.5	97	79	M20x1.5	16	26	4

17. Rainhood/Canopy

Utilisation of a rainhood/canopy increases the total length of the motor. The additional length can be seen on the table 31.

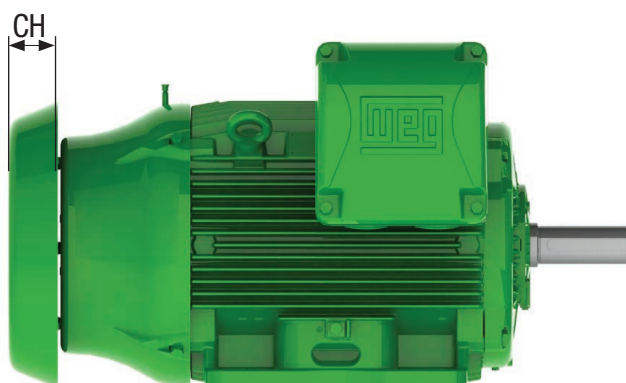


Figure 41 - Motor with rainhood/canopy

Frame	Dimension CH [increased motor length (mm)]
63	18
71	18
80	18
90	18
100	28
112	31
132	31
160	47
180	57
200	67
225S/M	81
250S/M	81
280S/M	91
315S/M	91
315L	91
355M/L	91

Table 31 - Rainhood dimension

18. Packaging

W22 motors in frames 63 to 132 are packaged in cardboard boxes (see figure 42), following are the dimensions, weights and volumes (refer table 32).



Figure 42 - Cardboard box

For frames 160 to 355A/B, the motors are packaged in wooden crates (see figure 43). Dimensions, weights and volumes (refer table 33).

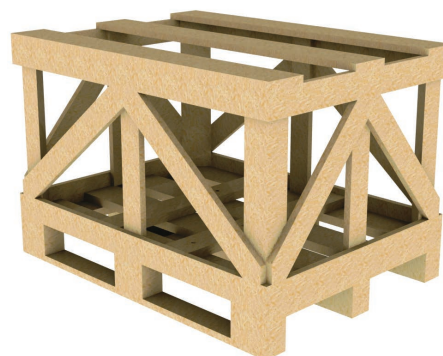


Figure 43 - Wooden crates

Side mounted terminal box

Frame	External height (m)	External width (m)	External length (m)	Weight (kg)	Volume (m ³)
63	0.20	0.24	0.28	0.2	0.01
71	0.20	0.28	0.30	0.2	0.01
80	0.21	0.28	0.36	0.7	0.02
L80	0.24	0.32	0.40	0.8	0.03
90	0.24	0.32	0.40	0.8	0.03
100L	0.27	0.35	0.46	1.6	0.04
L100L	0.32	0.37	0.50	1.4	0.06
112M	0.31	0.38	0.46	1.7	0.05
132	0.35	0.48	0.60	2.1	0.10
160	0.50	0.40	0.74	9.2	0.15
180	0.53	0.43	0.82	12.3	0.19
200	0.59	0.51	0.88	13.5	0.27
225S/M	0.90	0.85	1.15	51.9	0.88
250S/M	0.90	0.85	1.25	54.6	0.96
280S/M	1.13	0.85	1.40	67.9	1.34
315S/M	1.13	0.85	1.55	69.9	1.49
315L	1.20	0.90	1.70	111	1.84
355M/L	1.32	1.05	1.73	127	2.40

Table 32 - Note: values to be added to the net motor weight

Top mounted terminal box

Frame	External height (m)	External width (m)	External length (m)	Weight (kg)	Volume (m ³)
63	0.26	0.21	0.30	0.2	0.02
71	0.26	0.21	0.30	0.2	0.02
80	0.27	0.26	0.36	0.7	0.02
90	0.32	0.27	0.43	0.9	0.04
100	0.33	0.27	0.46	1.4	0.04
112M	0.36	0.30	0.46	1.5	0.05
132	0.42	0.33	0.60	1.7	0.08
160	0.40	0.51	0.74	9.8	0.15
180	0.46	0.57	0.82	13.4	0.21
200	0.49	0.63	0.88	14.6	0.27
225S/M	0.78	0.85	1.15	47.7	0.76
250S/M	0.90	0.85	1.25	52.2	0.96
280S/M	0.95	0.95	1.40	71.6	1.26
315S/M	1.13	1.10	1.75	88.4	2.18
315L	1.10	1.12	1.70	138	2.10
355M/L	1.20	1.19	1.72	146	2.46

Table 33 - Note: values to be added to the net motor weight

W22 Industrial Motor

W22 Mining Motor

Based on state-of-the-art technologies which reduce carbon foot print from manufacturing, to installation and on-going use, the W22 range of IE3 High Efficiency motors will reduce your operating, inventory and maintenance costs, whilst helping you achieve carbon emission targets.

With the quietest noise levels on the market, you will not find a simpler and more economical way to meet noise level regulations. High torques will keep your equipment running, even under severe load conditions.

When used with a VSD, our innovative WISE® insulation will deliver years of reliable operation. Combined with WEG's CFW11, the patented Optimal Flux® will provide savings never before experienced.

WEG welcomes you to a world of efficiency gains, reliable operation and carbon footprint reduction. This is our contribution to a sustainable future for generations to come.

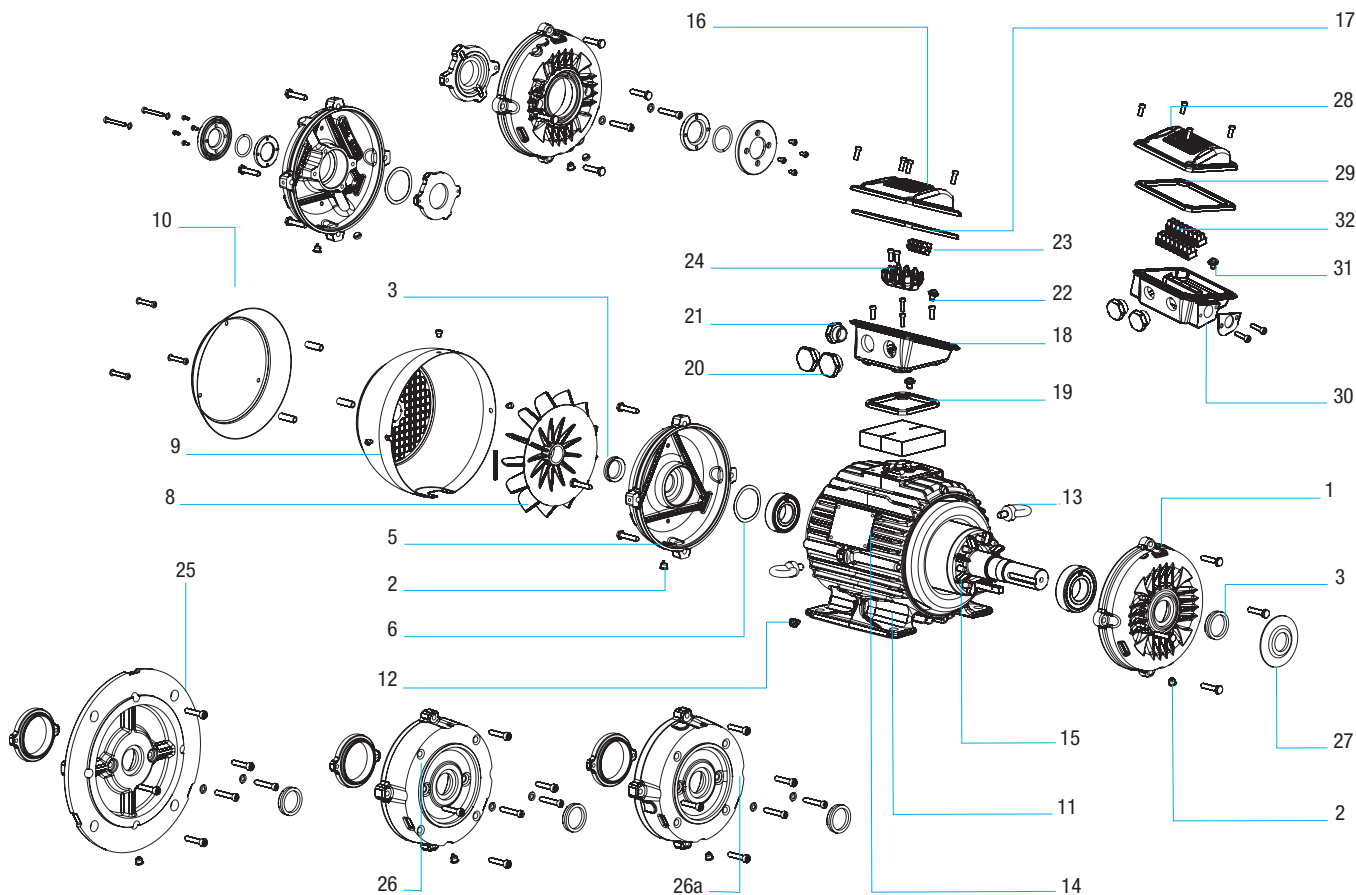


19. Spare Parts

General Information

The following information is for reference only. The itemised codes are for identification purposes and are not spare parts ordering codes.

Spare Parts - frames 63 to 112



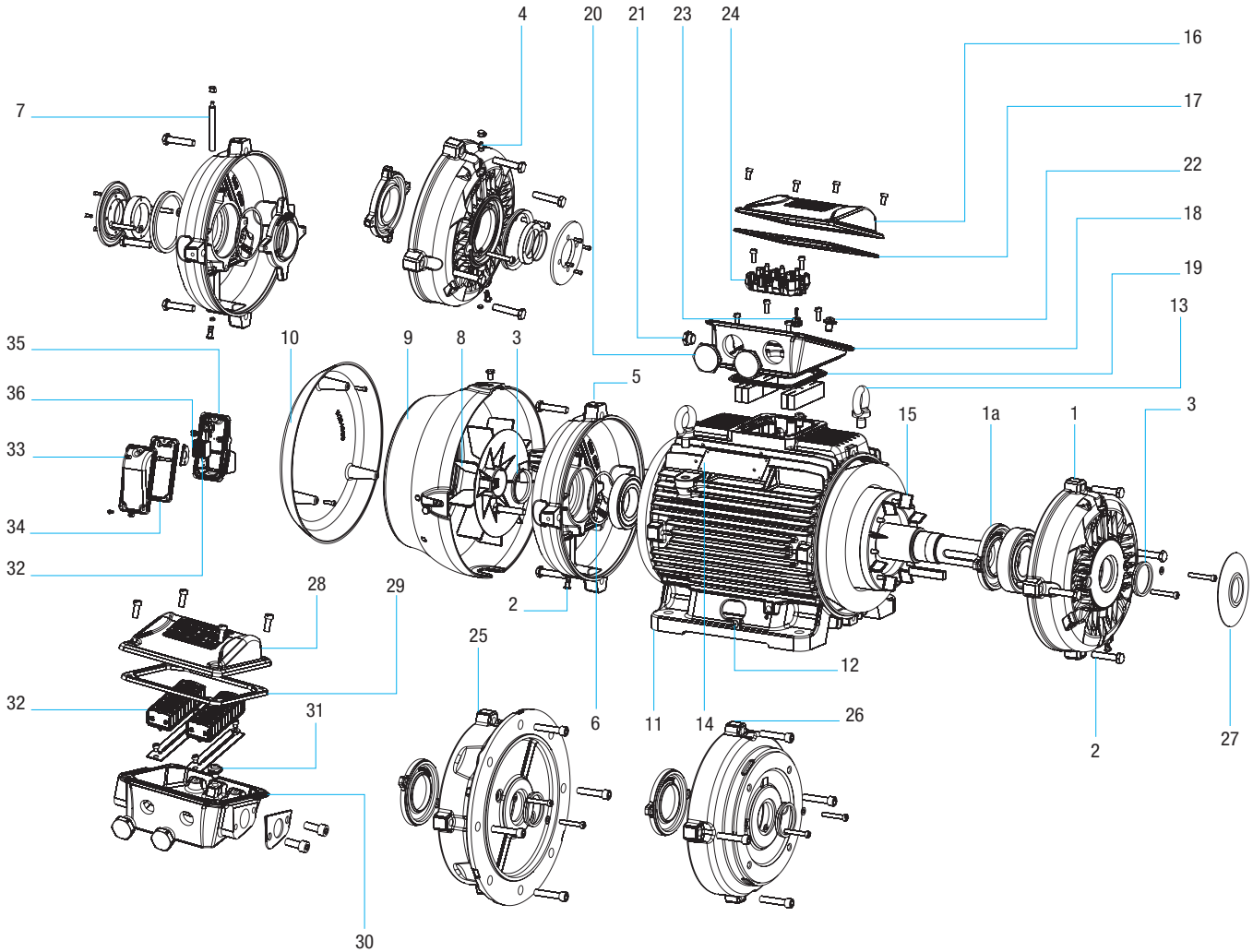
- | | |
|----------------------------------------|----------------------------------------------|
| 1. Drive endshield | 20. Terminal box plug for main leads |
| 2. Drain plug | 21. Terminal box plug for accessory leads |
| 3. Shaft seal (2) | 22. Terminal box earthing terminal |
| 5. Non-drive endshield | 23. Accessory connector |
| 6. Wave washer for axial displacement | 24. Terminal block |
| 8. Fan (2) | 25. FF flange |
| 9. Fan cover (3) | 26. FC flange (4) |
| 10. Rainhood/canopy | 26a. C-DIN flange (4) |
| 11. Frame with wound stator | 27. Slinger |
| 12. Earthing terminal | 28. Accessory terminal box lid |
| 13. Lifting eyebolt | 29. Accessory terminal box lid gasket |
| 14. Main nameplate | 30. Accessory terminal box |
| 15. Rotor, complete with shaft and key | 31. Accessory terminal box earthing terminal |
| 16. Terminal box lid | 32. Accessory connector |
| 17. Terminal box lid gasket | |
| 18. Terminal box | |
| 19. Terminal box gasket | |

Notes:

- (1) The shaft seal may vary with product line. As a spare part, the shaft seal in the 63-112 range will be supplied as an integral part of the endshield kit
- (2) When non-plastic fan is fitted, the spare part kit includes key and circlip for fan assembly onto the shaft.
- (3) The fan cover material may vary with product line.
- (4) C flange dimensions are in accordance with either NEMA MG1 Part 4 (FC Flange) standard or DIN standards (C Flange).

19. Spare Parts

Spare Parts - frames 132 to 200



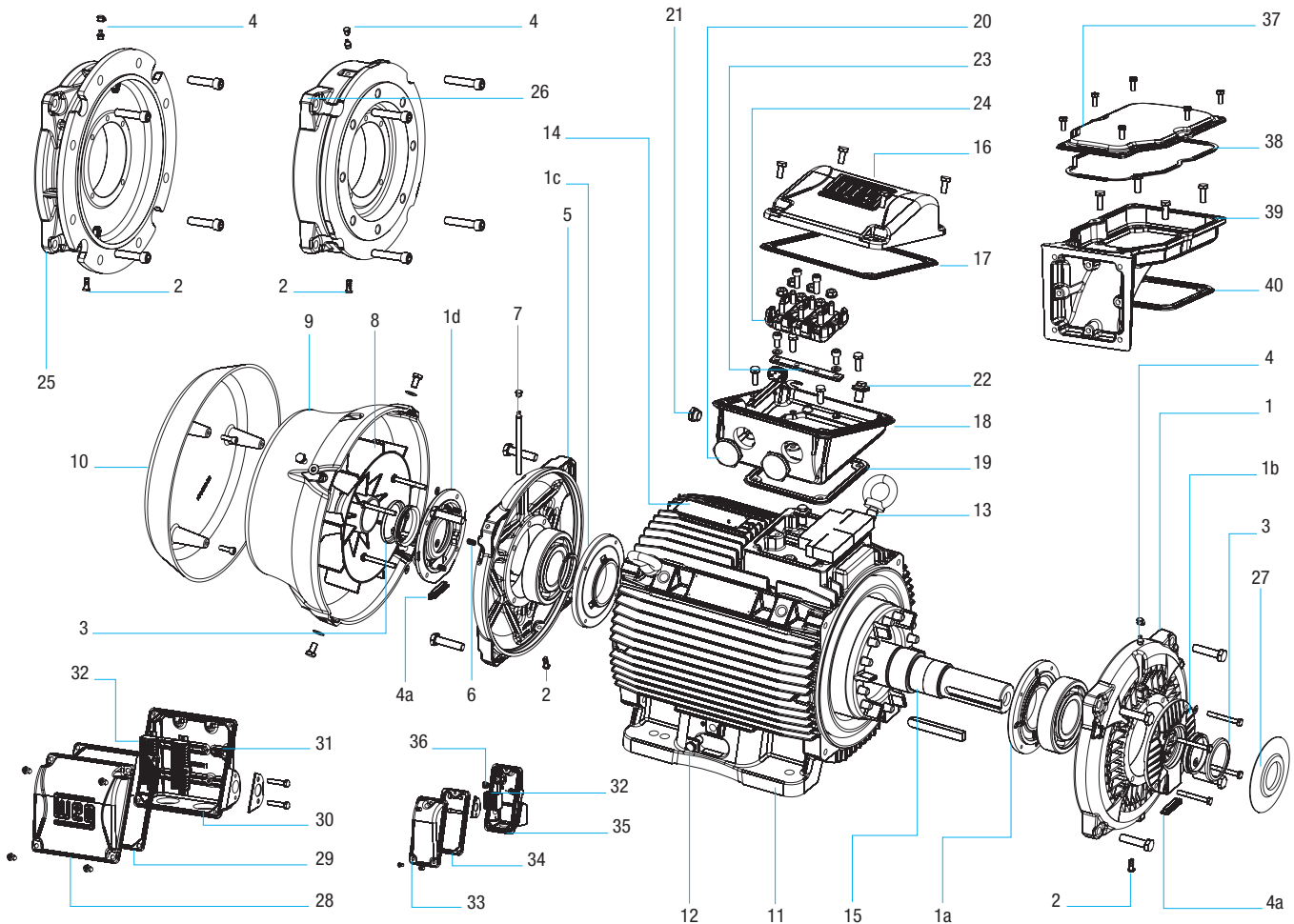
- | | |
|-----------------------------------------|-----------------------------------------------------------|
| 1. Drive endshield | 19. Terminal box gasket |
| 1a. Bearing cap, internal | 20. Terminal box plug for main leads |
| 2. Drain plug | 21. Terminal box plug for accessory leads |
| 3. Shaft seal (1) | 22. Terminal box earthing terminal |
| 4. Grease nipple (2) | 23. Accessory connector |
| 5. Non-drive endshield | 24. Terminal block |
| 6. Wave washer for axial displacement | 25. FF flange |
| 7. Grease nipple with extensor pipe (2) | 26. C flange (5) |
| 8. Fan (3) | 27. Slinger |
| 9. Fan cover (4) | 28. Accessory terminal box lid |
| 10. Rainhood/canopy | 29. Accessory terminal box lid gasket |
| 11. Frame with wound stator | 30. Accessory terminal box |
| 12. Earthing terminal | 31. Accessory terminal box earthing terminal |
| 13. Lifting eyebolt | 32. Accessory connector |
| 14. Main nameplate | 33. Space heater accessory terminal box lid |
| 15. Rotor, complete with shaft and key | 34. Space heater accessory terminal box lid gasket |
| 16. Terminal box lid | 35. Space heater accessory terminal box |
| 17. Terminal box lid gasket | 36. Space heater accessory terminal box earthing terminal |
| 18. Terminal box | |

Notes:

- (1) The shaft seal may vary with product line. As a spare part, the shaft seal in frames 132-200 will be supplied as an integral part of the endshield kit.
- (2) When fitted with grease nipples, the endshield spare part kit will also have grease relief. Grease nipples are standard from 160 frame upwards.
- (3) When non-plastic fan is fitted, the spare part kit is also supplied with key and circlip for fan assembly onto the shaft.
- (4) The fan cover material may vary with product line.
- (5) C flange dimensions are in accordance with either NEMA MG1 Part 4 (FC Flange) standard or DIN standards (C Flange).

19. Spare Parts

Spare Parts - frames 225 to 355



- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Drive endshield 1a. Bearing cap, internal, drive end 1b. Bearing cap, external, drive end 1c. Bearing cap, internal, non-drive end 1d. Bearing cap, external, non-drive end 2. Drain plug 3. Shaft seal (1) 4. Grease nipple 4a. Grease relief 5. Non-drive endshield 6. Pre-loading springs 7. Grease nipple (with extensor pipe) 8. Fan (2) 9. Fan cover, cast iron 10. Rainhood/canopy 11. Frame with wound stator 12. Earthing terminal 13. Lifting eyebolt 14. Main nameplate (3) 15. Rotor, complete with shaft and key 16. Terminal box lid 17. Terminal box lid gasket | <ol style="list-style-type: none"> 18. Terminal box 19. Terminal box gasket 20. Terminal box plug for main leads 21. Terminal box plug for accessory leads 22. Terminal box earthing terminal 23. Accessory connector 24. Terminal block 25. FF flange 26. FC flange (4) 27. Slinger 28. Accessory terminal box lid 29. Accessory terminal box lid gasket 30. Accessory terminal box 31. Accessory terminal box earthing terminal 32. Accessory connector 33. Space heater accessory terminal box lid 34. Space heater accessory terminal box lid gasket 35. Space heater accessory terminal box 36. Space heater accessory terminal box earthing terminal 37. Terminal box adaptor lid 38. Terminal box adaptor lid gasket 39. Terminal box adaptor base 40. Terminal box adaptor base gasket |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Notes:

- (1) The shaft seal may vary with product line. As a spare part, the shaft seal in the 225-355 range will be supplied as an integral part of the bearing cap kit.
- (2) When non-plastic fan is fitted, the spare part kit is also supplied with key and circlip for fan assembly onto the shaft.
- (3) Main nameplate position will vary with terminal box configuration (top and side mounting).
- (4) FC flange dimensions according to NEMA MG1 Part 4 standard.

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LV & MV Variable Speed & Soft Start Motor Control Solutions



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Driving efficiency and sustainability





Motors



Automation



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Gears



Service

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For states where there is not a WEG owned operation, please find our local distributors at www.weg.net/au

**For our worldwide
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All details are accurate at time of printing.
Product specifications are subject to change without prior notice.