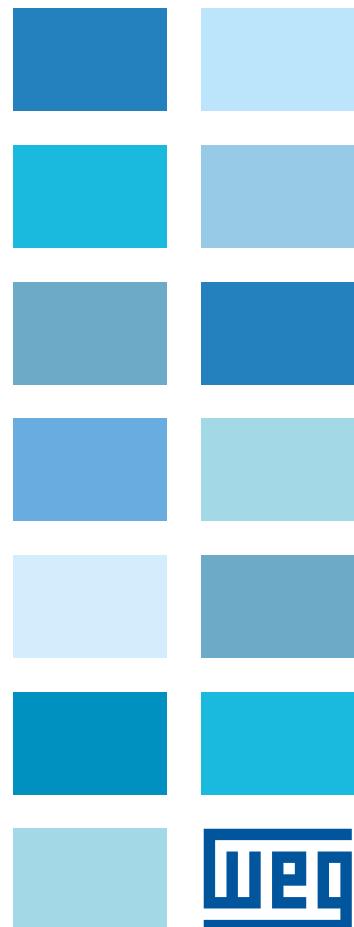


W22

Three-Phase Electric Motor

Technical Catalogue
African Market





W22 Line – High Efficiency Motors

The increasing demand for electrical energy to sustain global development requires consistent heavy investments in power supply generation. However, in addition to complex medium and long term planning, these investments rely on natural resources, which are becoming depleted due to constant pressures upon the environment. The best strategy, therefore, to maintain energy supply in the short term is to avoid wastage and increase energy efficiency. Electric motors play a major role in this strategy; since around 40% of global energy demand is estimated to be related to electric motor applications. Consequently, any initiatives to increase energy efficiency, by using high efficiency electric motors and frequency inverters, are to be welcomed, as they can make a real contribution to reductions in global energy demand.

At the same time as efficiency initiatives make an impact in traditional market sectors, the application of new technologies in emerging sectors is resulting in profound changes in the way that electric motors are applied and controlled. By integrating these changes

together with the demands for increased energy efficiency. WEG has taken up the challenge and produced a new design of high efficiency motor; one that exceeds the performance of WEG's existing W21 motor line, which is recognised worldwide for its quality, reliability and efficiency.

Using the latest generation of computerised tools, such as structural analysis software (finite element analysis) and computer fluid dynamics, as well as electrical design optimisation software, an innovative – next generation – product has been developed: the W22 motor.

Several key objectives have been achieved in the design of the W22 motor:

- Reduction of noise and vibration levels
- Increased energy efficiency and reduced thermal footprint
- Easy maintenance
- Compatibility with present & future generations of frequency inverters
- Flexible and modular design

The WEG W22 is what the industrial world needs today, to help sustain its future – tomorrow.
Visit www.weg.net/w22 to find out more.



Frame 63 to 112



Frame 132 to 200



Frame 225 to 355

Reducing carbon footprint and cutting costs with the W22

W22 range of three-phase induction motors, designed to offer not only significantly lower energy consumption, but lower noise and vibration, higher reliability, easier maintenance and lower cost of ownership.

Consisting of three products, each designed to exceed the requirements of the new IE1, IE2 and IE3 efficiency classes, the WEG W22 range can reduce energy losses by between 10% and 40% compared with other typical motors. It's an

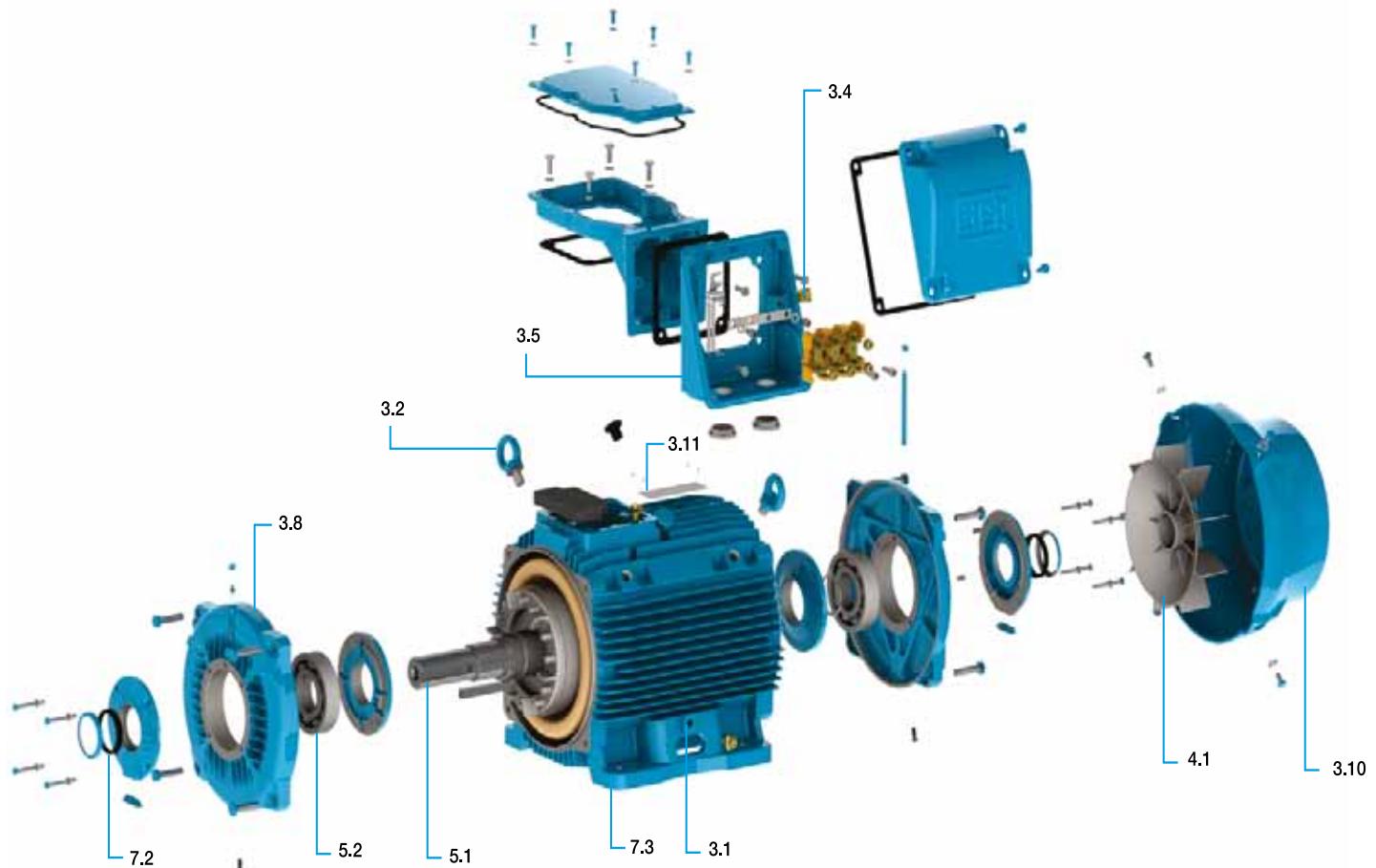
extremely effective way to reduce your carbon footprint, as well as your energy costs.

Go to our website at www.weg.net to check the potential reduction in CO₂ emissions and the return on investment of W22 motors.

The W22 line from WEG is the first complete range of IE3 motors available to Industry...

...we call it **WE^Gnology**

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1. Versions available

For the African market, the W22 will be available in three versions in accordance with IEC 60034-30:2008: Standard Efficiency (IE1), Premium Efficiency Plus (IE2) and Top Premium Efficiency (IE3). In figure 1 the efficiency levels of W22 motors can be compared with the minimum levels established by IEC 60034-30:2008.

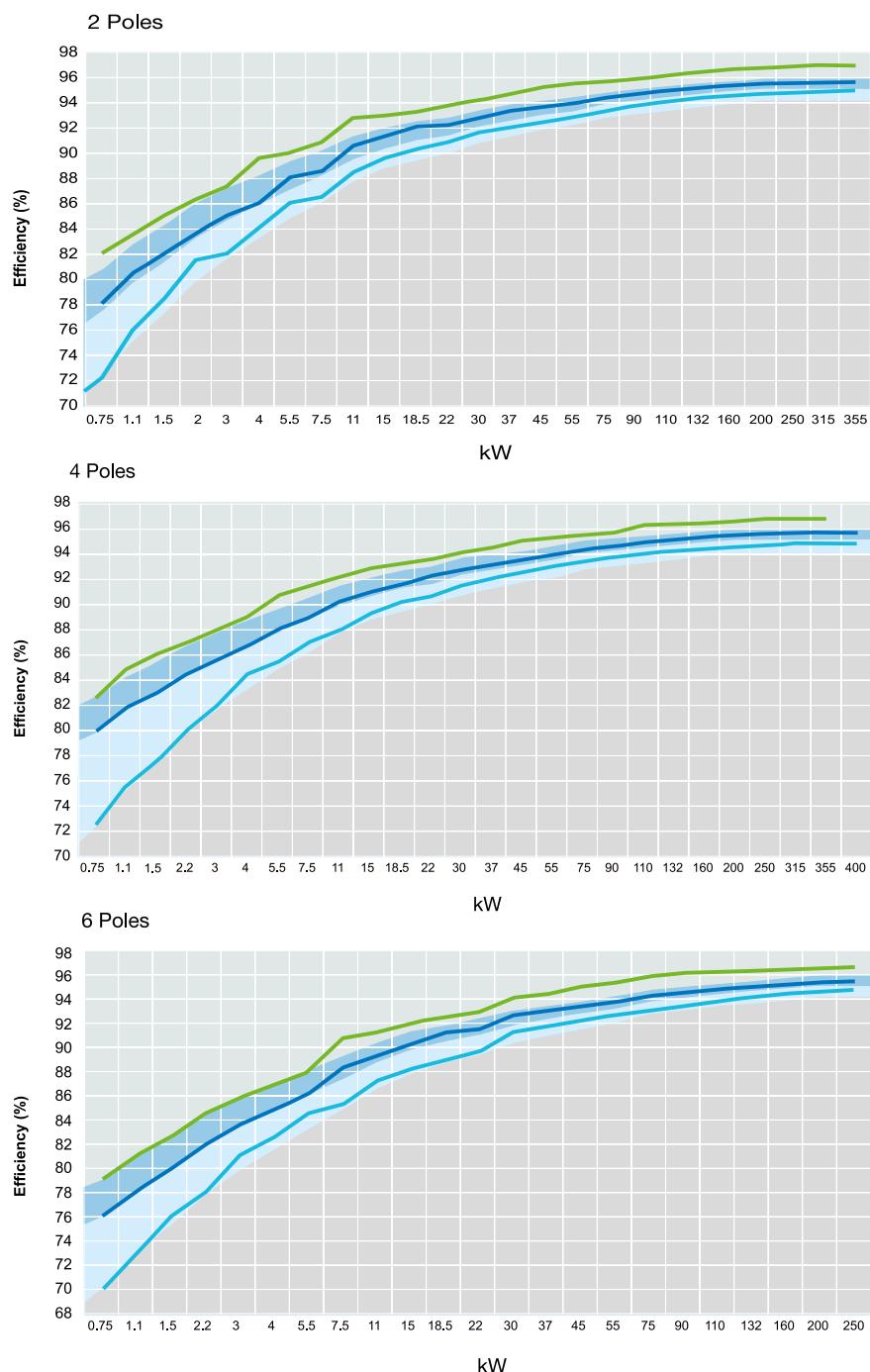


Figure 1 – Efficiency levels

■ W22 Standard Efficiency (IE1)
■ W22 Premium Efficiency Plus (IE2)
■ W22 Top Premium Efficiency (IE3)
■ IE1
■ IE2
■ IE3



For all three efficiency levels the W22 motors exceed the minimum figures required by the Standard. They are fully tested and have their efficiency figures declared in accordance with IEC 60034-2-1: 2007 Standard with stray load losses directly determined by summation of losses.

Another characteristic of the electrical design of the W22 line is that it was conceived so that its efficiency remains practically constant in the 75% to 100% load range. Therefore, even when the motor does not run at full load its efficiency is not considerably affected (see figure 2), resulting in high levels of energy efficiency.

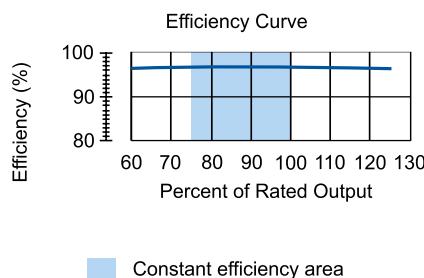


Figure 2 – Typical efficiency curve of W22 line

2. Standards

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

- IEC60034-1 Rotating electrical machines – Part 1: Rating and performance.
- IEC60034-2-1 Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles).
- IEC60034-5 Rotating electrical machines – Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - classification.
- IEC60034-6 Rotating electrical machines – Part 6: Methods of cooling (IC code).
- IEC60034-7 Rotating electrical machines – Part 7: Classification of types of enclosures and mounting arrangements (IM code).
- IEC60034-8 Rotating electrical machines – Part 8: Terminal markings and direction of rotation.
- IEC60034-9 Rotating electrical machines – Part 9: Noise limits.
- IEC60034-11-1 Rotating electrical machines – Part 11-1: Thermal protection.
- IEC60034-12 Rotating electrical machines – Part 12: Starting performance of single-speed three-phase cage induction motors.

IEC60034-14 Rotating electrical machines – Part 14: Mechanical vibration of certain machines – Limits of vibration.
 IEC60034-30 Rotating electrical machines – Part 30: Efficiency classes for single-speed three-phase cage induction motors.
 IEC60072-1 Dimensions and output series for rotating electrical machines – Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1080.

3. Construction details

The information included in this document refers to standard construction features and the most common variations for W22 motors in low voltage for general applications in frame sizes from IEC 63 to 355A/B.

W22 motors for special and/or customised applications are available on request. For more information, please contact ZEST.

3.1 Frame

The W22 frame (figure 3) is manufactured in FC-200 cast iron to provide high levels of mechanical strength to cater for the most critical applications. The cooling fins are designed to minimize the accumulation of liquids and dust over the motor.



Figure 3 – W22 Frame

The motor feet are completely solid for better mechanical strength (figure 4), allowing easier alignment and installation.

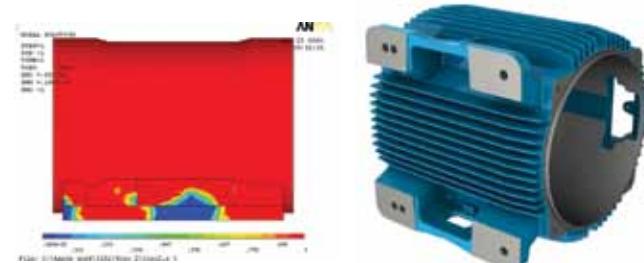


Figure 4 – Solid feet

3.2 Eyebolts

Eyebolts are available from frame size 100L and above. The configuration of the eyebolts are shown in the table 2:

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 355A/B – 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 (only for motors with the terminal box moved to the front of the frame, figure 5)
2	Frames 225S/M to 355A/B – 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 (only for motors with the terminal box moved to the front of the frame)

Table 2: Eyebolts

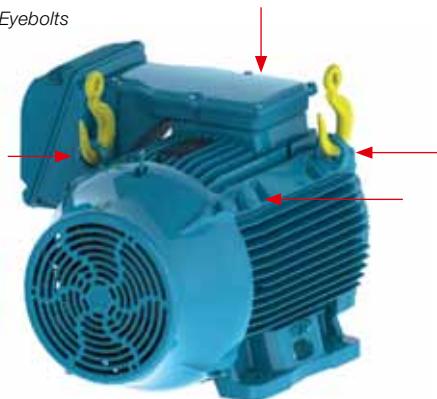


Figure 5: Motor with four threaded holes for fastening of the eyebolts

3.3 Points for vibration monitoring

To allow easy maintenance, specifically vibration testing, the 160 to 355 frames are designed with flat areas on both ends for better placement of the accelerometer (figure 6).

These areas are available both in vertical and horizontal planes. Besides areas on the frame, W22 motors count on flat areas on the endshields for easier installation of accelerometers.

As an option M8 threads for SPM accelerometers can be supplied.



Figure 6 - Flat surfaces for vibration monitoring on the back and front side

3.4 Earth terminals

All frames are provided with two earth terminals located inside and adjacent to the terminal box (see figure 7).

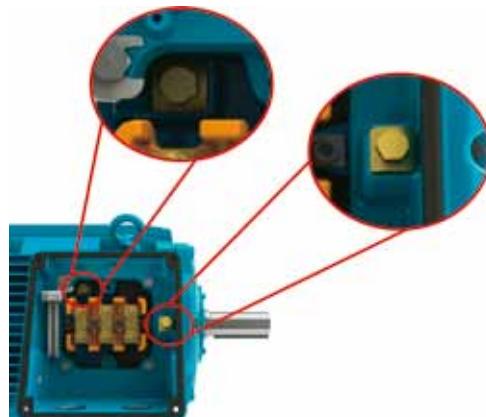


Figure 7 - Earth terminals in the terminal box

For Standard and Premium Efficiency Plus motors on frames 225S/M to 355A/B, two additional earth terminals on each side of the frame are provided to equalize electrical potential and provide greater safety for operators (figure 8).

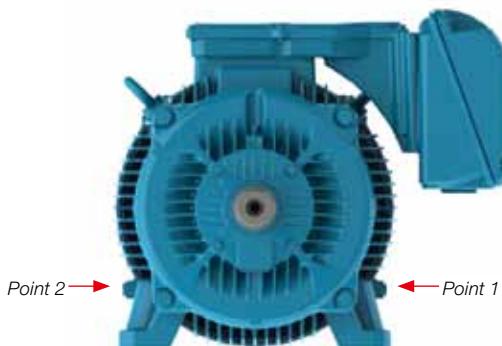


Figure 8 - Earth terminals position in the frame

3.5 Terminal box

The terminal box of W22 motors is made with FC-200 cast iron, which is the same material used to produce the frame and endshields. It is diagonally split for easier handling of leads and connections.

It is possible to supply 355A/B motors with an oversized terminal box. In this case, the aspect of the motor with side and top mounted terminal box is shown in the figures 9.1 and 9.2.



Figure 9.1 and 9.2 - Frame size 355A/B with oversized terminal box

For Standard Efficiency and Premium Efficiency Plus motors on frame sizes 225S/M to 355A/B, and Top Premium Efficiency motors on frame sizes 315S/M to 355A/B, the terminal box is positioned towards the drive end of the motor. This arrangement allows improvement of the airflow over the cooling fins, thus reducing motor operating temperatures. Terminal box position on either the left or right hand side of the motor is possible through the use of an adaptor (see figure 10).

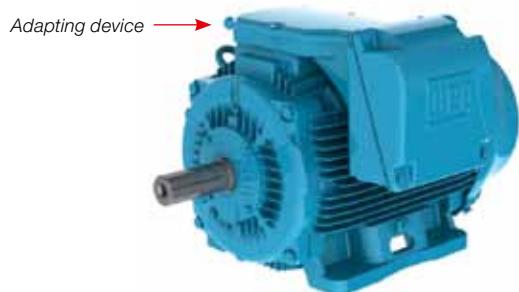


Figure 10 - Terminal box mounted on the left side viewing from shaft end

When supplied from the factory with a side mounted terminal box arrangement, this can be positioned on the opposite side simply by rotating the adaptor.

Similarly, by removing the adaptor and adjusting the length of the motor leads, the terminal box can be positioned on top of the motor.

The flexibility of terminal box positions on the W22 motor offered by the adaptor can be seen in figure 11.

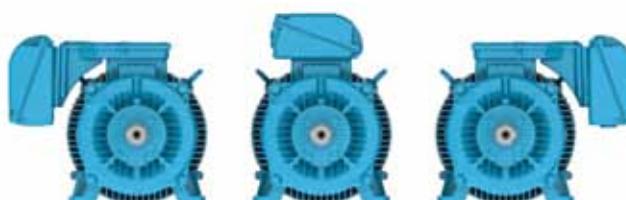


Figure 11 – Terminal box mounted on both sides and on top (versatility)

Conversely, factory supplied motors with the terminal box position on top can be modified to side mounting by fitting the adaptor and extending the motor leads.

For Standard Efficiency and Premium Efficiency Plus motors on frame sizes 63 to 200L and Top Premium Efficiency motors on frame sizes 63 to 280S/M, the terminal box is centralized on the motor frame and can be supplied in two configurations – left/ right side (standard) or top (optional) and for changing the mounting (terminal box position), the motor must be disassembled.

Please Note: For all terminal box position modifications please contact ZEST.

For all frames, the terminal box can be rotated in 90° increments. Motors in IEC frame sizes 315L, 355M/L and 355A/B are supplied with removable cast iron cable gland plates. As an option, the gland plates can be supplied undrilled.

Motors are supplied with plastic threaded plugs in the cable entries to maintain the degree of protection during transport and storage.

In order to guarantee the degree of protection, cable entries must comply with at least the same degree of protection indicated on the motor nameplate. Lack of compliance with such detail can invalidate the motor warranty. If required, please contact the WEG Service Area for further advice.

3.6 Power supply connection leads

Motor power supply leads are marked in accordance with IEC 60034-8 and are connected to a terminal block made from a polyester based resin BMC (Bulk Moulding Compound), duly reinforced with fibre glass (see figure 12).



Figure 12: Six-pin terminal block

Motors 355A/B are provided with the terminal block as shown in the figure 13.



Figure 13: 355A/B terminal block

3.7 Accessory connection leads

Accessory terminals are assembled on connectors whenever the motor is supplied with a terminal block. They may be assembled inside the main power terminal box or in a separate accessory terminal box (figure 14).

In the Mechanical data section of this catalogue it is possible to check the quantity of connectors that may be assembled inside the main and accessory terminal boxes.



Figure 14: Accessory terminal box attached to main terminal box

For frames 132 to 355, there is also the option of providing a dedicated terminal box for the connection of space heaters as shown in figure 15.



Figure 15: Two accessory terminal boxes attached to main terminal box

3.8 Endshields

The drive endshield (figure 16) is designed with fins for better thermal heat dissipation, and to ensure low bearing operating temperatures, resulting in extended lubrication intervals. For the frames 225S/M to 355A/B, where ventilation is critical for thermal performance of the motor, the endshield fastening screws are placed in such a way so as not to block airflow to any fin, thus contributing to better thermal exchange.



Figure 16 – Drive and non-drive endshields

3.9 Drains

The endshields have holes for drainage of water that may condense inside of the frame. These holes are supplied with rubber drain plugs, in accordance with figure 17 for frame range 160 to 355. These plugs leave the factory in the closed position and must be opened periodically to allow the exit of condensed water. In the 63 to 132 frame range, plugs are automatic and made of plastic.

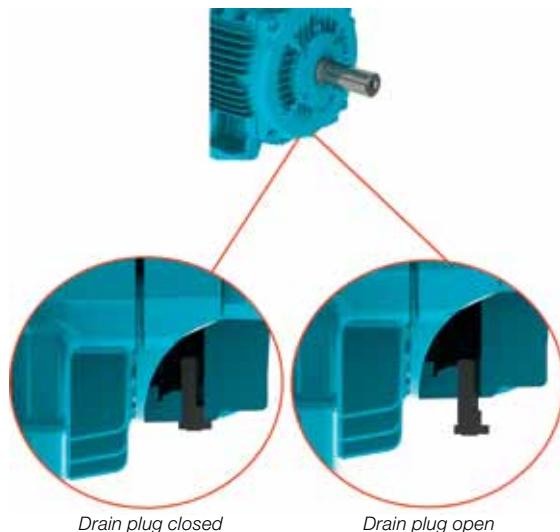


Figure 17: Detail of the drain plug position on drive endshield (160-355)

3.10 Fan cover

The fan cover is made of steel for frames 63 to 132 and FC-200 cast iron for frames 160 to 355. The cast iron fan covers have an aerodynamic design, which results in a significant reduction in noise level and optimized airflow between frame fins for heat exchange improvement. Figure 18 shows the aerodynamic design of the cast iron fan cover.



Figure 18 – Fan cover

3.11 Nameplate

The nameplate supplies information determining motor construction and performance characteristics.



Figure 19 – Nameplate position of W22 motors

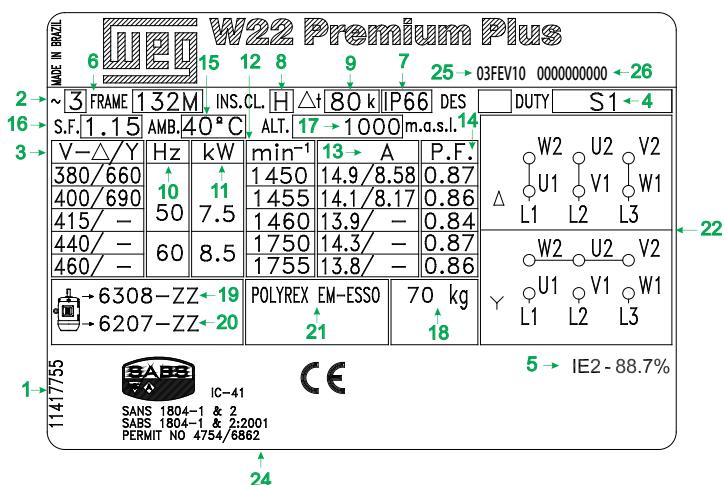


Figure 20 - Nameplate layout for frames 63 to 132

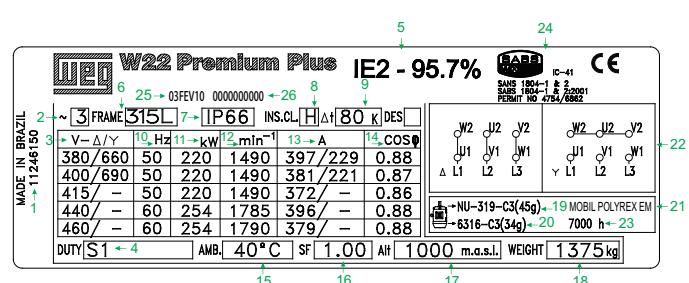


Figure 21 - Nameplate layout for frames 160 to 355

- 1 – Motor code
- 2 – Three phase
- 3 – Rated operating voltage
- 4 – Service duty
- 5 – Efficiency
- 6 – Frame size
- 7 – Degree of protection
- 8 – Insulation class
- 9 – Temperature rise
- 10 – Frequency
- 11 – Motor rated power
- 12 – Full load speed (rpm)
- 13 – Rated operating current
- 14 – Power factor
- 15 – Ambient temperature
- 16 – Service factor
- 17 – Altitude
- 18 – Motor weight
- 19 – Drive end bearing specification and amount of grease
- 20 – Non-drive end bearing specification and amount of grease
- 21 – Type of grease for bearings
- 22 – Connection diagram
- 23 – Relubrication intervals in hours
- 24 – Certification labels
- 25 – Date of manufacture
- 26 – Serial number

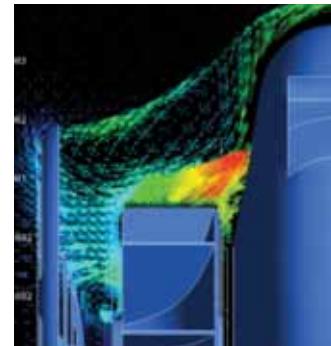


Figure 23 – Cooling system operation

W22 motors comply with IEC60034-9 Standard and the corresponding sound pressure levels. Tables 3 and 4 show sound pressure levels in dB(A) which are obtained upon tests at 50 Hz and 60 Hz.

Frame	IEC 50 HZ			
	2 Poles	4 Poles	6 Poles	8 Poles
63	52	44	43	-
71	56	43	43	41
80	59	44	43	42
90	64/62*	49	45	43
100	67	53	44	50
112	64	56	48	46
132	68/67*	60/56*	52	48
160	67	61	56	51
180	67	61	56	51
200	72/69*	65/63*	60	53
225	75/74*	66/63*	61	56
250	75/74*	66/64*	61	56
280	77	69	65	59
315S/M	77	71	67	61
315L	78	74/73*	68	61
355M/L	80	76/74*	73	70
355A/B	83	76	73	70

* Applicable to IE3 Top Premium Efficiency Motors

Table 3 – Sound pressure levels for 50 Hz motors

Frame	IEC 60 HZ			
	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	76/74*	68/66*	62	56
225	80/79*	70/67*	64	60
250	80/79*	70/68*	64	60
280	81	73	69	63
315S/M	81	75	70	64
315L	82	79/77*	71	64
355M/L	84	81/78*	77	75
355A/B	89	81	77	75

* Applicable to IE3 Top Premium Efficiency Motors

Table 4 – Sound pressure levels for 60 Hz motors



Figure 22 – Cooling system

The cooling system (fan, non drive endshield and fan cover) is designed to minimize the noise level and improve thermal efficiency (figure 23).

The noise level figures shown in tables 3 and 4 are taken at no load. Under load the IEC 60034-9 Standard foresees an increase of the sound pressure levels as shown in table 5.

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
355 ≤ H	2	2	4	5

Table 5 – Maximum expected increase of sound pressure level for loaded motors.

Note: These figures refer to operating frequencies of 50 Hz and 60 Hz.

The global noise level can be reduced up to 2 dB (A) with the installation of a drip cover.

4.2 Vibration level

Vibration of an electrical machine is closely related to its assembly on the application and, thus, it is generally desirable to perform vibration measurements under installation and operational conditions. Nevertheless, to allow evaluation of the vibration generated by the electrical machine itself in a way to allow reproducibility of the tests and the obtaining of comparative measurements, it is necessary to perform such measurements with the machine uncoupled, under controlled test conditions. The test conditions and vibration limits described here are those found in IEC 60034-14. The severity of vibration is the maximum value of vibration found among all the recommended measurement points and directions. The table below indicates the recommended admissible values of vibration severity under IEC standard 60034-14 for the frames IEC 56 to 400, for degrees of vibration A and B.

Standard Efficiency and Premium Efficiency Plus motors are dynamically balanced with half key and meets the vibration levels of Grade A (without special vibration requirements) described in IEC 60034-14 Standard. The Top Premium Efficiency motors meet the vibration levels of Grade B. The RMS speed and vibration levels in mm/s of Grades A and B are shown in table 6.

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

Table 6 – Speed and vibration levels

4.3 Impact resistance

The W22 motor complies with impact level IK08 – mechanical impact of 5J as per EN 50102 – Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code) ensuring superior mechanical strength for the most demanding applications.

5. Shaft / Bearings

5.1 Shaft

For standard version, the shaft of W22 standard motors is manufactured with AISI 1040/45 steel, for frames 63 to 200, for 2 poles motors in frame sizes 225S/M to 315S/M and for frames 225S/M and 250S/M in 4 poles and above. The shaft material will change to AISI 4140 steel in frame sizes 315L to 355A/B (all polarities) and 280S/M and 315S/M for all polarities, except for 2 poles.

W22 motors can be supplied with a second shaft end as per dimensions shown in section 17 – Mechanical data.

Information about maximum allowable radial and axial loads on the second shaft end is available on request.

As an option, W22 motors can be supplied with stainless steel shafts (AISI 316 and AISI 420) for highly corrosive environments.

Note: 2 pole motors will have as an option only the shaft end in stainless steel AISI 316.

5.2 Bearings

W22 motors are supplied with ball bearings as standard for frame sizes 63 to 200, for all 2 pole motors in frame sizes 225S/M to 355M/L, and 4 poles and above in frame sizes 225S/M and 250S/M. Motors in frame sizes 280S/M, 315S/M, 315L and 355M/L in 4 poles and above are supplied with NU roller bearings as standard.



Figure 24: Bearing view

The nominal bearing life L10h is 20,000 or 40,000 hours in conformance with maximum radial and axial loads as described in tables 8 and 9. When direct coupled to the load (without axial or radial thrusts), the L10h bearing life is 50,000 hours.

In standard configuration, with ball bearings, the drive end bearing is locked axially from frame 160 and above. To compensate for any axial movement the motors are fitted with pre-load washers for frames 63 to 200 and with pre-load springs for frames 225 to 355. When provided with roller bearings, the rear bearing is locked and the axial movement is compensated by the axial play of the front roller bearing. Minimum and maximum admissible radial loads are shown in tables 8.1 and 8.2 on page 14.

Bearings lifetime depends on the type and size of the bearing, the radial and axial mechanical loads it is submitted to, operating conditions (environment, temperature), rotational speed and grease life. Therefore, bearing lifetime is closely related to its correct use, maintenance and lubrication.

Respecting the quantity of grease and lubrication intervals allows bearings to reach the lifetime given, W22 motors in IEC frames 225S/M and above are provided as standard with grease fittings in each endshield to permit the relubrication of the bearings. The quantity of grease and lubrication intervals are stamped in the motor nameplate. The lubrication interval is shown on tables 10 and 11 - page 15.

It must be emphasized that excessive lubrication, i.e. a quantity of grease greater than that recommended on the motor nameplate, can result in the increase of bearing temperatures leading to reduced operating hours.

Note:

1. L10 lifetime means that at least 90% of the bearings submitted to the maximum indicated loads will reach the number of hours indicated. The maximum admissible radial and axial loads for the standard configuration are shown in table 8 and 9. The values of the maximum radial load consider axial load as nil. The values of the maximum axial load consider radial load as nil. For bearing lifetime in combined axial and radial loads condition contact WEG.
2. The radial force value F_r usually results from information recommended on catalogues of pulley/belts manufacturers. When this information is not available, the force F_r under operation, can be calculated based on the output power, on coupling design characteristics with pulleys and belts and on the type of application. So we have:

$$F_r = \frac{19.1 \cdot 10^6 \cdot P_n}{n_n \cdot d_p} \cdot k_a \text{ (N)}$$

Where:

F_r is the radial force caused by pulley and belt coupling [N];

P_n is the motor rated power [kW];

n_n is the motor rated speed per minute [rpm];

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

k_a is a factor that depends on belt tension and type of application (table 7).

Groups and basic types of application		ka Factor of the application	
		V Belts	Plane 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, Gyrotary Crushers, Jaw Crusher, Cone Crushers, Cage Mills, Ball Mills, Rubber Mixers, Mining machines, Shredders.	3.0	3.7

Table 7 – ka factor

Important:

1 - Special applications

Motor operation under adverse operating conditions, such as higher ambient temperatures and altitudes or abnormal axial / radial loads, may require specific lubrication measures and alternative relubrication intervals to those indicated in the tables provided within this technical catalogue.

2 - Roller bearings

Roller bearings require a minimum radial load so as to ensure correct operation. They are not recommended for direct coupling arrangements, or for use on 2 pole motors.

3 - Frequency inverter driven motors

Bearing life may be reduced when a motor is driven by a frequency drive at speeds above nominal. Speed itself is one of the factors taken into consideration when determining motor bearing life.

4 - Motors with modified mounting configurations

For motors supplied with horizontal mounting but working 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 upon which the load is applied, either at the centre of the shaft ($L/2$) or at the end of the shaft (L), figure 25.

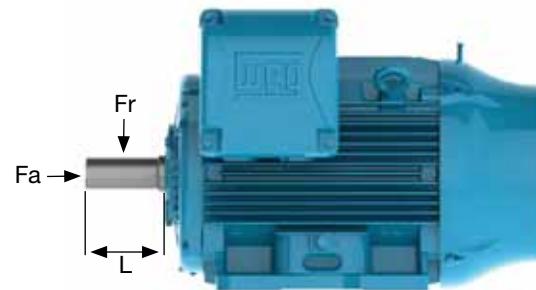


Figure 25 – Radial and axial thrust on motor shaft

5.2.1 Permissible loads

The values shown on the tables 8.1, 8.2, 9.1 and 9.2 refer to standard bearing.

Radial thrust

Frame	Maximum permissible radial thrust - 50 Hz - Fr in (kN) 20,000 hours							
	2 poles		4 poles		6 poles		8 poles	
	L/2	L	L/2	L	L/2	L	L/2	L
63	0.3	0.2	0.4	0.3	0.4	0.3	0.4	0.28
71	0.4	0.3	0.4	0.4	0.50	0.4	0.6	0.5
80	0.6	0.5	0.7	0.6	0.8	0.7	0.9	0.7
90	0.7	0.6	0.8	0.7	0.9	0.8	1.0	0.9
100	1.0	0.9	1.1	1.0	1.3	1.2	1.4	1.3
112	1.3	1.2	1.5	1.4	1.8	1.6	1.9	1.7
132	2.0	1.8	2.4	2.2	2.7	2.4	2.9	2.6
160	2.6	2.3	2.9	2.6	3.3	2.7	3.7	2.7
180	3.5	3.1	4.0	3.6	4.7	4.2	5.2	4.2
200	4.0	3.7	4.7	4.2	5.4	4.9	6.2	5.7
225S/M	5.3	4.9	5.8	5.2	7.0	5.2	7.6	5.7
250S/M	5.4	4.9	6.9	6.3	8.5	7.7	9.4	8.6
280S/M	5.4	5.0	28.5	13.3	28.9	13.5	28.6	13.3
315S/M	4.8	4.4	29.7	14.2	31.1	14.6	32.0	15.0
315L	5.4	5.1	23.6	11.1	24.4	11.4	31.8	15.0
355M/L	6.9	6.4	31.7	15.0	30.0	14.3	33.2	15.1
355A/B	6.3	6.0	25.9	12.3	22.2	10.5	30.9	14.7

Table 8.1 – Maximum permissible radial thrusts

Frame	Maximum permissible radial thrust - 50 Hz - Fr in (kN) 40,000 hours							
	2 poles		4 poles		6 poles		8 poles	
	L/2	L	L/2	L	L/2	L	L/2	L
63	0.2	0.2	0.3	0.3	0.4	0.3	0.4	0.3
71	0.2	0.2	0.3	0.3	0.4	0.3	0.4	0.3
80	0.5	0.4	0.5	0.4	0.6	0.5	0.7	0.6
90	0.5	0.4	0.6	0.5	0.7	0.6	0.8	0.7
100	0.7	0.7	0.8	0.7	1.0	0.9	1.1	1.0
112	1.0	0.9	1.1	1.0	1.2	1.1	1.4	1.3
132	1.6	1.4	1.8	1.6	2.0	1.8	2.2	2.0
160	2.0	1.8	2.1	1.9	2.4	2.2	2.7	2.5
180	2.7	2.4	3.0	2.7	3.5	3.2	3.9	3.6
200	3.0	2.8	3.5	3.2	4.0	3.7	4.7	4.3
225S/M	4.1	3.7	4.2	3.8	5.2	4.7	5.7	5.2
250S/M	4.1	3.7	5.0	4.6	6.4	5.8	7.1	6.4
280S/M	4.2	3.8	26.1	13.3	28.9	13.5	28.4	13.3
315S/M	3.5	3.2	23.2	14.2	26.7	14.6	29.4	15.0
315L	3.9	3.6	23.6	11.1	24.4	11.4	29.2	15.0
355M/L	5.0	4.7	31.7	15.0	30.0	14.3	33.2	15.0
355A/B	4.3	4.1	25.9	12.3	22.2	10.5	30.9	14.7

Table 8.2 – Maximum permissible radial thrusts

Axial thrust

Frame	Poles	Maximum permissible axial thrust - 50 Hz - Fa in (kN) - 20,000 hours					
		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	0.1
	4	0.3	0.3	0.2	0.3	0.3	0.2
	6	0.3	0.3	0.3	0.4	0.3	0.3
	8	0.3	0.3	0.3	0.4	0.3	0.3
71	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	0.3	0.4	0.4	0.4	0.4
	8	0.46	0.4	0.4	0.5	0.4	0.4
80	2	0.2	0.4	0.2	0.4	0.3	0.4
	4	0.3	0.5	0.3	0.6	0.3	0.5
	6	0.4	0.7	0.4	0.7	0.4	0.7
	8	0.5	0.8	0.5	0.8	0.5	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
225S/M	2	4.5	3.7	4.5	5.1	4.5	2.8
	4	5.5	4.7	5.5	6.4	5.5	3.7
	6	6.7	5.9	6.7	7.5	6.7	4.8
	8	7.5	6.8	7.5	8.4	7.5	5.7
250S/M	2	4.4	3.7	3.6	4.9	5.7	2.8
	4	6.2	5.4	4.8	7.5	8.3	4.0
	6	7.6	6.9	6.2	9.1	9.9	5.4
	8	8.6	7.9	7.2	10.1	10.9	6.5
280S/M	2	4.4	3.6				
	4	8.2	8.2				
	6	9.5	9.5				
	8	10.7	10.7				
315S/M	2	4.1	3.3				
	4	7.9	7.9				
	6	9.4	9.4				
	8	10.5	10.5				
315L	2	4.5	3.7				
	4	6.8	6.8				
	6	8.4	8.4				
	8	9.2	9.2				
355M/L	2	5.3	4.5				
	4	8.4	8.4				
	6	9.7	9.7				
	8	11.5	11.5				
355A/B	2	4.9	4.2				
	4	7.8	7.8				
	6	9.0	9.0				
	8	10.9	10.9				

On request

Table 9.1 – Maximum permissible axial thrusts

Axial thrust

Maximum permissible axial thrust - 50 Hz - Fa in (kN) - 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	0.1	0.2	0.1	0.2	0.2	0.1
	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	0.1	0.1	0.1	0.1	0.1
	4	0.2	0.2	0.1	0.2	0.2	0.1
	6	0.2	0.2	0.2	0.2	0.2	0.2
	8	0.3	0.3	0.2	0.3	0.3	0.2
80	2	0.1	0.2	0.1	0.3	0.1	0.2
	4	0.2	0.3	0.2	0.4	0.2	0.3
	6	0.3	0.4	0.2	0.5	0.3	0.4
	8	0.3	0.5	0.3	0.6	0.3	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
225S/M	2	4.5	2.6	2.4	3.9	4.5	1.6
	4	5.5	3.2	2.9	4.8	5.5	2.1
	6	6.7	4.1	3.8	5.7	6.7	3.0
	8	7.5	4.7	4.4	6.3	7.5	3.6
250S/M	2	3.3	2.5	2.4	3.7	4.5	1.7
	4	4.4	3.6	3.1	5.7	6.5	2.2
	6	5.5	4.8	4.1	7.0	7.8	3.3
	8	6.2	5.5	4.8	7.7	8.5	4.1
280S/M	2	3.3	2.5				
	4	6.0	6.0				
	6	7.0	7.0				
	8	7.8	7.8				
315S/M	2	3.0	2.2				
	4	5.7	5.7				
	6	6.9	6.9				
	8	7.6	7.6				
315L	2	3.2	2.4				
	4	4.6	4.6				
	6	5.9	5.9				
	8	6.4	6.4				
355M/L	2	3.8	3.1				
	4	5.9	5.9				
	6	6.8	6.8				
	8	8.2	8.2				
355A/B	2	3.6	2.9				
	4	5.3	5.3				
	6	6.2	6.2				
	8	7.6	7.6				

On request

Lubrication intervals

Lubrication intervals (hours)			
Frame	Poles	Bearing	50 Hz
160	2	6309	22,000
	4		25,000
	6		
	8		
180	2	6311	17,000
	4		25,000
	6		
	8		
200	2	6312	15,000
	4		25,000
	6		
	8		
225	2	6314	5,000
	4		14,000
	6		20,000
	8		24,000
250	2	6316	5,000
	4		13,000
	6		18,000
	8		20,000
280	2	6314	5,000
	4		11,000
	6		16,000
	8		20,000
315	2	6319	5,000
	4		11,000
	6		16,000
	8		20,000
355	2	6322	3,000
	4		9,000
	6		13,000
	8		19,000

Table 10 – Lubrication intervals for ball bearings (grease Mobil Polyrex EM)

Note: the amount of grease is indicated on the nameplate

Lubrication intervals (hours)			
Frame	Poles	Bearing	50 Hz
160	2	NU309	16,000
	4		25,000
	6		
	8		
180	2	NU311	11,000
	4		25,000
	6		
	8		
200	2	NU312	9,000
	4		25,000
	6		
	8		
225	4	NU314	11,000
	6		16,000
	8		20,000
	4		9,000
250	6	NU316	14,000
	8		19,000
	4		
	6		
280	4	NU319	7,000
	6		12,000
	8		17,000
	4		
315	6	NU319	7,000
	8		12,000
	4		17,000
	6		
355	4	NU322	5,000
	6		9,000
	8		14,000

Table 11 – Lubrication intervals for roller bearings (grease Mobil Polyrex EM)

Note: the amount of grease is indicated on the nameplate

Table 9.2 – Maximum permissible axial thrusts

5.2.2 Bearing monitoring

On request, W22 motors can be equipped with bearing temperature detectors which monitor bearing operating conditions. The most commonly used accessory is the PT-100 temperature detector for continuous monitoring of bearing operating temperature.

This type of monitoring is extremely important considering that it directly affects the grease and bearing lives particularly on motors equipped with regreasing facilities.

6. Mounting forms

W22 motors are supplied, as standard, with B3L(E) configuration, with the terminal box on right hand side of the frame viewing motor from shaft end.



Figure 26 – B3L(E) mounting

The mounting configuration for the W22 motor lines complies with IEC standard 60034-7. Standard mounting forms and their variations are shown in table 12. After the designation, a characteristic letter is used to define the terminal box position. So, the mounting code IM B3 can be seen in WEG documents as detailed below (without IM code).

B3R – terminal box on left hand side of the frame viewing the motor from shaft end.

B3L – terminal box on right hand side of the frame viewing motor from shaft end.

B3T – terminal box on top of the frame.

Note: The terminal box position is defined viewing the motor from the shaft end (figure 26).

Important:

1. The mountings IM B34 and IM B14 with C-DIN flange, in accordance with DIN standard EN50347, are limited to frame size 132; C flange in accordance with NEMA MG1 Part 4 standard is available for frames 63 to 355M/L.
2. For motors mounted vertically shaft down fitting of a drip cover is recommended to prevent ingress of small objects into the fan cover. The increase in total length of the motor with drip cover is shown in the section 19.
3. For vertically shaft up mounted motors installed in environments containing liquids, the use of a rubber slinger is recommended to prevent the ingress of liquid into the motor through the shaft.

Basic mountings	Other type of mounting				
	IM V5 IM 1001	IM V6 IM 1011	IM B6 IM 1031	IM B7 IM 1051	IM B8 IM 1061
IM B35 IM 2001	IM V15 IM 2011	IM V36 IM 2031	- *)	- *)	- *)
IM B34 IM 2101	IM V17 IM 2111	IM V37 IM 2131	- *)	- *)	- *)
IM B5 IM 3001	IM V1 IM 3011	IM V3 IM 3031			
IM B14 IM 3601	IM V18 IM 3611	IM V19 IM 3631			

Table 12 – Mountings configurations

* Non-defined mountings by IEC 60034-7

7. Degree of protection / Sealing system / Painting

7.1 Degree of protection

As per IEC 60034-5 Standard, the degree of protection of a rotating electrical machine consists of the letters IP (ingress protection), followed by two characteristic numerals, with the following meaning:

- a) First characteristic numeral: referred to protection of people against or approach to live parts and against contacts 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 degrees of protection in conformance with IEC 60034-5. As standard, the W22 Standard and Top Premium Efficiency motors are IP55, which means:
- a) First characteristic numeral 5: machine protected against dust. The enclosure is protected against contact with moving parts. Ingress of dust is not totally prevented, but dust does not enter in sufficient quantity to interfere with satisfactory operation of the machine.
 - b) Second characteristic numeral 5: Machine protected against water jets. Water projected by a nozzle against the machine from any direction shall have no harmful effect.

The Premium Efficiency Plus motors are supplied with degree of protection IP66, which means:

- a) First characteristic numeral 6: machine totally protected against dust.
- b) Second characteristic numeral 6: machine protected against water from heavy seas.

7.2 Sealing system

The sealing system applied to the shaft of W22 motors for Standard Efficiency line on frame sizes 63 to 200 is V'ring. For frame size 225S/M to 355A/B the sealing system is the exclusive WSeal®, which consists in a double lipped V'Ring with a metallic cap (see figure 27). This configuration operates like a labyrinth, preventing the ingress of water and dust into the motor.

For Top Premium Efficiency line the sealing system for frame sizes 63 to 80 is lip seal. For frame sizes 90 to 355 is tachonite labyrinth.

For Premium Efficiency Plus line the oil seal double lip is applied on frame size 63 to 200L. The sealing system for frame 225S/M to 280S/M 2 poles and 225S/M and 250S/M 4, 6 and 8 poles is WSeal®. For motors on frame size from 280S/M 4, 6 and 8 poles and from 315S/M 2 poles the sealing system used is W3 Seal®.



Figure 27 – WSeal®

Alternatively, W22 motors can be supplied with other sealing systems, for example, oil seal, tachonite labyrinth and the WEG exclusive W3 Seal®, among others (see Section 15 – Optional features).

When fitted with flange, the recommended seal is lip seal (no contact with liquid) and oil seal (with contact with liquid).

7.3 Painting



Figure 28 – WEG internal painting plan

W22 Standard Efficiency and Top Premium Efficiency motors in frame sizes 63 to 132 are supplied as standard with WEG internal painting plan 207A. This plan consists of:

- Primer: one coat with 20 to 55 µm of alkyd primer;
- Finishing: one coat with 30 to 40 µm of styrenated alkyd synthetic enamel.

And, W22 Standard Efficiency and Top Premium Efficiency motors in frame sizes 160 up to 355 and Premium Efficiency in all frame sizes, are supplied as standard with WEG internal painting plan 203A, consisting of:

- Primer: one coat with 20 to 55 µm of alkyd primer;
- Finishing: one coat with 50 to 75 µm of alkyd synthetic enamel.

These painting plans have a minimum resistance to the salt spray test of 120 hours (plans 207A and 201A) and 240 hours (plan 203A) in accordance with ASTM B 117/03 and may be used for motors applied at normal environments, slightly severe, sheltered or non-sheltered, for industrial use, with low relative humidity, normal temperature variations and the presence of SO₂.

Note:

These painting plans are not recommended for direct exposure to acid steam, alkalis, solvents and salty environments.

Alternative painting plans are available on request, which are suitable to guarantee additional protection in aggressive environments, either protected or unprotected (see section 15 – Optional features).

7.3.1 Tropicalized painting

The integrity of the insulation system is the primary consideration when determining the lifetime of an electric motor. High humidity can result in premature deterioration of the insulation system, therefore for any ambient temperature with relative humidity above 95%, it is recommended to coat all internal components of the motor with an epoxy painting, also known as tropicalization.

8. Voltage / Frequency

IEC 60034-1 the combination of voltage and frequency variations are classified as Zone A or Zone B, as per figure 29.

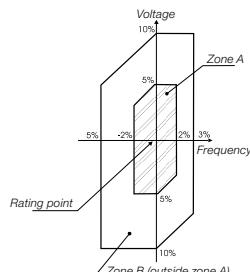


Figure 29 - Rated voltage and frequency limits for electric motors

IEC 60034-1 states that the motor must be suitable to perform its main function (supply torque) continuously at Zone A. However, this motor may not fully meet its performance characteristics due to power supply voltage and frequency variation, which can result in temperature rise above the rated value. The motor must also be suitable to perform its main function (supply torque) at Zone B. However, the performance characteristic changes will be greater than those operating at Zone A. The temperature rise will also be higher than that of rated voltage and frequency and that operating at Zone A. Prolonged operation near Zone B boundary is not recommended.

9. Overload capacity

As per IEC 60034-1, motors with output power up to 315 kW are suitable for an overload 1,5 times the rated torque for 2 minutes.

10. Ambient / Insulation

Unless otherwise specified, the rated power outputs shown in the electrical data tables within this catalogue refer to continuous duty operation S1, as per IEC 60034-1 and under the following conditions:

- With ambient temperature range -30°C to +40°C
 - With altitudes up to 1000 metres above sea level
- For operating temperatures and altitudes differing from those above, the factors indicated in table 13 must be applied to the nominal motor power rating in order to determine the derated available output (Pmax).

$$P_{max} = P_{nom} \times \text{correction factor}$$

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 13 – Correction factors for altitude and ambient temperature

W22 Standard Efficiency and Top Premium Efficiency motors are supplied with class F insulation, while the Premium Efficiency Plus motors are supplied with class H, as standard. Independently from the class of insulation, the temperature rise of these motors is limited to the temperature of class B (80K), (unless otherwise specified).

The difference between the temperature of the class F insulation (105 K) and the temperature rise of the design (80 K) means that, in practice, W22 motors are suitable to supply output ratings above the rated values up to a limit where the temperature rise reaches the temperature rise value of the insulation class.

$$\Delta T_{FINAL} \cong (F.S.)^2 \times \Delta T_{INITIAL}$$

Upon service factor calculation, we can see that SF is approximately 1,15. This reserve of temperature also allows W22 motors with class B temperature rise (80 K) to operate continuously at:

- Up to 15% above its rated output power, considering 40°C ambient temperature and 1.000 m.a.s.l., or;
- Up to 55°C ambient temperature, keeping the rated output power or;
- Up to 3000 m.a.s.l., keeping the rated output power

Note: Please note that under these conditions combined ambient and temperature rise may reach class F limits.

Bearing lubrication intervals will change under operating conditions other than 40°C maximum ambient temperature and 1000 metres above sea level. Contact WEG for more information.

All W22 motors are wound with the WISE® insulation system which consists of enamelled copper wire meeting temperatures up to 200°C and impregnated with solvent free resin. The WISE® system also permits motor operation with variable speed drives (see section 12).

10.1 Space heaters

The use of space heaters are 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 schedule. 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 7.3.

The supply voltage for space heaters must be defined by the customer. 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 355A/B.

The power rating and number of space heaters fitted depends on the size of the motor as indicated in table 14:

Frame	Quantities	Power rated (W)
63 to 80	1	7.5
90 and 100	1	11
112	2	11
132 and 160	2	15
180 and 200	2	19
225 and 250	2	28
280 and 315	2	70
355	2	87

Table 14 – Power and quantity of space heaters

11. Motor protection

Protections available for W22 can be classified as follows:

- Based on operating temperature
- Based on operating current

In section 14 - Construction features it is possible to identify the type of protection for each W22 line.

11.1 Protection based on operating temperature

Continuous duty motors must be protected from overload either by a device integrated into the motor or via an independent protection system, usually a thermal relay with rated or setting current, equal to or below the value obtained when multiplying the power supply rated current (I_n), as per table 15.

Service Factor	Relay setting current
1.0 up to 1.15	$I_n \times F.S.$
≥ 1.15	$(I_n \times F.S.) - 5\%$

Table 15 – Relay setting current referred to service factor

PT-100



Figure 30 - PT-100

These are temperature detectors with operating principle based on the properties that some materials vary the electric resistance with the variation in temperature (usually platinum, nickel or copper). They are also fitted with calibrated resistances that vary linearly with temperature, allowing continuous reading of motor operating temperature through a monitoring display, with high precision rate and response sensitivity.

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

Thermistor (PTC)



Figure 31 – Thermistor (PTC)

These are thermal protectors consisting of semiconductor detectors with sudden variation of the resistance when reaching a certain temperature.

PTC is considered a thermistor with the resistance increasing drastically to a well defined temperature figure. This sudden resistance variation blocks the PTC current, causing the output relay to operate, and the main circuit to switch-off. The thermistors are of small dimensions, do not wear and have quicker response if compared to other protectors, although they do not allow continuous monitoring of motor operating temperature.

Together with their electronic circuits, these thermistors provide full protection against overheating caused by overload, under or overvoltage or frequent reversing operations.

Where thermistor protection is required to provide both alarm and trip operation, it is necessary for each phase of the motor winding to be equipped with two sets of appropriately rated thermistors.

WEG Automation has a product called RPW which is an electronic relay intended specifically to read the PTC signal and operate its output relay. For more information access the website www.weg.net.

Bimetallic thermal protectors

These are silver-contact thermal sensors, normally closed, that operate at certain temperature rise. When their operating temperature decreases, they go back to the original position instantaneously, allowing the silver contact to close again. The bimetallic thermal protectors are series-connected with the contactor coil, and can be used either as alarm or trip.

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

11.2 Protection based on operating current

Overloads are processes that usually make the temperature increase gradually. To solve this problem, the thermal protectors described in item 11.1 are quite suitable. However, the only way to protect motors against short-circuit currents is the application of fuses. This type of protection depends directly on the current and it is highly effective in cases of locked rotor.

WEG Automation supplies fuses in versions D and NH. Access the web site www.weg.net for more information.

12. Variable speed drive application

12.1 Consideration regarding rated voltage

The stator windings of W22 Standard Efficiency and Top Premium Efficiency motors are wound with class F Insulation and the W22 Premium Efficiency Plus with class H Insulation and both are suitable for either DOL starting or via a variable speed drive. They incorporate the WEG exclusive insulation system - WISE® (WEG Insulation System Evolution) – which ensures superior electrical insulation characteristics. The stator winding is suitable for variable speed drive application, taking into account the limits shown in table 16.

Rated voltage				
380-415/660 V - 50 Hz // 440-460 V - 60 Hz (Standard and Premium Efficiency Plus) 525 V - 50 Hz (Top Premium Efficiency)				
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
460 V < Vn ≤ 575 V	≤ 1800 V	≤ 6500 V/μs		
575 V < Vn ≤ 690 V	≤ 2200 V	≤ 7800 V/μs		

Table 16 – Limit conditions for variable frequency drive operation without application of a load reactor

Notes:

- For the three cases above the maximum recommended switching frequency is limited at 5 kHz.
- If one or more of the above conditions is not followed accordingly (including the switching frequency), an output filter (load reactor) must be installed on the output of the VSD.
- General purpose motors with rated voltage up to 460 V may be operated by a frequency inverter respecting the limits shown in table 16.
- General purpose motors which at the time of purchase did not have any indication of operation with a frequency inverter, and with nominal voltage greater than 460 V, require special insulation to support the limits indicated in table 17. Otherwise, the limits of the first line of the table (for nominal voltage up to 460 V) must be considered or a load reactor at the output of the VSD must be installed.
- General purpose motors which at the time of purchase did not have any indication of operation with a frequency inverter and which are the dual voltage type, for example 380/660 V and 400/690 V, may only operate driven by a frequency inverter in the higher voltage with the installation of load reactor or otherwise respecting the limits of the first line of the table (for nominal voltage up to 460 V).

12.2 Torque restrictions on variable speed drive applications

Self-ventilated variable speed drive motors have their torque limited at low frequencies due to the reduction in ventilation. Curves and derating tables must be applied to define the torque available (figure 32 / table 17).

Constant flux condition

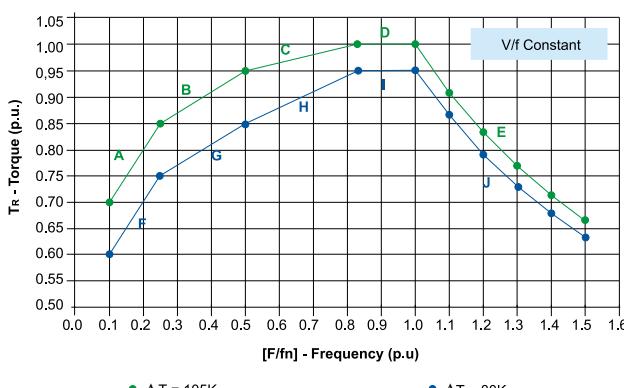


Figure 32 – Derating curve for constant flux

Derating factor with temperature rise for the insulation class*		
Interval	Limited by	Apply this equation
A	0.10 ≤ f/fn < 0.25	TR = (f/fn) + 0.60
B	0.25 ≤ f/fn < 0.50	TR = 0.40(f/fn) + 0.75
C	0.50 ≤ f/fn < 0.83	TR = 0.15(f/fn) + 0.87
D	0.83 ≤ f/fn ≤ 1.0	TR = 1.0
E	f/fn > 1.0	TR = 1/(f/fn)

Derating factor to maintain temperature rise at sinusoidal source**		
Interval	Limited by	Apply this equation
F	0.10 ≤ f/fn < 0.25	TR = (f/fn) + 0.50
G	0.25 ≤ f/fn < 0.50	TR = 0.40(f/fn) + 0.65
H	0.50 ≤ f/fn < 0.83	TR = 0.30(f/fn) + 0.70
I	0.83 ≤ f/fn ≤ 1.0	TR = 0.95
J	f/fn > 1.0	TR = 0.95/(f/fn)

Table 17 – Equation for torque definition at constant torque condition

(*) When the top curve is used (green), motor temperature rise will be limited by the temperature class of the insulation material. For example, for class F insulation 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 motors in order to ensure that, when driven by a frequency drive, the temperature rise remains class F (above 80 and below 105 K).

(**) When the lower curve is used (blue), the motor temperature rise of the variable frequency drive will be the same driven by sinusoidal source. 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 a variable frequency drive.

Note: The derating curves given in figure 32 are related to the temperature on motor winding and thermal class. These curves do not foresee thermal tolerance factor of the motors. They are intended to show the torque limitations for variable frequency drive motors.

Exclusive

Optimal flux condition®

The optimal flux solution was developed for low frequency applications with constant torque loads and it should not be used for variable torque loads or where the operating speed is higher than the rated frequency.

Optimal flux may only be applied under the following conditions:

- Motors must have a minimum efficiency of IE2
- Motor must be utilised with a WEG variable speed drive CFW-09 (version 2.40 or above) or CFW-11
- Application must be made with sensorless vector control (without encoder)

At optimal flux condition® the motor total losses are minimized, resulting in higher efficiency and consequently lower temperature rise. Therefore, the derating factor is smaller, as shown in figure 33 / table 18.

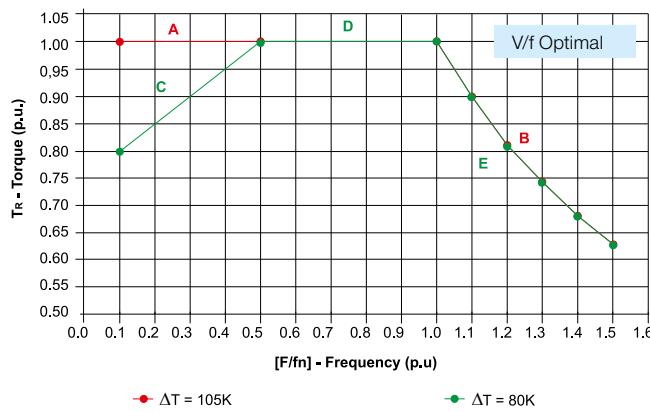


Figure 33 – Derating curve for optimal flux®

Derating factor with temperature rise for the insulation class with optimal flux®		
Interval	Limited by	Apply this equation
A	$0.10 \leq f/f_n \leq 1.0$	Constant torque
B	$f/f_n > 1.0$	$TR = 1/(f/f_n) = f_n/f$

Derating factor to maintain temperature rise at sinusoidal source with optimal flux®		
Interval	Limited by	Apply this equation
C	$0.10 \leq f/f_n < 0.50$	$TR = 0.5(f/f_n) + 0.75$
D	$0.50 \leq f/f_n \leq 1.0$	Constant Torque
E	$f/f_n > 1.0$	$TR = 1/(f/f_n) = f_n/f$

Table 18 – Equation for torque determination available at optimal flux condition

Frame size	Poles	Total motor length (L)	
		Without forced ventilation	With forced ventilation
90S	All	304	548
L90S	All	335	579
90L	All	329	573
L90L	All	360	604
100L	All	376	646
L100L	All	420	690
112M	All	393	660
L112M	All	423	690
132S	All	452	715
132M	All	490	753
132M/L	All	515	778
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	2P	856	1140
225S/M	4-12P	886	1170
250S/M	2P	965	1217
250S/M	4-12P	965	1217
280S/M	2P	1071	1348
280S/M	4-12P	1101	1378
315S/M	2P	1244	1459
315S/M	4-12P	1274	1489
315L	2P	1353	1568
315L	4-12P	1383	1598
355M/L	2P	1442	1816
355M/L	4-12P	1482	1856
355A/B	2P	1637	2011
355A/B	4-12P	1677	2051

Table 19 – Forced ventilation dimensions

12.5 Encoders

W22 motors may be supplied with encoders for speed control in closed loop. Encoders can be fitted to motors with either forced ventilation or with shaft mounted cooling fan (TEFC). When encoders are fitted to TEFC motors, they may not have a second shaft end or be fitted with drip cover.

The following models of encoder are available for supply:

- Dynapar - HS35 - 1024ppr (hollow shaft)
- 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 of the 1024 pulses per revolution type. As an option, models of 2048 pulses per revolution are available.

13. Tolerances for electrical data

The following tolerances are allowed in accordance with IEC 60034-1:

Efficiency (η)	-0.15 (1- η) for $P_{nom} \leq 150 \text{ kW}$ / -0.1 (1- η) for $P_{nom} > 150 \text{ kW}$ Where η is a decimal number
Power factor	$\frac{1 - \cos \phi}{6}$ Minimum 0.02 and Maximum 0.07
Slip	$\pm 20\%$ for $P_{nom} \geq 1 \text{ kW}$ and $\pm 30\%$ for $P_{nom} < 1 \text{ kW}$
Starting current	20% (without lower limit)
Starting torque	-15% + 25%
Breakdown torque	-10%
Moment of inertia	$\pm 10\%$

Table 20 - Tolerances for electrical data

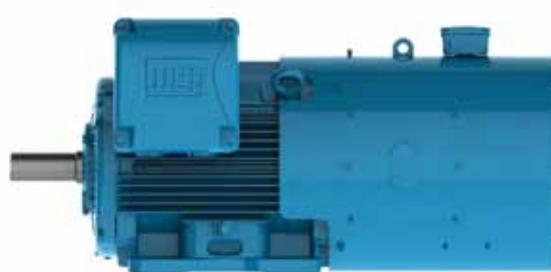


Figure 34 – Forced ventilation kit for W22 motors

When the forced ventilation kit is assembled on the motor in the factory, the overall motor length will be as shown in table 19. As a local stock modification option, an alternative forced ventilation kit can be fitted. Please contact your local WEG office for details of these dimensions.

14. Construction features

Standard Efficiency

Frame		63	71	80	90	100	112	132	160	180											
Mechanical features																					
Mounting form		B3L(E)																			
Frame	Material	Cast iron FC-200																			
Degree of protection		IP55																			
Grounding		Simple grounding (one inside the terminal box and one on the frame)																			
Cooling method		Totally enclosed fan cooled - IC411																			
Fan	Material	2P	Polypropylene																		
		4-12P	Polypropylene																		
Fan cover	Material	Steel							Cast iron FC-200												
Endshields	Material	Cast iron FC-200																			
Drain hole		Automatic plastic							Fitted with rubber drain plug												
Bearings	Clearance D.E		ZZ							C3											
	Clearance N.D.E		ZZ							Z-C3											
	Locking		Without bearing cap and with preload washer at non-drive end							DE locating bearing with bearing cap and with preload washer at non-drive end											
	Drive end side	2P	6201	6202	6204	6205	6206	6207	6308	6309	6311										
		4-12P			6203	6204	6205	6206	6207	6209	6211										
Bearing seal		V'ring																			
Lubrication	Type of grease		Mobil Polyrex EM																		
	Grease fitting		Without grease fitting																		
Terminal block		With terminal block																			
Terminal box	Material	Cast iron FC-200																			
Leads inlet	Main	Size	1 x M20 x 1.5	1 x M20 x 1.5	1 x M20 x 1.5	1 x M20 x 1.5	1 x M20 x 1.5	1 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M32 x 1.5										
	Plug		Threaded plug for transport and storage																		
Shaft	Material	2P	AISI 1040/45																		
		4-12P	AISI 1040/45																		
	Threaded hole	2P	M4	M5	M6	M8	M10	M10	M12	M16	M16										
		4-12P																			
Key (in accordance with DIN 6885:1968)		Supplied with open key type B																			
Vibration		Grade A																			
Balance		With half key																			
Nameplate	Material	Stainless steel AISI 304																			
Painting	Type	207A							203A												
	Colour	RAL 5007																			
Electrical features																					
Design		N																			
Voltage		220-240/380-415//440-460 V							380-415/660//440-460 V												
Winding	Material		Copper																		
	Impregnation		Dip and bake																		
	Insulation class		F (DT 80K)																		
Service factor		1.00																			
Rotor		Aluminium die cast																			
Thermal protector		None																			

Frame		200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B																
Mechanical features																									
Mounting form		B3L(E)																							
Frame	Material	Cast iron FC-200																							
Degree of protection		IP55																							
Grounding		Simple grounding (one inside the terminal box and one on the frame)	Double + additional (one inside the terminal box and three on the frame)																						
Cooling method		Totally enclosed fan cooled - IC411																							
Fan	Material	2P	Polypropylene																						
		4-12P	Polypropylene																						
Fan cover	Material	Cast iron FC-200																							
Endshields	Material	Cast iron FC-200																							
Drain hole		Fitted with rubber drain plug																							
Bearings	Clearance D.E		C3																						
	Clearance N.D.E		Z-C3	C3																					
	Locking		DE locating bearing with bearing cap and with preload washer at non-drive end	Locked on drive end with internal and external bearing cap and with preload springs on non drive end side																					
	Drive end side	2P	6312	6314	6314	6314	6314 - 6316(*)	6316	6319	6319															
		4-12P			6316	NU319	NU319	NU319	NU322	NU322															
	Non drive end side	2P	6212	6314	6314	6314	6314 - 6316(*)	6316	6316	6316															
		4-12P			6314	6316	6316	6316	6319	6319															
Bearing seal		V'ring	WSeal®																						
Lubrication	Type of grease		Mobil Polyrex EM																						
	Grease fitting		Without grease fitting	With grease fitting																					
Terminal block		With terminal block																							
Terminal box	Material		Cast iron FC-200																						
Leads inlet	Main	Size	2 x M32 x 1.5	2 x M32 x 1.5	2 x M40 x 1.5	2 x M50 x 1.5	2 x M63 x 1.5	2 x M63 x 1.5 (removable base)	2 x M63 x 1.5 (removable base)	2 x M63 x 1.5 (removable base)															
	Plug		Threaded plug for transport and storage																						
Shaft	Material	2P	AISI 1040/45							AISI 4140															
		4-12P	AISI 1040/45							AISI 4140															
	Threaded hole	2P	M20	M20	M20	M20	M20	M20	M20	M20															
		4-12P								M24															
Key (in accordance with DIN 6885:1968)		Supplied with open key type B																							
Vibration		Grade A																							
Balance		With half key																							
Nameplate	Material		Stainless steel AISI 304																						
Painting	Type	203A																							
	Colour	RAL 5007																							
Electrical features																									
Design		N																							
Voltage		380-415/660//440-460 V																							
Winding	Material		Cooper																						
	Impregnation		Dip and bake	Continuous flow impregnation																					
	Insulation class		F (DT 80K)																						
Service factor		1.00																							
Rotor		Aluminium die cast																							
Thermal protector		None	Thermistor PTC, 1 per phase, for tripping at 155°C																						

Note:

(*) Only for output ≥ 185 kW

Premium Efficiency Plus

Frame		63	71	80	90	100	112	132	160	180														
Mechanical features																								
Mounting form		B3L(E)																						
Frame	Material	Cast iron FC-200																						
Degree of protection		IP66																						
Grounding		Simple grounding (one inside the terminal box and one on the frame)																						
Cooling method		Totally enclosed fan cooled - IC411																						
Fan	Material	2P	Polypropylene																					
		4-8P	Polypropylene																					
Fan cover	Material	Steel								Cast iron FC-200														
Endshields	Material	Cast iron FC-200																						
Drain hole		Closed plastic								Fitted with rubber drain plug														
Bearings	Clearance D.E		ZZ								C3													
	Clearance N.D.E		ZZ								Z-C3													
	Locking		Without bearing cap and with preload washer at non-drive end								DE locating bearing with bearing cap and with preload washer at non-drive end													
	Drive end side	2P	6201	6202	6204	6205	6206	6207	6308	6309	6311													
		4-8P			6203	6204	6205	6206	6207	6209	6211													
Bearing seal		2P	Oil seal double lip																					
Joints sealing		Loctite 5923																						
Lubrication	Type of grease		Mobil Polyrex EM																					
	Grease fitting		Without grease fitting																					
Terminal block		With terminal block																						
Terminal box	Material	Cast iron FC-200																						
Leads inlet	Main	Size	1 x M20 x 1.5	1 x M20 x 1.5	1 x M20 x 1.5	1 x M20 x 1.5	1 x M20 x 1.5	1 x M25 x 1.5	2 x M25 x 1.5	2 x M25 x 1.5	2 x M32 x 1.5													
	Plug		Threaded plug for transport and storage																					
Shaft	Material	2P	AISI 1040/45																					
		4-8P	AISI 1040/45																					
	Threaded hole	2P	M4	M5	M6	M8	M10	M10	M12	M16	M16													
		4-8P																						
Key (in accordance with DIN 6885:1968)		Supplied with open key type B																						
Vibration		Grade A																						
Balance		With half key																						
Nameplate	Material	Stainless steel AISI 304																						
Painting	Type	203A																						
	Colour	RAL 6002																						
Electrical features																								
Design		N																						
Voltage		220-240/380-415//440-460 V						380-415/660//440-460 V																
Winding	Material		Cooper																					
	Impregnation		Dip and bake																					
	Insulation class		H (DT 80K)																					
Service factor		1.15																						
Rotor		Aluminium die cast																						
Thermal protector		None																						

Frame		200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B											
Mechanical features																				
Mounting form		B3L(E)																		
Frame	Material	Cast iron FC-200																		
Degree of protection		IP66																		
Grounding		Simple grounding (one inside the terminal box and one on the frame)	Double + additional (one inside the terminal box and three on the frame)																	
Cooling method		Totally enclosed fan cooled - IC411																		
Fan	Material	2P	Polypropylene							Aluminium										
		4-8P	Polypropylene							Aluminium										
Fan cover	Material	Cast iron FC-200																		
Endshields	Material	Cast iron FC-200																		
Drain hole		Fitted with rubber drain plug																		
Bearings	Clearance D.E		C3																	
	Clearance N.D.E		Z-C3	C3																
	Locking		DE locating bearing with bearing cap and with preload washer at non-drive end	Locked on drive end with internal and external bearing cap and with preload springs on non drive end side																
	Drive end side	2P	6312	6314	6314	6314 - 6316(*)	6316	6319	6319											
		4-8P		6316	NU319	NU319	NU319	NU322	NU322											
	Non drive end side	2P	6212	6314	6314	6314 - 6316(*)	6316	6316	6316											
		4-8P			6316	6316		6319	6319											
Bearing seal		2P	Oil seal double lip	WSeal®			W3 Seal®													
		4-8P		WSeal®			W3 Seal®													
Joints sealing		Loctite 5923																		
Lubrication	Type of grease		Mobil Polyrex EM																	
	Grease fitting		Without grease fitting	With grease fitting																
Terminal block		With terminal block									HGF terminal block									
Terminal box	Material		Cast iron FC-200																	
Leads inlet	Main	Size	2 x M32 x 1.5	2 x M32 x 1.5	2 x M40 x 1.5	2 x M50 x 1.5	2 x M63 x 1.5	2 x M63 x 1.5 (removable base)	2 x M63 x 1.5 (removable base)	2 x M63 x 1.5 (removable base)										
	Plug		Threaded plug for transport and storage																	
Shaft	Material	2P	AISI 1040/45																	
		4-8P	AISI 1040/45																	
	Threaded hole	2P	M20																	
		4-8P	M20																	
Key (in accordance with DIN 6885:1968)			Supplied with open key type B	Supplied with open key type AB																
Vibration			Grade A																	
Balance			With half key																	
Nameplate	Material		Stainless steel AISI 304																	
Painting	Type		203A																	
	Colour		RAL 6002																	
Electrical features																				
Design		N																		
Voltage		380-415/660//440-460 V									400 V with 6 term.									
Winding	Material		Cooper																	
	Impregnation		Dip and bake	Continuous flow impregnation																
	Insulation class		H (DT 80K)																	
Service factor			1.15				1.00													
Rotor			Aluminium die cast																	
Thermal protector			None	Thermistor PTC, 1 per phase, for tripping at 155°C																

Note:

(*) Only for output ≥ 185 kW

Top Premium Efficiency

Frame		63	71	80	90	100	112	132	160	180																			
Mechanical features																													
Mounting form		B3L(E)																											
Frame	Material	Cast iron FC-200																											
Degree of protection		IP55																											
Grounding		Simple grounding (one inside the terminal box and one on the frame)																											
Cooling method		Totally enclosed fan cooled - IC411																											
Fan	Material	2P	Polypropylene																										
		4-8P	Polypropylene																										
Fan cover	Material		Steel						Cast iron FC-200																				
Endshields	Material		Cast iron FC-200																										
Drain hole		Automatic plastic							Fitted with rubber drain plug																				
Bearings	Clearance D.E		ZZ							C3																			
	Clearance N.D.E		ZZ							Z-C3																			
	Locking		Without bearing cap and with preload washer at non-drive end							DE locating bearing with bearing cap and with preload washer at non-drive end																			
	Drive end side	2P	6201	6202	6204	6205	6206	6207	6308	6309	6311																		
		4-8P			6203	6204	6205	6206	6207	6209	6211																		
Bearing seal		Lip seal				Tachonite Labyrinth																							
Lubrication	Type of grease		Mobil Polyrex EM																										
	Grease fitting		Without grease fitting																										
Terminal block		With terminal block																											
Terminal box	Material		Cast iron FC-200																										
Leads inlet	Main	Size	1 x M20 x 1.5							1 x M32 x 1.5																			
	Plug		Threaded plug for transport and storage																										
Shaft	Material	2P	AISI 1040/45																										
		4-12P	AISI 1040/45																										
	Threaded hole	2P	M4	M5	M6	M8	M10	M10	M12	M16	M16																		
		4-12P																											
Key (in accordance with DIN 6885:1968)		Supplied with open key type B																											
Vibration		Grade B																											
Balance		With half key																											
Nameplate	Material		Stainless steel AISI 304																										
Painting	Type		207A							203A																			
	Colour		RAL 7012																										
Electrical features																													
Design		N																											
Voltage		525-550 V with 3 term.						525-550 V with 6 term.																					
Winding	Material		Cooper																										
	Impregnation		Dip and bake																										
	Insulation class		F (DT 80K)																										
Service factor		1.15																											
Rotor		Aluminium die cast																											
Thermal protector		None																											
Vibration test	2P	With spectrum analysis on rigid base																											
	4-8P	Analysis on resilient base																											
Routine test		Whole batch																											
Type test		1 motor batch																											

Frame		200L	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B													
Mechanical features																						
Mounting form		B3L(E)																				
Frame	Material	Cast iron FC-200																				
Degree of protection		IP55																				
Grounding		Simple grounding (one inside the terminal box and one on the frame)	Double (one inside the terminal box and two on the frame)	Double + additional (one inside the terminal box and three on the frame)																		
Cooling method		Totally enclosed fan cooled - IC411																				
Fan	Material	2P	Polypropylene																			
		4-8P	Polypropylene				Aluminium															
Fan cover	Material	Cast iron FC-200																				
Endshields	Material	Cast iron FC-200																				
Drain hole		Fitted with rubber drain plug																				
Bearings	Clearance D.E		C3																			
	Clearance N.D.E		Z-C3	C3																		
	Locking		DE locating bearing with bearing cap and with preload washer at non-drive end	Locked on drive end with internal and external bearing cap and with preload springs on non drive end side																		
	Drive end side	2P	6312	6314	6314	6314	6314 - 6316(*)	6316	6319	6319												
		4-8P			6316	NU319	NU319	NU319	NU322	NU322												
	Non drive end side	2P	6212		6314	6314	6314 - 6316(*)	6316	6316	6316												
		4-8P			6314	6316	6316	6316	6319	6319												
Bearing seal		Tachonite Labyrinth																				
Lubrication	Type of grease		Mobil Polyrex EM																			
	Grease fitting		Without grease fitting	With grease fitting																		
Terminal block		With terminal block																				
Terminal box	Material	Cast iron FC-200																				
Leads inlet	Main	Size	1 x M40 x 1.5			1 x M50 x 1.5	1 x M63 x 1.5	1 x M63 x 1.5 (removable base)														
	Plug		Threaded plug for transport and storage																			
Shaft	Material	2P	AISI 1040/45						AISI 4140													
		4-12P	AISI 1040/45			AISI 4140																
	Threaded hole	2P	M20	M20	M20	M20	M20	M20	M20													
		4-12P		M20	M20	M20	M20	M24	M24													
Key (in accordance with DIN 6885:1968)		Supplied with open key type B	Supplied with open key type AB																			
Vibration		Grade B																				
Balance		With half key																				
Nameplate	Material	Stainless steel AISI 304																				
Painting	Type	203A																				
	Colour	RAL 7012																				
Electrical features																						
Design		N																				
Voltage		525-550 V with 6 term.																				
Winding	Material		Cooper																			
	Impregnation		Dip and bake	Continuous flow impregnation																		
	Insulation class		F (DT 80K)																			
Service factor		1.15			1.00																	
Rotor		Aluminium die cast																				
Thermal protector		None	Thermistor PTC, 1 per phase, for tripping at 155°C																			
Vibration test	2P	With spectrum analysis on rigid base																				
		4-8P	Analysis on resilient base																			
Routine test		Whole batch																				
Type test		1 motor batch																				

Note:

(*) Only for output ≥ 185 kW

15. Optimal features

Standard Efficiency

Frame	63	71	80	90	100	112	132
Mechanical optionals							
Terminal box							
Additional terminal box	0	0	0	0	0	0	0
Terminal box with removable base	NA	NA	NA	NA	NA	NA	NA
Base	0	0	0	0	0	0	0
Epoxy compound on leads entry	0	0	0	0	0	0	0
Self-extinguishing foam at lead entry	S	S	S	S	S	S	S
Terminal block							
BMC terminal block - six-pin	S	S	S	S	S	S	S
BMC terminal block - twelve-pin	NA	NA	NA	0	0	0	0
HGF connection terminals	NA	NA	NA	NA	NA	NA	NA
Cable glands							
Plastic cable gland	0	0	0	0	0	0	0
Brass cable gland	0	0	0	0	0	0	0
Stainless steel cable gland	NA	NA	NA	0	0	0	0
Flange							
Flange FF	0	0	0	0	0	0	0
Flange C-DIN	0	0	0	0	0	0	0
Flange C	0	0	0	0	0	0	0
Fan							
Polypropylene (2 poles)	S	S	S	S	S	S	S
Polypropylene (4 poles and above)	S	S	S	S	S	S	S
Conductive plastic (2 poles)	0	0	0	0	0	0	0
Conductive plastic (4 poles and above)	0	0	0	0	0	0	0
Aluminium (2 poles)	0	0	0	0	0	0	0
Aluminium (4 and above)	0	0	0	0	0	0	0
Iron	0	0	0	0	0	0	0
Bronze	0	0	0	0	0	0	0
Bearing							
Ball bearing D.E (2 poles)	S	S	S	S	S	S	S
Ball bearing D.E (4 - 12 poles)	S	S	S	S	S	S	S
Roller bearing N.D.E (4 - 12 poles)	NA	NA	NA	NA	NA	NA	NA
Ball bearing N.D.E	S	S	S	S	S	S	S
Insulated drive end bearing	NA	NA	NA	NA	NA	NA	NA
Insulated non drive end bearing	NA	NA	NA	NA	NA	NA	NA
Bearing cap							
Without bearing cap	S	S	S	S	S	S	S
With bearing cap	NA	0	0	0	0	0	0
Bearing sealing							
WSeal®	NA	NA	NA	NA	NA	NA	NA
V'ring	S	S	S	S	S	S	S
Nitrillic rubber lip seal	0	0	0	0	0	0	0
Nitrillic rubber oil seal	0	0	0	0	0	0	0
Nitrillic rubber oil seal double lip	0	0	0	0	0	0	0
Viton seal	0	0	0	0	0	0	0
Viton oil seal	0	0	0	0	0	0	0
Viton oil seal with stainless steel spring	0	0	0	0	0	0	0
Taconite Labyrinth	NA	NA	NA	0	0	0	0
W3 Seal®	NA	NA	NA	0	0	0	0

Notes: 1) Other optional features, on request.
 2) Some combinations of optional features are not allowed - then contact WEG.

S(Standard)
 NA (Not available)
 O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Mechanical optionals									
Terminal box									
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
Terminal block									
S	S	S	S	S	S	S	S	S	NA
0	0	0	0	0	0	0	0	0	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	S
Cable glands									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Flange									
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	NA
Fan									
S	S	S	S	S	S	S	S	S	NA
S	S	S	S	S	S	S	NA	NA	NA
0	0	0	0	0	0	0	0	0	NA
0	0	0	0	0	0	0	NA	NA	NA
0	0	0	0	0	0	0	0	0	S
0	0	0	0	0	0	0	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Bearing									
S	S	S	S	S	S	S	S	S	S
S	S	S	S	S	NA	NA	NA	NA	NA
0	0	0	0	0	S	S	S	S	S
S	S	S	S	S	S	S	S	S	S
NA	NA	NA	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
Bearing cap									
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S	S	S	S	S	S	S	S	S	S
Bearing sealing									
NA	NA	NA	S	S	S	S	S	S	S
S	S	S	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	NA	NA	NA	NA	NA	NA
0	0	0	0	NA	NA	NA	NA	NA	NA
0	0	0	0	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Standard Efficiency

Frame	63	71	80	90	100	112	132
Mechanical optionals							
Other sealing							
Joints sealing with Loctite 5923 (Permatex)	0	0	0	0	0	0	0
Bolt with Loctite 5923 (Permatex)	0	0	0	0	0	0	0
Shaft							
AISI 1040/45	S	S	S	S	S	S	S
AISI 1040/45 (4 - 12 poles)	S	S	S	S	S	S	S
AISI 4140 (2 poles)	0	0	0	0	0	0	0
AISI 4140 (4 - 12 poles)	0	0	0	0	0	0	0
AISI 304 (stainless steel)	0	0	0	0	0	0	0
AISI 316 (stainless steel)	0	0	0	0	0	0	0
AISI 420 (stainless steel)	0	0	0	0	0	0	0
Locking shaft device (2 poles)	NA	NA	NA	NA	NA	NA	NA
Locking shaft device (4 - 12 poles)	NA	NA	NA	NA	NA	NA	NA
Second shaft end	0	0	0	0	0	0	0
Degree of protection							
IP56	0	0	0	0	0	0	0
IP65	0	0	0	0	0	0	0
IP66	0	0	0	0	0	0	0
Painting plan							
202E Primer: One coat with 20 to 55 µm of alkyd oxide red Intermediate: One coat with 20 to 30 µm of isocyanate epoxy paint Finishing: One coat with 100 to 140 µm of epoxy paint N2628 Recommended for pulp and paper, mining and chemical industries.	0	0	0	0	0	0	0
202P Primer: One coat with 20 to 55 µm of alkyd oxide red Intermediate: One coat with 20 to 30 µm of isocyanate epoxy paint Finishing: One coat with 70 to 100 µm of polyurethane paint N2677 Recommended for food processing industries.	0	0	0	0	0	0	0
211E Primer: One coat with 100 to 140 µm of epoxy paint N2630. Finishing: One coat with 100 to 140 µm of epoxy paint N2628 Recommended for motors supplied to Petrobras and its suppliers, to be used in refineries such as petrochemical industries that follow Petrobras specifications Note: Meets Petrobras N 1735 Standard (condition 3)	0	0	0	0	0	0	0
211P Primer: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 70 to 100 µm of PU paint N2677 Recommended for motors supplied to Petrobras and its suppliers. to be used in refineries such as petrochemical industries that follow Petrobras specifications Note: Meets Petrobras N 1735 Standard (condition 3)	0	0	0	0	0	0	0
212E Primer: One coat with 75 to 105 µm of epoxy paint N1277 Intermediate: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 100 to 140 µm of epoxy paint N2628 Recommended for applications in pulp and paper, mining, chemical and petrochemical industries Note: Meets Petrobras N 1735 Standard (condition 4)	0	0	0	0	0	0	0
212P Primer: One coat with 75 to 105 µm of epoxy paint N1277 Intermediate: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 70 to 100 µm of PU paint N2677 Recommended for applications in pulp and paper, mining, chemical and petrochemical industries Note: Meets Petrobras N 1735 Standard (condition 4)	0	0	0	0	0	0	0
213E Primer: One coat with 75 to 90 µm of Silicate Ethyl paint N1661 Intermediate: One coat with 35 to 50 µm of epoxy paint N1202 Finishing: One coat with 240 to 340 µm of epoxy paint N2628 Recommended for off-shore oil platform Note: Meets Petrobras N 1374 Standard (condition 5.2)	0	0	0	0	0	0	0
Inside of terminal box painted (Munsell 2.5 YR 6/14)	0	0	0	0	0	0	0
Inside epoxy painting (Tropicalized)	0	0	0	0	0	0	0

Notes: 1) Other optional features, on request.

2) Some combinations of optional features are not allowed - then contact WEG.

S(Standard)

NA (Not available)

O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Mechanical optionals									
Other sealing									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Shaft									
S	S	S	S	S	S	S	NA	NA	NA
S	S	S	S	S	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	S	S	S
0	0	0	0	0	S	S	S	S	S
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
Degree of protection									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Painting plan									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Standard Efficiency

Frame	63	71	80	90	100	112	132
Mechanical optionals							
Lubrication							
Mobil Polyrex EM	S	S	S	S	S	S	S
Aeroshell 7	0	0	0	0	0	0	0
Isoflex NBU-15	0	0	0	0	0	0	0
Grease nipple							
Carbon steel grease nipple	NA	NA	NA	NA	NA	NA	NA
Stainless steel grease nipple	NA	NA	NA	NA	NA	NA	NA
Balance							
Balance with half key (*4 poles and above)	NA	NA	S*	S	S	S	S
Balance without key	NA	NA	0	0	0	0	0
Balance with key	NA	NA	0	0	0	0	0
Vibration							
Grade B	0	0	0	0	0	0	0
Suitable to take vibration detector SPM	NA	NA	NA	NA	NA	NA	NA
Drain							
Rubber drain plug	NA	NA	NA	NA	NA	NA	NA
Plastic drain plug (open) - Automatic	S	S	S	S	S	S	S
Plastic drain plug (close)	0	0	0	0	0	0	0
Threaded drain plug (close)	0	0	0	0	0	0	0
Stainless steel drain plug (close)	0	0	0	0	0	0	0
T type drain plug - Automatic	0	0	0	0	0	0	0
Grounding							
One inside the terminal box and one on the frame	S	S	S	S	S	S	S
Double grounding (One inside the terminal box and two on the frame)	0	0	0	0	0	0	0
Double grounding + additional (one inside the terminal box and three on the frame)	NA	NA	NA	NA	NA	NA	NA
Superior grounding	0	0	0	0	0	0	0
Fan cover							
Steel plate	S	S	S	S	S	S	S
Iron cast	NA	NA	NA	0	0	0	0
Other mechanical optionals							
Drip cover (recommended for vertical shaft down applications)	0	0	0	0	0	0	0
Rubber slinger (recommended for vertical shaft up applications)	NA	NA	NA	0	0	0	0
Stainless steel bolt	0	0	0	0	0	0	0
Grease outlet through the fan cover	NA	NA	NA	NA	NA	NA	NA
Electrical optionals							
Winding thermal protection							
Bimetallic alarm thermal protector	0	0	0	0	0	0	0
Bimetallic tripping thermal protector	0	0	0	0	0	0	0
PT100 two wires, one per phase	0	0	0	0	0	0	0
PT100 two wires, two per phase	NA	NA	NA	NA	NA	NA	NA
PT100 three wires, one per phase	0	0	0	0	0	0	0
PT100 three wires, two per phase	NA	NA	NA	NA	NA	NA	NA
Alarm thermistor	0	0	0	0	0	0	0
Tripping thermistor	0	0	0	0	0	0	0
Bearing thermal protection							
Bimetallic thermal protector	NA	NA	NA	NA	NA	NA	NA
Thermistor	NA	NA	NA	NA	NA	NA	NA
PT-100 two wires	NA	NA	NA	NA	NA	NA	NA
PT-100 three wires	NA	NA	NA	NA	NA	NA	NA
PT-100 three wires (calibrated)	NA	NA	NA	NA	NA	NA	NA
Space heaters							
110-127 V	0	0	0	0	0	0	0
220-240 V	0	0	0	0	0	0	0
110-127 / 220-240 V	NA	NA	NA	NA	NA	0	0
380-480 V	0	0	0	0	0	0	0
Rotation direction							
Clockwise rotation direction	0	0	0	0	0	0	0
Counter clockwise rotation direction	0	0	0	0	0	0	0
Nameplate with indication of rotation direction	0	0	0	0	0	0	0
Service factor							
1.15	0	0	0	0	0	0	0
Insulation class							
H	0	0	0	0	0	0	0
Forced ventilation kit							
Forced ventilation kit with encoder provision (informe auxiliary motor voltage)	NA	NA	NA	0	0	0	0
Forced ventilation kit without encoder provision (informe auxiliary motor voltage)	NA	NA	NA	0	0	0	0
Encoder	NA	NA	NA	0	0	0	0
Drive end side grounding brush	NA	NA	NA	NA	NA	NA	NA
Non drive end side grounding brush	NA	NA	NA	NA	NA	NA	NA

Notes: 1) Other optional features, on request.

2) Some combinations of optional features are not allowed - then contact WEG.

(*) 4 poles and upwards

S(Standard)

NA (Not available)

O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Mechanical optionals									
Lubrication									
S	S	S	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Grease nipple									
0	0	0	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
Balance									
S	S	S	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Vibration									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Drain									
S	S	S	S	S	S	S	S	S	S
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Grounding									
S	S	S	NA	NA	NA	NA	NA	NA	NA
0	0	0	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
Fan cover									
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
Other mechanical optionals									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
Electrical optionals									
Winding thermal protection									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
Bearing thermal protection									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Space heaters									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Rotation direction									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Service factor									
0	0	0	0	0	0	0	0	0	0
Insulation class									
0	0	0	0	0	0	0	0	0	0
Forced ventilation kit									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	NA	NA	NA	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0

Premium Efficiency Plus

Frame	63	71	80	90	100	112	132
Mechanical optionals							
Terminal box							
Additional terminal box	0	0	0	0	0	0	0
Terminal box with removable base	NA	NA	NA	NA	NA	NA	NA
Base	0	0	0	0	0	0	0
Epoxy compound on leads entry	0	0	0	0	0	0	0
Self-extinguishing foam at lead entry	S	S	S	S	S	S	S
Terminal block							
BMC terminal block - six-pin	S	S	S	S	S	S	S
BMC terminal block - twelve-pin	NA	NA	NA	0	0	0	0
HGF connection terminals	NA	NA	NA	NA	NA	NA	NA
Cable glands							
Plastic cable gland	0	0	0	0	0	0	0
Brass cable gland	0	0	0	0	0	0	0
Stainless steel cable gland	NA	NA	NA	0	0	0	0
Flange							
Flange FF	0	0	0	0	0	0	0
Flange C-DIN	0	0	0	0	0	0	0
Flange C	0	0	0	0	0	0	0
Fan							
Polypropylene (2 poles)	S	S	S	S	S	S	S
Polypropylene (4 poles and above)	S	S	S	S	S	S	S
Conductive plastic (2 poles)	0	0	0	0	0	0	0
Conductive plastic (4 poles and above)	0	0	0	0	0	0	0
Aluminium (2 poles)	0	0	0	0	0	0	0
Aluminium (4 and above)	0	0	0	0	0	0	0
Iron	0	0	0	0	0	0	0
Bronze	0	0	0	0	0	0	0
Bearing							
Ball bearing D.E (2 poles)	S	S	S	S	S	S	S
Ball bearing D.E (4 - 8 poles)	S	S	S	S	S	S	S
Roller bearing N.D.E (4 - 8 poles)	NA	NA	NA	NA	NA	NA	NA
Ball bearing N.D.E	S	S	S	S	S	S	S
Insulated drive end bearing	NA	NA	NA	NA	NA	NA	NA
Insulated non drive end bearing	NA	NA	NA	NA	NA	NA	NA
Bearing cap							
Without bearing cap	S	S	S	S	S	S	S
With bearing cap	NA	0	0	0	0	0	0
Bearing sealing							
WSeal® (2 poles)	NA	NA	NA	NA	NA	NA	NA
WSeal® (4 - 8 poles)	NA	NA	NA	NA	NA	NA	NA
Nitrillic rubber oil seal double lip	S	S	S	S	S	S	S
W3 Seal® (2 poles)	NA	NA	NA	0	0	0	0
W3 Seal® (4 - 8 poles)	NA	NA	NA	0	0	0	0
Shaft							
AISI 1040/45 (2 poles)	S	S	S	S	S	S	S
AISI 1040/45 (4 - 8 poles)	S	S	S	S	S	S	S
AISI 4140 (2 poles)	0	0	0	0	0	0	0
AISI 4140 (4 - 8 poles)	0	0	0	0	0	0	0
AISI 304 (stainless steel)	0	0	0	0	0	0	0
AISI 316 (stainless steel)	0	0	0	0	0	0	0
AISI 420 (stainless steel)	0	0	0	0	0	0	0
Locking shaft device (2 poles)	NA	NA	NA	NA	NA	NA	NA
Locking shaft device (4 - 8 poles)	NA	NA	NA	NA	NA	NA	NA
Second shaft end	0	0	0	0	0	0	0

Notes: 1) Other optional features, on request.
2) Some combinations of optional features are not allowed - then contact WEG.

S(Standard)
NA (Not available)
O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Mechanical optionals									
Terminal box									
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
Terminal block									
S	S	S	S	S	S	S	S	S	NA
0	0	0	0	0	0	0	0	0	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	S
Cable glands									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Flange									
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	NA
Fan									
S	S	S	S	S	S	S	S	S	NA
S	S	S	S	S	S	S	NA	NA	NA
0	0	0	0	0	0	0	0	0	NA
0	0	0	0	0	0	0	NA	NA	NA
0	0	0	0	0	0	0	0	0	S
0	0	0	0	0	0	0	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Bearing									
S	S	S	S	S	S	S	S	S	S
S	S	S	S	S	NA	NA	NA	NA	NA
0	0	0	0	0	S	S	S	S	S
S	S	S	S	S	S	S	S	S	S
NA	NA	NA	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
Bearing cap									
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S	S	S	S	S	S	S	S	S	S
Bearing sealing									
NA	NA	NA	S	S	S	NA	NA	NA	NA
NA	NA	NA	S	S	NA	NA	NA	NA	NA
S	S	S	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	S	S	S	S
0	0	0	0	0	S	S	S	S	S
Shaft									
S	S	S	S	S	S	S	NA	NA	NA
S	S	S	S	S	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	S	S	S
0	0	0	0	0	S	S	S	S	S
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0

Premium Efficiency Plus

Frame	63	71	80	90	100	112	132
Mechanical optionals							
Painting plan							
202E Primer: One coat with 20 to 55 µm of alkyd oxide red Intermediate: One coat with 20 to 30 µm of isocyanate epoxy paint Finishing: One coat with 100 to 140 µm of epoxy paint N2628 Recommended for pulp and paper, mining and chemical industries.	0	0	0	0	0	0	0
202P Primer: One coat with 20 to 55 µm of alkyd oxide red Intermediate: One coat with 20 to 30 µm of isocyanate epoxy paint Finishing: One coat with 70 to 100 µm of polyurethane paint N2677 Recommended for food processing industries.	0	0	0	0	0	0	0
211E Primer: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 100 to 140 µm of epoxy paint N2628 Recommended for motors supplied to Petrobras and its suppliers, to be used in refineries such as petrochemical industries that follow Petrobras specifications Note: Meets Petrobras N 1735 Standard (condition 3).	0	0	0	0	0	0	0
211P Primer: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 70 to 100 µm of PU paint N2677 Recommended for motors supplied to Petrobras and its suppliers, to be used in refineries such as petrochemical industries that follow Petrobras specifications Note: Meets Petrobras N 1735 Standard (condition 3).	0	0	0	0	0	0	0
212E Primer: One coat with 75 to 105 µm of epoxy paint N1277 Intermediate: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 100 to 140 µm of epoxy paint N2628 Recommended for applications in pulp and paper, mining, chemical and petrochemical industries Not: Meets Petrobras N 1735 Standard (condition 4).	0	0	0	0	0	0	0
212P Primer: One coat with 75 to 105 µm of epoxy paint N1277 Intermediate: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 70 to 100 µm of PU paint N2677 Recommended for applications in pulp and paper, mining, chemical and petrochemical industries Note: Meets Petrobras N 1735 Standard (condition 4).	0	0	0	0	0	0	0
213E Primer: One coat with 75 to 90 µm of Silicate Ethyl paint N1661 Intermediate: One coat with 35 to 50 µm of epoxy paint N1202 Finishing: One coat with 240 to 340 µm of epoxy paint N2628 Recommended for off-shore oil platform Note: Meets Petrobras N 1374 Standard (condition 5.2)	0	0	0	0	0	0	0
Inside of terminal box painted (Munsell 2.5 YR 6/14)	0	0	0	0	0	0	0
Inside epoxy painting (Tropicalized)	0	0	0	0	0	0	0
Lubrication							
Mobil Polyrex EM	S	S	S	S	S	S	S
Aeroshell 7	0	0	0	0	0	0	0
Isoflex NBU-15	0	0	0	0	0	0	0
Grease nipple							
Carbon steel grease nipple	NA	NA	NA	NA	NA	NA	NA
Stainless steel grease nipple	NA	NA	NA	NA	NA	NA	NA
Balance							
Balance with half key (*4 poles and above)	NA	NA	S*	S	S	S	S
Balance without key	NA	NA	0	0	0	0	0
Balance with key	NA	NA	0	0	0	0	0
Vibration							
Grade B	0	0	0	0	0	0	0
Suitable to take vibration detector SPM	NA	NA	NA	NA	NA	NA	NA
Drain							
Rubber drain plug	NA	NA	NA	NA	NA	NA	NA
Plastic drain plug (close)	S	S	S	S	S	S	S
Threaded drain plug (close)	0	0	0	0	0	0	0
Stainless steel drain plug (close)	0	0	0	0	0	0	0
T type drain plug - Automatic	0	0	0	0	0	0	0

Notes: 1) Other optional features, on request.

2) Some combinations of optional features are not allowed - then contact WEG.

S(Standard)

NA (Not available)

O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Mechanical optionals									
Painting plan									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Lubrication									
S	S	S	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Grease nipple									
0	0	0	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
Balance									
S	S	S	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Vibration									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Drain									
S	S	S	S	S	S	S	S	S	S
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Premium Efficiency Plus

Frame	63	71	80	90	100	112	132
Mechanical optionals							
Grounding							
One inside the terminal box and one on the frame	S	S	S	S	S	S	S
Double grounding (One inside the terminal box and two on the frame)	0	0	0	0	0	0	0
Double grounding + additional (one inside the terminal box and three on the frame)	NA	NA	NA	NA	NA	NA	NA
Superior grounding	0	0	0	0	0	0	0
Fan cover							
Steel plate	S	S	S	S	S	S	S
Iron cast	NA	NA	NA	0	0	0	0
Other mechanical optionals							
Drip cover (recommended for vertical shaft down applications)	0	0	0	0	0	0	0
Rubber slinger (recommended for vertical shaft up applications)	NA	NA	NA	0	0	0	0
Stainless steel bolt	0	0	0	0	0	0	0
Grease outlet through the fan cover	NA	NA	NA	NA	NA	NA	NA
Electrical optionals							
Winding thermal protection							
Bimetallic alarm thermal protector	0	0	0	0	0	0	0
Bimetallic tripping thermal protector	0	0	0	0	0	0	0
PT100 two wires, one per phase	0	0	0	0	0	0	0
PT100 two wires, two per phase	NA	NA	NA	NA	NA	NA	NA
PT100 three wires, one per phase	0	0	0	0	0	0	0
PT100 three wires, two per phase	NA	NA	NA	NA	NA	NA	NA
Alarm thermistor	0	0	0	0	0	0	0
Tripping thermistor	0	0	0	0	0	0	0
Bearing thermal protection							
Bimetallic thermal protector	NA	NA	NA	NA	NA	NA	NA
Thermistor	NA	NA	NA	NA	NA	NA	NA
PT-100 two wires	NA	NA	NA	NA	NA	NA	NA
PT-100 three wires	NA	NA	NA	NA	NA	NA	NA
PT-100 three wires (calibrated)	NA	NA	NA	NA	NA	NA	NA
Space heaters							
110-127 V	0	0	0	0	0	0	0
220-240 V	0	0	0	0	0	0	0
110-127 / 220-240 V	NA	NA	NA	NA	NA	0	0
380-480 V	0	0	0	0	0	0	0
Rotation direction							
Clockwise rotation direction	0	0	0	0	0	0	0
Counter clockwise rotation direction	0	0	0	0	0	0	0
Nameplate with indication of rotation direction	0	0	0	0	0	0	0
Service factor							
1.00	0	0	0	0	0	0	0
1.15	S	S	S	S	S	S	S
Forced ventilation kit							
Forced ventilation kit with encoder provision (informe auxiliary motor voltage)	NA	NA	NA	0	0	0	0
Forced ventilation kit without encoder provision (informe auxiliary motor voltage)	NA	NA	NA	0	0	0	0
Encoder	NA	NA	NA	0	0	0	0
Drive end side grounding brush	NA	NA	NA	NA	NA	NA	NA
Non drive end side grounding brush	NA	NA	NA	NA	NA	NA	NA

Notes: 1) Other optional features, on request.

2) Some combinations of optional features are not allowed - then contact WEG.

(*) 4 poles and upwards

S(Standard)

NA (Not available)

O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Mechanical optionals									
Grounding									
S	S	S	NA	NA	NA	NA	NA	NA	NA
0	0	0	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
Fan cover									
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
Other mechanical optionals									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
Electrical optionals									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
Bearing thermal protection									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Space heaters									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Rotation direction									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Service factor									
0	0	0	0	0	0	S	S	S	S
S	S	S	S	S	S	0	0	0	0
Forced ventilation kit									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	NA	NA	NA	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0

Top Premium Efficiency

Frame	63	71	80	90	100	112	132
Mechanical optionals							
Terminal box							
Additional terminal box	0	0	0	0	0	0	0
Terminal box with removable base	NA	NA	NA	NA	NA	NA	NA
Base	0	0	0	0	0	0	0
Epoxy compound on leads entry	0	0	0	0	0	0	0
Self-extinguishing foam at lead entry	S	S	S	S	S	S	S
Terminal block							
BMC terminal block - six-pin	S	S	S	S	S	S	S
BMC terminal block - twelve-pin	NA	NA	NA	0	0	0	0
HGF connection terminals	NA	NA	NA	NA	NA	NA	NA
Cable glands							
Plastic cable gland	0	0	0	0	0	0	0
Brass cable gland	0	0	0	0	0	0	0
Stainless steel cable gland	0	0	0	0	0	0	0
Flange							
Flange FF	0	0	0	0	0	0	0
Flange C-DIN	0	0	0	0	0	0	0
Flange C	0	0	0	0	0	0	0
Fan							
Polypropylene (2 poles)	S	S	S	S	S	S	S
Polypropylene (4 poles and above)	S	S	S	S	S	S	S
Conductive plastic (2 poles)	0	0	0	0	0	0	0
Conductive plastic (4 poles and above)	0	0	0	0	0	0	0
Aluminium (2 poles)	0	0	0	0	0	0	0
Aluminium (4 and above)	0	0	0	0	0	0	0
Iron	0	0	0	0	0	0	0
Bronze	0	0	0	0	0	0	0
Bearing							
Ball bearing D.E (2 poles)	S	S	S	S	S	S	S
Ball bearing D.E (4 - 8 poles)	S	S	S	S	S	S	S
Roller bearing N.D.E (4 - 8 poles)	NA	NA	NA	NA	NA	NA	NA
Ball bearing N.D.E	S	S	S	S	S	S	S
Insulated drive end bearing	NA	NA	NA	NA	NA	NA	NA
Insulated non drive end bearing	NA	NA	NA	NA	NA	NA	NA
Bearing cap							
Without bearing cap	S	S	S	S	S	S	S
With bearing cap	NA	0	0	0	0	0	0
Bearing sealing							
WSeal®	NA	NA	NA	NA	NA	NA	NA
V'ring	0	0	0	0	0	0	0
Nitrillic rubber lip seal	S	S	S	0	0	0	0
Nitrillic rubber oil seal	0	0	0	0	0	0	0
Nitrillic rubber oil seal double lip	0	0	0	0	0	0	0
Viton seal	0	0	0	0	0	0	0
Viton oil seal	0	0	0	0	0	0	0
Viton oil seal with stainless steel spring	0	0	0	0	0	0	0
Taconite Labyrinth	NA	NA	NA	S	S	S	S
W3 Seal®	NA	NA	NA	0	0	0	0

Notes: 1) Other optional features, on request.

2) Some combinations of optional features are not allowed - then contact WEG.

S(Standard)

NA (Not available)

O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Mechanical options									
Terminal box									
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
Terminal block									
S	S	S	S	S	S	S	S	S	NA
0	0	0	0	0	0	0	0	0	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	S
Cable glands									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Flange									
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	NA
Fan									
S	S	S	S	S	S	S	S	S	NA
S	S	S	S	S	S	S	NA	NA	NA
0	0	0	0	0	0	0	0	0	NA
0	0	0	0	0	0	0	NA	NA	NA
0	0	0	0	0	0	0	0	0	S
0	0	0	0	0	0	0	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Bearing									
S	S	S	S	S	S	S	S	S	S
S	S	S	S	S	NA	NA	NA	NA	NA
0	0	0	0	0	S	S	S	S	S
S	S	S	S	S	S	S	S	S	S
NA	NA	NA	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
Bearing cap									
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S	S	S	S	S	S	S	S	S	S
Bearing sealing									
NA	NA	NA	S	S	S	S	S	S	S
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	NA	NA	NA	NA	NA	NA
0	0	0	0	NA	NA	NA	NA	NA	NA
0	0	0	0	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0

Top Premium Efficiency

Frame	63	71	80	90	100	112	132
Mechanical optionals							
Other sealing							
Joints sealing with Loctite 5923 (Permatex)	0	0	0	0	0	0	0
Bolt with Loctite 5923 (Permatex)	0	0	0	0	0	0	0
Shaft							
AISI 1040/45 (2 poles)	S	S	S	S	S	S	S
AISI 1040/45 (4 - 8 poles)	S	S	S	S	S	S	S
AISI 4140 (2 poles)	0	0	0	0	0	0	0
AISI 4140 (4 - 8 poles)	0	0	0	0	0	0	0
AISI 304 (stainless steel)	0	0	0	0	0	0	0
AISI 316 (stainless steel)	0	0	0	0	0	0	0
AISI 420 (stainless steel)	0	0	0	0	0	0	0
Locking shaft device (2 poles)	NA	NA	NA	NA	NA	NA	NA
Locking shaft device (4 - 8 poles)	NA	NA	NA	NA	NA	NA	NA
Second shaft end	0	0	0	0	0	0	0
Degree of protection							
IP56	0	0	0	0	0	0	0
IP65	0	0	0	0	0	0	0
IP66	0	0	0	0	0	0	0
Painting plan							
202E Primer: One coat with 20 to 55 µm of alkyd oxide red Intermediate: One coat with 20 to 30 µm of isocyanate epoxy paint Finishing: One coat with 100 to 140 µm of epoxy paint N2628 Recommended for pulp and paper, mining and chemical industries.	0	0	0	0	0	0	0
202P Primer: One coat with 20 to 55 mm of alkyd oxide red Intermediate: One coat with 20 to 30 µm of isocyanate epoxy paint Finishing: One coat with 70 to 100 µm of polyurethane paint N2677 Recommended for food processing industries.	0	0	0	0	0	0	0
211E Primer: One coat with 100 to 140 µm of epoxy paint N2630. Finishing: One coat with 100 to 140 µm of epoxy paint N2628 Recommended for motors supplied to Petrobras and its suppliers, to be used in refineries such as petrochemical industries that follow Petrobras specifications Note: Meets Petrobras N 1735 Standard (condition 3).	0	0	0	0	0	0	0
211P Primer: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 70 to 100 µm of PU paint N2677 Recommended for motors supplied to Petrobras and its suppliers, to be used in refineries such as petrochemical industries that follow Petrobras specifications Note: Meets Petrobras N 1735 Standard (condition 3).	0	0	0	0	0	0	0
212E Primer: One coat with 75 to 105 µm of epoxy paint N1277 Intermediate: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 100 to 140 µm of epoxy paint N2628 Recommended for applications in pulp and paper, mining, chemical and petrochemical industries Not: Meets Petrobras N 1735 Standard (condition 4).	0	0	0	0	0	0	0
212P Primer: One coat with 75 to 105 µm of epoxy paint N1277 Intermediate: One coat with 100 to 140 µm of epoxy paint N2630 Finishing: One coat with 70 to 100 µm of PU paint N2677 Recommended for applications in pulp and paper, mining, chemical and petrochemical industries Not: Meets Petrobras N 1735 Standard (condition 4).	0	0	0	0	0	0	0

Notes: 1) Other optional features, on request.
 2) Some combinations of optional features are not allowed - then contact WEG.

S(Standard)
 NA (Not available)
 O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Mechanical optionals									
Other sealing									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Shaft									
S	S	S	S	S	S	S	NA	NA	NA
S	S	S	S	S	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	S	S	S
0	0	0	0	0	S	S	S	S	S
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
Degree of protection									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Painting plan									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Top Premium Efficiency

Frame	63	71	80	90	100	112	132
Mechanical optionals							
213E Primer: One coat with 75 to 90 µm of Silicate Ethyl paint N1661 Intermediate: One coat with 35 to 50 µm of epoxy paint N1202 Finishing: One coat with 240 to 340 µm of epoxy paint N2628 Recommended for off-shore oil platform Note: Meets Petrobras N 1374 Standard (condition 5.2)	0	0	0	0	0	0	0
Inside of terminal box painted (Munsell 2.5 YR 6/14)	0	0	0	0	0	0	0
Inside epoxy painting (Tropicalized)	0	0	0	0	0	0	0
Lubrication							
Mobil Polyrex EM	S	S	S	S	S	S	S
Aeroshell 7	0	0	0	0	0	0	0
Isoflex NBU-15	0	0	0	0	0	0	0
Grease nipple							
Carbon steel grease nipple	NA	NA	NA	NA	NA	NA	NA
Stainless steel grease nipple	NA	NA	NA	NA	NA	NA	NA
Balance							
Balance with half key (*4 poles and above)	NA	NA	S*	S	S	S	S
Balance without key	NA	NA	0	0	0	0	0
Balance with key	NA	NA	0	0	0	0	0
Vibration							
Grade B	S	S	S	S	S	S	S
Suitable to take vibration detector SPM	NA	NA	NA	NA	NA	NA	NA
Drain							
Rubber drain plug	NA	NA	NA	NA	NA	NA	NA
Plastic drain plug (open) - Automatic	S	S	S	S	S	S	S
Plastic drain plug (close)	0	0	0	0	0	0	0
Threaded drain plug (close)	0	0	0	0	0	0	0
Stainless steel drain plug (close)	0	0	0	0	0	0	0
T type drain plug - Automatic	0	0	0	0	0	0	0
Grounding							
Double grounding (One inside the terminal box and two on the frame)	S	S	S	S	S	S	S
Double grounding + additional (one inside the terminal box and three on the frame)	NA	NA	NA	NA	NA	NA	NA
Superior grounding	0	0	0	0	0	0	0
Fan cover							
Steel plate	S	S	S	S	S	S	S
Iron cast	NA	NA	NA	0	0	0	0
Other mechanical optionals							
Drip cover (recommended for vertical shaft down applications)	0	0	0	0	0	0	0
Rubber slinger (recommended for vertical shaft up applications)	NA	NA	NA	0	0	0	0
Stainless steel bolt	0	0	0	0	0	0	0
Grease outlet through the fan cover	NA	NA	NA	NA	NA	NA	NA

Notes: 1) Other optional features, on request.

2) Some combinations of optional features are not allowed - then contact WEG.

(*) 4 poles and upwards

S(Standard)

NA (Not available)

O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Mechanical optionals									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Lubrication									
S	S	S	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Grease nipple									
0	0	0	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
Balance									
S	S	S	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Vibration									
S	S	S	S	S	S	S	S	S	S
0	0	0	0	0	0	0	0	0	0
Drain									
S	S	S	S	S	S	S	S	S	S
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Grounding									
S	S	S	S	S	S	NA	NA	NA	NA
NA	NA	NA	0	0	0	S	S	S	S
0	0	0	0	0	0	0	0	0	0
Fan cover									
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
Other mechanical optionals									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0

Top Premium Efficiency

Frame	63	71	80	90	100	112	132
Electrical optionals							
Winding thermal protection							
Bimetallic alarm thermal protector	0	0	0	0	0	0	0
Bimetallic tripping thermal protector	0	0	0	0	0	0	0
PT100 two wires, one per phase	0	0	0	0	0	0	0
PT100 two wires, two per phase	NA	NA	NA	NA	NA	NA	NA
PT100 three wires, one per phase	0	0	0	0	0	0	0
PT100 three wires, two per phase	NA	NA	NA	NA	NA	NA	NA
Alarm thermistor	0	0	0	0	0	0	0
Tripping thermistor	0	0	0	0	0	0	0
Bearing thermal protection							
Bimetallic thermal protector	NA	NA	NA	NA	NA	NA	NA
Thermistor	NA	NA	NA	NA	NA	NA	NA
PT-100 two wires	NA	NA	NA	NA	NA	NA	NA
PT-100 three wires	NA	NA	NA	NA	NA	NA	NA
PT-100 three wires (calibrated)	NA	NA	NA	NA	NA	NA	NA
Space heaters							
110-127 V	0	0	0	0	0	0	0
220-240 V	0	0	0	0	0	0	0
110-127 / 220-240 V	NA	NA	NA	NA	NA	0	0
380-480 V	0	0	0	0	0	0	0
Rotation direction							
Clockwise rotation direction	0	0	0	0	0	0	0
Counter clockwise rotation direction	0	0	0	0	0	0	0
Nameplate with indication of rotation direction	0	0	0	0	0	0	0
Service factor							
1.00	0	0	0	0	0	0	0
1.15	S	S	S	S	S	S	S
Insulation class							
H	0	0	0	0	0	0	0
Forced ventilation kit							
Forced ventilation kit with encoder provision (informe auxiliary motor voltage)	NA	NA	NA	0	0	0	0
Forced ventilation kit without encoder provision (informe auxiliary motor voltage)	NA	NA	NA	0	0	0	0
Encoder	NA	NA	NA	0	0	0	0
Drive end side grounding brush	NA	NA	NA	NA	NA	NA	NA
Non drive end side grounding brush	NA	NA	NA	NA	NA	NA	NA

Notes: 1) Other optional features, on request.
 2) Some combinations of optional features are not allowed - then contact WEG.

S(Standard)
 NA (Not available)
 O (Optional)

160	180	200	225S/M	250S/M	280S/M	315S/M	315L	355M/L	355A/B
Electrical optionals									
Winding thermal protection									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
S	S	S	S	S	S	S	S	S	S
Bearing thermal protection									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Space heaters									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Rotation direction									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
Service factor									
0	0	0	0	0	0	S	S	S	S
S	S	S	S	S	S	0	0	0	0
Insulation class									
0	0	0	0	0	0	0	0	0	0
Forced ventilation kit									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
NA	NA	NA	NA	NA	NA	0	0	0	0
NA	NA	NA	0	0	0	0	0	0	0

16. Electrical data

W22 - Standard Efficiency Exceeds IE1 (1)

Output		Frame	Full load torque (Nm)	Locked rotor current II/In	Locked rotor torque TI/Tn	Break-down torque Tb/Tn	Inertia J (kgm ²)	Allowable locked rotor time (s)		Weight (kg)	Sound dB (A)	400 V								Full load current In (A)
kW	HP											Rated speed (rpm)	% of full load			Power factor				
								Hot	Cold				Efficiency	50	75	100	50	75	100	
II Pole - 3000 rpm - 50 Hz																				
0.12	0.16	63	0.420	3.8	2.3	2.3	0.00010	27	59	4.3	52	2720	45.5	53.5	56.0	0.55	0.68	0.80	0.387	
0.18	0.25	63	0.630	4.2	2.4	2.3	0.00012	30	66	4.7	52	2730	50.5	56.5	59.0	0.55	0.69	0.80	0.550	
0.25	0.33	63	0.880	4.3	2.5	2.3	0.00014	25	55	5.1	52	2720	52.0	57.0	60.0	0.50	0.65	0.76	0.791	
0.37	0.5	71	1.29	4.6	2.3	2.4	0.00025	16	35	5.5	56	2730	62.0	66.5	67.0	0.60	0.75	0.84	0.949	
0.55	0.75	71	1.94	4.5	2.2	2.2	0.00033	13	29	6.5	56	2710	65.0	67.0	68.0	0.68	0.81	0.89	1.31	
0.75	1	80	2.60	5.1	2.5	2.6	0.00055	14	31	9.5	59	2760	68.5	72.0	72.1	0.62	0.76	0.84	1.79	
1.1	1.5	80	3.79	5.9	2.9	2.9	0.00076	14	31	13.5	59	2775	74.0	76.0	76.0	0.65	0.78	0.85	2.46	
1.5	2	90S	5.05	6.3	2.7	2.6	0.0017	7	15	15.0	68	2840	77.0	79.5	79.5	0.63	0.76	0.83	3.28	
2.2	3	90L	7.48	6.8	2.8	2.9	0.0022	9	20	16.7	68	2810	78.0	80.0	81.5	0.63	0.77	0.85	4.58	
3	4	100L	10.0	6.7	2.3	2.8	0.0052	9	20	23.5	67	2870	81.5	82.0	82.0	0.69	0.81	0.87	6.07	
4	5.5	112M	13.3	6.8	2.4	3.0	0.0073	9	20	31.0	64	2875	82.0	84.0	85.0	0.71	0.82	0.87	7.81	
5.5	7.5	132S	18.1	6.5	2.4	3.0	0.0159	11	24	42.0	68	2910	85.0	86.0	86.0	0.71	0.81	0.87	10.6	
7.5	10	132S	24.7	6.4	2.3	2.6	0.0187	11	24	53.0	68	2900	85.5	86.5	86.5	0.72	0.82	0.87	14.4	
9.2	12.5	132M	30.2	7.5	2.7	3.1	0.0243	8	18	58.0	68	2910	87.0	88.0	88.0	0.70	0.81	0.86	17.5	
11	15	160M	35.9	6.8	2.0	2.7	0.0282	11	24	97.0	67	2930	87.8	88.6	88.4	0.70	0.81	0.86	20.9	
15	20	160M	48.9	7.2	2.2	2.8	0.0363	9	20	108	67	2930	89.5	89.8	89.5	0.71	0.81	0.86	28.1	
18.5	25	160L	60.1	7.8	2.4	3.1	0.0446	7	15	122	67	2940	90.3	90.7	90.3	0.70	0.80	0.86	34.4	
22	30	180M	71.6	7.3	2.0	2.8	0.0867	7	15	156	67	2935	90.7	91.0	90.8	0.76	0.84	0.88	39.7	
30	40	200L	96.8	6.3	2.1	2.4	0.1532	18	40	220	72	2960	91.6	92.0	91.6	0.76	0.84	0.87	54.3	
37	50	200L	120	6.5	2.2	2.4	0.1780	16	35	232	72	2950	92.0	92.5	92.0	0.76	0.84	0.87	66.7	
45	60	225S/M	145	6.9	2.0	2.8	0.3226	10	22	356	75	2960	91.8	92.6	92.4	0.78	0.86	0.89	79.0	
55	75	250S/M	178	6.7	2.0	2.7	0.3214	12	26	413	75	2960	92.2	93.0	92.8	0.79	0.86	0.89	96.1	
75	100	250S/M	242	7.8	2.4	3.0	0.4229	9	20	457	75	2965	93.0	93.5	93.3	0.78	0.86	0.89	130	
90	125	280S/M	289	7.0	2.0	2.8	0.9804	20	44	664	77	2975	93.0	93.8	93.7	0.80	0.87	0.89	156	
110	150	280S/M	353	7.0	2.0	2.8	1.10	20	44	702	77	2975	93.5	94.2	94.0	0.79	0.86	0.89	190	
132	175	315S/M	423	6.7	1.8	2.6	0.9663	24	53	879	77	2980	93.5	94.3	94.3	0.79	0.86	0.89	227	
150	200	315S/M	482	7.0	2.2	3.0	1.13	20	44	880	77	2975	94.0	94.5	94.5	0.77	0.85	0.87	263	
160	220	315S/M	513	7.6	2.0	2.8	1.18	21	46	950	77	2980	94.0	94.5	94.5	0.80	0.87	0.90	272	
185	250	315S/M	593	7.7	2.0	2.8	1.29	14	31	993	77	2980	94.4	94.6	94.6	0.77	0.84	0.88	321	
200	270	315L	641	7.7	2.1	2.8	2.17	17	37	1135	78	2980	94.4	94.7	94.6	0.80	0.87	0.90	339	
200	270	355M/L	640	7.4	1.7	2.7	3.66	28	62	1430	80	2985	94.5	94.8	94.7	0.82	0.87	0.89	343	
220	300	315L	705	8.0	2.3	2.8	3.21	14	31	1224	78	2980	94.5	94.8	94.7	0.82	0.88	0.90	373	
220	300	355M/L	704	7.7	1.8	2.8	4.09	20	44	1496	80	2985	94.5	94.8	94.7	0.83	0.88	0.90	373	
250	340	315L	802	7.9	2.4	2.8	5.39	14	31	1316	78	2980	94.5	94.8	94.7	0.83	0.88	0.91	419	
250	340	355M/L	800	7.9	2.1	2.8	4.63	20	44	1592	80	2985	94.5	94.8	94.7	0.86	0.88	0.90	423	
260	350	315L	835	7.0	2.4	2.5	3.70	20	44	1340	78	2975	94.5	94.8	94.8	0.83	0.89	0.91	435	
280	380	315L**	898	8.5	2.8	2.8	3.21	14	31	1443	78	2980	94.5	94.9	94.8	0.84	0.88	0.90	474	
280	380	355M/L	898	7.6	2.0	2.6	5.06	17	37	1663	80	2980	94.6	94.9	94.8	0.86	0.90	0.91	468	
300	400	315L**	962	7.5	2.5	2.5	4.15	12	26	1500	78	2980	94.8	95.0	95.0	0.84	0.88	0.90	506	
315*	430	355M/L	1010	7.8	2.1	2.6	5.60	22	48	1770	80	2985	94.6	94.9	94.8	0.87	0.90	0.91	527	
355*	480	355M/L	1140	7.9	2.2	2.8	6.01	14	31	1830	80	2985	94.6	95.0	94.8	0.86	0.90	0.91	594	

Notes:

(1) Efficiency values are given according to IEC 60034-2-1. They are calculated according to indirect method, with stray load losses determined by measurement.

(*) Fitted with air deflector in the drive end side.

(**) Class "F" insulation ΔT 105 K.

W22 - Standard Efficiency

Exceeds IE1⁽¹⁾

Output		380 V										415 V									
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)				
			Efficiency			Power Factor					Efficiency			Power Factor							
kW	HP	50	75	100	50	75	100	50	75	100	50	75	100	50	75	100	50	75	100	In (A)	
II Pole - 3000 rpm - 50 Hz																					
0.12	0.16	2690	48.0	55.0	58.8	0.59	0.74	0.84	0.369	2735	43.0	51.0	53.5	0.52	0.64	0.75	0.75	0.416			
0.18	0.25	2700	52.5	57.5	59.5	0.60	0.75	0.85	0.541	2750	47.8	54.5	58.0	0.52	0.64	0.76	0.76	0.568			
0.25	0.33	2685	54.0	59.0	60.0	0.56	0.71	0.81	0.782	2740	50.0	55.5	59.9	0.47	0.60	0.72	0.72	0.806			
0.37	0.5	2700	64.6	67.5	66.6	0.67	0.81	0.88	0.959	2750	59.1	64.9	66.6	0.55	0.70	0.80	0.80	0.966			
0.55	0.75	2665	66.4	67.0	66.5	0.74	0.86	0.91	1.38	2735	63.4	66.5	68.4	0.63	0.77	0.86	0.86	1.30			
0.75	1	2730	70.8	72.7	72.1	0.69	0.82	0.88	1.80	2775	66.2	70.6	72.1	0.56	0.70	0.80	0.80	1.81			
1.1	1.5	2750	75.3	76.3	75.6	0.71	0.83	0.89	2.48	2790	72.2	75.0	75.9	0.58	0.72	0.81	0.81	2.49			
1.5	2	2820	78.0	80.1	78.9	0.70	0.81	0.87	3.32	2855	75.0	78.9	79.3	0.57	0.71	0.80	0.80	3.29			
2.2	3	2790	78.5	80.2	81.5	0.70	0.82	0.88	4.66	2820	77.5	79.8	81.5	0.57	0.72	0.82	0.82	4.58			
3	4	2855	82.4	83.0	83.0	0.75	0.85	0.89	6.17	2880	80.5	82.4	83.5	0.64	0.77	0.84	0.84	5.95			
4	5.5	2860	83.0	84.2	84.5	0.77	0.86	0.89	8.08	2885	80.8	83.4	84.8	0.66	0.78	0.85	0.85	7.72			
5.5	7.5	2895	85.4	86.0	86.0	0.77	0.85	0.89	10.9	2915	84.0	85.5	86.0	0.66	0.78	0.84	0.84	10.6			
7.5	10	2890	86.3	86.5	86.5	0.78	0.86	0.89	14.8	2910	84.5	86.0	86.5	0.66	0.78	0.84	0.84	14.4			
9.2	12.5	2900	87.9	88.0	88.0	0.76	0.85	0.89	17.8	2915	85.8	87.5	87.9	0.63	0.76	0.83	0.83	17.5			
11	15	2920	88.4	88.7	88.1	0.76	0.85	0.88	21.6	2935	87.1	88.3	88.4	0.65	0.77	0.84	0.84	20.6			
15	20	2945	89.9	89.8	89.1	0.76	0.84	0.88	29.1	2935	89.0	89.7	89.6	0.67	0.78	0.84	0.84	27.7			
18.5	25	2935	90.8	90.8	90.1	0.75	0.84	0.88	35.5	2945	89.7	90.4	90.3	0.65	0.76	0.84	0.84	33.9			
22	30	2925	90.9	90.8	90.3	0.80	0.86	0.89	41.6	2940	90.4	91.0	91.0	0.73	0.82	0.87	0.87	38.7			
30	40	2955	91.8	91.9	91.2	0.80	0.86	0.88	56.8	2965	91.3	92.0	91.8	0.72	0.81	0.86	0.86	52.9			
37	50	2945	92.2	92.4	91.6	0.80	0.87	0.88	69.7	2950	91.7	92.4	92.1	0.72	0.81	0.85	0.85	65.8			
45	60	2955	91.9	92.5	92.5	0.82	0.88	0.90	82.1	2960	91.6	92.6	92.4	0.75	0.84	0.88	0.88	77.0			
55	75	2955	92.3	92.9	92.5	0.83	0.88	0.90	100	2965	91.9	93.0	92.8	0.75	0.84	0.87	0.87	94.8			
75	100	2960	93.2	93.5	93.1	0.82	0.88	0.90	136	2970	92.7	93.4	93.3	0.74	0.83	0.87	0.87	129			
90	125	2970	93.1	93.7	93.5	0.83	0.89	0.90	162	2980	92.8	93.7	93.7	0.77	0.85	0.88	0.88	152			
110	150	2970	93.6	94.1	93.8	0.82	0.87	0.90	198	2975	93.3	93.9	94.0	0.76	0.84	0.88	0.88	185			
132	175	2975	93.8	94.2	94.1	0.83	0.88	0.90	237	2980	93.2	94.3	94.4	0.76	0.84	0.88	0.88	221			
150	200	2975	94.2	94.5	94.5	0.80	0.85	0.88	274	2980	94.5	94.7	94.7	0.75	0.82	0.86	0.86	256			
160	220	2975	94.2	94.5	94.4	0.83	0.89	0.91	283	2980	93.8	94.4	94.5	0.77	0.85	0.89	0.89	265			
185	250	2975	94.6	94.6	94.5	0.80	0.86	0.89	334	2980	94.2	94.5	94.6	0.74	0.82	0.87	0.87	313			
200	270	2980	94.5	94.7	94.6	0.83	0.89	0.91	353	2980	94.2	94.6	94.6	0.77	0.85	0.89	0.89	330			
200	270	2980	94.5	94.8	94.8	0.84	0.88	0.90	356	2985	94.3	94.6	94.7	0.80	0.86	0.89	0.89	330			
220	300	2975	94.6	94.8	94.5	0.84	0.89	0.91	389	2980	94.5	94.8	94.8	0.80	0.87	0.89	0.89	363			
220	300	2985	94.5	95.5	95.9	0.89	0.92	0.93	375	2990	93.9	95.3	96.0	0.86	0.90	0.92	0.92	347			
250	340	2975	94.5	94.8	94.5	0.85	0.89	0.91	442	2980	94.3	94.8	94.8	0.81	0.87	0.90	0.90	408			
250	340	2980	94.6	94.8	94.8	0.87	0.89	0.90	445	2985	94.4	94.8	94.8	0.84	0.87	0.90	0.90	408			
260	350	2970	94.3	94.7	94.7	0.85	0.90	0.92	453	2975	94.7	94.9	94.9	0.82	0.88	0.90	0.90	424			
280	380	2975	94.6	94.8	94.8	0.86	0.89	0.90	499	2980	94.4	94.9	94.9	0.83	0.87	0.90	0.90	456			
280	380	2975	94.6	94.8	94.6	0.86	0.89	0.90	500	2980	94.4	94.9	94.9	0.83	0.87	0.90	0.90	456			
300	400	2975	94.8	94.9	94.9	0.86	0.89	0.91	528	2980	94.8	95.1	95.1	0.82	0.87	0.89	0.89	493			
315*	430	2980	94.2	94.9	94.8	0.88	0.91	0.91	555	2985	94.6	94.9	94.9	0.86	0.89	0.91	0.91	507			
355*	480	2980	94.6	94.9	94.6	0.88	0.91	0.91	627	2985	94.6	95.0	94.9	0.84	0.89	0.91	0.91	572			

W22 - Standard Efficiency

Exceeds IE1 (1)

Output		Frame	Full load torque (Nm)	Locked rotor current I ₁ /In	Locked rotor torque T ₁ /T _n	Break-down torque T _b /T _n	Inertia J (kgm ²)	Allowable locked rotor time (s)		Weight (kg)	Sound dB (A)	400 V						Full load current In (A)			
												Rated speed (rpm)	% of full load			50	75	100			
kW	HP							Hot	Cold				Efficiency	Power factor							
II Pole - 3000 rpm - 50 Hz																					
Optional frames																					
0.37	0.5	63	1.32	4.0	2.6	2.4	0.00018	15	33	7.2	52	2670	60.0	64.0	64.0	0.59	0.74	0.83	1.01		
0.55	0.75	80	1.91	5.1	2.6	2.6	0.00044	21	46	8.0	59	2755	64.5	68.5	69.0	0.60	0.74	0.83	1.39		
0.75	1	71	2.62	5.5	2.8	2.8	0.00051	12	26	9.0	56	2740	71.0	72.0	72.1	0.70	0.82	0.89	1.69		
1.1	1.5	90S	3.70	6.3	2.7	2.6	0.0012	7	15	15.0	68	2840	74.5	76.5	76.5	0.63	0.76	0.83	2.50		
1.5	2	80	5.22	5.5	2.8	2.7	0.0009	15	33	15.0	59	2745	76.0	77.0	77.2	0.71	0.82	0.87	3.22		
1.5	2	90L	5.05	6.3	2.7	2.6	0.0017	7	15	15.0	68	2840	77.0	79.5	79.5	0.63	0.76	0.83	3.28		
2.2	3	100L	7.35	6.9	2.2	2.7	0.0045	13	29	27.0	67	2860	81.0	81.5	81.5	0.76	0.85	0.90	4.33		
2.2	3	90S	7.48	6.8	2.8	2.9	0.0022	9	20	16.7	68	2810	78.0	80.0	81.5	0.63	0.77	0.85	4.58		
3	4	112M	9.97	7.2	2.4	2.8	0.0063	20	44	37.0	64	2875	83.0	83.5	83.5	0.75	0.84	0.89	5.83		
3	4	90L**	10.2	6.0	3.4	3.0	0.0025	7	15	23.5	64	2820	81.0	81.5	81.5	0.57	0.71	0.80	6.64		
4	5.5	100L	13.3	8.4	3.2	3.4	0.0064	8	18	32.0	67	2885	83.0	84.0	83.5	0.69	0.81	0.87	7.95		
4	5.5	132S	13.1	6.5	2.3	2.8	0.0135	13	29	61.0	65	2910	83.0	84.0	84.0	0.67	0.78	0.85	8.09		
5.5	7.5	112M	18.3	7.7	2.5	3.0	0.0096	10	22	40.0	64	2870	86.5	86.0	86.0	0.80	0.87	0.90	10.3		
5.5	7.5	132M	18.1	6.5	2.4	3.0	0.0159	11	24	42.0	68	2910	85.0	86.0	86.0	0.71	0.81	0.87	10.6		
7.5	10	112M**	24.9	7.2	3.1	3.2	0.0094	8	18	42.0	64	2875	85.5	86.5	86.5	0.64	0.77	0.84	14.9		
7.5	10	132M	24.7	6.4	2.3	2.6	0.0187	11	24	53.0	68	2900	85.5	86.5	86.5	0.72	0.82	0.87	14.4		
9.2	12.5	160M	30.1	6.6	1.8	2.5	0.0254	13	29	93.0	67	2925	87.5	88.1	88.0	0.73	0.83	0.87	17.4		
11	15	132M	36.0	8.0	2.7	3.2	0.0280	8	18	74.0	68	2920	88.0	89.5	89.5	0.71	0.81	0.86	20.6		
15	20	160L	48.9	7.2	2.2	2.8	0.0363	9	20	108	67	2930	89.5	89.8	89.5	0.71	0.81	0.86	28.1		
22	30	160L	71.5	7.8	2.6	3.3	0.0608	7	15	140	67	2940	90.5	91.0	91.0	0.73	0.82	0.87	40.1		
22	30	180L	71.6	7.3	2.0	2.8	0.0867	7	15	156	67	2935	90.7	91.0	90.8	0.76	0.84	0.88	39.7		
30	40	180L	97.5	7.6	2.3	3.0	0.1301	6	13	194	67	2940	91.5	91.8	91.5	0.78	0.85	0.88	53.8		
30	40	200M	96.8	6.3	2.1	2.4	0.1532	18	40	220	72	2960	91.6	92.0	91.6	0.76	0.84	0.87	54.3		
37	50	200M	120	6.5	2.2	2.4	0.1780	16	35	232	72	2950	92.0	92.5	92.0	0.76	0.84	0.87	66.7		
45	60	200L	146	7.0	2.3	2.5	0.2204	13	29	272	72	2955	92.3	92.6	92.5	0.77	0.85	0.88	79.8		
55	75	225S/M	178	7.2	2.1	2.7	0.4229	9	20	394	75	2960	92.2	93.0	92.8	0.81	0.87	0.89	96.1		
75	100	280S/M	241	6.8	1.8	2.8	0.8492	28	62	630	77	2975	92.5	93.5	93.3	0.78	0.86	0.88	132		
110	150	315S/M	353	6.8	1.8	2.7	0.8810	26	57	848	77	2980	93.3	94.3	94.0	0.78	0.85	0.88	192		
132	175	280S/M	424	7.2	1.9	2.7	1.33	16	35	759	77	2975	94.0	94.3	94.3	0.81	0.86	0.89	227		
200	270	315S/M	641	7.7	2.1	2.8	1.42	17	37	1135	77	2980	94.4	94.7	94.6	0.80	0.87	0.90	339		

Notes:

(1) Efficiency values are given according to IEC 60034-2-1. They are calculated according to indirect method, with stray load losses determined by measurement.

(**) Class "F" insulation ΔT 105 K.

W22 - Standard Efficiency

Exceeds IE1⁽¹⁾

Output		380 V									415 V								
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)		
			Efficiency			Power Factor					Efficiency			Power Factor					
kW	HP	50	75	100	50	75	100	In (A)	50	75	100	50	75	100	50	75	100	In (A)	
II Pole - 3000 rpm - 50 Hz																			
Optional frames																			
0.37	0.5	2625	62.1	64.6	63.0	0.65	0.78	0.87	1.03	2700	57.5	62.9	64.1	0.54	0.69	0.80	0.80	1.00	
0.55	0.75	2725	66.8	69.3	68.7	0.68	0.80	0.87	1.40	2770	62.2	67.1	68.6	0.55	0.69	0.79	0.79	1.41	
0.75	1	2710	71.9	71.9	72.1	0.75	0.86	0.91	1.74	2760	70.0	71.7	72.5	0.65	0.79	0.86	0.86	1.67	
1.1	1.5	2820	75.5	77.1	77.1	0.70	0.81	0.87	2.49	2855	72.6	75.9	76.3	0.57	0.71	0.80	0.80	2.51	
1.5	2	2710	76.8	76.7	77.2	0.77	0.85	0.89	3.32	2765	75.3	76.9	77.7	0.67	0.79	0.85	0.85	3.16	
1.5	2	2820	78.0	80.1	78.9	0.70	0.81	0.87	3.32	2855	75.0	78.9	79.3	0.57	0.71	0.80	0.80	3.29	
2.2	3	2840	81.0	81.2	81.2	0.80	0.88	0.91	4.52	2870	80.5	81.5	81.9	0.73	0.83	0.88	0.88	4.25	
2.2	3	2790	78.5	80.2	81.5	0.70	0.82	0.88	4.66	2820	77.5	79.8	81.5	0.57	0.72	0.82	0.82	4.58	
3	4	2860	83.5	83.4	82.8	0.79	0.87	0.90	6.12	2885	82.4	83.4	83.7	0.71	0.81	0.87	0.87	5.73	
3	4	2800	82.1	81.7	81.5	0.63	0.76	0.84	6.66	2835	79.8	81.0	81.6	0.52	0.67	0.77	0.77	6.64	
4	5.5	2870	83.9	84.3	83.2	0.75	0.85	0.90	8.12	2895	81.9	83.6	83.5	0.64	0.77	0.84	0.84	7.93	
4	5.5	2900	83.5	84.0	84.8	0.73	0.83	0.87	8.24	2920	81.0	84.0	85.0	0.63	0.75	0.82	0.82	7.98	
5.5	7.5	2860	86.0	86.5	86.2	0.83	0.89	0.91	10.7	2880	85.0	86.5	86.7	0.77	0.85	0.89	0.89	9.92	
5.5	7.5	2895	85.4	86.0	86.0	0.77	0.85	0.89	10.9	2915	84.0	85.5	86.0	0.66	0.78	0.84	0.84	10.6	
7.5	10	2860	86.8	86.9	86.3	0.71	0.82	0.88	15.0	2885	84.3	85.9	86.3	0.57	0.71	0.80	0.80	15.1	
7.5	10	2890	86.3	86.5	86.5	0.78	0.86	0.89	14.8	2910	84.5	86.0	86.5	0.66	0.78	0.84	0.84	14.4	
9.2	12.5	2915	87.9	88.0	87.5	0.77	0.86	0.89	17.9	2930	87.0	88.0	88.2	0.69	0.80	0.85	0.85	17.1	
11	15	2910	88.5	89.5	89.0	0.76	0.84	0.88	21.3	2930	87.5	89.0	89.5	0.66	0.77	0.83	0.83	20.6	
15	20	2945	89.9	89.8	89.1	0.76	0.84	0.88	29.1	2935	89.0	89.7	89.6	0.67	0.78	0.84	0.84	27.7	
22	30	2930	90.7	91.0	91.0	0.77	0.84	0.88	41.7	2945	90.2	90.8	90.8	0.70	0.80	0.86	0.86	39.2	
22	30	2925	90.9	90.8	90.3	0.80	0.86	0.89	41.6	2940	90.4	91.0	91.0	0.73	0.82	0.87	0.87	38.7	
30	40	2935	91.6	91.6	91.1	0.81	0.87	0.89	56.2	2945	91.3	91.8	91.7	0.75	0.83	0.87	0.87	52.3	
30	40	2955	91.8	91.9	91.2	0.80	0.86	0.88	56.8	2965	91.3	92.0	91.8	0.72	0.81	0.86	0.86	52.9	
37	50	2945	92.2	92.4	91.6	0.80	0.87	0.88	69.7	2950	91.7	92.4	92.1	0.72	0.81	0.85	0.85	65.8	
45	60	2950	92.5	92.5	92.2	0.81	0.87	0.89	83.3	2960	92.0	92.6	92.6	0.73	0.83	0.87	0.87	77.7	
55	75	2955	92.3	92.8	92.4	0.83	0.88	0.90	100	2960	92.1	93.0	93.0	0.79	0.86	0.88	0.88	93.5	
75	100	2970	92.7	93.5	93.1	0.81	0.88	0.89	138	2980	92.2	93.4	93.3	0.75	0.84	0.87	0.87	129	
110	150	2975	93.6	94.4	93.9	0.82	0.87	0.89	200	2980	93.0	94.2	94.0	0.75	0.83	0.87	0.87	187	
132	175	2970	94.1	94.2	94.1	0.84	0.87	0.90	237	2980	93.9	94.3	94.4	0.79	0.85	0.88	0.88	221	
200	270	2980	94.5	94.7	94.6	0.83	0.89	0.91	353	2980	94.2	94.6	94.6	0.77	0.85	0.89	0.89	330	

W22 - Standard Efficiency

Exceeds IE1 (1)

Output		Frame	Full load torque (Nm)	Locked rotor current I _L /In	Locked rotor torque T _L /T _n	Break-down torque T _b /T _n	Inertia J (kgm ²)	Allowable locked rotor time (s)	Weight (kg)	Sound dB (A)	400 V										Full load current In (A)	
											Hot		Cold		Rated speed (rpm)			% of full load				
kW	HP										50	75	100	50	75	100	50	75	100			
IV Pole - 1500 rpm - 50 Hz																						
0.12	0.16	63	0.850	3.5	1.8	2.0	0.00033	38	84	5.2	44	1350	46.0	53.0	55.0	0.51	0.64	0.75	0.420			
0.18	0.25	63	1.30	3.6	1.8	1.9	0.00044	25	55	6.2	44	1320	52.0	54.0	56.0	0.57	0.71	0.81	0.573			
0.25	0.33	71	1.81	3.1	1.6	1.7	0.00038	28	62	5.5	43	1320	52.0	58.5	59.0	0.52	0.66	0.77	0.794			
0.37	0.5	71	2.66	3.6	2.1	2.1	0.00055	28	62	7.0	43	1330	59.0	63.0	63.0	0.49	0.63	0.73	1.16			
0.55	0.75	80	3.71	4.9	2.0	2.4	0.0019	13	29	9.5	44	1415	65.0	70.0	71.0	0.57	0.72	0.81	1.38			
0.75	1	80	5.14	4.9	2.0	2.3	0.0022	13	29	10.5	44	1395	70.0	72.0	72.3	0.63	0.78	0.84	1.78			
1.1	1.5	90S	7.40	5.6	2.3	2.4	0.0039	8	18	14.5	47	1420	70.0	76.0	77.0	0.55	0.69	0.79	2.61			
1.5	2	90L	10.2	5.5	2.3	2.4	0.0048	8	18	17.0	47	1410	76.5	78.5	79.0	0.58	0.73	0.82	3.34			
2.2	3	100L	14.9	5.6	2.4	2.6	0.0065	9	20	23.0	51	1410	80.5	81.5	81.5	0.60	0.74	0.82	4.75			
3	4	100L	20.2	6.0	2.8	3.0	0.0084	8	18	30.0	51	1420	80.0	81.0	82.6	0.57	0.72	0.81	6.47			
4	5.5	112M	26.5	6.2	2.1	2.5	0.0147	13	29	33.0	55	1440	83.5	84.6	85.0	0.65	0.77	0.83	8.18			
5.5	7.5	132S	36.2	6.5	2.1	2.5	0.0349	11	24	47.0	58	1450	84.5	85.6	86.0	0.63	0.77	0.84	11.0			
7.5	10	132M	49.3	6.7	2.1	2.9	0.0465	8	18	64.5	58	1455	85.0	86.5	87.0	0.63	0.77	0.84	14.8			
9.2	12.5	160M	60.2	6.0	2.0	2.4	0.0534	9	20	93.0	61	1460	86.8	87.5	87.4	0.64	0.76	0.82	18.5			
11	15	160M	72.0	6.0	2.1	2.5	0.0583	9	20	96.0	61	1460	87.0	88.0	88.0	0.64	0.76	0.82	22.0			
15	20	160L	98.2	6.2	2.2	2.7	0.0826	8	18	121	61	1460	89.0	89.7	89.3	0.66	0.76	0.83	29.2			
18.5	25	180M	121	6.6	2.4	2.8	0.1398	12	26	152	61	1465	89.7	90.4	90.2	0.67	0.77	0.84	35.2			
22	30	180L	143	6.6	2.4	2.9	0.1657	10	22	164	61	1465	90.0	90.8	90.7	0.66	0.77	0.84	41.7			
30	40	200L	195	6.3	2.1	2.6	0.2668	13	29	212	65	1470	91.3	91.7	91.5	0.68	0.78	0.84	56.3			
37	50	225S/M	240	6.7	2.3	2.7	0.5446	10	22	342	66	1475	92.0	92.4	92.2	0.71	0.81	0.85	68.1			
45	60	225S/M	292	6.9	2.4	2.7	0.6467	10	22	363	66	1475	92.2	92.2	92.6	0.72	0.82	0.86	81.6			
55	75	250S/M	356	6.5	2.1	2.5	0.7081	12	26	431	66	1475	92.9	93.2	93.1	0.75	0.85	0.88	96.9			
75	100	250S/M	484	7.6	2.4	3.0	1.01	8	18	496	66	1480	93.1	93.4	93.5	0.73	0.82	0.87	133			
90	125	280S/M	579	7.2	2.1	2.8	1.87	20	44	673	69	1485	93.2	93.8	93.8	0.75	0.83	0.87	159			
110	150	280S/M	708	6.8	2.1	2.6	2.17	16	35	735	69	1485	93.5	94.2	94.1	0.75	0.83	0.87	194			
132	175	315S/M	846	6.9	2.3	2.4	2.17	22	48	953	71	1490	93.9	94.5	94.3	0.74	0.83	0.86	235			
150	200	315S/M	962	7.0	2.5	2.8	2.33	18	40	1012	71	1490	94.0	94.5	94.5	0.74	0.82	0.86	266			
160	220	315S/M	1030	7.3	2.4	2.5	2.47	18	40	1012	71	1490	94.1	94.6	94.5	0.73	0.82	0.86	284			
185	250	315S/M	1190	6.9	2.4	2.3	2.77	17	37	1071	71	1490	94.3	94.7	94.6	0.74	0.82	0.86	328			
200	270	315L	1280	6.9	2.4	2.3	6.34	16	35	1216	74	1490	94.4	94.8	94.7	0.76	0.84	0.85	359			
200	270	355M/L	1280	6.3	1.8	2.0	5.94	18	40	1378	76	1490	94.5	94.9	94.9	0.74	0.81	0.85	358			
220	300	315L	1410	7.7	2.6	2.4	4.60	14	31	1330	74	1490	94.5	94.9	94.8	0.74	0.83	0.86	389			
220	300	355M/L	1410	6.4	2.0	2.2	6.48	18	40	1414	76	1490	94.6	94.9	94.8	0.73	0.81	0.85	394			
250	340	315L	1600	7.8	2.7	2.5	8.12	12	26	1399	74	1490	94.6	94.9	94.8	0.75	0.83	0.86	443			
250	340	355M/L	1600	6.8	2.1	2.4	7.17	18	40	1470	76	1490	94.6	95.0	94.9	0.73	0.82	0.85	447			
260	350	315L	1670	7.8	2.7	2.5	8.12	12	26	1399	74	1490	94.6	94.9	94.8	0.75	0.83	0.86	460			
260	350	355M/L	1670	6.4	2.4	2.4	7.73	14	31	1571	76	1490	94.6	95.0	94.9	0.73	0.82	0.85	465			
280	380	315L	1800	7.9	2.7	2.5	9.02	12	26	1496	74	1490	94.6	95.0	94.9	0.74	0.82	0.86	495			
280	380	355M/L	1800	6.6	2.1	2.4	8.05	14	31	1510	76	1490	94.6	95.0	94.9	0.74	0.82	0.85	501			
300	400	315L**	1920	7.6	2.5	2.5	9.92	11	24	1540	78	1490	95.4	95.8	95.8	0.72	0.80	0.85	532			
300	400	355M/L	1920	7.2	2.2	2.4	8.59	18	40	1560	76	1490	94.6	95.0	94.9	0.74	0.82	0.85	537			
315	430	315L**	2020	7.6	2.5	2.5	9.92	11	24	1540	78	1490	95.4	95.8	95.8	0.72	0.80	0.85	558			
315	430	355M/L	2020	7.2	2.4	2.4	8.95	14	31	1670	76	1490	94.6	95.0	94.9	0.74	0.82	0.86	557			
330	450	355M/L	2120	6.8	2.2	2.4	9.84	17	37	1769	76	1490	94.6	95.0	94.9	0.75	0.83	0.86	584			
355*	480	355M/L	2280	6.9	2.4	2.3	10.7	15	33	1888	76	1490	94.6	95.0	94.9	0.75	0.83	0.86	628			
370*	500	355M/L	2370	7.3	2.6	2.4	11.6	11	24	1971	76	1490	94.9	95.1	94.9	0.75	0.83	0.86	654			
400*	550	355M/L	2570	7.3	2.6	2.4	11.6	11	24	1971	76	1490	94.7	95.1	94.9	0.74	0.82	0.86	707			

Notes:

(1) Efficiency values are given according to IEC 60034-2-1. They are calculated according to indirect method, with stray load losses determined by measurement.

(*) Fitted with air deflector in the drive end side.

(**) Class "F" insulation ΔT 105 K.

W22 - Standard Efficiency

Exceeds IE1⁽¹⁾

Output		380 V									415 V								
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)		
			Efficiency			Power Factor					Efficiency			Power Factor					
kW	HP	50	75	100	50	75	100	50	In (A)	50	75	100	50	75	100	50	In (A)		
IV Pole - 1500 rpm - 50 Hz																			
0.12	0.16	1330	49.6	55.0	55.1	0.56	0.69	0.79	0.419	1360	42.7	50.9	54.0	0.48	0.60	0.71	0.435		
0.18	0.25	1290	53.9	54.3	54.3	0.61	0.75	0.84	0.600	1335	50.3	53.3	56.4	0.54	0.68	0.78	0.569		
0.25	0.33	1290	56.3	60.4	58.0	0.57	0.72	0.82	0.799	1335	48.0	55.8	58.4	0.49	0.62	0.73	0.816		
0.37	0.5	1305	62.5	64.5	62.6	0.54	0.69	0.78	1.15	1345	55.3	60.8	62.5	0.45	0.58	0.69	1.19		
0.55	0.75	1400	68.0	71.3	70.9	0.63	0.78	0.85	1.39	1420	62.0	68.4	70.4	0.53	0.68	0.77	1.41		
0.75	1	1380	72.2	72.5	72.1	0.69	0.82	0.87	1.84	1405	68.0	71.0	72.4	0.59	0.73	0.81	1.78		
1.1	1.5	1405	73.0	76.0	76.5	0.62	0.75	0.83	2.63	1425	67.0	75.0	77.0	0.49	0.64	0.75	2.65		
1.5	2	1400	78.5	79.0	79.0	0.65	0.78	0.86	3.35	1415	74.5	78.0	79.0	0.52	0.67	0.77	3.43		
2.2	3	1400	80.5	81.0	80.5	0.67	0.79	0.85	4.89	1420	79.0	81.0	81.5	0.55	0.68	0.78	4.82		
3	4	1410	81.5	82.0	81.9	0.64	0.77	0.84	6.63	1430	78.0	81.0	82.6	0.52	0.67	0.78	6.48		
4	5.5	1430	84.3	85.0	84.5	0.71	0.81	0.86	8.36	1445	82.0	84.0	85.0	0.59	0.72	0.80	8.18		
5.5	7.5	1445	85.5	86.0	85.6	0.70	0.81	0.86	11.4	1455	83.2	85.0	85.7	0.58	0.72	0.81	11.0		
7.5	10	1450	86.5	86.8	86.8	0.71	0.82	0.87	15.1	1455	83.2	85.7	86.7	0.57	0.72	0.80	15.0		
9.2	12.5	1455	87.5	87.6	87.0	0.69	0.79	0.84	19.1	1465	86.1	87.2	87.5	0.60	0.73	0.80	18.3		
11	15	1455	87.8	88.2	87.6	0.69	0.80	0.84	22.7	1465	86.1	87.6	88.0	0.59	0.72	0.79	22.0		
15	20	1455	89.5	89.7	88.9	0.71	0.79	0.85	30.2	1465	88.4	89.5	89.4	0.62	0.73	0.81	28.8		
18.5	25	1460	90.5	90.6	90.0	0.73	0.81	0.87	35.9	1470	89.0	90.1	90.2	0.62	0.73	0.81	35.2		
22	30	1460	90.8	91.0	90.5	0.72	0.81	0.87	42.5	1470	89.3	90.5	90.6	0.61	0.73	0.81	41.7		
30	40	1465	91.7	91.7	91.2	0.73	0.81	0.86	58.1	1470	90.8	91.5	91.6	0.63	0.75	0.82	55.6		
37	50	1470	92.3	92.4	91.9	0.76	0.84	0.86	71.1	1475	91.6	92.3	92.2	0.68	0.78	0.83	67.3		
45	60	1470	92.5	92.2	92.3	0.76	0.85	0.87	85.1	1475	91.9	92.1	92.6	0.68	0.79	0.84	80.5		
55	75	1470	93.1	93.1	92.7	0.79	0.87	0.89	101	1475	92.6	93.1	93.1	0.72	0.83	0.87	94.5		
75	100	1475	93.4	93.4	93.2	0.78	0.85	0.89	137	1480	93.6	93.2	93.5	0.69	0.79	0.85	131		
90	125	1480	93.6	93.9	93.6	0.79	0.85	0.88	166	1486	92.8	93.6	93.8	0.72	0.81	0.86	157		
110	150	1485	93.7	94.0	93.9	0.78	0.85	0.88	202	1485	93.3	94.1	94.1	0.72	0.81	0.86	189		
132	175	1490	94.2	94.5	94.2	0.78	0.85	0.87	245	1490	93.6	94.4	94.3	0.71	0.81	0.85	229		
150	200	1490	94.5	94.6	94.6	0.78	0.85	0.88	274	1490	93.6	94.3	94.5	0.70	0.79	0.84	263		
160	220	1490	94.4	94.7	94.4	0.77	0.84	0.87	296	1490	93.8	94.5	94.5	0.70	0.80	0.85	277		
185	250	1490	94.5	94.7	94.4	0.78	0.84	0.87	342	1490	94.0	94.6	94.6	0.71	0.80	0.85	320		
200	270	1490	94.6	94.8	94.5	0.79	0.86	0.88	365	1490	94.2	94.8	94.8	0.73	0.82	0.86	342		
200	270	1490	94.7	94.9	94.9	0.78	0.83	0.86	372	1490	94.3	94.8	94.9	0.71	0.79	0.84	349		
220	300	1490	94.7	94.9	94.7	0.78	0.85	0.87	406	1490	94.3	94.8	94.8	0.71	0.81	0.85	380		
220	300	1490	94.7	94.7	94.7	0.77	0.83	0.86	410	1490	94.4	94.8	94.8	0.70	0.79	0.84	384		
250	340	1490	95.4	94.9	94.7	0.79	0.85	0.87	461	1490	95.0	94.8	94.8	0.72	0.81	0.85	432		
250	340	1490	94.7	94.8	94.8	0.77	0.84	0.86	466	1490	94.4	94.9	94.9	0.70	0.80	0.84	436		
260	350	1490	95.4	94.9	94.7	0.79	0.85	0.87	479	1490	95.0	94.8	94.8	0.72	0.81	0.85	449		
260	350	1490	94.7	94.8	94.8	0.77	0.84	0.86	485	1490	94.4	94.9	94.9	0.70	0.80	0.84	454		
280	380	1490	95.6	95.0	94.8	0.77	0.84	0.87	516	1490	95.2	94.9	94.9	0.71	0.80	0.85	483		
280	380	1490	94.7	94.8	94.8	0.77	0.84	0.86	522	1490	94.4	94.9	95.0	0.71	0.80	0.84	488		
300	400	1490	95.6	95.8	95.8	0.76	0.82	0.86	553	1490	95.2	95.7	95.8	0.69	0.78	0.84	519		
300	400	1490	94.7	94.8	94.8	0.78	0.84	0.88	546	1490	94.4	94.9	94.9	0.71	0.80	0.84	524		
315	430	1490	95.6	95.8	95.8	0.76	0.82	0.86	580	1490	95.2	95.7	95.8	0.69	0.78	0.84	550		
315	430	1490	94.8	94.9	94.9	0.77	0.84	0.87	580	1490	94.4	94.9	94.9	0.71	0.80	0.85	543		
330	450	1485	94.6	94.9	94.9	0.74	0.79	0.85	622	1490	94.4	94.9	95.0	0.72	0.81	0.85	569		
355*	480	1490	94.7	94.8	94.8	0.78	0.85	0.87	654	1490	94.5	95.0	95.0	0.72	0.81	0.85	612		
370*	500	1490	94.5	94.7	94.8	0.78	0.85	0.87	682	1490	94.4	94.9	95.0	0.72	0.81	0.85	637		
400*	550	1490	94.8	94.8	94.8	0.77	0.84	0.87	737	1490	94.5	95.0	95.0	0.71	0.80	0.85	689		

W22 - Standard Efficiency

Exceeds IE1 (1)

Output		Frame	Full load torque (Nm)	Locked rotor current I/I _n	Locked rotor torque T/T _n	Break-down torque T _b /T _n	Inertia J (kgm ²)	Allowable locked rotor time (s)		Weight (kg)	Sound dB (A)	400 V										Full load current I _n (A)													
												Rated speed (rpm)	% of full load			Efficiency	Power factor		50	75	100	50	75	100											
kW	HP							Hot	Cold				50	75	100		50	75	100																
IV Pole - 1500 rpm - 50 Hz																																			
Optional frames																																			
0.18	0.25	71	1.27	3.3	1.7	1.9	0.00038	30	66	5.5	43	1350	50.0	57.0	58.0	0.50	0.63	0.73	0.73	0.614															
0.25	0.33	63	1.78	4.1	2.2	2.2	0.00055	23	51	7.2	44	1340	55.0	60.0	60.0	0.52	0.66	0.76	0.76	0.791															
0.37	0.5	80	2.50	5.0	2.0	2.4	0.0015	23	51	8.5	44	1415	63.0	66.0	67.0	0.57	0.71	0.81	0.81	0.984															
0.55	0.75	71	3.92	4.0	2.5	2.3	0.00082	23	51	9.5	43	1340	66.0	69.0	69.0	0.50	0.64	0.74	0.74	1.55															
0.55	0.75	90S	3.71	5.4	2.1	2.4	0.0030	29	64	15.5	49	1415	70.0	73.0	73.0	0.56	0.70	0.78	0.78	1.39															
0.75	1	90S	5.06	5.4	2.0	2.3	0.0036	20	44	16.5	49	1415	70.5	73.5	73.5	0.57	0.70	0.79	0.79	1.86															
1.1	1.5	80	7.43	5.8	2.9	3.0	0.0032	10	22	14.5	44	1415	70.5	75.0	75.5	0.56	0.71	0.80	0.80	2.63															
1.1	1.5	90L	7.40	5.6	2.3	2.4	0.0039	8	18	14.5	47	1420	70.0	76.0	77.0	0.55	0.69	0.79	0.79	2.61															
1.5	2	100L	10.2	5.4	2.1	2.4	0.0052	21	46	24.0	53	1405	79.0	79.5	79.0	0.64	0.76	0.82	0.82	3.34															
1.5	2	90S	10.2	5.5	2.3	2.4	0.0048	8	18	17.0	47	1410	76.5	78.5	79.0	0.58	0.73	0.82	0.82	3.34															
2.2	3	112M	14.6	5.9	1.7	2.5	0.0104	27	59	38.0	56	1440	81.0	82.0	82.0	0.59	0.72	0.79	0.79	4.90															
2.2	3	90L	14.9	5.8	2.7	2.5	0.0066	8	18	23.0	47	1410	75.0	76.5	76.5	0.57	0.71	0.80	0.80	5.19															
3	4	112M	19.9	5.9	1.7	2.4	0.0124	16	35	39.5	56	1440	82.5	83.0	83.0	0.61	0.74	0.81	0.81	6.44															
4	5.5	100L**	27.4	5.5	2.7	2.7	0.0104	8	18	35.0	53	1395	82.0	83.0	83.1	0.62	0.74	0.81	0.81	8.58															
4	5.5	132S	26.4	6.2	1.5	2.5	0.0285	15	33	57.0	60	1450	83.0	84.5	84.5	0.68	0.80	0.86	0.86	7.94															
5.5	7.5	112M	36.5	6.3	2.2	2.8	0.0182	11	24	44.0	56	1440	84.0	85.7	85.7	0.57	0.71	0.79	0.79	11.7															
5.5	7.5	132M	36.2	6.5	2.1	2.5	0.0349	11	24	47.0	58	1450	84.5	85.6	86.0	0.63	0.77	0.84	0.84	11.0															
7.5	10	132S	49.3	6.7	2.1	2.9	0.0465	8	18	64.5	58	1455	85.0	86.5	87.0	0.63	0.77	0.84	0.84	14.8															
9.2	12.5	132M	60.4	7.5	2.2	2.8	0.0582	6	13	70.0	58	1455	86.5	87.7	87.7	0.64	0.78	0.85	0.85	17.8															
11	15	132M/L**	72.2	7.5	2.4	2.7	0.0676	5	11	83.0	58	1455	87.0	88.4	88.0	0.70	0.81	0.88	0.88	20.5															
11	15	160L	72.0	6.0	2.1	2.5	0.0583	9	20	96.0	61	1460	87.0	88.0	88.0	0.64	0.76	0.82	0.82	22.0															
15	20	160M	98.2	6.2	2.2	2.7	0.0826	8	18	121	61	1460	89.0	89.7	89.3	0.66	0.76	0.83	0.83	29.2															
18.5	25	160L	121	6.6	2.4	2.9	0.1071	7	15	135	61	1465	89.5	90.2	90.0	0.64	0.76	0.82	0.82	36.2															
18.5	25	180L	121	6.6	2.4	2.8	0.1398	12	26	152	61	1465	89.7	90.4	90.2	0.67	0.77	0.84	0.84	35.2															
22	30	180M	143	6.6	2.4	2.9	0.1657	10	22	164	61	1465	90.0	90.8	90.7	0.66	0.77	0.84	0.84	41.7															
30	40	180L	196	6.7	2.9	2.9	0.2075	10	22	190	61	1460	90.5	91.2	91.0	0.63	0.74	0.82	0.82	58.0															
30	40	200M	195	6.3	2.1	2.6	0.2668	13	29	212	65	1470	91.3	91.7	91.5	0.68	0.78	0.84	0.84	56.3															
37	50	200L	241	6.6	2.3	2.5	0.3342	12	26	237	65	1470	92.0	92.4	92.0	0.71	0.81	0.85	0.85	68.3															
45	60	200L**	292	6.6	2.3	2.5	0.3735	6	13	255	65	1475	92.3	92.7	92.5	0.65	0.76	0.82	0.82	85.6															
55	75	225S/M	356	7.0	2.4	2.7	0.8794	9	20	394	66	1475	92.8	93.1	93.1	0.72	0.82	0.82	0.82	104															
75	100	280S/M	483	6.6	2.0	2.6	1.56	22	48	639	69	1485	93.0	93.5	93.5	0.75	0.83	0.87	0.87	133															
110	150	315S/M	705	6.4	2.0	2.4	1.78	26	57	887	71	1490	93.6	94.3	94.1	0.75	0.83	0.86	0.86	196															
132	175	280S/M	849	7.2	2.3	2.6	2.62	14	31	797	69	1485	93.7	94.4	94.3	0.74	0.83	0.86	0.86	235															
200	270	315S/M	1280	6.9	2.4	2.3	3.07	16	35	1216	71	1490	94.4	94.8	94.7	0.76	0.84	0.87	0.87	350															

Notes:

(1) Efficiency values are given according to IEC 60034-2-1. They are calculated according to indirect method, with stray load losses determined by measurement.

(**) Class "F" insulation ΔT 105 K.

W22 - Standard Efficiency

Exceeds IE1⁽¹⁾

Output		380 V								415 V							
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)
KW	HP		Efficiency			Power Factor					Efficiency			Power Factor			
			50	75	100	50	75	100			50	75	100	50	75	100	
IV Pole - 1500 rpm - 50 Hz																	
Optional frames																	
0.18	0.25	1325	52.9	58.6	57.6	0.54	0.68	0.78	0.609	1365	47.2	55.3	57.5	0.48	0.60	0.70	0.622
0.25	0.33	1320	57.5	61.0	59.6	0.57	0.71	0.80	0.797	1350	52.3	58.4	59.8	0.48	0.62	0.73	0.797
0.37	0.5	1405	65.4	67.0	66.7	0.62	0.76	0.84	1.00	1425	60.6	64.7	66.6	0.53	0.67	0.77	1.00
0.55	0.75	1315	68.7	70.2	68.3	0.55	0.69	0.78	1.57	1350	62.9	67.6	68.7	0.45	0.59	0.70	1.59
0.55	0.75	1405	71.6	73.4	72.3	0.61	0.74	0.81	1.43	1420	68.6	72.3	73.1	0.52	0.66	0.75	1.40
0.75	1	1405	72.0	73.9	72.8	0.62	0.75	0.82	1.91	1420	68.9	72.8	73.7	0.52	0.66	0.76	1.86
1.1	1.5	1405	73.3	76.4	75.7	0.63	0.77	0.85	2.60	1420	67.3	73.1	75.1	0.51	0.65	0.76	2.68
1.1	1.5	1405	73.0	76.0	76.5	0.62	0.75	0.83	2.63	1425	67.0	75.0	77.0	0.49	0.64	0.75	2.65
1.5	2	1390	79.6	79.1	77.7	0.69	0.79	0.84	3.49	1415	78.1	79.4	79.6	0.60	0.73	0.80	3.28
1.5	2	1400	78.5	79.0	79.0	0.65	0.78	0.86	3.35	1415	74.5	78.0	79.0	0.52	0.67	0.77	3.43
2.2	3	1435	82.2	82.3	81.5	0.65	0.76	0.82	5.00	1445	79.9	81.5	82.0	0.55	0.68	0.76	4.91
2.2	3	1390	76.0	77.0	76.0	0.65	0.75	0.83	5.30	1420	73.0	76.0	76.5	0.53	0.66	0.76	5.26
3	4	1435	83.8	83.3	82.5	0.67	0.78	0.84	6.58	1445	81.1	82.5	83.1	0.56	0.70	0.78	6.44
4	5.5	1380	82.8	82.7	81.9	0.67	0.78	0.83	8.94	1405	81.1	82.8	83.7	0.57	0.71	0.79	8.42
4	5.5	1445	84.1	84.7	83.9	0.74	0.84	0.88	8.23	1455	81.9	84.1	84.5	0.63	0.76	0.83	7.93
5.5	7.5	1435	85.5	86.2	85.4	0.66	0.77	0.82	11.9	1445	82.4	84.9	85.4	0.52	0.66	0.75	11.9
5.5	7.5	1445	85.5	86.0	85.6	0.70	0.81	0.86	11.4	1455	83.2	85.0	85.7	0.58	0.72	0.81	11.0
7.5	10	1450	86.5	86.8	86.8	0.71	0.82	0.87	15.1	1455	83.2	85.7	86.7	0.57	0.72	0.80	15.0
9.2	12.5	1450	87.3	87.8	87.4	0.70	0.82	0.87	18.4	1455	85.3	87.1	87.5	0.59	0.73	0.82	17.8
11	15	1450	87.5	88.4	88.0	0.75	0.84	0.89	21.4	1460	86.5	88.4	88.4	0.67	0.79	0.86	20.1
11	15	1455	87.8	88.2	87.6	0.69	0.80	0.84	22.7	1465	86.1	87.6	88.0	0.59	0.72	0.79	22.0
15	20	1455	89.5	89.7	88.9	0.71	0.79	0.85	30.2	1465	88.4	89.5	89.4	0.62	0.73	0.81	28.8
18.5	25	1460	90.1	90.3	89.7	0.69	0.79	0.84	37.3	1470	88.9	90.0	90.1	0.60	0.73	0.80	35.7
18.5	25	1460	90.5	90.6	90.0	0.73	0.81	0.87	35.9	1470	89.0	90.1	90.2	0.62	0.73	0.81	35.2
22	30	1460	90.8	91.0	90.5	0.72	0.81	0.87	42.5	1470	89.3	90.5	90.6	0.61	0.73	0.81	41.7
30	40	1455	91.3	91.4	90.8	0.69	0.78	0.85	59.1	1465	89.8	90.9	91.0	0.59	0.71	0.79	58.1
30	40	1465	91.7	91.7	91.2	0.73	0.81	0.86	58.1	1470	90.8	91.5	91.6	0.63	0.75	0.82	55.6
37	50	1465	92.3	92.4	91.7	0.76	0.84	0.87	70.5	1470	91.5	92.2	92.1	0.66	0.78	0.83	67.3
45	60	1470	93.1	93.0	92.5	0.72	0.81	0.86	85.9	1475	91.3	92.2	92.3	0.58	0.71	0.78	87.0
55	75	1470	93.0	93.0	92.7	0.76	0.84	0.83	109	1475	92.5	93.1	93.3	0.69	0.80	0.81	101
75	100	1480	93.3	93.5	93.3	0.79	0.85	0.88	139	1485	92.7	93.4	93.5	0.72	0.81	0.86	130
110	150	1490	93.8	94.3	93.9	0.79	0.85	0.87	205	1490	93.3	94.2	94.1	0.72	0.81	0.85	191
132	175	1480	93.9	94.3	94.1	0.77	0.85	0.87	245	1485	93.5	94.4	94.4	0.71	0.81	0.85	229
200	270	1490	94.6	94.8	94.5	0.79	0.86	0.88	365	1490	94.2	94.8	94.8	0.73	0.82	0.86	342

W22 - Standard Efficiency

Exceeds IE1⁽¹⁾

Output		Frame	Full load torque (Nm)	Locked rotor current II/In	Locked rotor torque TI/Tn	Break-down torque Tb/Tn	Inertia J (kgm ²)	Allowable locked rotor time (s)		Weight (kg)	Sound dB (A)	400 V										Full load current In (A)
												Rated speed (rpm)	% of full load			Efficiency			Power factor			
kW	HP							Hot	Cold				50	75	100	50	75	100				
VI Pole - 1000 rpm - 50 Hz																						
0.12	0.16	63	1.34	2.6	1.7	1.6	0.00051	46	101	6.7	43	855	40.7	46.7	45.5	0.49	0.60	0.71	0.536			
0.18	0.25	71	1.91	3.1	2.2	2.2	0.00077	30	66	9.0	43	900	46.0	53.0	55.0	0.38	0.49	0.58	0.814			
0.25	0.33	71	2.67	3.1	2.2	2.2	0.00093	30	66	11.5	43	895	48.0	55.0	57.0	0.38	0.48	0.58	1.09			
0.37	0.5	80	3.91	3.6	1.7	1.7	0.0019	16	35	12.1	43	905	55.0	60.0	63.0	0.50	0.64	0.75	1.13			
0.55	0.75	80	5.65	4.5	2.3	2.3	0.0030	10	22	15.5	43	930	60.0	65.0	67.0	0.50	0.63	0.73	1.62			
0.75	1	90S	7.79	4.2	1.8	2.1	0.0047	17	37	18.0	45	920	68.0	70.0	70.0	0.51	0.65	0.75	2.06			
1.1	1.5	90L	11.4	4.8	2.7	2.7	0.0062	9	20	22.0	45	925	70.0	72.0	73.0	0.47	0.60	0.72	3.02			
1.5	2	100L	15.6	4.4	1.9	2.2	0.0093	21	46	27.0	44	920	76.0	77.0	76.0	0.52	0.66	0.73	3.90			
2.2	3	112M	22.4	5.1	2.3	2.5	0.0165	17	37	37.0	48	940	78.0	78.5	78.0	0.53	0.66	0.74	5.50			
3	4	132S	30.0	5.3	2.0	2.2	0.0340	20	44	55.0	52	955	80.0	82.7	82.5	0.58	0.70	0.77	6.82			
4	5.5	132M	39.8	5.8	2.3	2.4	0.0446	19	42	59.0	52	960	81.5	83.6	84.2	0.54	0.66	0.74	9.27			
5.5	7.5	132M	54.7	6.2	2.3	2.9	0.0604	19	42	72.0	52	960	82.5	84.5	84.5	0.51	0.64	0.72	13.0			
7.5	10	160M	74.3	5.4	1.9	2.3	0.0772	12	26	103	56	965	85.3	85.5	85.3	0.64	0.76	0.83	15.3			
9.2	12.5	160L	91.1	5.7	2.0	2.4	0.0983	10	22	113	56	965	86.0	86.5	86.0	0.66	0.76	0.83	18.6			
11	15	160L	109	5.8	2.1	2.4	0.1191	11	24	127	56	965	87.0	87.5	87.2	0.65	0.77	0.83	21.9			
15	20	180L	148	6.8	2.3	2.7	0.2299	6	13	166	56	970	88.0	88.5	88.2	0.72	0.82	0.87	28.2			
18.5	25	200L	181	5.7	2.1	2.4	0.2989	12	26	190	60	975	88.3	89.3	88.9	0.64	0.76	0.82	36.6			
22	30	200L	216	6.0	2.2	2.4	0.3692	13	29	218	60	975	89.5	90.0	89.7	0.67	0.77	0.83	42.7			
30	40	225S/M	293	6.8	2.1	2.7	0.9688	12	26	359	61	980	91.0	91.5	91.2	0.74	0.83	0.86	55.2			
37	50	250S/M	359	6.7	2.1	2.4	1.01	14	31	425	61	985	91.7	91.9	91.7	0.74	0.83	0.86	67.7			
45	60	250S/M	437	6.5	2.1	2.3	1.28	15	33	466	61	985	92.2	92.4	92.2	0.75	0.84	0.87	81.0			
55	75	280S/M	534	6.0	2.2	2.5	2.13	20	44	607	65	985	92.7	92.7	92.6	0.64	0.75	0.81	106			
75	100	280S/M	728	6.5	2.0	2.5	2.80	14	31	682	65	985	93.0	93.1	93.0	0.68	0.79	0.83	140			
90	125	315S/M	869	6.2	2.0	2.2	2.68	18	40	883	67	990	93.4	93.6	93.4	0.70	0.80	0.83	168			
110	150	315S/M	1060	6.2	2.0	2.2	3.12	20	44	941	67	990	93.7	94.0	93.8	0.70	0.80	0.83	204			
132	175	315S/M	1270	6.2	2.1	2.2	3.67	18	40	1012	67	990	94.0	94.2	94.1	0.73	0.82	0.85	238			
150	200	355M/L	1440	5.6	1.8	2.0	7.41	38	84	1340	73	995	94.2	94.5	94.5	0.64	0.74	0.79	290			
160	220	315L	1540	6.5	2.2	2.3	9.53	14	31	1203	68	990	94.1	94.4	94.4	0.69	0.79	0.83	295			
160	220	355M/L	1540	5.6	1.8	2.0	7.86	32	70	1416	73	990	94.2	94.6	94.5	0.64	0.74	0.79	309			
185	250	315L	1790	7.1	2.3	2.4	8.60	12	26	1346	68	990	94.2	94.5	94.6	0.70	0.79	0.83	340			
185	250	355M/L	1790	6.0	2.0	2.2	8.57	30	66	1530	73	990	94.3	94.6	94.6	0.63	0.74	0.79	357			
200	270	315L	1930	7.3	2.4	2.5	12.0	12	26	1488	68	990	94.3	94.6	94.6	0.70	0.80	0.83	368			
200	270	355M/L	1930	6.0	2.0	2.1	10.2	32	70	1600	73	990	94.4	94.7	94.7	0.64	0.75	0.80	381			
220	300	315L	2120	6.8	2.3	2.3	10.7	15	33	1563	68	990	94.4	94.7	94.7	0.70	0.80	0.83	404			
220	300	355M/L	2120	6.4	2.1	2.2	11.1	30	66	1678	73	990	94.4	94.8	94.7	0.64	0.74	0.80	419			
250	340	315L**	2410	7.0	2.5	2.5	11.0	11	24	1399	68	990	94.8	95.1	95.1	0.65	0.77	0.81	468			
250	340	355M/L	2410	6.0	2.1	2.1	12.0	32	70	1752	73	990	94.4	94.7	94.7	0.65	0.75	0.80	476			
260	350	315L**	2510	8.0	2.8	2.8	11.0	9	20	1496	68	990	94.8	95.0	95.0	0.60	0.72	0.78	506			
260	350	355M/L	2510	6.0	2.0	2.0	12.0	32	70	1752	73	990	94.4	94.7	94.7	0.65	0.75	0.80	495			
280	380	355M/L	2700	6.2	2.1	2.1	13.2	28	62	1839	73	990	94.5	94.8	94.8	0.64	0.75	0.80	533			
300	400	355M/L	2900	6.2	2.2	2.2	14.3	30	66	1900	73	990	94.4	94.7	94.6	0.63	0.74	0.79	579			
315*	430	355M/L	3020	6.2	2.2	2.2	15.0	28	62	1979	73	995	94.5	94.8	94.8	0.66	0.76	0.81	592			
Optional frames																						
0.25	0.33	80	2.60	3.4	1.8	1.9	0.0015	26	57	8.5	43	920	51.0	58.0	60.0	0.52	0.65	0.76	0.791			
0.75	1	90L	7.79	4.2	1.8	2.1	0.0047	17	37	18.0	45	920	68.0	70.0	70.0	0.51	0.65	0.75	2.06			
1.5	2	112M	15.2	5.2	2.0	2.4	0.0147	21	46	36.0	48	945	75.5	77.5	77.0	0.53	0.66	0.75	3.75			
3	4	112M	30.5	5.4	2.3	2.5	0.0257	15	33	44.0	48	940	81.0	82.5	82.0	0.55	0.68	0.75	7.04			
3	4	132M	30.0	5.3	2.0	2.2	0.0340	20	44	55.0	52	955	80.0	82.7	82.5	0.58	0.70	0.77	6.82			
4	5.5	132S	39.8	5.8	2.3	2.4	0.0446	19	42	59.0	52	960	81.5	83.6	84.2	0.54	0.66	0.74	9.27			
7.5	10	160L	74.3	5.4	1.9	2.3	0.0772	12	26	103	56	965	85.3	85.5	85.3	0.64	0.76	0.83	15.3			
11	15	160M	109	5.8	2.1	2.4	0.1191	11	24	127	56	965	87.0	87.5	87.2	0.65	0.77	0.83	21.9			
15	20	180M	148	6.8	2.3	2.7	0.2299	6	13	166	56	970	88.0	88.5	88.2	0.72	0.82	0.87	28.2			
18.5	25	200M	181	5.7	2.1																	

W22 - Standard Efficiency

Exceeds IE1⁽¹⁾

Output		380 V									415 V								
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)		
			Efficiency			Power Factor					Efficiency			Power Factor					
kW	HP	50	75	100	50	75	100	In (A)	50	75	100	50	75	100	50	75	100		
VI Pole - 1000 rpm - 50 Hz																			
0.12	0.16	845	46.2	50.6	47.6	0.52	0.64	0.76	0.504	860	36.2	42.8	43.2	0.48	0.57	0.67	0.67	0.577	
0.18	0.25	885	49.3	55.1	55.9	0.41	0.52	0.62	0.789	905	42.9	50.5	53.7	0.37	0.46	0.55	0.55	0.848	
0.25	0.33	880	51.8	57.3	57.6	0.41	0.53	0.63	1.05	905	45.0	52.6	55.5	0.36	0.45	0.54	0.54	1.16	
0.37	0.5	890	57.0	62.0	65.0	0.54	0.69	0.80	1.08	910	55.0	60.0	62.0	0.47	0.60	0.72	0.72	1.15	
0.55	0.75	920	62.0	65.8	68.0	0.54	0.67	0.77	1.60	935	58.0	64.0	66.0	0.47	0.59	0.68	0.68	1.70	
0.75	1	905	70.1	70.6	70.0	0.56	0.70	0.78	2.09	925	65.9	69.1	70.1	0.47	0.61	0.71	0.71	2.10	
1.1	1.5	915	70.7	74.3	76.1	0.52	0.67	0.77	2.85	930	68.8	69.5	73.0	0.42	0.55	0.67	0.67	3.13	
1.5	2	910	77.6	77.2	75.2	0.57	0.70	0.76	3.99	925	74.4	76.3	76.3	0.48	0.62	0.70	0.70	3.91	
2.2	3	930	79.8	78.9	77.7	0.58	0.71	0.78	5.52	945	76.0	77.4	77.9	0.48	0.62	0.71	0.71	5.53	
3	4	950	81.0	83.0	82.0	0.61	0.72	0.79	7.04	960	79.0	82.5	82.6	0.53	0.66	0.74	0.74	6.83	
4	5.5	960	82.7	84.2	84.0	0.58	0.73	0.78	9.28	965	80.0	82.9	83.9	0.52	0.64	0.72	0.72	9.21	
5.5	7.5	955	83.8	85.1	84.4	0.56	0.69	0.76	13.0	965	81.1	83.8	84.3	0.47	0.60	0.69	0.69	13.2	
7.5	10	960	86.2	85.6	84.7	0.69	0.80	0.85	15.8	970	84.3	85.2	85.4	0.60	0.73	0.81	0.81	15.1	
9.2	12.5	960	86.8	86.6	85.4	0.71	0.79	0.85	19.3	970	85.1	86.2	86.2	0.62	0.73	0.81	0.81	18.3	
11	15	960	87.6	87.5	86.6	0.69	0.80	0.85	22.7	970	86.4	87.3	87.4	0.61	0.74	0.81	0.81	21.6	
15	20	970	88.5	88.4	87.7	0.76	0.85	0.89	29.2	970	87.4	88.3	88.4	0.68	0.79	0.85	0.85	27.8	
18.5	25	970	89.3	89.6	88.7	0.70	0.80	0.85	37.3	975	87.3	88.8	88.8	0.59	0.72	0.79	0.79	36.7	
22	30	970	90.3	90.2	89.4	0.72	0.81	0.85	44.0	975	88.6	89.6	89.7	0.62	0.73	0.81	0.81	42.1	
30	40	975	91.2	91.3	90.7	0.78	0.85	0.87	57.8	980	90.6	91.4	91.2	0.71	0.81	0.85	0.85	53.8	
37	50	980	91.9	91.7	91.2	0.77	0.85	0.87	70.9	985	91.4	91.9	91.8	0.71	0.81	0.85	0.85	66.0	
45	60	980	92.2	92.1	91.6	0.78	0.86	0.88	84.8	985	92.0	92.4	92.2	0.72	0.82	0.86	0.86	79.0	
55	75	980	93.0	92.7	92.3	0.69	0.78	0.83	109	985	92.3	92.5	92.6	0.60	0.72	0.79	0.79	105	
75	100	980	93.3	93.0	92.7	0.72	0.82	0.85	145	985	92.6	93.0	93.0	0.64	0.76	0.81	0.81	139	
90	125	990	93.7	93.6	93.1	0.74	0.83	0.84	175	990	93.1	93.5	93.4	0.67	0.78	0.82	0.82	163	
110	150	989	93.6	93.7	93.7	0.74	0.83	0.84	212	990	93.4	93.9	93.8	0.67	0.78	0.82	0.82	199	
132	175	985	94.3	94.2	93.9	0.78	0.85	0.87	245	990	93.7	94.1	94.1	0.69	0.80	0.83	0.83	235	
150	200	990	94.5	94.8	94.8	0.69	0.77	0.82	293	995	93.8	94.4	94.4	0.61	0.71	0.76	0.76	291	
160	220	985	94.3	94.4	94.2	0.73	0.81	0.84	307	990	93.8	94.3	94.4	0.66	0.77	0.82	0.82	288	
160	220	990	93.5	95.2	95.2	0.73	0.80	0.84	304	990	92.5	94.9	95.4	0.63	0.74	0.80	0.80	292	
185	250	990	94.4	94.5	94.4	0.74	0.81	0.84	354	990	93.9	94.4	94.7	0.67	0.77	0.82	0.82	331	
185	250	990	93.5	94.4	94.8	0.73	0.80	0.83	357	990	92.5	94.0	94.8	0.63	0.72	0.79	0.79	344	
200	270	990	94.5	94.6	94.4	0.74	0.82	0.84	383	990	94.0	94.5	94.6	0.67	0.78	0.82	0.82	359	
200	270	990	94.0	94.7	94.8	0.74	0.81	0.83	386	990	93.0	94.3	94.8	0.66	0.75	0.79	0.79	372	
220	300	990	94.6	94.7	94.5	0.74	0.82	0.84	421	990	94.2	94.7	94.8	0.67	0.78	0.82	0.82	394	
220	300	990	93.8	95.0	95.3	0.72	0.80	0.82	428	995	93.0	94.6	95.3	0.62	0.74	0.79	0.79	407	
250	340	985	94.9	95.0	95.0	0.67	0.79	0.83	482	990	94.8	95.1	95.1	0.62	0.74	0.79	0.79	463	
250	340	990	94.6	94.7	94.6	0.69	0.78	0.82	490	990	94.2	94.6	94.7	0.62	0.73	0.78	0.78	471	
260	350	990	94.8	95.0	95.0	0.65	0.76	0.81	513	990	94.8	95.1	95.1	0.56	0.69	0.76	0.76	500	
260	350	990	94.6	94.7	94.6	0.69	0.78	0.82	509	990	94.2	94.6	94.7	0.62	0.73	0.78	0.78	490	
280	380	990	94.7	94.8	94.7	0.68	0.78	0.82	548	990	94.3	94.7	94.8	0.61	0.72	0.78	0.78	527	
300	400	990	94.7	94.7	94.5	0.65	0.75	0.80	603	995	94.2	94.6	94.6	0.60	0.70	0.77	0.77	573	
315*	430	995	94.7	94.8	94.7	0.70	0.79	0.83	609	995	94.3	94.7	94.8	0.62	0.73	0.79	0.79	585	
Optional frames																			
0.25	0.33	905	54.9	60.0	59.6	0.56	0.70	0.80	0.797	930	47.7	55.6	59.0	0.50	0.62	0.73	0.808		
0.75	1	905	70.1	70.6	70.0	0.56	0.70	0.78	2.09	925	65.9	69.1	70.1	0.47	0.61	0.71	2.10		
1.5	2	940	76.9	77.8	76.3	0.58	0.72	0.78	3.83	950	74.1	76.8	77.1	0.50	0.63	0.72	3.76		
3	4	935	82.2	82.7	81.3	0.60	0.73	0.78	7.19	945	79.5	81.9	82.1	0.50	0.64	0.72	7.06		
3	4	950	81.0	83.0	82.0	0.61	0.72	0.79	7.04	960	79.0	82.5	82.6	0.53	0.66	0.74	6.83		
4	5.5	960	82.7	84.2	84.0	0.58	0.73	0.78	9.28	965	80.0	82.9	83.9	0.52	0.64	0.72	9.21		
7.5	10	960	86.2	85.6	84.7	0.69	0.80	0.85	15.8	970	84.3	85.2	85.4	0.60	0.73	0.81	15.1		
11	15	960	87.6	87.5	86.6	0.69	0.80	0.85	22.7	970	86.4	87.3	87.4	0.61	0.74	0.81	21.6		
15	20	970	88.5	88.4	87.7	0.76	0.85	0.89	29.2	970	87.4	88.3	88.4	0.68	0.79	0.85	27.8		
18.5	25	970	89.3	89.6	88.7	0.70	0.80	0.85	37.3	975	87.3	88.8	88.8	0.59	0.72	0.79	36.7		
22	30	970	90.3	90.2	89.4	0.72	0.81	0.85	44.0	975	88.6	89.6	89.7	0.62	0.73	0.81	42.1		
37	50	980	91.9	91.7	91.2	0.77	0.85	0.87	70.9	985	91.5	91.7	91.9	0.71	0.81	0.85	65.9		
45	60	980	92.3	92.5	91.9	0.74	0.82	0.85	87.5	985	91.6	92.3	92.2	0.65	0.76	0.81	83.8		
75	100	990	93.5	93.4	92.9	0.73	0.81	0.85	144	990	92.7	93.1	93.0	0.64	0.75	0.81	139		

W22 - Standard Efficiency

Exceeds IE1⁽¹⁾

Output		Frame	Full load torque (Nm)	Locked rotor current II/In	Locked rotor torque TI/Tn	Break-down torque Tb/Tn	Inertia J (kgm ²)	Allowable locked rotor time (s)		Weight (kg)	Sound dB (A)	400 V								Full load current In (A)				
												Rated speed (rpm)	% of full load											
kW	HP							Hot					Efficiency			Power factor								
VIII Pole - 750 rpm - 50 Hz																								
0.12	0.16	71	1.74	2.2	2.1	2.0	0.00079	84	185	10.7	41	660	36.3	43.4	45.6	0.37	0.45	0.53	0.717					
0.18	0.25	80	2.47	2.8	2.2	2.4	0.0021	29	64	12.6	42	695	36.2	44.1	48.6	0.45	0.53	0.62	0.862					
0.25	0.33	80	3.49	3.8	2.1	2.2	0.0027	27	59	13.0	42	685	46.0	51.0	53.0	0.45	0.56	0.66	1.03					
0.37	0.5	90S	5.16	3.0	1.9	1.8	0.0039	32	70	15.4	43	685	50.6	56.5	57.4	0.44	0.55	0.64	1.45					
0.55	0.75	90L	7.79	3.3	1.9	2.0	0.0056	25	55	16.5	43	675	58.0	60.0	60.0	0.43	0.56	0.66	2.01					
0.75	1	100L	10.2	3.5	1.8	2.4	0.0079	33	73	23.8	50	705	62.0	67.2	67.8	0.42	0.53	0.62	2.58					
1.1	1.5	100L	15.0	4.0	1.7	2.3	0.0118	27	59	28.5	50	700	69.3	72.3	71.2	0.45	0.57	0.66	3.38					
1.5	2	112M	20.5	4.2	2.2	2.2	0.0178	26	57	33.4	46	700	73.7	75.4	73.5	0.48	0.61	0.70	4.21					
2.2	3	132S	29.6	6.1	2.5	2.8	0.0602	22	48	55.3	48	710	75.8	78.0	77.1	0.55	0.68	0.77	5.35					
3	4	132M	40.4	6.1	2.2	2.6	0.0728	18	40	65.0	48	710	78.5	80.1	79.0	0.55	0.68	0.76	7.21					
4	5.5	160M	53.1	4.7	2.0	2.1	0.0718	17	37	101	51	720	79.5	82.0	81.5	0.52	0.65	0.72	9.84					
5.5	7.5	160M	73.0	4.7	2.0	2.1	0.0913	16	35	110	51	720	82.0	83.2	83.0	0.52	0.65	0.73	13.1					
7.5	10	160L	99.5	4.9	2.2	2.2	0.1221	16	35	130	51	720	84.0	85.5	85.0	0.52	0.65	0.73	17.4					
9.2	12.5	180M	121	6.3	2.0	2.4	0.2037	10	22	156	51	725	86.0	86.5	86.0	0.64	0.76	0.82	18.8					
11	15	180L	145	6.4	2.1	2.4	0.2444	10	22	175	51	725	87.0	87.5	87.0	0.67	0.78	0.84	21.7					
15	20	200L	198	4.6	1.9	2.0	0.3341	22	48	205	53	725	87.5	88.0	88.0	0.58	0.70	0.76	32.4					
18.5	25	225S/M	241	6.4	1.8	2.4	0.8328	18	40	339	56	735	91.0	91.0	90.6	0.66	0.77	0.82	35.9					
22	30	225S/M	286	6.4	1.8	2.4	0.9716	16	35	358	56	735	91.3	91.3	91.0	0.69	0.79	0.83	42.0					
30	40	250S/M	390	6.9	1.9	2.7	1.06	13	29	433	56	735	91.6	91.8	91.6	0.67	0.78	0.83	57.0					
37	50	250S/M	484	6.9	1.9	2.7	1.33	12	26	475	56	730	91.9	92.0	91.9	0.67	0.78	0.83	70.0					
45	60	280S/M	581	5.4	1.7	2.0	2.26	21	46	617	59	740	92.1	92.6	92.5	0.64	0.75	0.79	88.9					
55	75	280S/M	710	5.4	1.7	2.0	2.82	20	44	826	59	740	92.4	92.7	93.0	0.64	0.75	0.79	108					
75	100	315S/M	968	5.3	1.6	2.0	2.93	30	66	913	62	740	93.0	93.5	93.5	0.66	0.76	0.80	145					
90	125	315S/M	1160	5.8	1.8	2.1	3.49	26	57	982	62	740	93.6	94.0	94.2	0.66	0.76	0.80	172					
110	150	315L	1420	5.8	1.8	2.1	12.21	24	53	1180	68	740	93.8	94.5	94.5	0.64	0.75	0.80	210					
110	150	355M/L	1410	5.6	1.1	2.0	9.48	50	110	1343	70	745	94.0	94.5	94.6	0.62	0.73	0.79	212					
132	175	315L	1700	6.2	2.0	2.2	12.8	23	51	1290	68	740	94.0	94.5	94.6	0.63	0.74	0.79	255					
132	175	355M/L	1690	6.0	1.2	2.1	11.3	48	106	1448	70	745	94.3	94.9	94.8	0.62	0.74	0.79	254					
150	200	355M/L	1920	7.0	1.5	2.0	13.8	35	77	1571	70	745	94.8	95.0	95.0	0.64	0.75	0.80	308					
160	220	315L	2070	6.4	2.2	2.2	9.99	20	44	1350	68	740	94.5	94.8	94.8	0.63	0.74	0.79	308					
160	220	355M/L	2050	6.2	1.4	2.2	14.7	48	106	1571	70	745	94.5	95.0	95.0	0.62	0.74	0.79	308					
185	250	315L ^{**}	2390	7.0	2.4	2.4	11.3	12	26	1520	68	740	94.5	94.9	94.9	0.62	0.72	0.78	361					
185	250	355M/L	2370	6.0	1.4	2.1	15.4	46	101	1653	70	745	94.6	95.1	95.1	0.64	0.75	0.80	351					
200	270	355M/L	2570	6.2	1.5	2.2	17.0	44	97	1725	70	745	94.8	95.2	95.2	0.63	0.74	0.79	384					
220	300	355M/L	2820	6.3	1.4	2.1	19.9	42	92	1839	70	745	95.0	95.3	95.3	0.64	0.75	0.80	417					
Optional frames																								
2.2	3	132M	29.6	6.1	2.5	2.8	0.0602	22	48	55.3	48	710	75.8	78.0	77.1	0.55	0.68	0.77	5.35					
5.5	7.5	160L	73.0	4.7	2.0	2.1	0.0913	16	35	110	51	720	82.0	83.2	83.0	0.52	0.65	0.73	13.1					
7.5	10	160M	99.5	4.9	2.2	2.2	0.1221	16	35	130	51	720	84.0	85.5	85.0	0.52	0.65	0.73	17.4					
37	50	280S/M	478	5.0	1.6	2.0	1.81	26	57	575	59	740	91.8	92.4	92.3	0.64	0.75	0.79	73.2					
55	75	315S/M	710	5.3	1.6	2.0	2.25	30	66	745	62	740	92.6	93.0	93.0	0.65	0.76	0.80	107					

Notes:

(1) Efficiency values are given according to IEC 60034-2-1. They are calculated according to indirect method, with stray load losses determined by measurement.
 (**) Class "F" insulation ΔT 105 K.

W22 - Standard Efficiency

Exceeds IE1⁽¹⁾

Output		380 V									415 V								
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)		
			Efficiency			Power Factor					Efficiency			Power Factor					
kW	HP	50	75	100	50	75	100	In (A)	50	75	100	50	75	100	50	75	100		
VIII Pole - 750 rpm - 50 Hz																			
0.12	0.16	650	41.0	47.1	47.6	0.39	0.48	0.57	0.672	670	32.7	40.3	43.2	0.36	0.43	0.50	0.50	0.773	
0.18	0.25	690	40.7	47.7	50.6	0.47	0.57	0.66	0.819	700	32.8	41.2	46.1	0.43	0.51	0.59	0.59	0.921	
0.25	0.33	675	48.8	52.8	53.4	0.48	0.60	0.70	1.02	690	43.2	49.4	52.1	0.43	0.53	0.63	1.06		
0.37	0.5	680	54.4	59.0	58.3	0.48	0.60	0.69	1.40	690	46.6	53.8	56.1	0.41	0.51	0.61	1.50		
0.55	0.75	665	61.7	62.0	60.0	0.47	0.60	0.70	1.99	680	54.8	59.0	59.0	0.41	0.52	0.62	2.09		
0.75	1	695	65.6	69.0	68.0	0.46	0.58	0.66	2.54	710	58.3	64.6	66.7	0.39	0.49	0.58	2.70		
1.1	1.5	690	72.1	73.6	70.8	0.50	0.62	0.70	3.37	705	66.2	70.7	70.7	0.41	0.53	0.62	3.49		
1.5	2	690	75.9	76.2	73.2	0.52	0.65	0.73	4.27	705	71.6	74.2	73.1	0.44	0.57	0.66	4.33		
2.2	3	705	77.1	78.3	76.7	0.60	0.73	0.80	5.45	715	74.7	77.5	77.1	0.52	0.65	0.74	5.36		
3	4	705	79.7	80.5	78.6	0.60	0.73	0.80	7.25	715	77.1	79.6	79.0	0.51	0.64	0.73	7.24		
4	5.5	715	81.3	82.7	81.2	0.57	0.70	0.75	9.98	720	77.8	81.2	81.3	0.48	0.61	0.69	9.92		
5.5	7.5	715	83.3	83.5	82.5	0.57	0.69	0.76	13.3	720	80.7	82.6	83.0	0.49	0.62	0.70	13.2		
7.5	10	715	85.2	85.8	84.6	0.57	0.69	0.76	17.7	720	82.8	85.0	85.0	0.48	0.62	0.70	17.5		
9.2	12.5	720	86.8	86.6	85.4	0.69	0.80	0.84	19.5	730	85.2	86.3	86.2	0.60	0.73	0.80	18.6		
11	15	720	87.6	87.4	86.3	0.72	0.81	0.86	22.5	725	86.4	87.3	87.3	0.63	0.75	0.82	21.4		
15	20	720	88.5	88.2	87.5	0.64	0.74	0.78	33.4	725	86.4	87.6	88.0	0.53	0.66	0.73	32.5		
18.5	25	730	91.3	90.8	90.0	0.70	0.80	0.84	37.2	735	90.6	91.0	90.8	0.63	0.75	0.81	35.0		
22	30	730	91.5	91.1	90.3	0.73	0.82	0.84	44.1	735	91.0	91.3	91.2	0.66	0.77	0.82	40.9		
30	40	730	92.0	91.7	91.1	0.72	0.81	0.85	58.9	735	91.2	91.7	91.8	0.63	0.75	0.81	56.1		
37	50	725	92.1	91.8	91.3	0.71	0.81	0.85	72.4	730	91.6	92.0	92.2	0.63	0.75	0.81	68.9		
45	60	735	92.5	92.6	92.1	0.69	0.78	0.81	91.6	740	91.7	92.5	92.6	0.60	0.72	0.77	87.8		
55	75	735	92.7	92.6	92.5	0.68	0.78	0.80	113	740	92.0	92.6	93.1	0.60	0.72	0.77	107		
75	100	735	93.2	93.3	93.0	0.70	0.79	0.81	151	740	92.7	93.4	93.6	0.63	0.74	0.79	141		
90	125	740	93.8	94.0	94.0	0.70	0.79	0.81	180	740	93.1	93.8	94.3	0.62	0.73	0.78	170		
110	150	740	93.4	94.4	94.6	0.69	0.78	0.82	215	740	93.4	94.4	94.6	0.60	0.72	0.78	207		
110	150	740	93.0	94.2	94.5	0.66	0.77	0.82	216	745	92.0	94.1	94.5	0.60	0.71	0.78	208		
132	175	740	94.3	94.5	94.4	0.68	0.77	0.81	262	740	93.6	94.4	94.6	0.59	0.71	0.77	252		
132	175	740	93.5	94.6	94.8	0.66	0.75	0.81	261	745	92.5	94.4	94.8	0.60	0.71	0.77	252		
150	200	745	95.3	95.3	95.1	0.69	0.79	0.83	289	745	94.2	94.7	94.9	0.59	0.71	0.77	286		
160	220	740	94.5	94.8	94.8	0.66	0.76	0.80	321	740	94.8	95.0	95.0	0.60	0.72	0.78	300		
160	220	745	94.9	95.2	95.0	0.67	0.78	0.81	316	745	94.1	94.8	95.0	0.58	0.71	0.77	304		
185	250	740	94.7	94.9	94.9	0.65	0.75	0.80	370	740	94.7	95.0	95.0	0.57	0.69	0.76	356		
185	250	745	94.9	95.2	95.0	0.69	0.78	0.82	361	745	94.3	95.0	95.1	0.60	0.72	0.78	347		
200	270	745	95.2	95.3	95.1	0.68	0.78	0.81	394	745	94.4	95.0	95.2	0.59	0.71	0.77	380		
220	300	745	95.3	95.4	95.2	0.69	0.78	0.82	428	745	94.7	95.2	95.3	0.60	0.72	0.78	412		
Optional frames																			
2.2	3	705	77.1	78.3	76.7	0.60	0.73	0.80	5.45	715	74.7	77.5	77.1	0.52	0.65	0.74	5.36		
5.5	7.5	715	83.3	83.5	82.5	0.57	0.69	0.76	13.3	720	80.7	82.6	83.0	0.49	0.62	0.70	13.2		
7.5	10	715	85.2	85.8	84.6	0.57	0.69	0.76	17.7	720	82.8	85.0	85.0	0.48	0.62	0.70	17.5		
37	50	735	92.2	92.3	91.8	0.69	0.78	0.81	75.6	740	91.4	92.3	92.5	0.60	0.72	0.77	72.3		
55	75	740	93.0	93.1	92.8	0.69	0.79	0.81	111	740	92.2	92.9	93.2	0.61	0.73	0.78	105		

W22 - Premium Efficiency Plus

Exceeds IE2⁽¹⁾

Output		Frame	Full load torque (Nm)	Locked rotor current I _l /In	Locked rotor torque T _l /T _n	Break-down torque T _b /T _n	Inertia J (kgm ²)	Allowable locked rotor time (s)		Weight (kg)	Sound dB (A)	400 V								Full load current In (A)
												Rated speed (rpm)	% of full load							
kW	HP							Hot	Cold				50	75	100	50	75	100		
II Pole - 3000 rpm - 50 Hz																				
0.12	0.16	63	0.410	4.8	3.0	2.9	0.00012	37	81	5.7	52	2790	53.0	60.0	61.0	0.53	0.66	0.75	0.379	
0.18	0.25	63	0.620	4.6	2.9	2.8	0.00014	28	62	6.2	52	2770	56.0	62.0	63.0	0.54	0.68	0.78	0.529	
0.25	0.33	63	0.870	4.7	3.2	2.9	0.00016	24	53	6.7	52	2760	58.0	64.0	65.0	0.53	0.67	0.78	0.712	
0.37	0.5	71	1.26	5.6	2.7	2.8	0.00033	21	46	6.5	56	2800	68.0	71.0	71.0	0.66	0.79	0.86	0.875	
0.55	0.75	71	1.89	5.3	2.7	2.7	0.00040	15	33	8.5	56	2780	70.0	72.0	72.0	0.70	0.82	0.88	1.25	
0.75	1	80	2.57	6.0	3.1	3.1	0.00065	22	48	12.5	59	2790	77.0	78.0	78.0	0.67	0.79	0.85	1.63	
1.1	1.5	80	3.77	6.3	3.2	3.1	0.00082	18	40	14.0	59	2790	79.5	80.5	80.5	0.67	0.79	0.85	2.32	
1.5	2	90S	5.07	5.9	2.6	2.6	0.0016	12	26	17.5	62	2825	81.5	82.0	82.0	0.66	0.78	0.84	3.14	
2.2	3	90L	7.40	6.6	3.0	3.0	0.0022	9	20	21.0	62	2840	83.0	83.6	83.6	0.63	0.76	0.83	4.58	
3	4	100L	9.95	7.7	2.9	3.1	0.0051	12	26	28.5	67	2880	84.0	85.0	85.0	0.68	0.80	0.86	5.92	
4	5.5	112M	13.3	6.5	2.3	2.9	0.0066	16	35	38.0	64	2870	86.0	86.0	86.0	0.70	0.81	0.87	7.72	
5.5	7.5	132S	18.1	6.8	2.2	3.0	0.0162	17	37	60.0	67	2910	86.5	88.0	88.0	0.68	0.79	0.85	10.6	
7.5	10	132S	24.6	6.8	2.2	2.9	0.0198	13	29	63.0	67	2910	88.0	88.5	88.5	0.72	0.82	0.87	14.1	
9.2	12.5	132M	30.2	7.6	2.5	3.2	0.0234	10	22	70.0	67	2915	88.5	89.0	89.0	0.70	0.81	0.86	17.3	
11	15	160M	35.8	7.0	2.3	3.0	0.0337	13	29	104	67	2935	90.0	90.6	90.5	0.71	0.82	0.86	20.4	
15	20	160M	48.9	7.0	2.3	3.0	0.0391	9	20	112	67	2930	91.0	91.3	91.3	0.71	0.81	0.86	27.6	
18.5	25	160L	60.1	7.4	2.4	3.1	0.0472	8	18	124	67	2940	91.3	92.0	92.0	0.70	0.80	0.86	33.7	
22	30	180M	71.4	7.3	2.2	3.0	0.0975	9	20	164	67	2945	92.0	92.4	92.2	0.76	0.84	0.88	39.1	
30	40	200L	97.0	6.5	2.4	2.7	0.1703	17	37	226	72	2955	92.5	93.0	92.9	0.75	0.83	0.87	53.6	
37	50	200L	120	6.8	2.4	2.6	0.2242	16	35	255	72	2950	93.0	93.4	93.3	0.76	0.84	0.87	65.8	
45	60	225S/M	145	7.0	2.2	2.8	0.3250	12	26	356	75	2960	93.3	93.6	93.6	0.79	0.86	0.89	78.0	
55	75	250S/M	178	7.0	2.2	2.8	0.3226	14	31	413	75	2960	93.6	93.9	93.9	0.79	0.86	0.89	95.0	
75	100	250S/M	242	8.2	2.4	3.0	0.4075	10	22	450	75	2965	94.0	94.3	94.3	0.79	0.86	0.90	128	
90	125	280S/M	289	7.0	2.0	2.8	0.9386	25	55	653	77	2975	94.0	94.6	94.6	0.79	0.86	0.89	154	
110	150	280S/M	353	7.6	2.3	3.0	1.11	21	46	702	77	2975	94.5	94.9	94.9	0.78	0.86	0.89	188	
132	175	315S/M	423	7.3	2.0	2.9	1.14	21	46	931	77	2980	94.5	95.1	95.1	0.80	0.87	0.90	223	
160	220	315S/M	513	7.5	2.2	2.9	1.30	23	51	995	77	2980	94.8	95.3	95.3	0.80	0.87	0.90	269	
185	250	315S/M	593	7.6	2.2	3.1	1.42	16	35	1032	77	2980	94.9	95.5	95.4	0.80	0.86	0.89	314	
200	270	315L	641	7.5	2.3	2.8	1.55	21	46	1175	78	2980	95.0	95.5	95.4	0.82	0.88	0.90	336	
200	270	355M/L	640	7.6	1.9	2.7	3.99	22	48	1487	80	2985	94.8	95.5	95.5	0.83	0.88	0.90	336	
220	300	315L	705	7.8	2.4	2.8	5.17	14	31	1228	78	2980	95.0	95.5	95.5	0.81	0.87	0.90	369	
220	300	355M/L	704	7.6	1.8	2.5	4.42	21	46	1560	80	2985	95.1	95.6	95.5	0.86	0.89	0.90	369	
250	340	315L	802	7.8	2.4	2.8	5.75	17	37	1316	78	2980	95.1	95.6	95.5	0.84	0.89	0.91	415	
250	340	355M/L	800	7.9	2.2	2.8	4.85	20	44	1634	80	2985	95.2	95.6	95.6	0.86	0.89	0.91	415	
280	380	315L	898	7.9	2.3	2.8	5.75	12	26	1442	78	2980	95.2	95.6	95.6	0.85	0.89	0.91	465	
280	380	355M/L	898	7.7	1.9	2.6	5.06	17	37	1669	80	2980	95.2	95.6	95.6	0.86	0.89	0.91	465	
315	430	315L**	1010	7.9	2.3	2.7	4.01	11	24	1442	86	2980	95.2	95.6	95.6	0.84	0.88	0.90	528	
315*	430	355M/L	1010	7.8	2.1	2.6	5.60	23	51	1777	80	2985	95.2	95.6	95.6	0.87	0.91	0.92	517	
355*	480	355M/L	1140	7.9	2.2	2.8	6.01	14	31	1838	80	2985	95.3	95.6	95.6	0.87	0.90	0.91	589	
400*	550	355A/B	1280	7.6	2.4	2.8	6.76	31	68	2043	83	2985	95.8	96.2	96.4	0.85	0.89	0.91	658	
450*	610	355A/B	1440	7.5	2.5	2.7	7.40	31	68	2160	83	2985	95.8	96.2	96.6	0.85	0.90	0.91	739	
Optional frames																				
0.37	0.5	63	1.29	4.5	3.1	2.8	0.00020	20	44	7.2	52	2730	64.0	67.0	68.0	0.57	0.72	0.82	0.958	
0.75	1	90S	2.51	6.5	2.7	2.8	0.0012	25	55	15.5	62	2850	77.0	79.0	79.0	0.61	0.73	0.80	1.71	
1.1	1.5	90S	3.71	6.1	2.5	2.6	0.0014	16	35	16.5	62	2835	80.0	80.5	80.5	0.65	0.77	0.83	2.38	
1.5	2	90L	5.07	5.9	2.6	2.6	0.0016	12	26	17.5	62	2825	81.5	82.0	82.0	0.66	0.78	0.84	3.14	
2.2	3	100L	7.29	7.5	2.6	3.0	0.0043	15	33	26.5	67	2885	82.5	83.6	83.6	0.66	0.78	0.85	4.47	
5.5	7.5	112M	18.3	7.3	2.7	3.0	0.0088	11	24	42.0	64	2880	86.5	87.0	87.0	0.72	0.82	0.87	10.5	
5.5	7.5	132M	18.1	6.8	2.2	3.0	0.0162	17	37	60.0	67	2910	86.5	88.0	88.0	0.68	0.79	0.85	10.6	
7.5	10	132M	24.6	6.8	2.2	2.9	0.0198	13	29	63.0	67	2910	88.0	88.5	88.5	0.72	0.82	0.87	14.1	
11	15	160L	35.8	7.0	2.3	3.0	0.0337	13	29	104	67	2935	90.0	90.6	90.5	0.71	0.82	0.86	20.4	
15	20	160L	48.9	7.0	2.3	3.0	0.0391	9	20	112	67	2930	91.0	91.3	91.3	0.71	0.81	0.86	27.6	
18.5	25	180M	60.1	7.0	2.1	2.9	0.0867	10	22	156	67	2940	91.4	92.0	91.8	0.75	0.84	0.88	33.1	
22	30	180L	71.4	7.3	2.2	3.0	0.0975	9	20	164	67	2945	92.0	92.4	92.2	0.76	0.84	0.88	39.1	
75	100	280S/M	241	7.0	2.0	2.8	0.8541	28	62	630	77	2975	93.4	94.3	94.3	0.79	0.86	0.89	129	
110	150	315S/M	353	7.3	2.0	2.9	0.9691	24	53	874	77	2980	94.3	94.9	94.9	0.79	0.			

W22 - Premium Efficiency Plus

Exceeds IE2⁽¹⁾

Output		380 V										415 V									
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)				
			Efficiency			Power Factor					Efficiency			Power Factor							
kW	HP	50	75	100	50	75	100	50	50	75	100	50	75	100	50	50	75	100	50	75	100
II Pole - 3000 rpm - 50 Hz																					
0.12	0.16	2765	54.7	60.8	60.9	0.57	0.71	0.79	0.379	2805	51.4	59.0	60.6	0.50	0.63	0.72	0.383				
0.18	0.25	2740	57.9	63.0	63.0	0.58	0.73	0.82	0.529	2785	54.1	60.9	62.6	0.50	0.64	0.75	0.533				
0.25	0.33	2730	60.3	65.1	65.0	0.59	0.73	0.82	0.713	2775	55.9	62.7	64.5	0.49	0.63	0.74	0.729				
0.37	0.5	2775	69.0	71.1	70.3	0.72	0.83	0.89	0.898	2815	66.9	70.6	71.2	0.63	0.76	0.84	0.861				
0.55	0.75	2750	70.8	71.9	71.0	0.75	0.85	0.91	1.29	2795	68.9	71.7	72.5	0.65	0.79	0.86	1.23				
0.75	1	2765	77.7	78.0	78.0	0.72	0.83	0.87	1.64	2805	76.0	77.8	78.4	0.63	0.76	0.82	1.62				
1.1	1.5	2765	80.4	80.5	79.7	0.73	0.83	0.87	2.41	2805	78.6	80.2	80.7	0.62	0.75	0.82	2.31				
1.5	2	2800	82.0	81.6	81.6	0.71	0.81	0.86	3.25	2840	80.8	81.9	82.5	0.61	0.75	0.82	3.08				
2.2	3	2820	83.7	83.5	83.2	0.69	0.80	0.85	4.75	2855	82.2	83.4	83.9	0.59	0.72	0.80	4.56				
3	4	2865	84.9	85.1	84.6	0.74	0.84	0.88	6.13	2890	83.1	84.6	85.0	0.64	0.77	0.84	5.85				
4	5.5	2855	86.6	86.0	85.8	0.75	0.85	0.89	8.00	2880	85.3	85.9	86.3	0.66	0.78	0.85	7.59				
5.5	7.5	2900	87.1	88.0	87.6	0.74	0.83	0.88	10.8	2915	85.6	87.6	88.0	0.63	0.76	0.83	10.5				
7.5	10	2900	88.4	88.4	88.1	0.77	0.85	0.89	14.5	2915	87.3	88.3	88.7	0.67	0.79	0.85	13.8				
9.2	12.5	2905	89.1	89.0	88.6	0.75	0.85	0.89	17.7	2920	87.6	88.6	89.0	0.65	0.77	0.84	17.1				
11	15	2930	90.3	90.5	90.1	0.75	0.85	0.88	21.1	2940	89.6	90.5	90.6	0.67	0.79	0.84	20.1				
15	20	2945	91.4	91.3	90.9	0.76	0.84	0.88	28.5	2935	90.6	91.2	91.4	0.67	0.78	0.84	27.2				
18.5	25	2930	91.6	91.9	91.6	0.74	0.83	0.88	34.9	2945	91.0	91.9	92.2	0.66	0.77	0.84	33.2				
22	30	2940	92.2	92.2	91.8	0.79	0.86	0.89	40.9	2950	91.8	92.4	92.4	0.73	0.82	0.87	38.1				
30	40	2950	92.7	92.9	92.6	0.79	0.85	0.88	55.9	2960	92.3	93.0	93.0	0.71	0.81	0.86	52.2				
37	50	2945	93.2	93.3	93.0	0.80	0.86	0.88	68.7	2955	92.8	93.4	93.5	0.73	0.82	0.86	64.0				
45	60	2955	93.4	93.5	93.2	0.83	0.88	0.90	81.5	2960	93.1	93.6	93.8	0.76	0.84	0.88	75.8				
55	75	2955	93.8	93.8	93.6	0.83	0.88	0.90	99.2	2960	93.3	93.8	94.0	0.75	0.84	0.88	92.5				
75	100	2960	94.2	94.3	94.1	0.83	0.88	0.92	132	2970	93.8	94.3	94.4	0.75	0.84	0.88	126				
90	125	2970	94.2	94.6	94.4	0.83	0.88	0.90	161	2975	93.8	94.5	94.5	0.76	0.84	0.88	151				
110	150	2970	94.7	94.9	94.8	0.82	0.88	0.90	196	2975	94.3	94.8	94.9	0.75	0.84	0.88	183				
132	175	2975	94.6	95.1	94.9	0.83	0.89	0.91	232	2980	94.4	95.1	95.2	0.78	0.86	0.89	217				
160	220	2975	94.9	95.2	95.2	0.83	0.89	0.91	281	2980	94.7	95.3	95.3	0.78	0.86	0.89	262				
185	250	2975	95.0	95.5	95.3	0.83	0.88	0.90	328	2980	94.8	95.5	95.4	0.78	0.85	0.88	307				
200	270	2975	95.0	95.4	95.2	0.85	0.89	0.91	351	2980	94.9	95.5	95.5	0.80	0.87	0.90	324				
200	270	2980	93.9	95.2	95.5	0.90	0.92	0.92	346	2985	93.5	95.1	95.6	0.88	0.90	0.91	320				
220	300	2975	95.1	95.4	95.3	0.84	0.88	0.91	385	2980	94.9	95.5	95.6	0.79	0.86	0.89	360				
220	300	2985	95.5	96.2	96.4	0.87	0.91	0.92	377	2990	95.0	96.0	96.3	0.83	0.89	0.91	349				
250	340	2980	95.1	95.5	95.3	0.86	0.90	0.91	438	2980	95.0	95.6	95.6	0.82	0.88	0.91	400				
250	340	2980	95.5	96.3	96.4	0.89	0.92	0.93	424	2985	95.4	96.3	96.4	0.86	0.91	0.92	392				
280	380	2975	95.2	95.5	95.4	0.87	0.90	0.91	490	2980	95.2	95.6	95.7	0.83	0.88	0.91	447				
280	380	2975	95.2	95.5	95.4	0.87	0.90	0.91	490	2980	95.2	95.6	95.7	0.83	0.88	0.91	447				
315	430	2980	94.2	95.5	95.4	0.89	0.92	0.92	545	2980	95.2	95.6	95.7	0.82	0.87	0.90	510				
315*	430	2980	94.2	95.5	95.4	0.89	0.92	0.92	545	2985	95.2	95.6	95.7	0.86	0.90	0.92	498				
355*	480	2980	95.3	95.5	95.4	0.89	0.91	0.91	621	2985	95.3	95.6	95.7	0.85	0.89	0.91	567				
400*	550	2985	95.9	96.2	96.3	0.87	0.90	0.91	694	2485	95.7	96.2	96.5	0.84	0.88	0.91	634				
450*	610	2985	95.9	96.2	96.5	0.87	0.91	0.91	779	2485	95.7	96.2	96.7	0.84	0.89	0.91	711				
Optional frames																					
0.37	0.5	2695	65.9	67.6	67.4	0.63	0.77	0.84	0.993	2750	62.1	66.2	67.9	0.53	0.67	0.78	0.972				
0.75	1	2830	77.8	79.1	78.3	0.66	0.77	0.83	1.75	2860	76.0	78.7	79.2	0.56	0.70	0.78	1.69				
1.1	1.5	2810	80.7	80.3	79.5	0.70	0.80	0.85	2.47	2850	79.2	80.4	81.0	0.60	0.74	0.81	2.33				
1.5	2	2800	82.0	81.6	81.6	0.71	0.81	0.86	3.25	2840	80.8	81.9	82.5	0.61	0.75	0.82	3.08				
2.2	3	2870	83.3	83.8	83.2	0.71	0.82	0.87	4.62	2895	81.5	83.2	83.6	0.62	0.75	0.82	4.46				
5.5	7.5	2865	87.0	86.9	86.4	0.76	0.86	0.89	10.9	2885	85.9	86.8	87.2	0.67	0.79	0.85	10.3				
5.5	7.5	2900	87.1	88.0	87.6	0.74	0.83	0.88	10.8	2915	85.6	87.6	88.0	0.63	0.76	0.83	10.5				
7.5	10	2900	88.4	88.4	88.1	0.77	0.85	0.89	14.5	2915	87.3	88.3	88.7	0.67	0.79	0.85	13.8				
11	15	2930	90.3	90.5	90.1	0.75	0.85	0.88	21.1	2940	89.6	90.5	90.6	0.67	0.79	0.84	20.1				
15	20	2945	91.4	91.3	90.9	0.76	0.84	0.88	28.5	2935	90.6	91.2	91.4	0.67	0.78	0.84	27.2				
18.5	25	2935	91.6	91.8	91.4	0.78	0.86	0.89	34.6	2945	91.2	92.0	92.0	0.72	0.82	0.87	32.2				
22	30	2940	92.2	92.2	91.8	0.79	0.86	0.89	40.9	2950	91.8	92.4	92.4	0.73	0.82	0.87	38.1				

W22 - Premium Efficiency Plus

Exceeds IE2⁽¹⁾

Output		Frame	Full load torque (Nm)	Locked rotor current II/In	Locked rotor torque TI/Tn	Break-down torque Tb/Tn	Inertia J (kgm ²)	Allowable locked rotor time (s)	Weight (kg)	Sound dB (A)	400 V						Full load current In (A)		
											Rated speed (rpm)	% of full load			Efficiency	Power factor			
kW	HP											50	75	100	50	75	100		
N Pole - 1500 rpm - 50 Hz																			
0.12	0.16	63	0.830	3.9	1.8	2.0	0.00039	51	112	5.7	44	1380	55.0	58.0	59.0	0.54	0.67	0.77	0.381
0.18	0.25	63	1.25	4.3	2.2	2.2	0.00055	40	88	7.2	44	1380	59.0	61.0	61.0	0.55	0.68	0.77	0.553
0.25	0.33	71	1.76	4.0	2.1	2.2	0.00055	68	150	7.0	43	1360	63.0	66.0	66.0	0.54	0.67	0.76	0.719
0.37	0.5	71	2.59	4.2	2.5	2.5	0.00066	48	106	8.0	43	1365	65.0	68.0	68.0	0.50	0.64	0.73	1.08
0.55	0.75	80	3.73	5.8	2.4	2.8	0.0022	18	40	10.5	44	1410	75.0	76.5	76.5	0.61	0.74	0.82	1.27
0.75	1	80	5.08	6.0	2.6	2.9	0.0029	15	33	13.5	44	1410	79.0	79.6	79.8	0.63	0.76	0.83	1.63
1.1	1.5	90S	7.30	6.5	1.9	2.6	0.0049	14	31	19.0	49	1440	81.0	81.8	81.8	0.62	0.75	0.81	2.40
1.5	2	90L	9.95	6.3	2.0	2.8	0.0055	10	22	22.0	49	1440	81.5	83.0	83.0	0.57	0.72	0.80	3.26
2.2	3	100L	14.8	6.6	3.1	3.2	0.0082	16	35	30.5	53	1425	84.0	84.5	84.5	0.63	0.75	0.81	4.64
3	4	100L	20.2	6.5	3.2	3.3	0.0097	14	31	33.0	53	1420	85.0	85.6	85.6	0.64	0.76	0.82	6.17
4	5.5	112M	26.5	6.1	2.0	2.6	0.0156	13	29	42.0	56	1440	86.0	86.7	86.7	0.64	0.76	0.82	8.12
5.5	7.5	132S	36.0	7.3	1.9	3.0	0.0416	10	22	63.0	56	1460	88.0	88.1	88.1	0.69	0.81	0.86	10.5
7.5	10	132M	49.3	7.2	2.0	3.0	0.0528	8	18	72.0	56	1455	88.7	89.0	89.0	0.71	0.81	0.86	14.1
9.2	12.5	160M	60.0	6.0	2.0	2.6	0.0602	13	29	96.0	61	1465	88.5	89.5	89.2	0.66	0.77	0.83	17.9
11	15	160M	71.5	6.4	2.3	2.8	0.0730	10	22	105	61	1470	89.0	90.2	90.2	0.65	0.76	0.83	21.2
15	20	160L	97.8	6.2	2.3	2.8	0.0874	10	22	125	61	1465	90.6	91.0	91.0	0.66	0.76	0.83	28.7
18.5	25	180M	121	6.6	2.4	2.8	0.1657	14	31	164	61	1465	91.5	91.8	91.6	0.68	0.78	0.83	35.1
22	30	180L	143	6.8	2.6	2.9	0.2006	15	33	186	61	1465	92.2	92.5	92.3	0.70	0.80	0.85	40.5
30	40	200L	195	6.3	2.2	2.6	0.2929	16	35	222	65	1470	92.6	93.0	92.8	0.68	0.78	0.83	56.2
37	50	225S/M	240	6.6	2.2	2.7	0.6126	12	26	342	66	1475	93.0	93.2	93.2	0.74	0.83	0.86	66.6
45	60	225S/M	292	6.8	2.4	2.7	0.7147	10	22	363	66	1475	93.2	93.7	93.6	0.74	0.83	0.86	80.7
55	75	250S/M	356	6.4	2.2	2.7	0.8093	14	31	444	66	1475	93.6	93.9	94.0	0.75	0.84	0.87	97.1
75	100	250S/M	486	7.2	2.4	2.9	1.05	10	22	496	66	1475	94.0	94.3	94.4	0.74	0.84	0.88	130
90	125	280S/M	579	7.2	2.1	2.7	1.88	20	44	673	69	1485	94.1	94.7	94.7	0.76	0.84	0.87	158
110	150	280S/M	708	7.6	2.4	2.9	2.27	18	40	735	69	1485	94.3	95.0	95.0	0.75	0.83	0.87	192
132	175	315S/M	846	6.6	2.1	2.4	2.17	22	48	953	71	1490	94.6	95.2	95.2	0.76	0.84	0.87	230
150	200	315S/M	962	6.2	2.2	2.4	2.33	30	66	950	71	1490	95.0	95.4	95.4	0.77	0.84	0.87	261
160	220	315S/M	1030	6.6	2.2	2.4	2.48	20	44	1012	71	1490	94.8	95.4	95.4	0.77	0.84	0.87	278
185	250	315S/M	1190	6.8	2.4	2.4	2.78	18	40	1114	71	1490	94.9	95.6	95.6	0.75	0.83	0.86	325
200	270	315L	1280	6.7	2.4	2.4	3.93	17	37	1216	74	1490	95.0	95.6	95.6	0.77	0.84	0.87	347
200	270	355M/L	1280	6.3	1.8	2.0	5.94	18	40	1404	76	1490	95.1	95.6	95.6	0.74	0.81	0.85	355
220	300	315L	1410	7.0	2.6	2.4	6.86	14	31	1333	74	1490	95.2	95.7	95.7	0.76	0.84	0.87	381
220	300	355M/L	1410	6.4	2.0	2.2	6.48	18	40	1441	76	1490	95.3	95.7	95.7	0.73	0.81	0.85	390
250	340	315L	1600	7.0	2.6	2.4	8.12	13	29	1399	74	1490	95.3	95.7	95.7	0.77	0.85	0.88	428
250	340	355M/L	1600	6.8	2.1	2.4	7.19	18	40	1470	76	1490	95.4	95.8	95.8	0.73	0.82	0.85	443
260	350	355M/L	1670	6.8	2.1	2.4	7.73	18	40	1470	76	1490	95.4	95.8	95.8	0.73	0.82	0.85	461
280	380	315L	1800	7.2	2.6	2.4	9.02	12	26	1496	74	1490	95.4	95.8	95.8	0.76	0.84	0.87	485
280	380	355M/L	1800	6.6	2.1	2.4	8.05	14	31	1510	76	1490	95.5	95.8	95.8	0.74	0.82	0.85	496
300	400	315L**	1920	7.6	2.5	2.5	9.92	11	24	1540	78	1490	95.4	95.8	95.8	0.72	0.80	0.85	532
300	400	355M/L	1920	7.2	2.2	2.4	8.59	18	40	1510	76	1490	95.5	95.8	95.8	0.74	0.82	0.85	532
315	430	315L**	2020	7.6	2.5	2.5	9.92	11	24	1540	78	1490	95.4	95.8	95.8	0.72	0.80	0.85	558
315	430	355M/L	2020	7.2	2.4	2.4	8.95	14	31	1643	76	1490	95.5	95.8	95.8	0.74	0.82	0.86	552
330	450	355M/L	2120	6.8	2.2	2.4	9.84	17	37	1769	76	1490	95.5	95.8	95.8	0.75	0.83	0.86	578
355*	480	355M/L	2280	6.9	2.4	2.3	10.7	15	33	1752	76	1490	95.5	95.9	95.8	0.75	0.83	0.86	622
370*	500	355M/L	2370	7.0	2.4	2.4	11.6	15	33	1971	76	1490	95.5	95.9	95.8	0.75	0.83	0.86	648
400*	550	355M/L	2570	7.3	2.6	2.4	11.6	11	24	1888	76	1490	95.5	95.9	95.8	0.74	0.82	0.86	701
450*	610	355A/B	2890	7.4	2.5	2.8	13.2	20	44	2089	76	1490	95.8	96.1	96.2	0.69	0.80	0.84	804
500*	680	355A/B**	3210	7.3	2.4	2.7	14.6	17	37	2246	76	1490	95.9	96.3	96.3	0.72	0.81	0.85	882
Optional frames																			
0.25	0.33	80	1.68	5.5	2.0	2.5	0.0015	31	68	9.0	44	1420	70.0	74.0	74.0	0.61	0.74	0.81	0.602
0.37	0.5	80	2.49	5.7	2.2	2.7	0.0019	23	51	9.5	44	1420	73.0	75.5	75.5	0.60	0.73	0.81	0.873
0.75	1	90S	5.03	5.9	2.2	2.6	0.0038	19	42	17.5	49	1425	78.0	80.0	80.0	0.59	0.72	0.80	1.69
1.1	1.5	90L	7.30	6.5	1.9	2.6	0.0049	14	31	19.0	49	1440	81.0	81.8	81.8	0.62	0.75	0.81	2.40
1.5	2	100L	10.1	6.6	2.8	3.0	0.0067	20	44	28.0	53	1425	82.5	83.2	83.2	0.62	0.74	0.81	3.21
2.2	3	112M	14.6	6.3	1.9	2.6	0.0117	23	51	39.0	56	1445	84.5	85.0	85.0	0.63	0.75	0.81	4.61
4	5.5	132S	26.3	7.2	1.9	3.0	0.0341	14	31	60.0	56	1455	87.0	87.2	87.2	0.68	0.80	0.85	7.75
5.5	7.5	132M	36.0	7.3	1.9	3.0	0.0416	10											

W22 - Premium Efficiency Plus

Exceeds IE2⁽¹⁾

Output		380 V									415 V								
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)		
			Efficiency			Power Factor					Efficiency			Power Factor					
kW	HP	50	75	100	50	75	100	In (A)	50	75	100	50	75	100	50	75	100	In (A)	
IV Pole - 1500 rpm - 50 Hz																			
0.12	0.16	1360	56.8	58.7	58.4	0.58	0.71	0.80	0.390	1390	53.2	57.1	59.0	0.51	0.64	0.74	0.382		
0.18	0.25	1360	60.4	61.3	60.1	0.59	0.72	0.81	0.562	1390	57.7	60.6	61.2	0.52	0.65	0.75	0.546		
0.25	0.33	1340	64.1	66.1	65.0	0.58	0.71	0.79	0.740	1370	61.8	65.5	66.5	0.51	0.64	0.74	0.707		
0.37	0.5	1345	66.9	68.5	67.4	0.55	0.68	0.77	1.08	1375	63.1	66.9	67.9	0.46	0.60	0.70	1.08		
0.55	0.75	1400	76.5	76.7	75.7	0.66	0.78	0.85	1.30	1415	73.6	75.9	76.6	0.57	0.71	0.80	1.25		
0.75	1	1400	80.1	79.6	79.8	0.68	0.80	0.86	1.66	1415	77.9	79.2	80.1	0.60	0.73	0.81	1.61		
1.1	1.5	1432	81.9	81.8	81.5	0.67	0.78	0.83	2.47	1444	80.1	81.5	82.1	0.58	0.72	0.79	2.36		
1.5	2	1430	82.8	83.2	82.8	0.63	0.77	0.83	3.32	1445	80.1	82.3	83.1	0.53	0.68	0.78	3.22		
2.2	3	1415	84.5	84.3	84.3	0.68	0.79	0.83	4.82	1430	83.3	84.5	84.9	0.59	0.73	0.79	4.56		
3	4	1410	85.6	85.4	85.5	0.68	0.79	0.84	6.35	1425	84.3	85.5	86.0	0.59	0.73	0.80	6.07		
4	5.5	1435	86.5	86.6	86.6	0.69	0.80	0.84	8.35	1445	85.3	86.6	87.0	0.60	0.73	0.80	8.00		
5.5	7.5	1455	88.6	88.0	87.7	0.74	0.84	0.88	10.9	1460	87.5	88.0	88.3	0.66	0.78	0.84	10.3		
7.5	10	1450	89.0	88.7	88.7	0.75	0.83	0.87	14.9	1460	88.3	89.0	89.4	0.67	0.78	0.84	13.9		
9.2	12.5	1460	89.0	89.5	88.7	0.70	0.80	0.85	18.5	1470	88.0	89.4	89.4	0.62	0.74	0.81	17.7		
11	15	1465	89.5	90.2	89.8	0.69	0.79	0.85	21.9	1470	88.5	90.0	90.3	0.61	0.73	0.81	20.9		
15	20	1460	91.0	90.9	90.6	0.70	0.79	0.85	29.6	1470	90.2	90.9	91.2	0.63	0.73	0.81	28.2		
18.5	25	1460	91.8	91.7	91.2	0.72	0.81	0.85	36.3	1470	91.1	91.7	91.7	0.50	0.75	0.81	34.7		
22	30	1460	92.5	92.4	91.9	0.74	0.83	0.87	41.8	1465	91.8	92.4	92.4	0.66	0.77	0.83	39.9		
30	40	1465	92.9	92.9	92.4	0.72	0.81	0.85	58.0	1470	92.3	92.9	92.9	0.65	0.76	0.81	55.5		
37	50	1470	93.2	93.1	92.8	0.78	0.86	0.87	69.6	1475	92.7	93.1	93.3	0.70	0.81	0.85	64.9		
45	60	1470	93.5	93.6	93.2	0.78	0.86	0.88	83.4	1475	92.9	93.6	93.7	0.70	0.81	0.84	79.5		
55	75	1470	93.8	93.8	93.7	0.79	0.86	0.88	101	1475	93.3	93.9	94.1	0.72	0.82	0.86	94.6		
75	100	1470	94.3	94.3	94.1	0.78	0.87	0.90	135	1475	93.7	94.2	94.5	0.71	0.82	0.87	127		
90	125	1480	94.4	94.7	94.5	0.80	0.86	0.88	164	1485	93.8	94.6	94.7	0.73	0.82	0.86	154		
110	150	1480	94.6	95.1	94.9	0.79	0.85	0.88	200	1485	94.0	94.9	95.0	0.72	0.81	0.86	187		
132	175	1485	94.8	95.2	95.0	0.79	0.86	0.88	240	1490	94.4	95.1	95.2	0.73	0.82	0.86	224		
150	200	1490	95.2	95.4	95.2	0.80	0.85	0.88	271	1490	94.8	95.4	95.4	0.75	0.83	0.86	254		
160	220	1485	95.0	95.4	95.2	0.80	0.86	0.88	290	1490	94.6	95.3	95.4	0.74	0.82	0.86	271		
185	250	1485	95.1	95.6	95.5	0.79	0.85	0.87	338	1490	94.7	95.5	95.6	0.72	0.81	0.85	317		
200	270	1485	95.1	95.5	95.4	0.80	0.86	0.88	362	1490	94.8	95.6	95.7	0.74	0.82	0.86	338		
200	270	1490	95.3	95.5	95.5	0.78	0.83	0.86	370	1490	94.9	95.5	95.6	0.71	0.79	0.84	346		
220	300	1490	95.4	95.7	95.6	0.80	0.86	0.88	397	1490	95.0	95.6	95.7	0.73	0.82	0.86	372		
220	300	1490	95.5	95.6	95.6	0.77	0.83	0.86	407	1490	95.0	95.6	95.7	0.70	0.79	0.84	381		
250	340	1490	95.5	95.9	95.8	0.80	0.87	0.89	445	1490	95.1	95.8	95.9	0.74	0.83	0.87	417		
250	340	1490	95.6	95.7	95.7	0.77	0.84	0.86	462	1490	94.2	95.7	95.8	0.70	0.80	0.84	432		
260	350	1490	95.6	95.7	95.7	0.77	0.84	0.86	480	1490	94.2	95.7	95.8	0.70	0.80	0.84	449		
280	380	1490	95.6	95.8	95.8	0.79	0.86	0.88	505	1490	95.2	95.7	95.8	0.73	0.82	0.86	473		
280	380	1490	95.6	95.7	95.7	0.77	0.84	0.86	517	1490	95.3	95.7	95.8	0.71	0.80	0.84	484		
300	400	1490	95.6	95.8	95.8	0.76	0.82	0.86	553	1490	95.2	95.7	95.8	0.69	0.78	0.84	519		
300	400	1490	95.6	95.6	95.7	0.78	0.84	0.88	541	1490	95.3	95.7	95.8	0.71	0.80	0.84	519		
315	430	1490	95.6	95.8	95.8	0.76	0.82	0.86	580	1490	95.2	95.7	95.8	0.69	0.78	0.84	550		
315	430	1490	95.6	95.7	95.7	0.77	0.84	0.87	575	1490	95.3	95.7	95.8	0.71	0.80	0.85	538		
330	450	1485	95.5	95.7	95.7	0.74	0.79	0.85	616	1490	95.3	95.7	95.8	0.72	0.81	0.85	564		
355*	480	1490	95.6	95.7	95.7	0.78	0.85	0.87	648	1490	95.4	95.8	95.8	0.72	0.81	0.85	607		
370*	500	1490	95.1	95.5	95.7	0.78	0.85	0.87	675	1490	95.0	95.7	95.9	0.72	0.81	0.85	631		
400*	550	1490	95.7	95.8	95.8	0.77	0.84	0.87	729	1490	95.3	95.8	95.8	0.71	0.80	0.85	683		
450*	610	1490	96.0	96.2	96.2	0.73	0.83	0.86	826	1490	95.5	95.9	96.1	0.65	0.77	0.82	794		
500*	680	1490	96.1	96.3	96.3	0.76	0.84	0.87	907	1790	95.7	96.2	96.3	0.69	0.79	0.84	860		
Optional frames																			
0.25	0.33	1410	71.0	74.0	73.2	0.65	0.77	0.84	0.618	1425	69.1	73.7	74.4	0.58	0.71	0.79	0.592		
0.37	0.5	1410	74.1	75.6	74.8	0.65	0.77	0.84	0.895	1425	71.7	75.1	75.8	0.57	0.70	0.79	0.860		
0.75	1	1415	79.1	79.9	78.9	0.64	0.76	0.83	1.74	1430	76.9	79.6	80.4	0.55	0.69	0.78	1.66		
1.1	1.5	1432	81.9	81.8	81.5	0.67	0.78	0.83	2.47	1444	80.1	81.5	82.1	0.58	0.72	0.79	2.36		
1.5	2	1415	82.9	82.9	82.2	0.66	0.77	0.83	3.34	1430	81.9	83.2	83.7	0.58	0.71	0.79	3.16		
2.2	3	1440	85.0	84.8	84.1	0.67	0.78	0.83	4.79	1450	83.9	84.9	85.4	0.59	0.72	0.79	4.54		
4	5.5	1450	87.5	87.1	86.6	0.72	0.83	0.86	8.12	1459	86.4	87.1	87.4	0.65	0.77	0.83	7.63		
5.5	7.5	1455	88.6	88.0	87.7	0.74	0.84	0.88	10.9	1460	87.5	88.0	88.3	0.66	0.78	0.84	10.3		
7.5	10	1450	89.0	88.7	88.7	0.75	0.83	0.87	14.9	1460	88.3	89.0	89.4	0.67	0.78	0.84	13.9		
7.5	10	1460	88.5	89.1	88.6	0.69	0.80	0.85	15.1	1470	87.5	89.0	89.1	0.61	0.74	0.81	14.5		
9.2	12.5	1450	89.6	89.4	88.9	0.75	0.83	0.88	17.9	1455</td									

W22 - Premium Efficiency Plus

Exceeds IE2⁽¹⁾

Output		Frame	Full load torque (Nm)	Locked rotor current II/In	Locked rotor torque TI/Tn	Break-down torque Tb/Tn	Inertia J (kgm ²)	Allowable locked rotor time (s)		Weight (kg)	Sound dB (A)	400 V										Full load current In (A)
												Rated speed (rpm)	% of full load			Efficiency	Power factor	50	75	100	50	75
kW	HP							Hot	Cold				Efficiency	Power factor								
VI Pole - 1000 rpm - 50 Hz																						
0.12	0.16	63	1.27	3.0	1.9	2.0	0.00061	52	114	7.2	43	905	42.0	50.0	52.0	0.43	0.53	0.63	0.63	0.529		
0.18	0.25	71	1.93	3.2	2.0	2.0	0.00082	96	211	9.5	43	890	52.0	58.0	59.0	0.40	0.51	0.61	0.61	0.722		
0.25	0.33	71	2.65	3.2	2.2	2.1	0.00093	70	154	11.5	43	900	53.0	60.0	61.0	0.37	0.48	0.58	0.58	1.02		
0.37	0.5	80	3.88	3.9	1.8	2.0	0.0022	27	59	10.5	43	910	63.0	67.0	67.0	0.51	0.66	0.76	0.76	1.05		
0.55	0.75	80	5.77	4.1	2.0	2.2	0.0030	21	46	14.0	43	910	65.0	71.0	71.0	0.50	0.65	0.75	0.75	1.49		
0.75	1	90S	7.75	4.5	2.0	2.1	0.0055	23	51	19.0	45	925	74.5	76.0	76.0	0.51	0.64	0.73	0.73	1.95		
1.1	1.5	90L	11.4	4.7	2.3	2.2	0.0066	17	37	23.0	45	925	76.0	78.1	78.1	0.50	0.63	0.73	0.73	2.78		
1.5	2	100L	15.3	5.0	2.0	2.4	0.0110	23	51	28.5	44	940	79.5	80.0	80.0	0.51	0.64	0.73	0.73	3.71		
2.2	3	112M	22.4	5.0	2.1	2.3	0.0183	19	42	38.0	48	940	81.0	82.5	82.0	0.53	0.66	0.73	0.73	5.30		
3	4	132S	29.9	5.7	2.0	2.4	0.0359	31	68	61.0	52	960	82.5	83.6	83.6	0.50	0.63	0.71	0.71	7.30		
4	5.5	132M	39.8	6.0	2.1	2.5	0.0453	21	46	68.0	52	960	84.0	84.8	84.8	0.51	0.64	0.72	0.72	9.46		
5.5	7.5	132M	54.7	6.4	2.2	2.7	0.0604	19	42	72.0	52	960	85.5	86.1	86.1	0.51	0.64	0.72	0.72	12.8		
7.5	10	160M	73.9	5.8	2.0	2.6	0.0983	17	37	113	56	970	88.3	88.7	88.3	0.64	0.76	0.82	0.82	15.0		
9.2	12.5	160L	90.6	6.0	2.2	2.6	0.1193	14	31	127	56	970	88.5	88.9	88.6	0.64	0.76	0.82	0.82	18.3		
11	15	160L	108	6.0	2.3	2.7	0.1331	13	29	136	56	970	89.0	89.5	89.2	0.62	0.74	0.81	0.81	22.0		
15	20	180L	148	7.0	2.4	3.0	0.2565	7	15	174	56	970	90.3	90.5	90.3	0.70	0.81	0.86	0.86	27.9		
18.5	25	200L	181	5.7	2.1	2.5	0.3517	15	33	214	60	975	91.0	91.4	91.2	0.67	0.77	0.82	0.82	35.7		
22	30	200L	216	6.0	2.2	2.7	0.4037	14	31	225	60	975	91.4	91.7	91.5	0.65	0.76	0.82	0.82	42.3		
30	40	225S/M	291	6.8	2.1	2.5	0.9688	12	26	359	61	985	92.6	92.7	92.6	0.71	0.81	0.86	0.86	54.4		
37	50	250S/M	359	6.7	2.2	2.5	1.10	16	35	438	61	985	93.0	93.2	93.0	0.73	0.82	0.86	0.86	66.8		
45	60	250S/M	437	6.4	2.1	2.3	1.29	15	33	466	61	985	93.4	93.5	93.4	0.76	0.84	0.87	0.87	79.9		
55	75	280S/M	534	6.2	2.0	2.4	2.36	22	48	629	65	985	93.6	93.9	93.8	0.68	0.79	0.83	0.83	102		
75	100	280S/M	724	6.4	2.0	2.4	3.03	17	37	702	65	990	93.9	94.3	94.2	0.69	0.79	0.84	0.84	137		
90	125	315S/M	869	6.0	1.9	2.1	2.79	22	48	893	67	990	94.4	94.6	94.5	0.72	0.80	0.84	0.84	164		
110	150	315S/M	1060	6.1	2.0	2.2	3.35	20	44	966	67	990	94.5	94.9	94.8	0.72	0.80	0.84	0.84	199		
132	175	315S/M	1270	6.4	2.2	2.4	3.90	17	37	1036	67	990	94.6	95.0	95.0	0.71	0.80	0.84	0.84	239		
160	220	315L	1540	6.6	2.2	2.4	9.53	14	31	1228	68	990	94.8	95.2	95.2	0.70	0.80	0.84	0.84	289		
160	220	355M/L	1540	5.9	1.8	2.0	8.34	34	75	1453	73	990	94.9	95.3	95.3	0.65	0.75	0.80	0.80	303		
185	250	315L	1790	6.9	2.3	2.4	10.2	12	26	1358	68	990	95.0	95.4	95.4	0.69	0.79	0.83	0.83	337		
185	250	355M/L	1790	5.7	1.9	2.0	9.24	32	70	1521	73	990	95.1	95.4	95.4	0.65	0.75	0.80	0.80	350		
200	270	315L	1930	7.0	2.4	2.5	12.4	12	26	1488	68	990	95.1	95.4	95.4	0.69	0.79	0.83	0.83	365		
200	270	355M/L	1930	6.5	2.1	2.3	10.9	28	62	1643	73	990	95.1	95.5	95.5	0.64	0.75	0.80	0.80	378		
220	300	315L	2120	6.8	2.3	2.3	13.8	14	31	1621	68	990	95.2	95.5	95.5	0.69	0.79	0.83	0.83	401		
220	300	355M/L	2120	6.0	2.0	2.1	11.8	32	70	1795	73	990	95.3	95.5	95.5	0.65	0.75	0.80	0.80	416		
250	340	355M/L	2410	6.0	2.1	2.2	12.7	34	75	1789	73	990	95.3	95.5	95.5	0.66	0.76	0.81	0.81	466		
260	350	355M/L	2510	6.0	2.1	2.2	12.7	34	75	1789	73	990	95.3	95.5	95.5	0.66	0.76	0.81	0.81	485		
280	380	355M/L	2700	6.2	2.2	2.2	13.9	27	59	1884	73	990	95.4	95.6	95.6	0.64	0.75	0.80	0.80	528		
300	400	355M/L	2900	6.2	2.2	2.2	14.3	30	66	1900	73	990	95.4	95.7	95.6	0.63	0.74	0.79	0.79	573		
315*	430	355M/L	3020	6.2	2.2	2.2	15.0	28	62	1979	73	995	95.4	95.7	95.6	0.66	0.76	0.81	0.81	587		
355*	480	355A/B	3430	6.2	2.0	2.3	17.1	29	64	2200	73	990	95.3	95.7	95.8	0.63	0.74	0.79	0.79	677		
400*	550	355A/B**	3860	6.1	2.0	2.3	18.9	29	64	2346	73	990	95.4	95.8	95.9	0.63	0.74	0.79	0.79	762		
Optional frames																						
0.25	0.33	80	2.62	3.9	1.8	2.0	0.0022	27	59	10.5	43	910	63.0	67.0	67.0	0.51	0.66	0.76	0.76	0.709		
1.5	2	112M	15.2	5.2	2.1	2.3	0.0156	28	62	36.5	48	945	80.5	81.0	80.5	0.51	0.64	0.72	0.74			
3	4	132M	29.9	5.7	2.0	2.4	0.0359	31	68	61.0	52	960	82.5	83.6	83.6	0.50	0.63	0.71	0.73			
5.5	7.5	160M	54.2	6.0	2.1	2.6	0.0842	19	42	106	56	970	87.5	88.0	87.5	0.63	0.75	0.81	0.81	11.2		
37	50	225S/M	359	6.8	2.1	2.5	1.20	11	24	390	61	985	93.0	93.2	93.0	0.72	0.81	0.86	0.86	66.8		
45	60	280S/M	437	6.2	2.0	2.5	2.02	26	57	596	65	985	93.4	93.6	93.4	0.68	0.78	0.82	0.82	84.8		
75	100	315S/M	724	6.2	1.9	2.2	2.35	23	51	837	67	990	94.0	94.3	94.2	0.69	0.79	0.83	0.83	138		

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Exceeds IE2⁽¹⁾

Output		380 V										415 V										
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)					
			Efficiency			Power Factor					Efficiency			Power Factor								
kW	HP	(rpm)	50	75	100	50	75	100	In (A)	(rpm)	50	75	100	50	75	100	In (A)					
VI Pole - 1000 rpm - 50 Hz																						
0.12	0.16	895	45.4	52.1	52.9	0.46	0.57	0.67	0.514	910	39.1	47.5	50.7	0.41	0.50	0.59	0.558					
0.18	0.25	875	54.2	59.0	58.7	0.43	0.55	0.65	0.717	900	50.1	56.8	58.6	0.38	0.48	0.58	0.58	0.737				
0.25	0.33	885	56.3	61.9	61.5	0.41	0.52	0.62	0.996	905	50.1	57.8	59.7	0.35	0.45	0.54	0.54	1.08				
0.37	0.5	895	65.2	67.7	66.0	0.56	0.70	0.80	1.06	915	60.5	65.9	67.1	0.48	0.62	0.73	1.05					
0.55	0.75	900	67.5	71.8	70.2	0.55	0.69	0.79	1.51	915	62.5	69.6	70.9	0.47	0.61	0.72	1.50					
0.75	1	915	75.8	75.9	74.6	0.55	0.68	0.76	2.01	930	73.2	75.6	76.4	0.48	0.61	0.71	1.92					
1.1	1.5	915	77.9	78.5	78.5	0.55	0.67	0.77	2.76	930	74.3	77.3	78.1	0.46	0.59	0.70	2.80					
1.5	2	930	80.7	80.1	79.8	0.55	0.69	0.76	3.76	945	78.3	79.7	80.3	0.48	0.61	0.70	3.71					
2.2	3	930	82.0	82.4	81.8	0.57	0.70	0.76	5.44	945	80.0	82.1	82.4	0.49	0.63	0.71	5.23					
3	4	955	83.4	83.8	83.1	0.54	0.67	0.74	7.41	960	81.4	83.1	83.6	0.46	0.59	0.68	7.34					
4	5.5	955	84.9	85.0	84.6	0.55	0.68	0.74	9.74	960	83.0	84.4	84.9	0.47	0.61	0.69	9.50					
5.5	7.5	955	86.4	86.3	86.0	0.56	0.68	0.75	13.0	965	84.6	85.7	86.2	0.47	0.61	0.69	12.9					
7.5	10	965	88.7	88.6	87.7	0.68	0.79	0.84	15.5	970	87.8	88.6	88.5	0.61	0.73	0.80	14.7					
9.2	12.5	965	88.9	88.8	88.1	0.68	0.79	0.84	18.9	970	88.0	88.8	88.8	0.61	0.73	0.80	18.0					
11	15	965	89.6	89.5	88.8	0.66	0.77	0.83	22.7	970	88.4	89.3	89.3	0.59	0.71	0.79	21.7					
15	20	965	90.6	90.4	89.7	0.74	0.84	0.88	28.9	970	89.9	90.5	90.6	0.67	0.79	0.85	27.1					
18.5	25	970	91.5	91.4	90.8	0.71	0.80	0.84	36.9	975	90.5	91.2	91.3	0.63	0.74	0.80	35.2					
22	30	970	92.0	91.8	91.2	0.70	0.79	0.84	43.6	975	90.8	91.5	91.6	0.61	0.73	0.80	41.8					
30	40	980	92.8	92.5	92.1	0.75	0.83	0.87	56.9	985	92.2	92.6	92.7	0.68	0.79	0.84	53.6					
37	50	980	93.2	93.0	92.6	0.77	0.84	0.87	69.8	985	92.7	93.2	93.2	0.70	0.80	0.85	65.0					
45	60	980	93.4	93.2	92.8	0.79	0.86	0.88	83.7	985	93.3	93.6	93.7	0.73	0.82	0.86	77.7					
55	75	980	93.8	93.8	93.5	0.72	0.82	0.85	105	985	93.3	93.6	93.9	0.65	0.77	0.82	99.4					
75	100	985	94.1	94.2	93.9	0.73	0.82	0.85	143	990	93.7	94.2	94.3	0.66	0.77	0.83	133					
90	125	990	94.6	94.5	94.2	0.76	0.82	0.85	171	990	94.2	94.5	94.6	0.69	0.78	0.83	159					
110	150	990	94.7	94.9	94.5	0.76	0.82	0.85	208	990	94.2	94.8	94.9	0.69	0.78	0.83	194					
132	175	990	94.9	95.0	94.8	0.75	0.83	0.85	249	990	94.3	94.9	95.0	0.68	0.78	0.83	233					
160	220	990	95.0	95.2	95.0	0.74	0.82	0.85	301	990	94.5	95.1	95.2	0.67	0.78	0.83	282					
160	220	990	94.5	95.9	96.0	0.70	0.80	0.82	309	990	93.9	95.8	96.0	0.60	0.74	0.80	290					
185	250	990	95.2	95.4	95.2	0.73	0.82	0.84	351	990	94.7	95.3	95.4	0.66	0.77	0.81	333					
185	250	990	94.4	95.5	95.7	0.70	0.79	0.82	358	990	94.0	95.5	95.8	0.60	0.71	0.78	344					
200	270	990	95.3	95.4	95.2	0.73	0.82	0.85	376	990	94.8	95.3	95.4	0.66	0.77	0.82	356					
200	270	990	95.0	95.6	95.7	0.70	0.79	0.82	387	990	94.4	95.4	95.7	0.62	0.73	0.79	368					
220	300	985	95.3	95.4	95.2	0.73	0.81	0.84	418	990	95.0	95.5	95.6	0.66	0.77	0.82	390					
220	300	990	94.2	95.4	95.7	0.72	0.80	0.82	426	995	93.4	95.0	95.8	0.62	0.74	0.79	404					
250	340	990	95.5	95.5	95.4	0.70	0.79	0.83	480	990	95.1	95.4	95.5	0.62	0.73	0.79	461					
260	350	990	95.5	95.5	95.4	0.70	0.79	0.83	499	990	95.1	95.4	95.5	0.62	0.73	0.79	479					
280	380	990	95.6	95.6	95.5	0.68	0.78	0.82	543	990	95.2	95.5	95.6	0.61	0.72	0.78	522					
300	400	990	95.7	95.7	95.5	0.65	0.75	0.80	597	995	95.2	95.6	95.6	0.60	0.70	0.77	567					
315*	430	995	95.6	95.7	95.5	0.70	0.79	0.83	604	995	95.2	95.6	95.6	0.62	0.73	0.79	580					
355*	480	990	95.4	95.7	95.7	0.64	0.75	0.79	713	990	95.2	95.7	95.9	0.62	0.73	0.79	652					
400*	550	990	95.7	95.9	95.9	0.67	0.77	0.81	782	990	95.2	95.7	95.9	0.60	0.71	0.77	754					
Optional frames																						
0.25	0.33	895	65.2	67.7	66.0	0.56	0.70	0.80	0.719	915	60.5	65.9	67.1	0.48	0.62	0.73	0.710					
1.5	2	935	81.5	81.0	79.5	0.55	0.68	0.75	3.82	950	79.5	80.7	80.8	0.48	0.61	0.70	3.69					
3	4	955	83.4	83.8	83.1	0.54	0.67	0.74	7.41	960	81.4	83.1	83.6	0.46	0.59	0.68	7.34					
5.5	7.5	965	87.9	87.9	86.9	0.67	0.78	0.83	11.6	970	87.0	87.9	87.8	0.60	0.73	0.79	11.0					
37	50	980	93.1	92.9	92.4	0.76	0.83	0.87	69.9	985	92.8	93.2	93.2	0.69	0.79	0.85	65.0					
45	60	980	93.7	93.6	93.1	0.72	0.81	0.84	87.4	985	93.1	93.5	93.5	0.65	0.76	0.80	83.7					
75	100	990	94.3	94.3	94.0	0.73	0.82	0.84	144	990	93.7	94.2	94.2	0.66	0.77	0.81	137					

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Exceeds IE2⁽¹⁾

Output		Frame	Full load torque (Nm)	Locked rotor current I _l /In	Locked rotor torque T _l /T _n	Break-down torque T _b /T _n	Inertia J (kgm ²)	Allowable locked rotor time (s)	Weight (kg)	Sound dB (A)	400 V										Full load current In (A)
											Rated speed (rpm)	% of full load			Efficiency			Power factor			
kW	HP											Hot	Cold	50	75	100	50	75	100		
VIII Pole - 750 rpm - 50 Hz																					
0.12	0.16	71	1.76	2.3	1.9	2.0	0.00083	172	378	9.5	41	650	40.0	48.0	50.0	0.35	0.43	0.52	0.666		
0.18	0.25	80	2.57	3.1	1.9	2.1	0.0024	48	106	11.5	42	670	47.0	53.0	55.0	0.44	0.55	0.65	0.727		
0.25	0.33	80	3.57	3.2	1.9	2.1	0.0029	42	92	13.5	42	670	49.0	55.0	57.0	0.43	0.55	0.66	0.959		
0.37	0.5	90S	5.12	3.5	2.1	2.1	0.0044	37	81	18.0	43	690	56.0	62.0	62.0	0.41	0.52	0.62	1.39		
0.55	0.75	90L	7.67	3.5	1.9	2.0	0.0060	31	68	22.0	43	685	61.0	64.0	64.0	0.44	0.56	0.66	1.88		
0.75	1	100L	10.1	4.6	2.0	2.4	0.0110	42	92	28.5	50	710	71.0	74.0	74.0	0.40	0.52	0.62	2.36		
1.1	1.5	100L	14.9	4.6	2.1	2.3	0.0127	29	64	30.5	50	705	71.0	75.0	75.0	0.40	0.53	0.62	3.41		
1.5	2	112M	20.5	4.7	2.4	2.3	0.0202	29	64	39.0	46	700	77.0	79.0	79.0	0.44	0.57	0.67	4.09		
2.2	3	132S	30.0	5.5	2.2	2.4	0.0592	25	55	62.0	48	700	81.0	81.5	81.0	0.52	0.65	0.72	5.44		
3	4	132M	41.0	5.5	2.3	2.4	0.0740	19	42	66.0	48	700	82.0	82.5	82.0	0.54	0.66	0.73	7.23		
4	5.5	160M	52.7	4.7	2.0	2.2	0.0842	29	64	107	51	725	84.0	85.0	85.0	0.52	0.65	0.72	9.43		
5.5	7.5	160M	72.5	4.7	2.0	2.2	0.1149	21	46	120	51	725	85.0	86.0	85.5	0.52	0.65	0.73	12.7		
7.5	10	160L	98.8	4.9	2.2	2.3	0.1436	22	48	139	51	725	86.0	87.0	87.0	0.52	0.65	0.73	17.0		
9.2	12.5	180M	121	6.0	2.0	2.5	0.2033	11	24	156	51	725	88.0	88.0	87.5	0.63	0.75	0.82	18.5		
11	15	180L	145	6.0	2.1	2.4	0.2439	11	24	175	51	725	88.0	88.5	88.0	0.67	0.77	0.83	21.7		
15	20	200L	196	4.9	1.9	2.0	0.4220	30	66	226	53	730	90.0	90.5	90.0	0.58	0.70	0.76	31.7		
18.5	25	225S/M	241	6.3	2.0	2.4	0.8328	17	37	339	56	735	91.5	91.9	91.7	0.65	0.77	0.82	35.5		
22	30	225S/M	286	6.1	2.0	2.4	0.9702	16	35	358	56	735	91.7	92.0	92.0	0.67	0.78	0.81	42.6		
30	40	250S/M	390	6.6	2.1	2.7	1.06	13	29	433	56	735	92.0	92.4	92.3	0.68	0.79	0.83	56.5		
37	50	250S/M	484	7.5	2.1	2.6	1.66	12	26	570	56	730	92.5	93.0	93.0	0.66	0.77	0.82	70.0		
45	60	280S/M	581	5.8	1.9	2.1	2.71	23	51	660	59	740	93.4	93.8	93.8	0.64	0.74	0.80	86.6		
55	75	280S/M	710	5.8	2.0	2.1	3.16	24	53	710	59	740	93.7	94.2	94.1	0.64	0.75	0.80	105		
75	100	315S/M	968	5.9	1.8	2.1	3.26	30	66	951	62	740	94.1	94.5	94.6	0.68	0.77	0.81	141		
90	125	315S/M	1160	6.0	1.9	2.1	3.83	26	57	1020	62	740	94.4	94.7	94.7	0.68	0.77	0.81	169		
110	150	315L	1420	6.0	1.9	2.1	12.6	28	62	1244	68	740	94.6	94.8	94.8	0.67	0.76	0.80	209		
110	150	355M/L	1410	5.8	1.3	2.1	10.4	48	106	1379	70	745	94.6	95.2	95.2	0.63	0.74	0.79	211		
132	175	315L	1700	6.3	2.0	2.3	13.2	20	44	1352	68	740	94.8	95.1	95.1	0.64	0.75	0.80	250		
132	175	355M/L	1690	5.6	1.3	2.0	12.6	50	110	1473	70	745	95.0	95.5	95.4	0.64	0.75	0.80	250		
160	220	355M/L	2050	6.0	1.5	2.3	14.4	54	119	1616	70	745	95.2	95.6	95.6	0.63	0.74	0.80	302		
185	250	355M/L	2370	6.1	1.5	2.3	16.5	48	106	1691	70	745	95.2	95.6	95.6	0.62	0.72	0.78	358		
200	270	355M/L	2570	6.3	1.6	2.3	18.4	48	106	1765	70	745	95.3	95.6	95.6	0.63	0.74	0.80	377		
220	300	355M/L	2820	6.3	1.5	2.3	19.5	48	106	1875	70	745	95.4	95.7	95.7	0.63	0.74	0.79	420		
250*	340	355A/B	3210	6.2	1.5	2.4	21.7	47	103	2092	70	745	95.1	95.7	95.8	0.62	0.73	0.79	477		
280*	380	355A/B	3590	6.4	1.6	2.4	25.0	44	97	2279	70	745	95.1	95.7	95.8	0.61	0.73	0.79	534		
Optional frames																					
37	50	280S/M	478	5.6	1.8	2.1	2.26	26	57	614	59	740	93.0	93.5	93.5	0.64	0.74	0.80	71.4		
55	75	315S/M	710	5.8	1.8	2.1	2.48	32	70	851	62	740	93.7	94.2	94.2	0.66	0.76	0.80	105		
110	150	315S/M	1420	6.0	1.9	2.1	4.82	28	62	1300	62	740	94.6	94.8	94.8	0.67	0.76	0.80	209		

Notes:

(1) Efficiency values are given according to IEC 60034-2-1. They are calculated according to indirect method, with stray load losses determined by measurement.
(*) Fitted with air deflector in the drive end side.

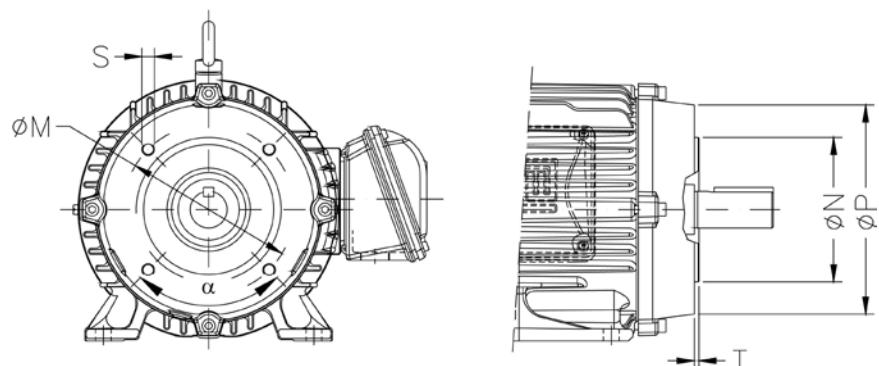
W22 - Premium Efficiency Plus

Exceeds IE2⁽¹⁾

Output		380 V									415 V								
		Rated speed (rpm)	% of full load						Full load current In (A)	Rated speed (rpm)	% of full load						Full load current In (A)		
			Efficiency			Power Factor					Efficiency			Power Factor					
kW	HP	50	75	100	50	75	100	In (A)	50	75	100	50	75	100	50	75	100	In (A)	
VIII Pole - 750 rpm - 50 Hz																			
0.12	0.16	635	42.9	50.1	50.8	0.37	0.47	0.56	0.641	655	37.1	45.7	48.8	0.34	0.41	0.49	0.49	0.698	
0.18	0.25	660	49.3	54.4	54.9	0.47	0.59	0.69	0.722	675	45.0	51.8	54.5	0.42	0.53	0.62	0.62	0.741	
0.25	0.33	660	51.1	56.2	56.8	0.47	0.59	0.70	0.955	675	47.0	53.8	56.8	0.42	0.53	0.63	0.63	0.972	
0.37	0.5	680	59.5	63.8	62.4	0.44	0.56	0.67	1.34	695	53.1	59.9	60.9	0.39	0.49	0.59	0.59	1.43	
0.55	0.75	675	63.3	65.1	63.5	0.47	0.61	0.70	1.88	690	58.5	62.8	63.9	0.41	0.53	0.63	0.63	1.90	
0.75	1	705	73.0	75.0	73.9	0.44	0.57	0.65	2.37	715	69.2	73.0	73.7	0.38	0.49	0.59	0.59	2.40	
1.1	1.5	700	73.6	76.2	74.9	0.45	0.57	0.66	3.38	705	68.8	73.6	74.5	0.37	0.49	0.59	0.59	3.48	
1.5	2	695	78.8	79.6	78.5	0.49	0.61	0.70	4.15	705	75.3	78.2	78.9	0.41	0.53	0.63	0.63	4.20	
2.2	3	695	81.8	81.5	79.9	0.57	0.69	0.75	5.58	705	80.1	81.4	81.4	0.49	0.62	0.70	0.70	5.37	
3	4	690	82.7	82.4	80.8	0.58	0.70	0.75	7.52	705	81.1	82.4	82.5	0.50	0.63	0.71	0.71	7.13	
4	5.5	720	84.8	85.0	84.4	0.56	0.68	0.74	9.73	730	83.2	84.7	85.2	0.49	0.62	0.70	0.70	9.33	
5.5	7.5	720	85.8	86.0	84.9	0.56	0.68	0.75	13.1	725	84.2	85.7	85.7	0.49	0.62	0.71	0.71	12.6	
7.5	10	720	86.8	87.2	86.6	0.56	0.69	0.76	17.3	725	85.1	86.7	87.1	0.49	0.62	0.71	0.71	16.9	
9.2	12.5	720	88.5	87.9	86.8	0.67	0.78	0.84	19.2	725	87.4	87.9	87.8	0.59	0.72	0.80	0.80	18.2	
11	15	720	88.4	88.3	87.2	0.71	0.80	0.85	22.5	725	87.5	88.5	88.4	0.64	0.75	0.81	0.81	21.4	
15	20	725	90.5	90.4	89.4	0.62	0.73	0.78	32.7	730	89.4	90.4	90.2	0.55	0.67	0.74	0.74	31.3	
18.5	25	730	91.8	91.8	91.2	0.69	0.80	0.84	36.7	735	91.1	91.9	91.9	0.62	0.74	0.80	0.80	35.0	
22	30	730	91.9	91.8	91.4	0.70	0.81	0.83	44.1	735	91.4	92.0	92.2	0.64	0.76	0.80	0.80	41.5	
30	40	730	92.3	92.3	91.8	0.73	0.82	0.85	58.4	735	91.6	92.3	92.5	0.64	0.76	0.81	0.81	55.7	
37	50	730	92.7	92.9	92.9	0.70	0.79	0.83	72.9	735	92.5	93.1	93.1	0.64	0.75	0.81	0.81	68.3	
45	60	735	93.3	93.9	94.0	0.66	0.77	0.81	89.8	740	92.5	93.5	94.1	0.58	0.70	0.77	0.77	86.4	
55	75	740	94.0	94.1	93.7	0.68	0.78	0.82	109	740	93.4	94.1	94.3	0.60	0.72	0.78	0.78	104	
75	100	740	94.4	94.5	94.3	0.72	0.80	0.82	147	740	93.8	94.4	94.7	0.64	0.75	0.80	0.80	138	
90	125	740	94.7	94.7	94.4	0.72	0.80	0.82	177	740	94.1	94.6	94.8	0.64	0.75	0.80	0.80	165	
110	150	740	94.8	94.7	94.5	0.71	0.79	0.81	218	740	94.3	94.7	94.9	0.64	0.74	0.79	0.79	204	
110	150	740	94.0	95.2	95.1	0.65	0.76	0.81	217	745	93.0	95.2	95.2	0.59	0.77	0.77	0.77	209	
132	175	740	94.6	95.2	95.1	0.68	0.78	0.82	257	740	94.5	95.0	95.1	0.61	0.72	0.78	0.78	248	
132	175	740	94.5	95.4	95.3	0.66	0.75	0.81	260	745	93.5	95.4	95.4	0.60	0.71	0.77	0.77	250	
160	220	745	95.6	95.7	95.6	0.68	0.78	0.82	310	745	94.8	95.4	95.6	0.59	0.71	0.78	0.78	299	
185	250	745	95.6	95.8	95.6	0.67	0.76	0.81	363	745	94.7	95.3	95.4	0.57	0.68	0.75	0.75	360	
200	270	745	95.7	95.7	95.6	0.68	0.78	0.83	383	745	94.9	95.4	95.5	0.59	0.71	0.78	0.78	374	
220	300	745	95.8	95.9	95.7	0.68	0.78	0.81	431	745	95.0	95.5	95.6	0.59	0.71	0.77	0.77	416	
250*	340	745	95.5	95.8	95.8	0.67	0.77	0.81	489	745	94.7	95.5	95.7	0.58	0.70	0.77	0.77	472	
280*	380	745	95.5	95.9	95.9	0.66	0.76	0.81	548	745	94.7	95.5	95.7	0.57	0.70	0.77	0.77	529	
Optional frames																			
37	50	735	93.3	93.4	93.1	0.68	0.77	0.82	73.6	740	92.6	93.4	93.6	0.61	0.72	0.78	0.78	70.5	
55	75	740	94.0	94.2	93.9	0.70	0.79	0.82	109	740	93.3	94.1	94.3	0.62	0.73	0.78	0.78	104	
110	150	740	94.8	94.7	94.5	0.71	0.79	0.81	218	740	94.3	94.7	94.9	0.64	0.74	0.79	0.79	204	

Frame	A	AA	AB	AC	AD	AD' (***)	B	BA	BB	C	CA	Shaft																						
												D	DA	E	EA	ES	F	FA	G	GB	GD	GF	TS											
63	100	25.5	116	125	122	122	80	-	95	40	78	11 6	9 6	23	20	14	4	3	8.5	7.2	4	3	12											
71	112	28.5	132	141	130	130	90	-	113.5	45	88	14 6	11 6	30	23	18	5	4	11	8.5	5	4	14											
80																																		
L80	125	30.5	149	159	139	139						125.5	50	93	19 6	14 6	40	30	28	6		15.5	11	6										
90S																																		
L90S	140	36.5	164	179	157	157						131																						
90L																																		
L90L													156	104	24 6	16 6	50	40	36															
100L																																		
L100L	160	40	188	199	167	167						173	63	118																				
L112M	190	40.5	220	222	192	192						177	70	128																				
L112M																																		
132S													187																					
132M	216	51	248	271	218	218						55	225	89	150	38k6	28 6	80	60	63	10													
132M/L																																		
160M	254	64	308	329	264	264						210	63																					
160L													254	298	108	174	42k6	42k6																
180M	279	78	350	360	279	279						241	70																					
180L													279	332	121	200	48k6	48k6																
200M	318	82	385	402	317	317						267	82	332		55m6																		
200L													305	370	133	222																		
225S/M	356	80	436	455								384	286/311	124	412	149	319/294	55m6*	55m6*	110*	110*	100*	16*	49*	49*	10*	10*	100*						
250S/M	406		506	486								408					60m6	60m6	140	140	125	18	18	53	53	11	11	125						
280S/M	457		100									402	311/349	146	467	168	354/316	60m6*	60m6*	140*	140*	125*	18*	18*	53*	53*	11*	11*	125*					
315S/M												557	599	442	472	368/419	151	517	190	385/334	65m6*	60m6*	140*	140*	125*	18*	18*	53*	11*	11*	125*			
315S/M (***)												508	120	630	657	525	530	406/457	184	621	216	494/443	65m6*	60m6*	140*	140*	125*	18*	18*	53*	11*	11*	125*	
315L												589	575	508	219	752						497	70m6*	60m6*	140*	140*	125*	20*	18*	62.5*	53*	12*	11*	125*
355M/L												610	140	750	736	609	625	560/630	230	760	254	483/413	90m6*	60m6*	170*	140*	160*	25*	18*	81*	53*	14*	11*	125*
355A/B												701	764			710/800	325	955			528/438	100m6	80m6	210	170	200	28	22	90	71	16	14	160	

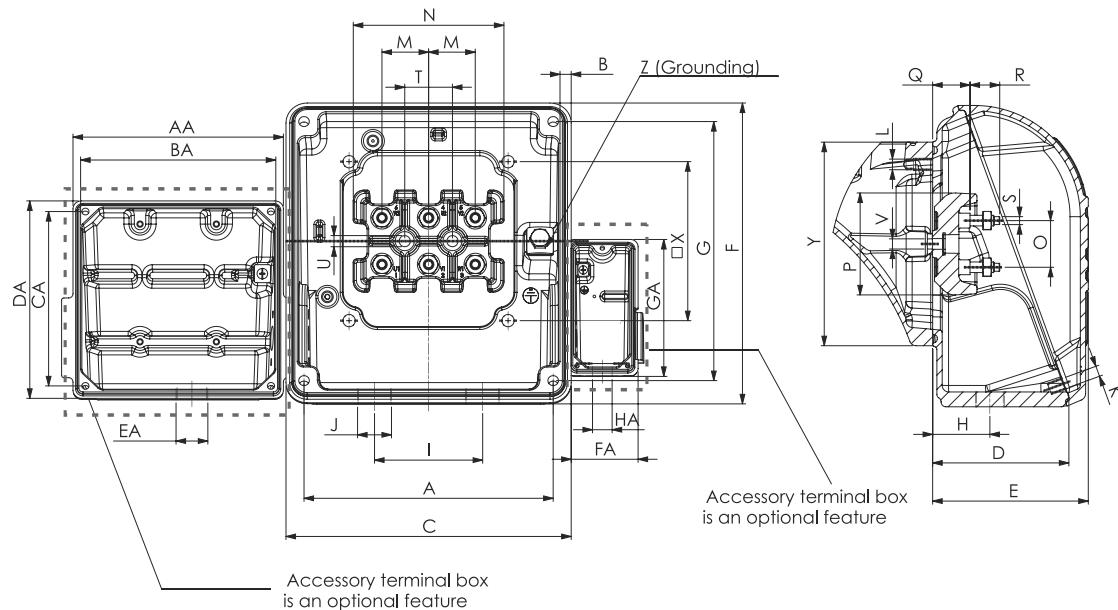
Frame	H	HA	HB	HC	HD	HD [*] (****)	HF	HG	HG [*] (****)	HH	HK	K	L	LC	LL	LM	S1	d1	d2	Bearings					
																				D.E.	N.D.E.				
63	63	7	25.5	129	-	-	68.5	-	-	80										M4	M3	6201 - ZZ			
71	71		33	145	-	-	76	-	-	90										M5		6202 - ZZ			
80	80	8	43.5	163	-	-					87	-	-	100						M6	M4	6204 - ZZ	6203 - ZZ		
L80																									
90S																									
L90S	90	9	45	182	-	-					90	-	-	106						10	304	350			M20x1.5
90L																									
L90L																									
100L																									
L100L	100	10	61.5	205	244	-	106.4	-	-	133										12	376	431			2xM25x1.5
L112M	112		54.5	235	280	-		112	-	-	140									14.5	393	448			2xM32x1.5
L112M																				19.8	642	756			M20
132S	132	20	75	266	319	-		132	-	-	159									14.5	452	519			2xM40x1.5
132M																				18.5	515	582			2xM50x1.5
132M/L																									
160M	160	22	79	327	374	-	168	-	-	213										14.5	598	712			
160L																				14.5	642	756			
180M	180	28	92	363	413	-		180	-	-	241.5									14.5	664	782			
180L																				14.5	702	820			
200M	200	30	119	405	464	-		218	-	-	266.5									14.5	729	842			
200L																				14.5	767	880			
225S/M	225	34	255	453	550	325	403	523	298	212										14.5	856*	974*			
250S/M	250	43	290	493	583	333	449	566	316	214										14.5	886	1034			
280S/M	280	42	383	580	696	416	550	667	387	266										14.5	965	1113			
315S/M																				14.5	1071*	1223*			
315S/M (***)																				14.5	1101	1253			
315L																				14.5	1244*	1392*			
355M/L																				14.5	1274	1426			
355A/B																				14.5	1244*	1392*			
																				14.5	1274	1426			
																				14.5	1353*	1501*			
																				14.5	1383	1535			
																				14.5	1442*	1607*			
					</																				

"NEMA C" Flange

Flange "C"								
Frame	Flange	M	N	P	S	T	α	Nº of holes
63								
71	FC-95	95.2	76.2	143	UNC 1/4"x20			
80								
90								
100	FC-149	149.2	114.3	165	UNC 3/8"x16			
112								
132	FC-184	184.2	215.9	225				
160					UNC 1/2"x13			
180								
200	FC-228	228.6	266.7	280				
225	FC-279	279.4	317.5	395				
250								
280	FC-355	355.6	406.4					
315					455			
355	FC-368	368.3	419.1		UNC 5/8"x11	6.3	22°30'	8



18. Terminal box drawings



Frame	A	B	C	D	E	F	G	H	I	J	J (*)	K	L	M	N	O	P	Q	R	S	T	U
63																						
71	90	3.5	108.5	51.5	59	96	85	27		42	M20x1.5											
80																						
90																						
100	98	3	114.5	59.5	67	101	91	31														
112																						
132	117	2.5	138	71	80	130.5	117	36.5	54		M25x1.5											
160																						
180	175	4	198	90	100.5	187.5	175	49	84		2xM25x1.5											
200	204	4.5	228	107	118	216	204	59	94		2xM32x1.5											
225																						
250	235	12.5	269	133	153	301	260	71	110		2xM40x1.5											
280	275	13.5	314			311	275		126		2xM50x1.5	M50x1.5										
315S/M	340		379	162	182	390	345	78	160													
315L		14.5		404	202	226	422	390	97	200												
355M/L	365										2xM63x1.5	M63x1.5										
355A/B	415	-	442	267	353	729	678	187	140													

Frame	V	X	Y	Z	AA	BA	CA	DA	EA	FA	GA	HA	MAX CONNECTOR NUMBER			
													MAIN	ACCESSORIES	SPACE HEATER	
63				77												
71				78												
80				81												
90				77												
100				81												
112				107												
132				103												
160	M6x1.0	110	140	5.2-25mm ²												
180					139	117	117	133								
200	M8x1.25	120	155	5.2-35mm ²												
225				192												
250				197												
280				204												
315S/M				200	198	175	175	189								
315L				260												
355M/L				300												
355A/B	-	290		85-120mm ²												
				50-70mm ²												

(*) Dimension for Top Premium Efficiency motors

19. Drip cover data

Utilization of a rain drip cover increases the total length of the motor.
The additional land length can be seen an the tabel bellow.



Figure 35 – Motor with drip cover

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



20. Packaging

W22 motors in frames 63 to 132 are packaged in cardboard boxes (see figure 36). following the dimensions. weights and volumes opposite:



Figure 36: Cardboard box

Top mounted terminal box

Frame	External height (m)	External width (m)	External length (m)	Weight (kg)	Volume (m³)
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

Side mounted terminal box

Frame	External height (m)	External width (m)	External length (m)	Weight (kg)	Volume (m³)
63	19.5	23.5	28	0.2	0.01
71	19.5	27.5	30	0.2	0.01
80	21	28	36	0.7	0.02
L80	23.5	31.5	39.8	0.8	0.03
90	23.5	31.5	39.8	0.8	0.03
100L	26.5	35	45.5	1.6	0.04
L100L	31.5	36.5	49.5	1.4	0.06
112M	31	38	45.5	1.7	0.05
132	35	48	59.5	2.1	0.10

Note: Values to be added to the net motor weight

For frames 160 to 355A/B. the motors are packaged in wooden crates (see figure 37). Dimensions. weights and volumes are in tables opposite.



Figure 37: Wooden crates

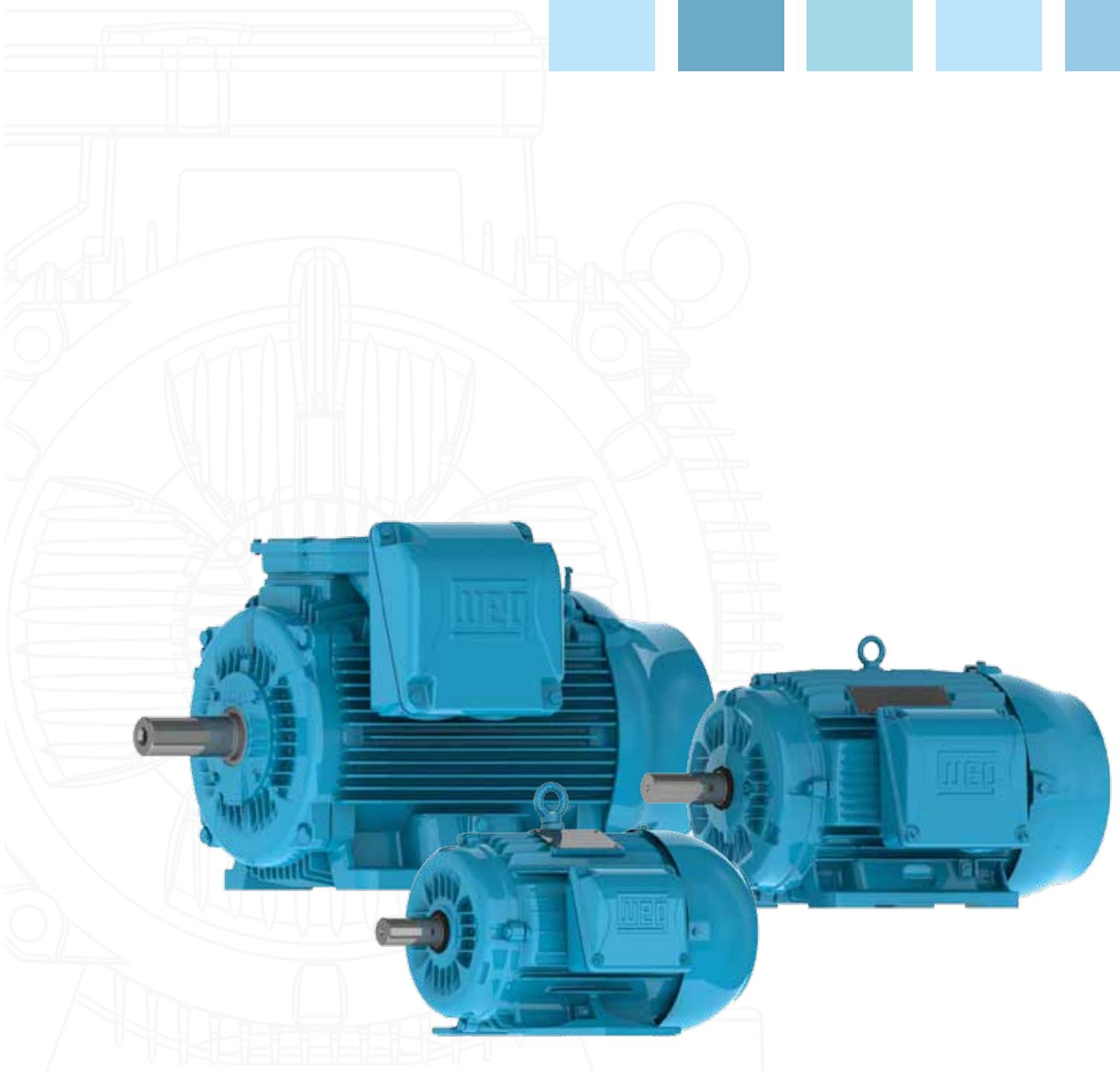
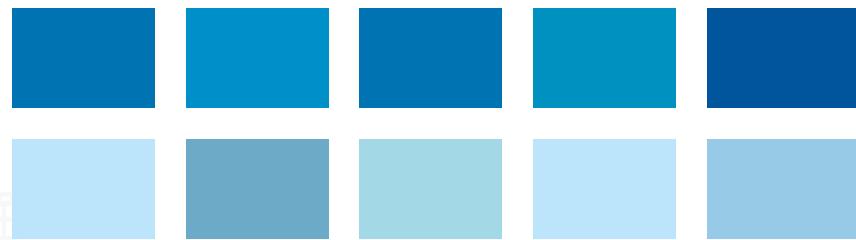
Top mounted terminal box

Frame	External height (m)	External width (m)	External length (m)	Weight (kg)	Volume (m³)
160	40.2	51.2	74	9.8	0.15
180	45.2	57.2	82	13.4	0.21
200	49.2	63.2	88	14.6	0.27
225S/M	78	85	115	47.7	0.76
250S/M	90	85	125	52.2	0.96
280S/M	95	95	140	71.6	1.26
315S/M	113	110	175	88.4	2.18
315L	110.3	112.2	170	138	2.10
355M/L	120	119	172	146	2.46
355A/B	120	119	190	163	2.71

Side mounted terminal box

Frame	External height (m)	External width (m)	External length (m)	Weight (kg)	Volume (m³)
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
355A/B	1.32	1.05	1.90	141	2.63

Note: Values to be added to the net motor weight



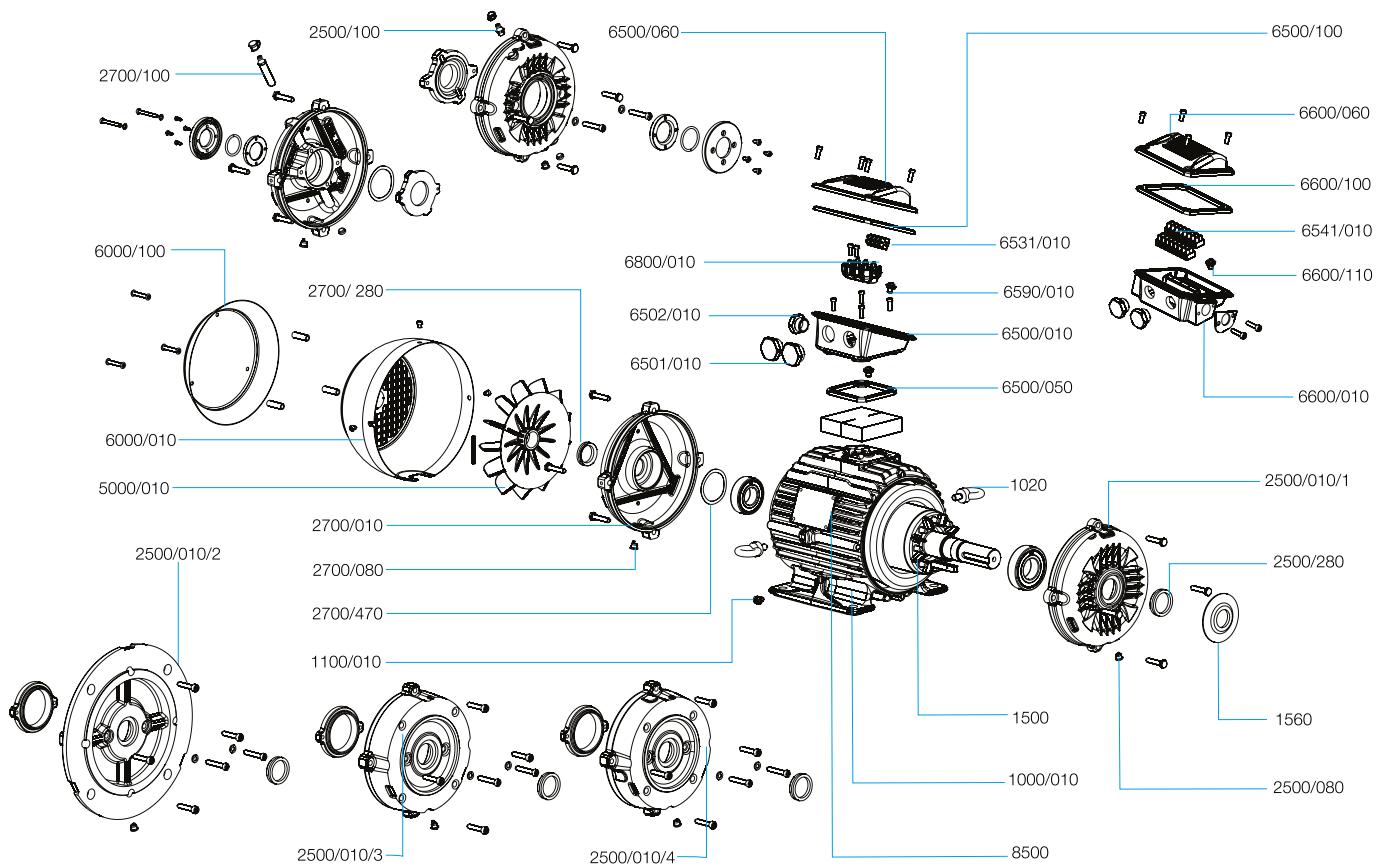
21. Spare parts

General Information

The following information is required when purchasing of spare parts:

- Serial number and manufacturing date, both stamped in the nameplate
- Spare part description
- Codes shown are for reference only. Final codes of spare parts will depend on colour

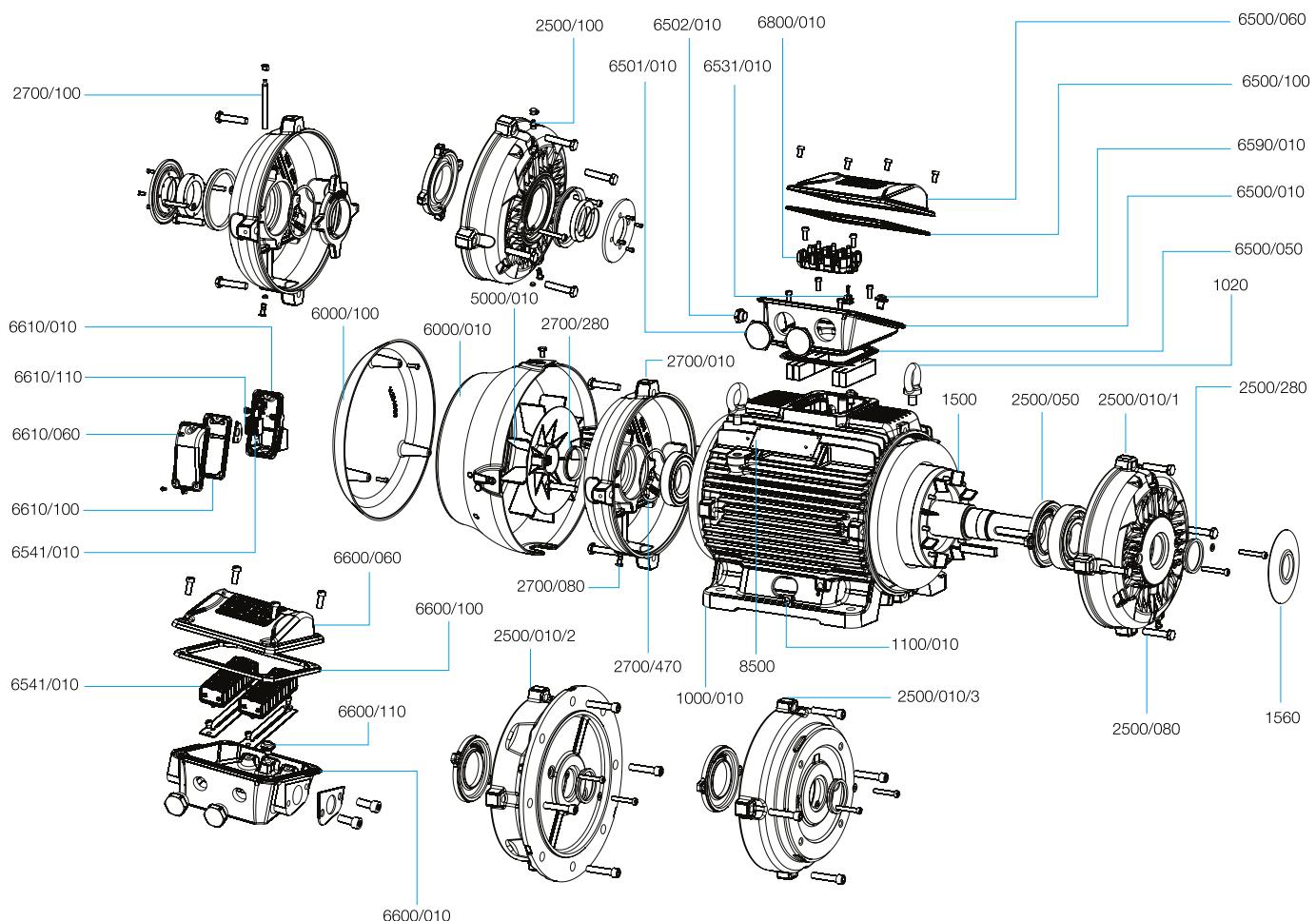
Spare Parts Available 63-112



Motor component		Spare part	
Item	Description	Item	Composition
1000/010	Frame with wound stator		
1020	Lifting eyebolt	1020	Lifting eyebolt
1100/010	Earthing terminal		
1500	Rotor, complete with shaft and key		
1560	Slinger	1560	Slinger (recommended for vertical shaft up applications, non-flange mounted)
2500/010/1	Endshield, drive end	2500/1	Endshield, drain plug, shaft seal, bolts and washers
2500/080	Drain plug, drive end		
2500/100	Grease nipple, drive end (2)		
2500/280	Shaft seal, drive end (1)		
2500/010/2	FF Flange	2500/2	FF Flange, drain plug, shaft seal, bolts and washers
2500/080	Drain plug, drive end		
2500/100	Grease nipple, drive end (2)		
2500/280	Shaft seal, drive end (1)		
2500/010/3	C Flange (5)	2500/3	C Flange, drain plug, shaft seal, bolts and washers
2500/080	Drain plug, drive end		
2500/100	Grease nipple, drive end (2)		
2500/280	Shaft seal, drive end (1)		
2500/010/4	C-DIN Flange (5)	2500/4	C-DIN Flange, drain plug, shaft seal, bolts and washers
2500/080	Drain plug, drive end		
2500/100	Grease nipple, drive end (2)		
2500/280	Shaft seal, drive end (1)		
2700/010	Endshield, non-drive end	2700	Endshield, drain plug, shaft seal, bolts and washers
2700/080	Drain plug, non-drive end		
2700/100	Grease nipple, non-drive end (2)		
2700/280	Shaft seal, non-drive end (1)		
2700/470	Wave washer for axial displacement		
5000/010	Fan	5000	Fan (3)
6000/010	Fan cover (4)	6000	Fan cover, bolts
		6050	Fan cover, drip cover and bolts
6000/100	Drip cover	6100	Drip cover, bolts
6500/010	Terminal box	6500	Terminal box complete with lid, gaskets (for lid and terminal box), plugs (for mains and accessories), earthing terminal, bolts and washers
6500/050	Terminal box gasket		
6500/060	Terminal box lid		
6500/100	Terminal box lid gasket		
6501/010	Terminal box plug for main leads		
6502/010	Terminal box plug for accessory leads		
6590/010	Terminal box earthing terminal		
6531/010	Accessory connector	6531	Accessory connector, mounting rail, bolts and washers
6541/010	Accessory connector	6541	Accessory connector, mounting rail, bolts and washers
6600/010	Accessory terminal box	6600	Accessory terminal box, complete with lid, gasket, plugs, earthing terminal, bolts and washers
6600/060	Accessory terminal box lid		
6600/100	Accessory terminal box lid gasket		
6600/110	Accessory terminal box earthing terminal		
6800/010	Terminal block	6800	Terminal block, bolts and washers
8500	Main nameplate		

Notes:

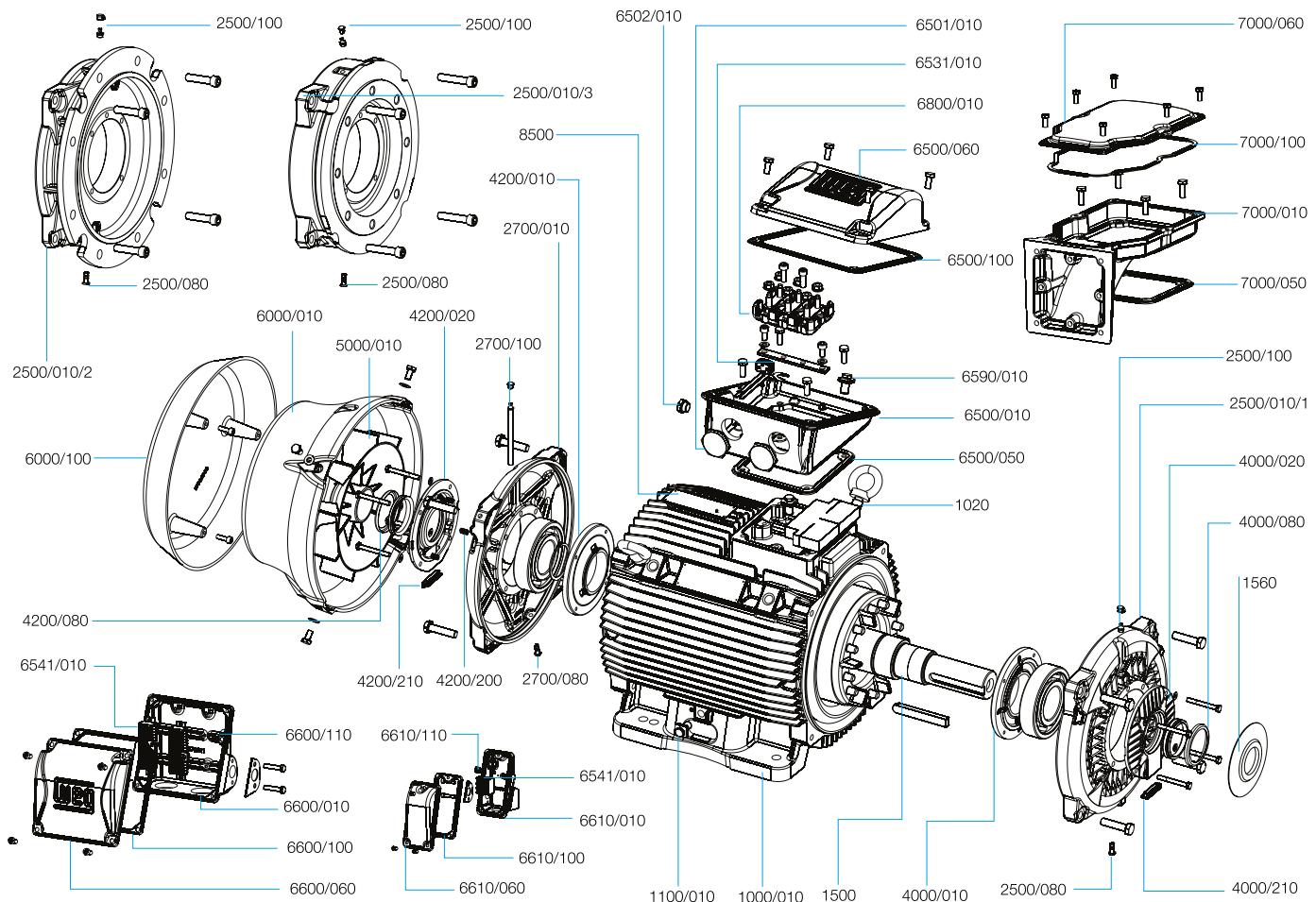
- (1) The shaft sealing may vary with product line. As a spare part, the shaft sealing in the 63-112 range will be supplied as an integral part of the endshield kit. If fitted with labyrinth seal, taconite or W3 Seal®, available from 90 frame upwards.
- (2) When fitted with grease nipple, the endshield spare part kit will also have grease relief, internal bearing cap and labyrinth seal (taconite or W3 Seal®).
- (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. Considering general purpose, it is steel fabricated in the 63-112 frame.
- (5) C flange dimensions according to NEMA MG1 Part 4 standard or DIN.

Spare Parts Available 132-200

Motor component		Spare part	
Item	Description	Item	Composition
1000/010	Frame with wound stator		
1020	Lifting eyebolt	1020	Lifting eyebolt
1100/010	Earthing terminal		
1500	Rotor, complete with shaft and key		
1560	Slinger	1560	Slinger (recommended for vertical shaft up applications, non-flange mounted)
2500/010/1	Endshield, drive end	2500/1	Endshield, bearing cap, drain plug, shaft seal, bolts and washers
2500/050	Bearing cap, internal, drive end		
2500/080	Drain plug, drive end		
2500/280	Shaft seal, drive end (1)		
2500/100	Grease nipple, drive end (2)		
2500/010/2	FF Flange	2500/2	FF Flange, drain plug, shaft seal, bolts and washers
2500/080	Drain plug, drive end		
2500/100	Grease nipple, drive end (2)		
2500/280	Shaft seal, drive end (1)		
2500/010/3	C Flange (7)	2500/3	C Flange, drain plug, shaft seal, bolts and washers
2500/080	Drain plug, drive end		
2500/280	Shaft seal, drive end (1)		
2500/100	Grease nipple, drive end (2)		
2700/010	Endshield, non-drive end	2700	Endshield, drain plug, shaft seal, bolts and washers
2700/080	Drain plug, non-drive end		
2700/100	Grease nipple (with extensor pipe), non-drive end (4)		
2700/280	Shaft seal, non-drive end (1)		
2700/470	Wave washer for axial displacement (3)		
5000/010	Fan	5000	Fan (5)
6000/010	Fan cover (6)	6000	Fan cover, bolts
		6050	Fan cover, drip cover and bolts
6000/100	Drip cover	6100	Drip cover and bolts
6500/010	Terminal box	6500	Terminal box, complete with lid, gaskets (for lid and terminal box), plugs (for mains and accessories), earthing terminal, bolts and washers
6500/050	Terminal box gasket		
6500/060	Terminal box lid		
6500/100	Terminal box lid gasket		
6501/010	Terminal box plug for main leads		
6502/010	Terminal box plug for accessory leads		
6590/010	Terminal box earthing terminal		
6531/010	Accessory connector	6531	Accessory connector, mounting rail, bolts and washers
6541/010	Accessory connector	6541	Accessory connector, mounting rail, bolts and washers
6600/010	Accessory terminal box	6600	Accessory terminal box, complete with lid, gasket, plugs, earthing terminal, bolts and washers
6600/060	Accessory terminal box lid		
6600/100	Accessory terminal box lid gasket		
6600/110	Accessory terminal box earthing terminal		
6610/010	Space heater accessory terminal box	6610	Space heater accessory terminal box, complete with lid, gasket, plugs, earthing terminal, bolts and washers
6610/060	Space heater accessory terminal box lid		
6610/100	Space heater accessory terminal box lid gasket		
6610/110	Space heater accessory terminal box earthing terminal		
6800/010	Terminal block	6800	Terminal block, bolts and washers
8500	Main nameplate		

Notes:

- (1) The shaft seal may vary with product line. As a spare part, the shaft seal in the 132-300 range will be supplied as an integral part of the endshield kit. If fitted with labyrinth seal (taconite or W3 Seal®) internal bearing cap is mandatory from frame 160.
- (2) When fitted with grease nipple, the endshield spare part kit will also have grease relief.
- (3) Valid when ball bearing is fitted in drive end. When the drive end is fitted with roller bearings, the wave washer is not supplied (non-drive end bearing locked with internal bearing cap).
- (4) When fitted with grease nipple in the non-drive end, the endshield spare part kit will also have grease relief and internal bearing cap.
- (5) When non-plastic fan is fitted, the spare part kit is also supplied with key and circlip for fan assembly onto the shaft.
- (6) The fan cover material may vary with product line. Considering general purpose, it is cast iron in the 160-200 range and steel fabricated to 132 frame.
- (7) C flange dimensions according to NEMA MG1 Part 4 standard in the 132-200 range and according to DIN to 132 frame.

Spare Parts Available 225 - 355

Motor component		Spare part	
Item	Description	Item	Composition
1000/010	Frame with wound stator		
1020	Lifting eyebolt	1020	Lifting eyebolt
1100/010	Earthing terminal		
1500	Rotor, complete with shaft and key		
1560	Slinger	1560	Slinger
2500/010/1	Endshield, drive end	2500/1	Endshield, grease nipple, drain plug, bolts and washers
2500/080	Drain plug, drive end		
2500/100	Grease nipple, drive end		
2500/010/2	FF Flange	2500/2	FF Flange, grease nipple, drain plug, bolts and washers
2500/080	Drain plug, drive end		
2500/100	Grease nipple, drive end		
2500/010/3	C Flange (5)	2500/3	C Flange, grease nipple, drain plug, bolts and washers
2500/080	Drain plug, drive end		
2500/100	Grease nipple, drive end		
2700/010	Endshield, non-drive end	2700	Endshield, grease nipple with extensor pipe, drain plug, bolts and washers
2700/080	Drain plug, non-drive end		
2700/100	Grease nipple (with extensor pipe), non-drive end		
4000/010	Bearing cap, internal, drive end	4000	Bearing cap (external and internal), shaft seal, grease relief, bolts and washers
4000/020	Bearing cap, external, drive end		
4000/080	Shaft seal, drive end (1)		
4000/210	Grease relief		
4200/010	Bearing cap, internal, non-drive end	4200	Bearing cap (external and internal), shaft seal, grease relief with extensor pipe, pre-load springs, bolts and washers
4200/020	Bearing cap, external, non-drive end		
4200/080	Shaft seal, non-drive end (1)		
4200/200	Pre-load springs for axial displacement (2)		
4200/210	Grease relief		
5000/010	Fan	5000	Fan (3)
6000/010	Fan cover, cast iron	6000	Fan cover, bolts
6000/050		6050	Fan cover, drip cover and bolts
6000/100	Drip cover	6100	Drip cover and bolts
6500/010	Terminal box	6500	Terminal box, complete with lid, gaskets (for lid and terminal box), plugs (for mains and accessories), earthing terminal, bolts and washers
6500/050	Terminal box gasket		
6500/060	Terminal box lid		
6500/100	Terminal box lid gasket		
6501/010	Terminal box plug for main leads		
6502/010	Terminal box plug for accessory leads		
6590/010	Terminal box earthing terminal		
6531/010	Accessory connector	6531	Accessory connector, mounting rail, bolts and washers
6541/010	Accessory connector	6541	Accessory connector, mounting rail, bolts and washers
6600/010	Accessory terminal box	6600	Accessory terminal box, complete with lid, gasket, plugs, earthing terminal, bolts and washers
6600/060	Accessory terminal box lid		
6600/100	Accessory terminal box lid gasket		
6600/110	Accessory terminal box earthing terminal		
6610/010	Space heater accessory terminal box	6610	Space heater accessory terminal box, complete with lid, gasket, plugs, earthing terminal, bolts and washers
6610/060	Space heater accessory terminal box lid		
6610/100	Space heater accessory terminal box lid gasket		
6610/110	Space heater accessory terminal box earthing terminal		
6800/010	Terminal block	6800	Terminal block, mounting rail, bolts and washers
7000/010	Terminal box adaptor base	7000	Terminal box adaptor for side mounted position, complete with lid, gaskets, bolts and washers
7000/050	Terminal box adaptor base gasket		
7000/060	Terminal box adaptor lid		
7000/100	Terminal box adaptor lid gasket		
8500	Main nameplate (4)		

Notes:

- (1) The shaft sealing may vary with product line. As a spare part, the shaft sealing in the 225-355 range will be supplied as an integral part of the bearing cap kit.
- (2) Valid when ball bearing is fitted in drive end. When the drive end is fitted with roller bearings, pre-load springs are not supplied (non-drive end bearing locked).
- (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) Main nameplate position will vary with terminal box configuration (top and side mounting)
- (5) C flange dimensions according to NEMA MG1 Part 4 standard.

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