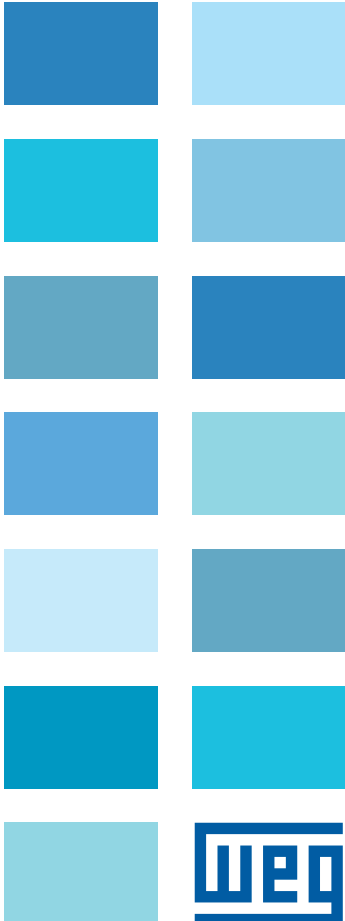
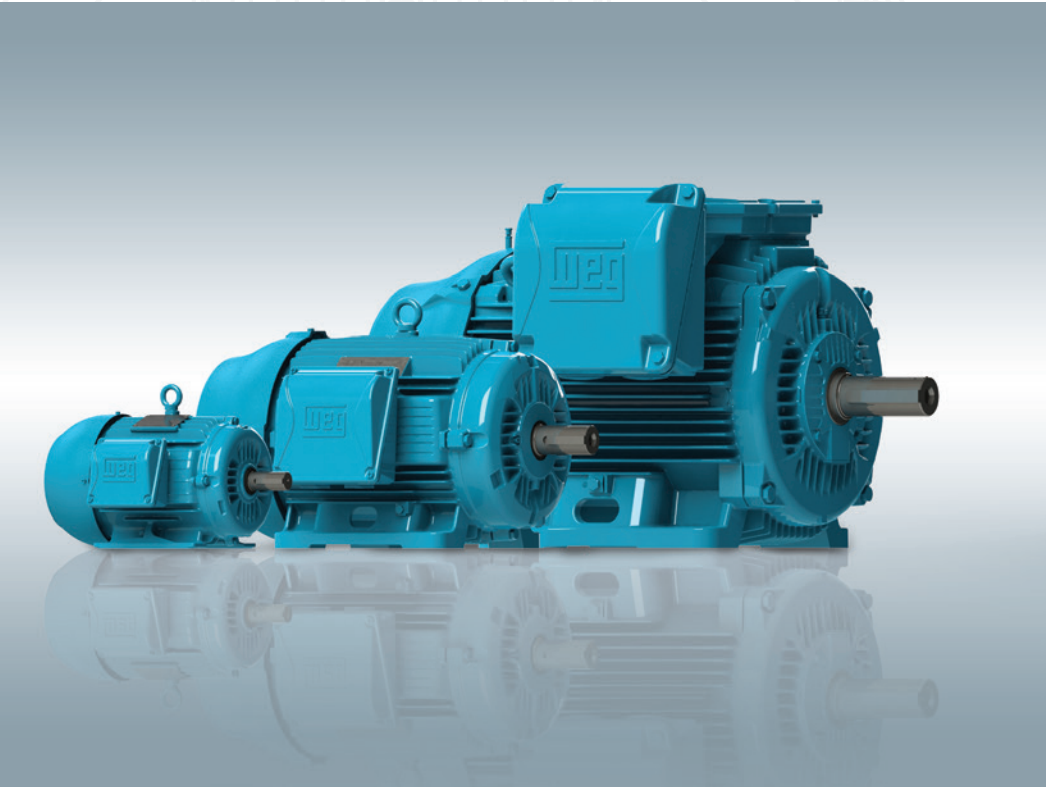


W22

TECHNICAL CATALOG
NEMA MARKET

Three-Phase Electric Motor





W22 Line

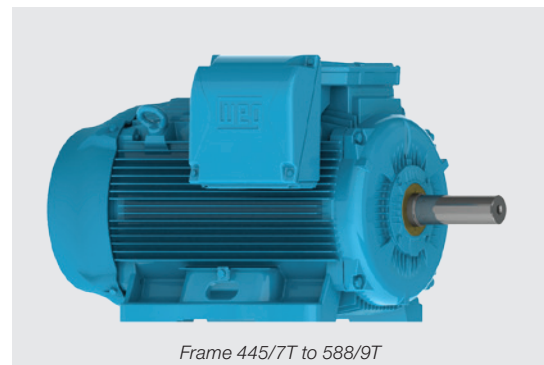
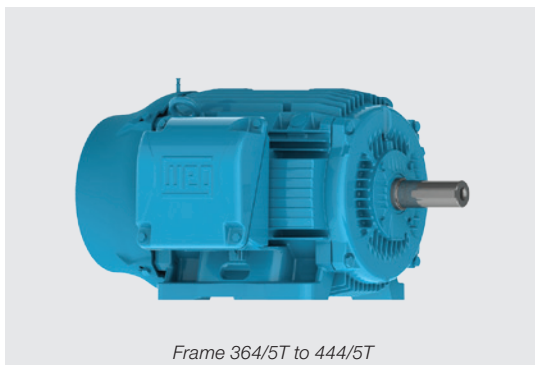
The increasing demand for electrical energy to sustain global development requires consistent heavy investments in power supply generation. However, in addition to complex medium and long term planning, these investments rely on natural resources, which are becoming depleted due to constant pressures 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 the previous WEG's 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 optimization 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 carbon footprint;
- Easy maintenance;
- Compatibility with present & future generations of frequency inverters;
- Flexible and modular design.

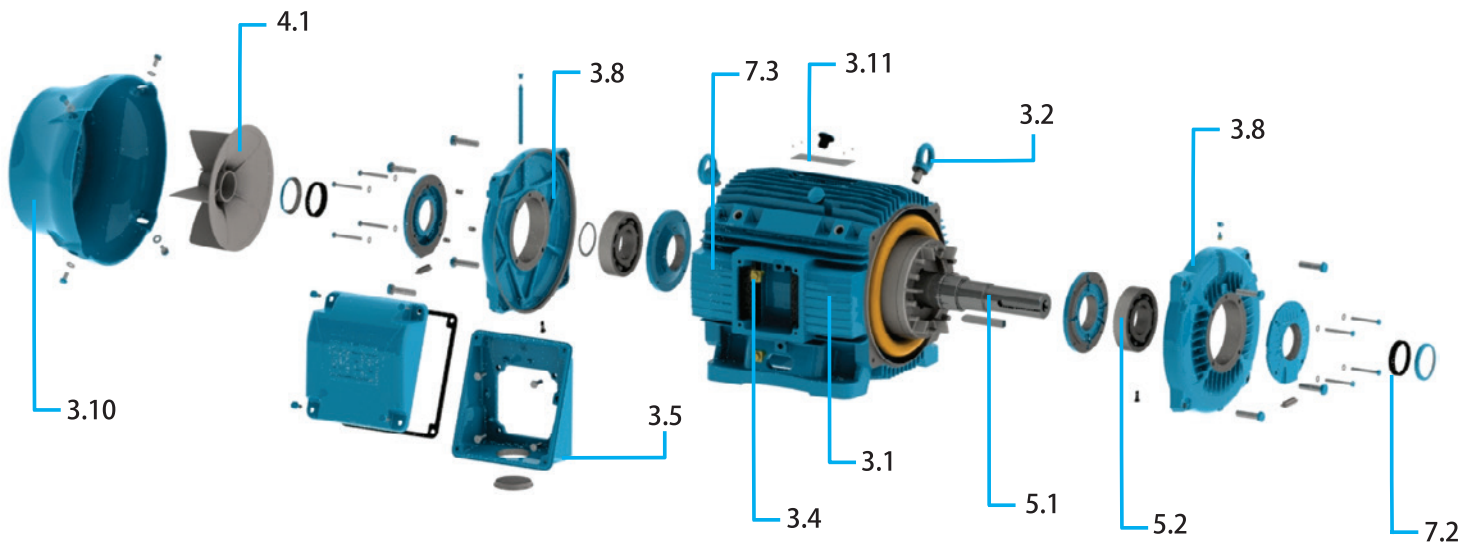


Reducing Carbon Footprint and Cutting Costs with the W22

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 NEMA MG 1-2009, the W22 Super Premium Efficiency, NEMA Premium Efficiency and High Efficiency can reduce energy losses by between 10% and 50% compared with other typical motors. It's an extremely effective way to reduce your carbon footprint, as well as your energy costs.

W22 motors fully comply with the energy efficiency requirements of the EISA 2007 (Energy Independence and Security Act 2007) from USA and EcoAction from Canada.



Visual Index



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1. Versions Available

W22 NEMA Motors are available in three versions: W22 High Efficiency, NEMA Premium Efficiency and Super Premium Efficiency. These versions are in accordance with the tables 12-11 and 12-12 from NEMA MG-1.

2. Standards

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

| | |
|----------------------|--|
| CSA C22.2 No. 100-04 | Motor and Generators |
| CSA C390 | Test Methods, Marking Requirements and Energy Efficiency Levels for Three-Phase Induction Motors |
| IEEE STD 112 | IEEE Standard Test Procedure for Polyphase Induction Motors and Generators |
| NEMA MG-1 | Motors and Generators |
| UL 1004-1 | Rotating Electrical Machines - General Requirements |

Table 1 - Standards

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 143T to 588/9T.

W22 motors for special and/or customized applications are available on request. For more information, please contact your WEG office or distributor.

3.1 Frame

The W22 frame (figure 1) 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 1 - W22 Frame.

The motor feet are completely solid for better mechanical strength (figure 2), allowing easier alignment and installation.

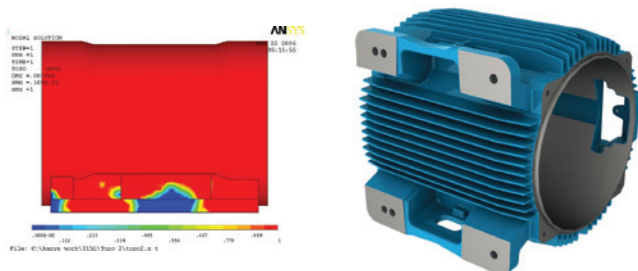


Figure 2 - Solid feet.

3.2 Eyebolts

Eyebolts are available from frame size 182T. The quantity of eyebolts for each frame and mounting is shown in the table 2.

| Number of eyebolts | Description |
|--------------------|---|
| 1 | Frames 182T to 326T Motors with feet and with side mounted terminal box |
| 2 | Frames 182T to 444/5T Motors with feet and with top mounted terminal box |
| 2 | Frames 182T to 444/5T - Motors without feet and with C or D flange |
| 2 | Frames 445/7T to 588/9T - Motors with feet and side or top mounted terminal box. These motors have four threaded holes in the upper part of the frame for fastening of the eyebolts (figure 3) |
| 2 | Frames 445/7T to 588/9T - Motors without feet and with C or D flange. These motors have four threaded holes in the upper part of the frame for fastening of the eyebolts and two more threaded holes in the bottom part |

Table 2 - Eyebolts.

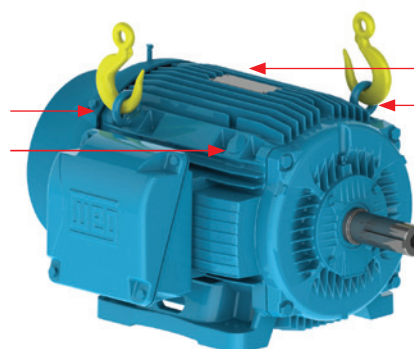


Figure 3 - Motor with four threaded holes for fastening of the eyebolts.

3.3 Points for Vibration Monitoring

To allow easy maintenance, specifically for vibration testing, the 254T to 588/9T frames are designed with flat areas on both ends for better placement of the accelerometer (figure 4). 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.

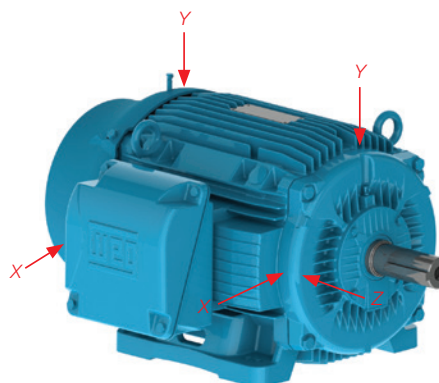


Figure 4 - Flat surfaces for vibration monitoring on the back and front side.

3.4 Grounding

All frames from 143T to 588/9T are provided with earth terminals located inside the terminal box (see figure 5). Motors on frames 364/5T to 588/9T are fitted with one more earth terminal in the frame. It is located at the same side of the terminal box cable outlet (see figure 5) and is responsible to equalize electrical potential and provide greater safety for operators. Capable of withstanding cables from 25 mm² to 185 mm².

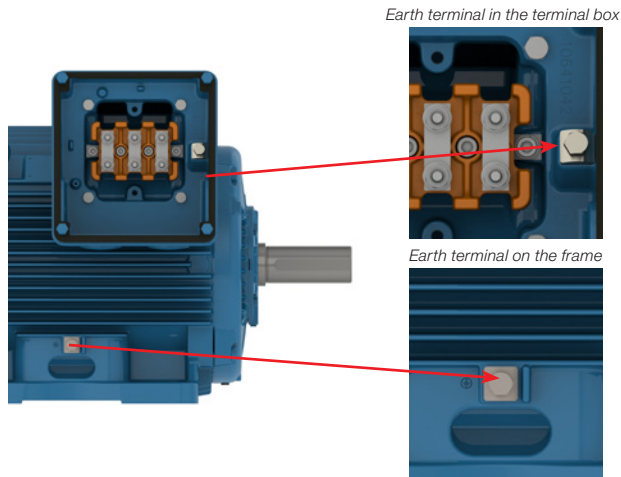


Figure 5 - Earth terminals in the terminal box and on the frame

Optionally, the motors in frames 143T up to 588/9T can be supplied with an additional earth terminal on the opposite side of the frame (see figure 6).

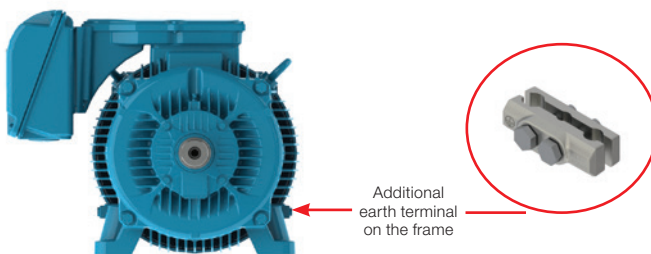


Figure 6 - Additional earth terminal position on the frame.

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.

For frame sizes 445/7T to 588/9T 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 7).

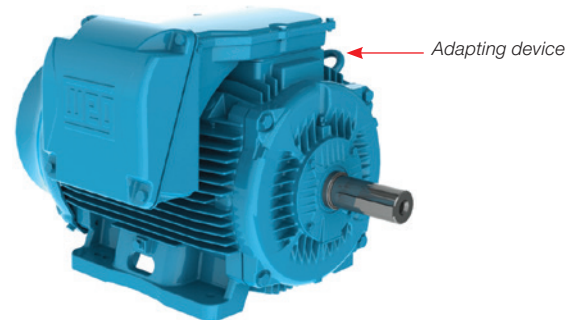


Figure 7 - Terminal box mounted on the left side viewing from shaft drive end side

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 8.

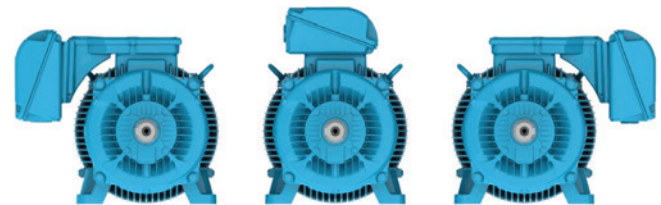


Figure 8 - Terminal box mounted on both sides and on top (versatility).

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 the frame size range 143T to 444/5T the terminal box position 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.

Note: for all terminal box position modifications please contact WEG or your local WEG service centre.

For all frames, the terminal box can be rotated in 90° increments. Motors in frame sizes 504/5T, L447/9T, 586/7T and 588/9T are supplied with removable cast iron gland plates.

As an option, the gland plates can be supplied undrilled. Motors are supplied with plastic 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 NEMA MG-1 Part 2 - Terminal Markings and, as optional, can be fitted with a terminal block made from a polyester based resin BMC (Bulk Molding Compound), duly reinforced with fibre glass (see figure 9).



Figure 9 - Six-pin terminal block.

Motors 588/9T, as optional, can be provided with the terminal block as shown in the figure 10.



Figure 10 - 588/9T 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 11).

Whether the accessory terminals are assembled inside the main power or a separate terminal box, an NPT 3/4" threaded hole is provided for fitting of cable glands for the incoming connection leads.

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

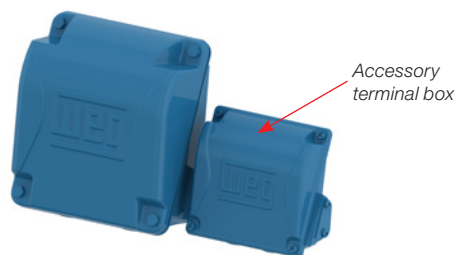


Figure 11 - Accessory terminal box attached to power terminal box.

For frames 213T to 588/9T, there is also the option of providing a dedicated terminal box for the connection of space heaters as shown in figure 12.

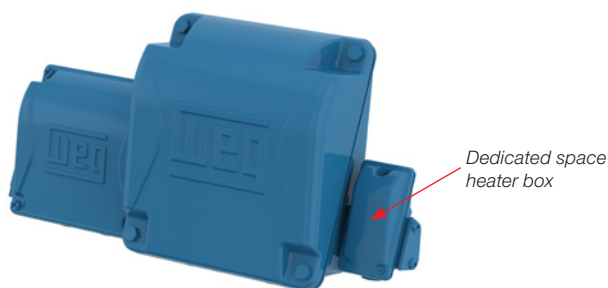


Figure 12 - Two accessory terminal boxes attached to power terminal box.

3.8 Endshields

The drive end endshield (figure 13) is designed with fins for better thermal heat dissipation, and to ensure low bearing operating temperatures, resulting in extended lubrication intervals.

For the frames 364/5T to 588/9T, 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.

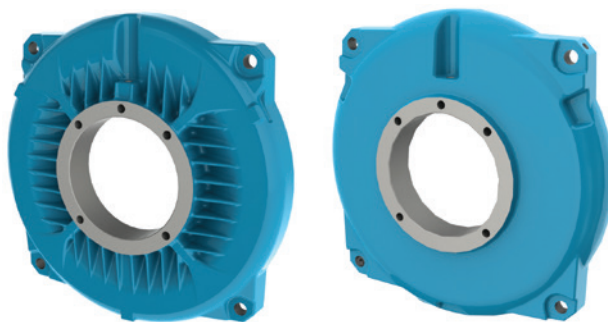


Figure 13 - Drive and non-drive endshields

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 14. These plugs leave the factory in the closed position and must be opened periodically to allow the exit of condensed water.

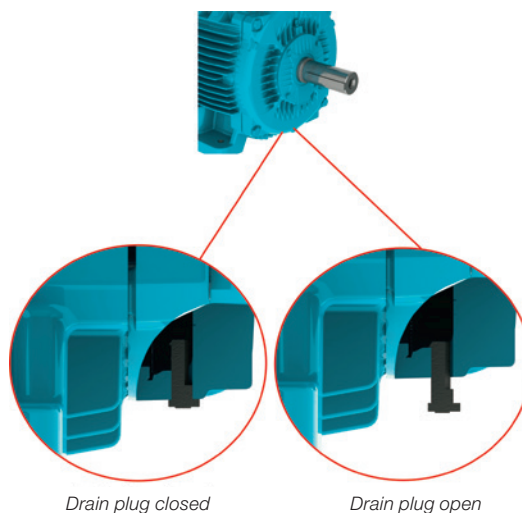


Figure 14 - Detail of the drain plug position on drive endshield

3.10 Fan Cover

The fan cover is made of steel for frames 143T to 215T and FC-200 cast iron for frames 254T to 588/9T. 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 15 shows the aerodynamic design of the cast iron fan cover.



Figure 15 - Fan cover.

3.11 Nameplate

The nameplate supplies information determining motor construction and performance characteristics. The line name is given on the first line of the nameplate together with nominal efficiency levels as required by NEMA MG-1.



Figure 16 - Nameplate position of W22 motors.

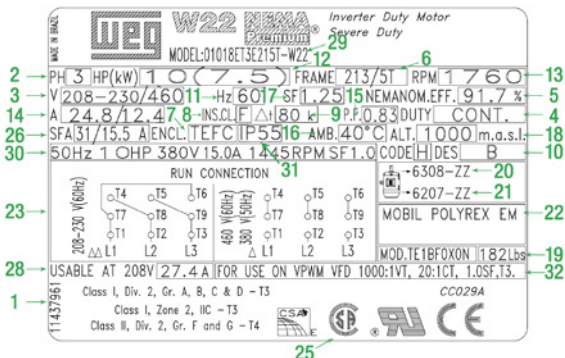


Figure 17 - Nameplate layout for frames 143T to 215T

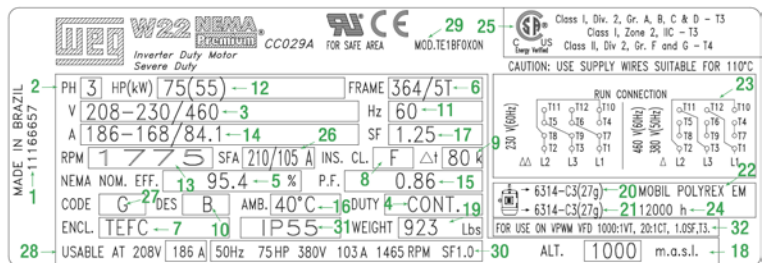


Figure 18 - Nameplate layout for frames 254T to 588/9T

- 1 - Motor code
- 2 - Three-phase
- 3 - Rated operating voltage
- 4 - Service duty
- 5 - Efficiency
- 6 - Frame size
- 7 - Enclosure
- 8 - Insulation class
- 9 - Temperature rise
- 10 - Design
- 11 - Frequency
- 12 - Motor rated power
- 13 - Full load speed (rpm)
- 14 - Rated operating current
- 15 - Power factor
- 16 - Ambient temperature
- 17 - Service factor
- 18 - Altitude
- 19 - Motor weight
- 20 - Drive end bearing specification and amount of grease
- 21 - Non-drive end bearing specification and amount of grease
- 22 - Type of grease for bearings
- 23 - Connection diagram
- 24 - Relubrication intervals in hours
- 25 - Certification labels*
- 26 - Service factor current
- 27 - NEMA code letters for locked rotor kVA
- 28 - Current at 208 V
- 29 - Model
- 30 - Derating 50 Hz
- 31 - Degree of protection
- 32 - VFD supply

Note: *A CE mark will be available on nameplate if motor frequency shall be 50 Hz or 50/60 Hz.

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

4.1 Cooling System and Noise level

The W22 standard motors are totally enclosed fan cooled (IC411), as per NEMA MG-1 Part 6 (figure 19). Non-ventilated versions (TENV), air over (TEAO) and with forced ventilation TEBC (IC416) are available on request. More information about IC416 option can be found in section 12 - Variable speed drive application.

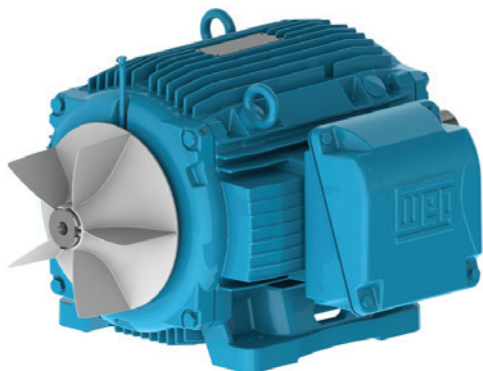


Figure 19 - Cooling system.

The cooling system (fan, non drive end endshield and fan cover) is designed to minimize the noise level and improve thermal efficiency (figure 20).

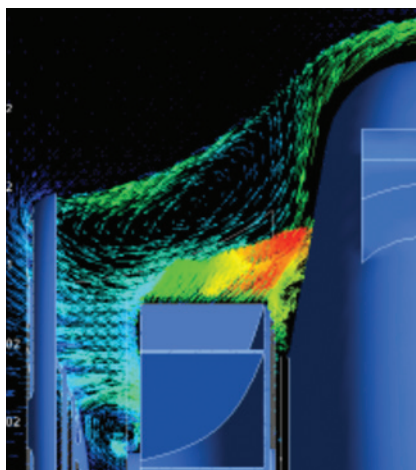


Figure 20 - Cooling system operation

4.2 Noise level

W22 motors comply with NEMA MG-1 Part 9 Standard and the corresponding sound pressure levels. Table 3 shows sound pressure levels in dB(A) which is obtained upon tests at 60 Hz.

| Frame | Sound Pressure Level - dB(A) | | | |
|---------|------------------------------|---------|---------|---------|
| | 2 Poles | 4 Poles | 6 Poles | 8 Poles |
| 143/5T | 68 | 51 | 49 | 47 |
| 182/4T | 69 | 58 | 52 | 50 |
| 213/5T | 72 | 61 | 55 | 52 |
| 254/6T | 72 | 64 | 59 | 54 |
| 284/6T | 72 | 64 | 59 | 54 |
| 324/6T | 76/ 74* | 68/ 66* | 62 | 56 |
| 364/5T | 80/ 79* | 70/ 67* | 64 | 60 |
| 404/5T | 80/ 79* | 70/ 68* | 64 | 60 |
| 444/5T | 81 | 73 | 69 | 63 |
| L447/9T | 82 | 79 | 71 | 64 |
| 504/5T | 81 | 75 | 70 | 64 |
| 586/7T | 84 | 81/ 78* | 77 | 75 |
| 588/9T | 89 | 81 | 77 | 75 |

* Applicable to NEMA Premium Efficiency and Super Premium Efficiency motors
Table 3 - Sound pressure levels for 60 Hz motors.

The noise level values shown in table 3 are taken at no load. Under load the NEMA MG-1 Part 9 foresees an increase of the sound pressure levels as shown in table 4.

| Rated Output, HP | 2 poles | 4 poles | 6 poles | 8 poles |
|------------------|---------|---------|---------|---------|
| 1.0 < HP ≤ 15 | 2 | 5 | 7 | 8 |
| 15 ≤ HP ≤ 50 | 2 | 4 | 6 | 7 |
| 50 ≤ HP ≤ 150 | 2 | 3 | 5 | 6 |
| 150 ≤ HP ≤ 500 | 2 | 3 | 4 | 6 |

Table 4 - Maximum expected increase of sound pressure level for loaded motors.

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

4.3 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 to obtain 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 NEMA MG-1 Part 7. As an option, motors can be supplied with special vibration levels.

4.4 Impact Resistance

The W22 motor complies with impact level IK08 - mechanical impact of 5J as per EN 62262 - 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

The shaft of W22 standard motors is made of AISI 1040/45 steel, in frames 143T to 364/5T (all polarities), and 404/5T, 444/5T, 445/7T and 504/5T (2 poles) and in AISI 4140 steel for frames 404/5T and up (4 poles) and 447/9T, L447/9T, 586/7T and 588/9T (2 poles). When supplied with roller bearings (optional for frames 213T and above), the shaft material must be AISI 4140.

When fitted with AISI 4140 steel shafts, W22 motors can employ roller bearings, making them suitable for heavy duty applications such as pulley and belt applications. The maximum allowable radial load on shaft ends is in accordance with NEMA MG-1 Part 14 Table 14-1A.

Important: Under such circumstances, the non-drive end bearing cap needs to be replaced as the non-drive end bearing must be locked.

For frames 364/5T and above, the shaft are supplied with a threaded centre hole and have dimensions shown in section 15 - Mechanical Data.

W22 motors can be supplied with a second shaft end on request. As an option, W22 motors can be supplied with stainless steel shafts (AISI 304, 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 deep groove ball bearings as standard (figure 21). Optionally, frame size 254T and above can be supplied with NU series roller bearings, where high radial loads may occur.

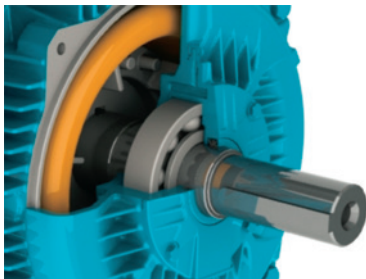


Figure 21 - Bearing view.

The nominal bearing life L10h is 26,280 hours in conformance with maximum radial/axial loads as described in tables 6 and 7. In standard configuration, with ball bearings, the drive end bearing is locked axially from frame 254T. To compensate for any axial movement the motors are fitted with spring washers for frames 143T to 326T and with pre-load springs for frames 364/5T to 588/9T.

When provided with roller bearings, the non-drive end bearing is locked and the axial movement is compensated by the axial play of the front roller bearing.

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 frames 254T and above are provided as standard with grease fittings in each endshield to permit the relubrication of the

bearings. The lubrication interval is stamped on nameplate. The lubrication interval is shown in tables 8 and 9, page 12.

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: L10 lifetime means that at least 90% of the bearings submitted to the maximum indicated loads will reach the number of hours indicated. For bearing lifetime in combined axial and radial loads condition contact WEG.

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 lubrication intervals to those indicated in the tables provided within this technical catalog.

2 - Roller bearings

Roller bearings require a minimum radial load to ensure correct operation. They are not recommended for direct coupling arrangements, or for use on 2 pole motors (60 Hz).

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.

5.2.1 Permissible Loads

Permissible loads are in accordance with NEMA MG-1 (Table 14-1A), as shown in table 5.

| Shaft loading for AC induction horizontal motors with ball bearings Maximum radial overhung load, in pounds, at center of N-W dimension | | | | |
|--|---------|---------|---------|---------|
| Frame sizes | 2 poles | 4 poles | 6 poles | 8 poles |
| 143T | 106 | 154 | 179 | 192 |
| 145T | 109 | 154 | 176 | 196 |
| 182T | 180 | 227 | 260 | 287 |
| 184T | 180 | 227 | 260 | 289 |
| 213T | 230 | 300 | 350 | 380 |
| 215T | 230 | 300 | 350 | 380 |
| 254T | 470 | 593 | 703 | 774 |
| 256T | 470 | 589 | 705 | 776 |
| 284T | 570 | 735 | 838 | 929 |
| 286T | 570 | 735 | 838 | 929 |
| 324T | 660 | 860 | 990 | 1100 |
| 326T | 660 | 850 | 980 | 1090 |
| 364T | 820 | 1080 | 1240 | 1390 |
| 365T | 820 | 1080 | 1240 | 1370 |
| 404T | - | 1270 | 1450 | 1600 |
| 405T | - | 1290 | 1480 | 1630 |
| 444T | - | 1560 | 1760 | 1970 |
| 445T | - | 1520 | 1760 | 1970 |
| 447T | - | 1450 | 1660 | 1880 |
| 449T | - | 1490 | 1660 | 1880 |

Table 5 - Permissible loads for NEMA motors.

- 1 - All belt loads are considered to act in vertically downward direction.
- 2 - Overhung loads include belt tension and weight of sheave.
- 3 - For load at end of the shaft subtract 15%.
- 4 - Radial overhung load limitis based on bearing L-10 life of 26,280 hours.
- 5 - Overhung load limitis do not include any effect of unbalanced magnetic pull.

Radial Loads - Roller bearings

| Maximum permissible radial load in pounds - 60 Hz L10 26,280 hours | | | | | | |
|--|---------|------|---------|------|---------|------|
| Frame | 4 poles | | 6 poles | | 8 poles | |
| | (N-W)/2 | N-W | (N-W)/2 | N-W | (N-W)/2 | N-W |
| 254/6T | 1435 | 895 | 1435 | 895 | 1435 | 895 |
| 284/6T | 2290 | 1190 | 2290 | 1190 | 2290 | 1190 |
| 324/6T | 2650 | 1615 | 2695 | 1640 | 2675 | 1615 |
| 364/5T | 3280 | 1840 | 3300 | 1865 | 3325 | 1885 |
| 404/5T | 4450 | 2675 | 4470 | 2675 | 4470 | 2675 |
| 444/5T | 5930 | 3640 | 6650 | 3640 | 6720 | 3685 |
| 445/7T | | | | | | |
| 447/9T | 6515 | 3255 | 6065 | 3030 | 6450 | 3235 |
| L447/9T | | | | | | |
| 504/5T | 5460 | 3210 | 5485 | 3235 | 5485 | 3235 |
| 586/7T | 7280 | 3910 | 7080 | 3705 | 6945 | 3480 |
| 588/9T | 6830 | 3100 | 6065 | 2135 | 6945 | 3480 |

Table 6 - Maximum permissible radial load for roller bearings.
Note: the values given for roller bearings take into consideration shaft supplied with steel AISI 4140 (Special order on frames 365T and below).

Axial Loads

| Maximum permissible axial load - 60 Hz - 26,280 hours - in pounds | | | | | | | |
|---|-------|------------|---------|-----------------------------|---------|-------------------------------|---------------|
| Frame | Poles | Horizontal | | Vertical with shaft upwards | | Vertical with shaft downwards | |
| | | Pushing | Pulling | Pushing | Pulling | Pushing | Pulling |
| 143T | 2 | 70 | 70 | 70 | 80 | 80 | 70 |
| | 4 | 100 | 100 | 90 | 110 | 110 | 90 |
| | 6 | 130 | 130 | 120 | 140 | 140 | 120 |
| | 8 | 150 | 150 | 140 | 160 | 160 | 140 |
| 182/4T | 2 | 130 | 130 | 120 | 150 | 150 | 120 |
| | 4 | 180 | 180 | 160 | 210 | 210 | 160 |
| | 6 | 230 | 230 | 210 | 270 | 270 | 210 |
| | 8 | 280 | 280 | 260 | 310 | 310 | 260 |
| 213/5T | 2 | 230 | 230 | 210 | 270 | 270 | 210 |
| | 4 | 310 | 310 | 280 | 360 | 360 | 280 |
| | 6 | 380 | 380 | 360 | 430 | 430 | 360 |
| | 8 | 440 | 440 | 400 | 520 | 520 | 400 |
| 254/6T | 2 | 460 | 300 | 420 | 360 | 530 | 260 |
| | 4 | 540 | 380 | 480 | 470 | 640 | 330 |
| | 6 | 650 | 490 | 600 | 600 | 750 | 430 |
| | 8 | 720 | 560 | 650 | 670 | 830 | 490 |
| 284/6T | 2 | 610 | 400 | 540 | 510 | 710 | 340 |
| | 4 | 730 | 530 | 650 | 650 | 850 | 450 |
| | 6 | 850 | 650 | 760 | 810 | 1010 | 560 |
| | 8 | 990 | 790 | 910 | 920 | 1120 | 710 |
| 324/6T | 2 | 650 | 420 | 540 | 600 | 820 | 310 |
| | 4 | 800 | 570 | 690 | 760 | 990 | 460 |
| | 6 | 960 | 730 | 830 | 940 | 1170 | 610 |
| | 8 | 1090 | 870 | 970 | 1070 | 1300 | 740 |
| 364/5T | 2 | 790 | 610 | 620 | 870 | 1050 | 440 |
| | 4 | 1000 | 820 | 810 | 1110 | 1280 | 630 |
| | 6 | 1190 | 1010 | 980 | 1350 | 1530 | 800 |
| | 8 | 1370 | 1210 | 1170 | 1530 | 1690 | 1000 |
| 404/5T | 2 | 750 | 570 | 550 | 900 | 1070 | 380 |
| | 4 | 1070 | 890 | 810 | 1300 | 1480 | 640 |
| | 6 | 1280 | 1110 | 1000 | 1550 | 1730 | 830 |
| | 8 | 1440 | 1260 | 1150 | 1750 | 1930 | 970 |
| 444/5T 445/7T | 2 | 720 | 550 | 440 | 1000 | 1170 | 260 |
| | 4 | 1210 | 1030 | 830 | 1660 | 1840 | 650 |
| | 6 | 1570 | 1390 | 1210 | 1960 | 2110 | 1030 |
| | 8 | 1710 | 1530 | 1280 | 2200 | 2380 | 1110 |
| 447/9T L447/9T | 2 | 710 | 540 | Under request | 1300 | 1480 | Under request |
| | 4 | 1550 | 1370 | 850 | 2430 | 2590 | 670 |
| | 6 | 1870 | 1690 | 1210 | 2740 | 2920 | 1030 |
| | 8 | 2160 | 2000 | 1480 | 3030 | 3210 | 1330 |
| 504/5T | 2 | 640 | 470 | Under request | 1080 | 1260 | Under request |
| | 4 | 1070 | 890 | 520 | 1730 | 1910 | 340 |
| | 6 | 1260 | 1090 | 660 | 2090 | 2270 | 490 |
| | 8 | 1480 | 1300 | 810 | 2340 | 2520 | 640 |
| 586/7T 588/9T | 2 | 570 | 390 | Under request | 1300 | Under request | Under request |
| | 4 | 1150 | 980 | Under request | 2430 | Under request | Under request |
| | 6 | 1330 | 1170 | Under request | 2880 | Under request | Under request |
| | 8 | 1480 | 1300 | Under request | 3350 | Under request | Under request |

Table 7 - Maximum permissible axial loads for ball bearings.

Lubrication Intervals (40 °C - Rated Speed)

| Lubrication intervals (hours) | | | |
|-------------------------------|------|---------|--------|
| Frame | RPM | Bearing | 60 Hz |
| 143/5 | 3600 | 6205 | 25,000 |
| | 1800 | | |
| | 1200 | | |
| | 900 | | |
| 182/4 | 3600 | 6207 | 25,000 |
| | 1800 | | |
| | 1200 | | |
| | 900 | | |
| 213/5 | 3600 | 6208 | 25,000 |
| | 1800 | | |
| | 1200 | | |
| | 900 | | |
| 254/6T | 3600 | 6309 | 25,000 |
| | 1800 | | |
| | 1200 | | |
| | 900 | | |
| 284/6T | 3600 | 6311 | 25,000 |
| | 1800 | | |
| | 1200 | | |
| | 900 | | |
| 324/6T | 3600 | 6312 | 25,000 |
| | 1800 | | |
| | 1200 | | |
| | 900 | | |
| 364/5T | 3600 | 6314 | 4,000 |
| | 1800 | | 12,000 |
| | 1200 | | 17,000 |
| | 900 | | 20,000 |
| 404/5T | 3600 | 6314 | 4,000 |
| | 1800 | | 10,000 |
| | 1200 | | 16,000 |
| | 900 | | 20,000 |
| 444/5T 445/7T | 3600 | 6319 | 4,000 |
| | 1800 | | 8,000 |
| | 1200 | | 13,000 |
| | 900 | | 17,000 |
| 447/9T L447/9T | 3600 | 6322 | 4,000 |
| | 1800 | | 6,000 |
| | 1200 | | 11,000 |
| | 900 | | 14,000 |
| 504/5T | 3600 | 6314 | 4,000 |
| | 1800 | | 8,000 |
| | 1200 | | 13,000 |
| | 900 | | 17,000 |
| 586/7T 588/9T | 3600 | 6322 | 4,000 |
| | 1800 | | 6,000 |
| | 1200 | | 11,000 |
| | 900 | | 14,000 |

Table 8 - Lubrication intervals for ball bearings.
Note: the amount of grease is indicated on the nameplate.

| Lubrication intervals (hours) | | | | |
|-------------------------------|------|---------|--------|--------|
| Frame | RPM | Bearing | 60 Hz | |
| 254/6T | 3600 | NU309 | 12,000 | |
| | 1800 | | 25,000 | |
| | 1200 | | | |
| | 900 | | | |
| 284/6T | 3600 | NU311 | | 8,000 |
| | 1800 | | 25,000 | |
| | 1200 | | | |
| | 900 | | | |
| 324/6T | 3600 | NU312 | | 6,000 |
| | 1800 | | 21,000 | |
| | 1200 | | | |
| | 900 | | | |
| 364/5T | 1800 | NU314 | | 9,000 |
| | 1200 | | 13,000 | |
| | 900 | | | 19,000 |
| | 1800 | | | |
| 404/5T | 1800 | NU316 | | |
| | 1200 | | 12,000 | |
| | 900 | | | 17,000 |
| | 1800 | | | |
| 444/5T 445/7T | 1800 | NU319 | | |
| | 1200 | | 9,000 | |
| | 900 | | | 15,000 |
| | 1800 | | | |
| 447/9T L447/9T | 1800 | NU322 | | |
| | 1200 | | 7,000 | |
| | 900 | | | 13,000 |
| | 1800 | | | |
| 504/5T | 1800 | NU319 | | |
| | 1200 | | 9,000 | |
| | 900 | | | 15,000 |
| | 1800 | | | |
| 586/7T 588/9T | 1800 | NU322 | | |
| | 1200 | | 7,000 | |
| | 900 | | | 13,000 |
| | 1800 | | | |

Table 9 - Lubrication intervals for roller bearings.
Note: the amount of grease is indicated on the nameplate.

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 RTD 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

Motors are supplied, as standard, in the F-1 configuration, with the terminal box on left hand side of the motor frame when looking from the drive end shaft.



Figure 22 - F-1 mounting.

The mounting configuration for the W22 motor lines comply with NEMA MG-1 Part 4. Standard mounting forms and their variations are shown in table 10.

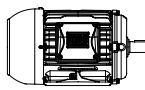
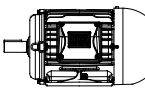
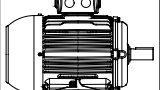

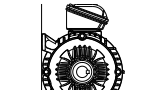

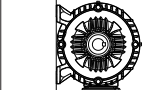
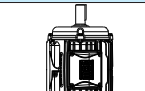
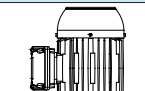
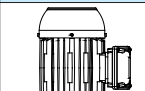








| Floor mountings | | | |
|---|---|---|---|
| Assembly F-1 | Assembly F-2 | Assembly F-3 | |
|  |  |  | |
| Wall mountings | | | |
| Assembly W-1 | Assembly W-2 | Assembly W-3 | Assembly W-4 |
|  |  |  |  |
| Assembly W-5 | Assembly W-6 | Assembly W-7 | Assembly W-8 |
|  |  |  |  |
| Assembly W-9 | Assembly W-10 | Assembly W-11 | Assembly W-12 |
|  |  |  |  |
| Ceiling mountings | | | |
| Assembly C-1 | Assembly C-2 | Assembly C-3 | |
|  |  |  | |

Table 10 - Mountings configurations.

7. Degree of Protection / Sealing System / Painting

7.1 Degree of Protection

As per NEMA MG-1 Part 5, 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 NEMA MG-1 Part 5. As standard, they 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.

7.2 Sealing System

The sealing system applied to the shaft of W22 motors in frame 143T to 326T is V-ring. For frames 364/5T to L447/9T the sealing system is the exclusive WSeal®, which consists of a double lipped V-ring with a metallic cap (see figure 23). This configuration operates like a labyrinth preventing ingress of water and dust into the motor.

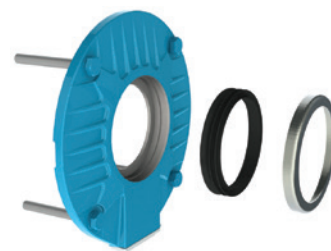


Figure 23 - WSeal®.

For frame sizes 586/7T and 588/9T the sealing system is the Taconite Labyrinth. Alternatively, W22 motors can be supplied with other sealing systems, for example, Oil'seal and the WEG exclusive W3 Seal®, among others (see Section 13 - 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

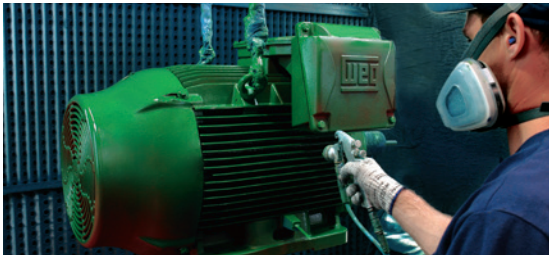


Figure 24 - WEG painting plan

W22 motors of frame 143T to 215T are supplied as standard with WEG internal painting plan 207A.

And, W22 motors of frame 254T up to 588/9T are supplied as standard with WEG internal painting plan 203A.

These painting plans have a minimum resistance to the salt spray test of 240 hours in accordance with ASTM B117-03 and may be used in motors applied in normal environments, slightly severe, sheltered or non-sheltered, for industrial use, with low relative humidity, normal temperature variations and the presence of SO₂.

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

Alternative painting plans are suitable to guarantee additional protection in aggressive environments, either protected or unprotected (see section 13 - Optional Features).

| Plan | Recommended use |
|-------|--|
| 202 E | Severe sheltered industrial environments. May have presence of SO ₂ , vapors, solid contaminants and high relative humidity. Specific use recommendation: for application in pulp and paper, mining and chemical industries. |
| 202 P | Severe industrial environments, sheltered or not, may have the presence of SO ₂ , vapors, solid contaminants and high relative humidity. Specific use recommendations: Indicated for application in food processing motors - USA. |
| 203 A | Regular environments, not too severe, sheltered and non-sheltered, for industrial purpose, with low relative humidity, normal temperature variations and SO ₂ presence. <i>Notes: 1 - Not recommended for direct exposure to acid vapors, alkalis and solvents. 2- Do not apply the 203 plan in motors with steel plate frames.</i> |
| 207 A | Regular environments, not too severe, sheltered or not, for industrial application, with low relative humidity, normal temperature variations and SO ₂ presence. <i>Note: not recommended for direct exposure to acid vapors, alkalis and solvents.</i> Specific use recommendation: for application in motors with steel plate frames, in which packaging process demands quick drying painting. |
| 211 E | Severe industrial environments, sheltered, may have presence of SO ₂ , vapors and solid contaminants, high relative humidity and alkalis and solvent spills. Specific use recommendation: for motors destined to Petrobras and its suppliers, for refineries purposes, as well as petrochemical industries |
| 211 P | Severe industrial environments, sheltered or not, may have presence of SO ₂ , vapors and solid contaminants, high relative humidity and alkalis and solvent spills. Specific use recommendation: specific use recommendation: for motors destined to Petrobras and its suppliers for refineries purposes, as well as petrochemical industries. |
| 212 P | Aggressive marine or industrial marine environments, sheltered and not, high relative humidity may be present. Specific use recommendation: for application in pulp and paper, mining, chemical and petrochemical industries. |

Table 11 - Painting plans.

7.3.1 Internal Anti-Corrosive 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

NEMA MG-1 Part 12 states that the motor shall operate successfully under running conditions at rated load with a variation in the voltage or the frequency up to the following:

1. Plus or minus 10 percent of rated voltage, with rated frequency.
2. Plus or minus 5 percent of rated frequency, with rated voltage.
3. A combined variation in voltage and frequency of 10 percent (sum of absolute values) of the rated values, provided the frequency variation does not exceed plus or minus 5 percent of rated frequency.

Performance within these voltage and frequency variations will not necessary be in accordance with the standards established for operation at rated voltage and frequency.

9. Ambient / Insulation

Unless otherwise specified, the rated power outputs shown in the electrical data tables within this catalog refer to continuous duty operation S1, as per NEMA MG-1 Part 14 and under the following conditions:

- With ambient temperature range -30°C to +40°C;
- With altitudes up to 3300 feet (1000 meters) above sea level.

For operating temperatures and altitudes differing from those above, the factors indicated in table 12 must be applied to the nominal motor power rating in order to determine the derated available output (P_{max}).

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

| 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 12 - Correction factors for altitude and ambient temperature.

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

All W22 motors are wound with the WISE® insulation system which consists of enamelled conductor 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 11).

9.1 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 internal anti-corrosive painting is applied in the internal components of the motor. More information can be obtained in Section 7.3.

For all frame sizes, W22 motors can be provided with space heaters suitable for 110-127 V, 220-240 V and 380-480 V. Motors in frame sizes 586/7T and 588/9T are supplied with space heaters for 220-240 V as standard. As an option, dual voltage heaters of 110-127 / 220-240 V can be supplied for frame sizes 182T to 588/9T.

The power rating and number of space heaters fitted depends on the size of the motor as indicated in table 13.

| Frame | Quantity | Total power rated (W) |
|----------------|----------|-----------------------|
| 143 to 145 | 1 | 11 |
| 182 to 184 | 2 | 22 |
| 213 to 256 | 2 | 30 |
| 284 to 326 | 2 | 38 |
| 364/5 to 404/5 | 2 | 56 |
| 444/5 to 504/5 | 2 | 140 |
| 586/7 to 588/9 | 2 | 174 |

Table 13 - Power and quantity of space heaters.

10. Motor Protections

Protections available for W22 can be classified as follows:

- Based on operating temperature.
- Based on operating current.

In section 12 - Construction Features it is possible to identify the type of protection for each W22 line.

10.1 Protection Based on Operating temperature

Continuous duty motors must be protected from overload either by a device integrated into the motor winding 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 (In), as per table 14.

| Service Factor | Relay setting current |
|----------------|-----------------------|
| 1.0 up to 1.15 | In x S.F. |
| ≥ 1.15 | (In x S.F.) - 5% |

Table 14 - Relay setting current referred to service factor.

10.1.1 RTD

These are temperature detectors (figure 25) with operating principle based on the properties that some materials vary the electric resistance with the variation in temperature (usually platinum, nickel or copper).



Figure 25 - RTD.

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).

10.1.2 Thermistor (PTC)

These are thermal protectors consisting of semiconductor detectors with sudden variation of the resistance when reaching a certain temperature (figure 26).



Figure 26 - Thermistor (PTC).

PTC is considered a thermistor with the resistance increasing drastically to a well defined temperature value. 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 go to the website www.weg.net.

10.1.3 Thermostats

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 thermostats 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-100, KTY and thermocouples. Contact your local WEG office closest to you for more information.

10.2 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 10.1 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. Go to the site www.weg.net for more information.

11. Variable Speed Drive Application

11.1 Considerations Regarding Voltage Spikes and the Insulation System

The stator windings of W22 motors are wound with class F insulation (class H optional) and 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 15.

| Motor rated voltage | Voltage Spikes ¹⁾ at motor terminals (phase-phase) | dV/dt ²⁾ at motor terminals (phase-phase) | Rise time ²⁾ | Time between pulses |
|--|---|--|-------------------------|-----------------------|
| $V_{rated} < 460\text{ V}$ | $\leq 1600\text{ V}$ | $\leq 5200\text{ V}/\mu\text{s}$ | $\geq 0.1\ \mu\text{s}$ | $\geq 6\ \mu\text{s}$ |
| $460\text{ V} \leq V_{rated} < 575\text{ V}$ | $\leq 2000\text{ V}$ | $\leq 6500\text{ V}/\mu\text{s}$ | | |
| $575\text{ V} \leq V_{rated} \leq 1000\text{ V}$ | $\leq 2400\text{ V}$ | $\leq 7800\text{ V}/\mu\text{s}$ | | |

1) Peak voltage in the case of unipolar pulses. Peak-to-peak voltage in the case of bipolar pulses.

2) dV/dt and Rise time definition according to Nema Std. MG1 - Part 30.

Table 15 - Supportability of random wound motors' insulation system

Notes:

- If one or more of the above conditions is not respected, a filter (load reactor or dV/dt filter) must be installed in the output of the VSD.
- General purpose motors with rated voltage greater than 575 V, which at the time of purchase did not have any indication of operation with VSD, are able to withstand the electrical limits set in the table above for rated voltage up to 575 V. If such conditions are not fully satisfied, output filters must be used.
- General purpose motors of the dual voltage type, for example 400/690 V or 380/660 V, which at the time of purchase were not specified for VSD operation, are permitted to be operated with the VSD at the higher voltage provided that the limits defined in the table above for rated voltage up to 460 V are fully respected. Otherwise, a load reactor or a dV/dt filter must be installed in the VSD output. Otherwise, a load reactor or a dV/dt filter must be installed in the VSD output.

11.2 Torque Restrictions on Variable Speed Drive Applications

In order to keep the temperature rise of WEG motors within acceptable levels, when under VSD supply, the speed range related loadability limits established in table 16 must be respected.

Note: applications with motors rated for use in hazardous areas must be particularly evaluated - in such case please contact WEG.

| TEFC NEMA High Efficiency Motors | | | | | |
|-------------------------------------|------------------------|-----------------|-------------------------------|---------------------|---------------|
| Frame size | Constant torque | Variable torque | Constant power ^(v) | Drive | Comments |
| 143 - 589 ⁽ⁱⁱⁱ⁾ | 12:1 | 1000:1 | 60 - 120 Hz | Any | Constant flux |
| | 100:1 ⁽ⁱⁱ⁾ | - | 60 - 120 Hz | WEG ⁽ⁱⁱ⁾ | Optional flux |
| 589 ^(iv) | 4:1 | 1000:1 | 60 - 120 Hz | Any | Constant flux |
| | 10:1 | - | 60 - 120 Hz | WEG ⁽ⁱⁱ⁾ | Optional flux |
| TEFC NEMA Premium Efficiency Motors | | | | | |
| Frame size | Constant torque | Variable torque | Constant power ^(v) | Drive | Comments |
| 143 - 589 ⁽ⁱⁱⁱ⁾ | 20:1 | 1000:1 | 60 - 120 Hz | Any | Constant flux |
| | 1000:1 ⁽ⁱⁱ⁾ | - | 60 - 120 Hz | WEG ⁽ⁱⁱ⁾ | Optional flux |
| 589 ^(iv) | 6:1 | 1000:1 | 60 - 120 Hz | Any | Constant flux |
| | 12:1 | - | 60 - 120 Hz | WEG ⁽ⁱⁱ⁾ | Optional flux |

Table 16 - Loadability limits for W22 motors operating with VSD

- Satisfactory motor performance depends on proper drive setup - please contact WEG
- WEG drive CFW-09 version 2.40 or higher, operating in sensorless (open loop) vector mode
- Motors with rated power $\leq 250\text{ hp}$. Criteria also valid for motors of the frame sizes 447 and 449
- Motors with rated power $> 250\text{ hp}$. Criteria also valid for motors of the frame sizes 447 and 449
- Maximum speeds for safe operation (mechanical issues) must be also observed - refer to Table 16. For CSA certified 2-pole motors, constant horsepower is limited to the range of 60 - 90 Hz.

Notes:

- The speed ranges stated above are related to the motor thermal capability only. Speed regulation will depend on VSD mode of operation and proper adjustment.
- W22 motors of all frame sizes can be blower cooled (independently ventilated) under request. In such case, the motor will be suitable for variable and constant torque applications up to 1000:1 with any drive.

The relations in table 17 correspond to speed ranges of operation. Considering 60 Hz as the base operating frequency, the following equivalence is valid:

| Relation | Frequency range |
|----------|-----------------|
| 4:1 | 15 - 60 Hz |
| 10:1 | 6 - 60 Hz |
| 12:1 | 5 - 60 Hz |
| 20:1 | 3 - 60 Hz |
| 100:1 | 0.6 - 60 Hz |
| 1000:1 | 0.06 - 60 Hz |

Table 17 - Operation range description.

| HP | TEFC Motors | | |
|------|-------------|---------|---------|
| | 2 poles | 4 poles | 6 poles |
| 0.25 | 7200 | 3600 | 2400 |
| 0.33 | | | |
| 0.50 | | | |
| 0.75 | | | |
| 1 | | | |
| 1.5 | | | |
| 2 | | | |
| 3 | 5400 | 2700 | 1800 |
| 5 | | | |
| 7.5 | | | |
| 10 | | | |
| 15 | | | |
| 20 | | | |
| 25 | | | |
| 30 | | | |
| 40 | | | |
| 50 | | | |
| 60 | 4500 | 2700 | 1800 |
| 75 | | | |
| 100 | 3600 | 2250 | 1800 |
| 125 | | | |
| 150 | | | |
| 200 | | | |
| 250 | | | |
| 300 | | | |
| 350 | | | |
| 400 | | | |
| 450 | | | |
| 500 | | | |

Table 18 - Maximum safe operating speeds (rpm) for W22 motors driven by VSD.

Notes:

1. The values in the table are based on mechanical limitations. For operation above nameplate speed, the electrical limitations (motor torque capability) must be also observed.
2. The limits established in table 18 are in accordance with the Nema Std. MG 1 - Part 30.
3. The permissible overspeed value is 10% above the limits given in table 18 (not to exceed 2 minutes in duration) except where the maximum safe operating speed is the same as the synchronous speed at 60 Hz - in such case, please contact WEG.
4. Operation above nameplate speed may require specially refined motor balancing. In such case, vibration and noise limits per Nema MG1 Parts 7 and 9, respectively, are not applicable.
5. Bearing life will be affected by the length of time the motor is operated at various speeds.
6. For speeds and ratings not covered by the table above, please contact WEG.

11.3 Considerations Regarding Bearing Currents

Motors up to frame size 445T generally do not require special features with respect to the bearings for variable speed drive application. From frame size 447T upwards additional measures should be taken in order to avoid detrimental bearing currents. This can be accomplished by means of the use of an insulated bearing or an insulated hub end shield in the non-drive end side and a shaft grounding brush mounted on the drive end shield. Since this is a systems issue, involving the VFD characteristics, Power Cabling and connections issues can occur on smaller motors and the customer experience may dictate these safeguards on much smaller motors.

11.4 Forced Ventilation Kit

For those cases where an independent cooling system is required, the W22 motors can be supplied with a forced ventilation kit, as shown in figure 27.

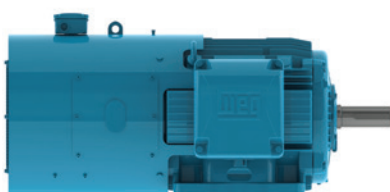


Figure 27 - Forced ventilation kit for W22 motors

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.

For more information on VSD motor applications, visit our website (www.weg.net) and download the Technical Guide - Induction Motors Fed by PWM (code 50029350).

| Frame | Total motor length (inches) | |
|----------|-----------------------------|-------------------------|
| | Without forced ventilation | With forced ventilation |
| 143T | 12.346 | 21.952 |
| 145T | 13.358 | 22.952 |
| 182T | 14.860 | 25.372 |
| 184T | 15.860 | 26.372 |
| 213T | 18.021 | 28.375 |
| 215T | 19.517 | 29.871 |
| 254T | 23.213 | 33.331 |
| 256T | 24.945 | 35.063 |
| 284T | 26.433 | 36.042 |
| 284TS | 25.061 | 34.602 |
| 284/6T | 27.929 | 37.538 |
| 284/6TS | 26.557 | 36.083 |
| 286T | 27.929 | 37.538 |
| 286TS | 26.557 | 36.102 |
| 324T | 29.620 | 39.345 |
| 324TS | 28.120 | 37.844 |
| 324/6T | 31.116 | 40.840 |
| 324/6TS | 29.616 | 39.340 |
| 326T | 31.116 | 40.840 |
| 326TS | 29.616 | 39.340 |
| 364/5T | 34.251 | 45.432 |
| 364/5TS | 32.338 | 43.540 |
| 404/5T | 39.730 | 49.848 |
| 404/5TS | 36.732 | 47.128 |
| 444/5T | 45.157 | 55.429 |
| 444/5TS | 41.407 | 52.244 |
| 445/7T | 48.779 | 59.180 |
| 445/7TS | 44.951 | 55.915 |
| 447/9T | 56.338 | 67.243 |
| 447/9TS | 52.588 | 63.493 |
| L447/9T | 57.181 | 65.630 |
| L447/9TS | 53.431 | 61.882 |
| 504/5T | 54.095 | 62.560 |
| 504/5TS | 48.215 | 57.238 |
| 586/7T | 61.902 | 76.703 |
| 586/7TS | 55.027 | 69.828 |
| 588/9T | 69.381 | 84.106 |
| 588/9TS | 62.506 | 77.175 |

Table 19 - Forced ventilation dimensions

11.5 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 machines, motors may not have a second shaft end or be fitted with drip cover. The following models of encoder are available for supply:

- Dynapar - B58N - 1024ppr (hollow shaft)
- Hengstler - RI58 - 1024ppr (hollow shaft)
- Line & Linde - XH861 - 1024ppr (hollow shaft)
- Hubner Berlin - HOG 10 - 1024ppr (hollow 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.

12. Construction Features

| Frame | | 143T | 145T | 182T | 184T | 213T | 215T | 254T | 256T | 284T | 286T | |
|----------------------------------|---------------------------------------|---|---|----------|--------|--------|--------|-----------------------------|--|------------|------------|------------|
| Mechanical features | | | | | | | | | | | | |
| Nameplate markings | | UL, CSA | | | | | | | | | | |
| Mounting | | F-1 | | | | | | | | | | |
| Frame material | | Cast Iron FC-200 | | | | | | | | | | |
| Degree of protection (IP rating) | | IP55 | | | | | | | | | | |
| Grounding | | Simple grounding - one inside the terminal box | | | | | | | | | | |
| Cooling method (IC) | | Totally enclosed fan-cooled (IC411) | | | | | | | | | | |
| Fan material | 2-4P | Polypropylene | | | | | | | | | | |
| | 6-12P | | | | | | | | | | | |
| Fan cover material | | Steel | | | | | | Cast Iron FC-200 | | | | |
| Endshields material | | Cast Iron FC-200 | | | | | | | | | | |
| Drain plug | | Fitted with rubber drain plug | | | | | | | | | | |
| Bearings | Shielded/clearance (DE) | ZZ / Normal | | | | | | Open / C3 | | | | |
| | Shielded/clearance (NDE) | ZZ / Normal | | | | | | Open / C3 | | | | |
| | Locating bearing configuration | | Without bearing cap and with spring washer at NDE | | | | | | Locked DE bearing and spring washer at NDE | | | |
| | Drive end | 2P | 6205 | 6205 | 6207 | 6207 | 6308 | 6308 | 6309 | 6309 | 6311 | 6311 |
| | | 4 - 12P | | | | | | | | | | |
| Non-drive end | 2P | 6204 | 6204 | 6206 | 6206 | 6207 | 6207 | 6209 | 6209 | 6211 | 6211 | |
| | 4 - 12P | | | | | | | | | | | |
| Bearing seal | | V-ring | | | | | | | | | | |
| Lubrication | Type of grease | Mobil Polyrex EM | | | | | | | | | | |
| | Grease fitting | None | | | | | | With grease relief fitting | | | | |
| Terminal block | | None | | | | | | | | | | |
| Terminal box material | | Cast Iron FC-200 | | | | | | | | | | |
| Leads inlet | Main T-box | Size | NPT 3/4" | NPT 3/4" | NPT 1" | NPT 1" | NPT 1" | NPT 1" | NPT 1 1/2" | NPT 1 1/2" | NPT 1 1/2" | NPT 1 1/2" |
| | Plug | | Flat plastic plug for transport and storage | | | | | | | | | |
| Shaft | Material | 2P | SAE 1040/45 | | | | | | | | | |
| | | 4 - 12P | | | | | | | | | | |
| | DE threaded hole | 2P | - | - | - | - | - | - | - | - | - | - |
| | | 4 - 12P | | | | | | | | | | |
| NDE(*) threaded hole | 2P | - | - | - | - | - | - | - | - | M12x1.25 | | |
| | 4 - 12P | | | | | | | | | | | |
| Vibration velocity limit | | 0.15 in./sec peak | | | | | | | | | | |
| Nameplate material | | Stainless Steel AISI 304 | | | | | | | | | | |
| Painting | Type | | 207A | | | | | | 203A | | | |
| | Color | | Blue RAL 5009 - High Efficiency and NEMA Premium Efficiency | | | | | | | | | |
| | | | Green RAL 6002 - Super Premium Efficiency | | | | | | | | | |
| Electrical features | | | | | | | | | | | | |
| Design | Standard and Super Premium Efficiency | | A | | | | | | | | | |
| | High and NEMA Premium Efficiency | | B | | | | | | | | | |
| Voltage | | 208-230/460 V with 9 leads | | | | | | 208-230/460 V with 12 leads | | | | |
| Winding | Impregnation | | Dip and Bake - Polyester | | | | | | | | | |
| | Insulation class | | F (DT=80K) | | | | | | | | | |
| Service factor | | 1.25 for High Efficiency and NEMA Premium Efficiency up to 100 HP and for all Super Premium Efficiency motors 1.15 for High Efficiency and NEMA Premium Efficiency of 125 HP and above | | | | | | | | | | |
| Rotor | | Aluminum die cast | | | | | | | | | | |
| Space heater | | None | | | | | | | | | | |

(*) NDE Threaded hole is an exclusive feature of NEMA Premium Efficiency and Super Premium Efficiency versions.

| Frame | | 324T | 326T | 364/5T | 404/5T | 444/5T | 445/7T | 447/9T | L447/9T | 504/5T | 586/7T | 588/9T | |
|----------------------------------|---------------------------------------|---|--|---|--|-----------------------------------|----------|-----------------------------------|---------------|-------------------------------------|-----------------|-------------------------------------|----------|
| Mechanical features | | | | | | | | | | | | | |
| Nameplate markings | | UL, CSA | | | | | | | | | | | |
| Mounting | | F-1 | | | | | | | | | | | |
| Frame material | | Cast Iron FC-200 | | | | | | | | | | | |
| Degree of protection (IP rating) | | IP55 | | | | | | | | | | | |
| Grounding | | Simple grounding - one inside the terminal | | Double grounding - one inside the terminal box and other one on the frame | | | | | | | | | |
| Cooling method (IC) | | Totally enclosed fan-cooled (IC411) | | | | | | | | | | | |
| Fan material | 2-4P | Polypropylene | | | | | | 2P: Polypropylene 4P: Aluminum | Polypropylene | 2P: Polypropylene 4P: Aluminum | Aluminum | | |
| | 6-12P | Aluminium | | | | | | | | | | | |
| Fan cover material | | Cast Iron FC-200 | | | | | | | | | | | |
| Endshields material | | Cast Iron FC-200 | | | | | | | | | | | |
| Drain plug | | Fitted with rubber drain plug | | | | | | | | | | | |
| Shielded/clearance (DE) | | Open / C3 | | | | | | | | | | | |
| Shielded/clearance (NDE) | | Open / C3 | | | | | | | | | | | |
| Bearings | Locating bearing configuration | | Locked DE bearing and spring washer at NDE | | Locked on DE with internal and external bearing caps and with preload springs at NDE | | | | | | | | |
| | Drive end | 2P | 6312 | 6312 | 6314 | 6314 | 6314 | 6314 | 6314 | 6314 | 6314 | 6314 | 6314 |
| | | 4 - 12P | | | | 6316 | 6319 | 6319 | 6322 | 6322 | 6319 | 6322 | 6322 |
| | Non-drive end | 2P | 6212 | 6212 | | 6314 | 6314 | 6314 | 6314 | 6314 | 6314 | 6314 | 6314 |
| 4 - 12P | | 6316 | | | | 6316 | 6319 | 6319 | 6316 | 6319 | 6319 | 6316 | |
| Bearing seal | | V-ring | | WSeal® | | | | | | Taconite Labyrinth | | | |
| Lubrication | Type of Grease | | Mobil Polyrex EM | | | | | | | | | | |
| | Grease fitting | | With grease relief fitting | | | | | | | | | | |
| Terminal block | | None | | | | | | | | | | | |
| Terminal box material | | Cast Iron FC-200 | | | | | | | | | | | |
| Leads inlet | Main T-box | Size | NPT 2" | NPT 2" | NPT 3" | NPT 3" | 2xNPT 3" | 2xNPT 3" | 2xNPT 3" | 2xNPT 3" (removable gland plate) | | 2xNPT 4" (removable gland plate) | |
| | Plug | | Flat plastic plug for transport and storage | | | | | | | | | | |
| Shaft | Material | 2P | SAE 1040/45 | | | SAE 1040/45 | | | SAE 4140 | SAE 1040/45 | SAE 4140 | | |
| | | 4 - 12P | SAE 4140 | | | | | | | | | | |
| | DE threaded hole | 2P | - | - | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" |
| | | 4 - 12P | - | - | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 3/4" | UNC 7/8" | UNC 7/8" |
| NDE(*) threaded hole | 2P | M12x1.25 | | | M20x2.5 | | | | | | | | |
| | 4 - 12P | M20x2.5 | | | | | | | | | | | |
| Vibration velocity limit | | 0.15 in./sec peak | | | | | | | | | | | |
| Nameplate material | | Stainless Steel AISI 304 | | | | | | | | | | | |
| Painting | Type | | 203A | | | | | | | | | | |
| | Color | | Blue RAL 5009 - High Efficiency and NEMA Premium Efficiency Green RAL 6002 - Super Premium Efficiency | | | | | | | | | | |
| Electrical features | | | | | | | | | | | | | |
| Design | Standard and Super Premium Efficiency | | A | | | | | | | | | | |
| | High and NEMA Premium Efficiency | | B | | | | | | | | | | |
| Voltage | | 208-230/460 V (12 leads) | | | | | | | | | 460 V (6 leads) | | |
| Winding | Impregnation | | Dip and bake - Polyester | | | Continuous resin flow - Polyester | | | | | | | |
| | Insulation class | | F (DT=80K) | | | | | | | | | | |
| Service factor | | 1.25 for High Efficiency and NEMA Premium Efficiency up to 100 HP and for all Super Premium Efficiency motors 1.15 for High Efficiency and NEMA Premium Efficiency of 125 HP and above | | | | | | | | | 1.00 | | |
| Rotor | | Aluminum die cast | | | | | | | | | | | |
| Space heater | | None | | | | | | | | | 200-240 Vac | | |

13. Optional Features

| Frame | 143T | 145T | 182T | 184T | 213T | 215T | 254T | 256T | 284T | 286T |
|---|------|------|------|------|------|------|------|------|------|------|
| Terminal box | | | | | | | | | | |
| Accessory terminal box | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| With base plate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Epoxy compound on leads entry | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Self-extinguishing foam at leads entry | S | S | S | S | S | S | S | S | S | S |
| Terminal block | | | | | | | | | | |
| BMC terminal block - six pin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BMC terminal block - twelve pin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HGF connection terminal | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cable glands | | | | | | | | | | |
| Plastic cable gland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Brass cable gland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stainless steel cable gland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Flange | | | | | | | | | | |
| Flange D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Flange C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fan | | | | | | | | | | |
| Polypropylene (2 poles) | S | S | S | S | S | S | S | S | S | S |
| Polypropylene (from 4 poles on) | S | S | S | S | S | S | S | S | S | S |
| Conductive Plastic (2 poles) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conductive Plastic (from 4 poles on) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aluminum (2 poles) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aluminum (from 4 poles on) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cast iron | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bronze | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fan cover | | | | | | | | | | |
| Steel plate | S | S | S | S | S | S | 0 | 0 | 0 | 0 |
| Cast iron | 0 | 0 | 0 | 0 | 0 | 0 | S | S | S | S |
| Bearing | | | | | | | | | | |
| Roller bearing (DE) | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Insulated drive end bearing | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Insulated non drive end bearing | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Bearing cap | | | | | | | | | | |
| Without bearing cap | S | S | S | S | S | S | NA | NA | NA | NA |
| With bearing cap | 0 | 0 | 0 | 0 | 0 | 0 | S | S | S | S |
| Bearing sealing | | | | | | | | | | |
| Nitrilic rubber lip seal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nitrilic rubber oil seal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Viton lip seal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Viton seal with spring | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Viton oil seal with stainless steel spring | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Taconite labyrinth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W3 Seal® | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shaft | | | | | | | | | | |
| Second shaft end | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TS shaft end (from 4 poles on) | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 |
| Threaded center hole | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Locking shaft device (standard for roller bearing motors) | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Lubrication | | | | | | | | | | |
| Aeroshell 7 / Aeroshell 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Isoflex NBU 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Krytox | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grease nipple | | | | | | | | | | |
| Carbon steel grease nipple | 0 | 0 | 0 | 0 | 0 | 0 | S | S | S | S |
| Stainless steel grease nipple | 0 | 0 | 0 | 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)

| Frame | 324T | 326T | 364/5T | 404/5T | 444/5T | 445/7T | 447/9T | L447/9T | 504/5T | 586/7T | 588/9T |
|---|------|------|--------|--------|--------|--------|--------|---------|--------|--------|--------|
| Terminal box | | | | | | | | | | | |
| Accessory terminal box | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| With base plate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Epoxy compound on leads entry | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Self-extinguishing foam at leads entry | S | S | S | S | S | S | S | S | S | S | S |
| Terminal block | | | | | | | | | | | |
| BMC terminal block - six pin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA |
| BMC terminal block - twelve pin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA |
| HGF connection terminal | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 |
| Cable glands | | | | | | | | | | | |
| Plastic cable gland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Brass cable gland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stainless Steel cable gland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Flange | | | | | | | | | | | |
| Flange D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Flange C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA |
| Fan | | | | | | | | | | | |
| Polypropylene (2 poles) | S | S | S | S | S | S | S | S | S | S | NA |
| Polypropylene (from 4 poles on) | S | S | S | S | S | S | NA | NA | S | NA | NA |
| Conductive Plastic (2 poles) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA |
| Conductive Plastic (from 4 poles on) | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 | NA | NA |
| Aluminum (2 poles) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S |
| Aluminum (from 4 poles on) | 0 | 0 | 0 | 0 | 0 | 0 | S | S | 0 | S | S |
| Cast iron | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bronze | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fan cover | | | | | | | | | | | |
| Steel plate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cast iron | S | S | S | S | S | S | S | S | S | S | S |
| Bearing | | | | | | | | | | | |
| Roller bearing (DE) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Insulated drive end bearing | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Insulated non drive end bearing | NA | NA | 0 | 0 | 0 | 0 | 0 | S | S | S | S |
| Bearing cap | | | | | | | | | | | |
| Without bearing cap | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| With bearing cap | S | S | S | S | S | S | S | S | S | S | S |
| Bearing sealing | | | | | | | | | | | |
| Nitrilic rubber lip seal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| Nitrilic rubber oil seal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| Viton lip seal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Viton seal with spring | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Viton oil seal with stainless steel spring | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Taconite labyrinth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | S |
| W3 Seal® | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shaft | | | | | | | | | | | |
| Second shaft end | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TS shaft end (from 4 poles on) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Threaded center hole | 0 | 0 | S | S | S | S | S | S | S | S | S |
| Locking shaft device (standard for roller bearing motors) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lubrication | | | | | | | | | | | |
| Aeroshell 7 / Aeroshell 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Isoflex NBU 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Krytox | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grease nipple | | | | | | | | | | | |
| Carbon steel grease nipple | S | S | S | S | S | S | S | S | S | S | S |
| Stainless steel grease nipple | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Frame | 143T | 145T | 182T | 184T | 213T | 215T | 254T | 256T | 284T | 286T |
|--|------|------|------|------|------|------|------|------|------|------|
| Drain | | | | | | | | | | |
| Rubber drain plug | S | S | S | S | S | S | S | S | S | S |
| Threaded drain plug | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stainless steel threaded drain plug (closed) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| T-type drain plug (opened) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Degree of protection | | | | | | | | | | |
| IP56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IP65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IP66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IPW55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IPW56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IPW66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Painting plan | | | | | | | | | | |
| 202E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 202P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 211E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 211P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 212E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 212P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Painting inside of terminal box (Munsell 2.5 YR 6/14) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Internal Tropicalized Painting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other mechanical options | | | | | | | | | | |
| Additional grounding on the frame (outside the terminal box) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drip cover | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rubber Slinger | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grease outlet through endshield | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Electrical options | | | | | | | | | | |
| Winding thermal protection | | | | | | | | | | |
| Alarm thermostat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tripping thermostat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD two wires, one per phase | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD two wires, two per phase | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD three wires, one per phase | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD three wires, two per phase | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Alarm thermistor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tripping thermistor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bearing thermal protection | | | | | | | | | | |
| Thermostat | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 |
| Thermistor | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 |
| RTD two wires | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 |
| RTD three wires | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 |
| RTD three wires (calibrated) | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 |
| Space heater | | | | | | | | | | |
| 110-127 V | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 220-240 V | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 110-127 / 220-240 V | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 380-480 V | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Insulation class | | | | | | | | | | |
| F | S | S | S | S | S | S | S | S | S | S |
| H | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Forced ventilation kit | | | | | | | | | | |
| Forced ventilation kit with encoder provision (specify kit voltage) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Forced ventilation kit without encoder provision (specify kit voltage) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Encoder | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drive end side grounding brush | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Non drive end side grounding brush | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| AEGIS SGR™ Bearing Protection Ring Kit | 0 | 0 | 0 | 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)

| Frame | 324T | 326T | 364/5T | 404/5T | 444/5T | 445/7T | 447/9T | L447/9T | 504/5T | 586/7T | 588/9T |
|--|------|------|--------|--------|--------|--------|--------|---------|--------|--------|--------|
| Drain | | | | | | | | | | | |
| Rubber drain plug | S | S | S | S | S | S | S | S | S | S | S |
| Threaded drain plug | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stainless steel threaded drain plug (closed) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| T-type drain plug (opened) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Degree of protection | | | | | | | | | | | |
| IP56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IP65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IP66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IPW55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IPW56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IPW66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Painting plan | | | | | | | | | | | |
| 202E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 202P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 211E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 211P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 212E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 212P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Painting inside of terminal box (Munsell 2.5 YR 6/14) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Internal Tropicalized Painting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other mechanical options | | | | | | | | | | | |
| Additional grounding on the frame (outside the terminal box) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drip cover | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rubber Slinger | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grease outlet through endshield | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Electrical options | | | | | | | | | | | |
| Winding thermal protection | | | | | | | | | | | |
| Alarm thermostat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tripping thermostat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD two wires, one per phase | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD two wires, two per phase | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD three wires, one per phase | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD three wires, two per phase | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Alarm thermistor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tripping thermistor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bearing thermal protection | | | | | | | | | | | |
| Thermostat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Thermistor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD two wires | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD three wires | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RTD three wires (calibrated) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Space heater | | | | | | | | | | | |
| 110-127 V | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 220-240 V | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | S |
| 110-127 / 220-240 V | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 380-480 V | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Insulation class | | | | | | | | | | | |
| F | S | S | S | S | S | S | S | S | S | S | S |
| H | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Forced ventilation kit | | | | | | | | | | | |
| Forced ventilation kit with encoder provision (specify kit voltage) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Forced ventilation kit without encoder provision (specify kit voltage) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Encoder | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drive end side grounding brush | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Non drive end side grounding brush | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AEGIS SGR™ Bearing Protection Ring Kit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Output | | Frame | Full Load Torque (ft.lb) | Locked Rotor Current | | Locked Rotor Torque Tl/Tn | Break-down Torque Tb/Tn | Inertia J (sq. ft.lb) | Allowable locked rotor time (s) | | Weight (lb) | Sound dB(A) | Service Factor | 460 V | | | | | | | | |
|-------------------|------|---------|--------------------------|----------------------|------|---------------------------|-------------------------|-----------------------|---------------------------------|------|-------------|-------------|----------------|-------------------|----------------|------|------|--------------|------|------|--------------------------|--|
| | | | | Code | I/In | | | | Hot | Cold | | | | Rated speed (rpm) | % of full load | | | Power Factor | | | Full load current In (A) | |
| | | | | | | | | | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | |
| VIII Poles | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0,75 | 182/4T | 5,96 | K | 5,0 | 2,0 | 2,6 | 0,3481 | 49 | 108 | 88,2 | 50,0 | 1,25 | 870 | 68,0 | 72,0 | 74,0 | 0,41 | 0,52 | 0,62 | 2,05 | |
| 1,5 | 1,1 | 182/4T | 8,98 | H | 4,7 | 2,0 | 2,4 | 0,3918 | 37 | 81 | 94,8 | 50,0 | 1,25 | 865 | 74,0 | 75,5 | 77,0 | 0,44 | 0,58 | 0,66 | 2,72 | |
| 2 | 1,5 | 213/5T | 11,9 | L | 6,6 | 2,4 | 2,9 | 1,19 | 43 | 95 | 141 | 52,0 | 1,25 | 870 | 78,5 | 81,5 | 82,5 | 0,47 | 0,53 | 0,66 | 3,46 | |
| 3 | 2,2 | 213/5T | 18,0 | K | 7,1 | 2,0 | 2,1 | 2,02 | 30 | 66 | 159 | 52,0 | 1,25 | 865 | 82,5 | 84,0 | 84,0 | 0,59 | 0,70 | 0,76 | 4,33 | |
| 5 | 3,7 | 254/6T | 29,4 | H | 5,5 | 2,0 | 2,6 | 2,90 | 33 | 73 | 243 | 54,0 | 1,25 | 880 | 82,5 | 84,0 | 85,5 | 0,48 | 0,61 | 0,70 | 7,76 | |
| 7,5 | 5,5 | 254/6T | 44,2 | H | 5,5 | 2,0 | 2,6 | 3,41 | 25 | 55 | 276 | 54,0 | 1,25 | 880 | 82,5 | 85,5 | 85,5 | 0,48 | 0,62 | 0,70 | 11,5 | |
| 10 | 7,5 | 284/6T | 58,9 | G | 5,7 | 2,0 | 2,2 | 7,20 | 30 | 66 | 373 | 54,0 | 1,25 | 880 | 87,5 | 88,5 | 88,5 | 0,62 | 0,72 | 0,77 | 13,8 | |
| 15 | 11 | 284/6T | 88,3 | G | 5,7 | 2,0 | 2,2 | 8,18 | 22 | 48 | 417 | 54,0 | 1,25 | 880 | 87,5 | 88,5 | 88,5 | 0,68 | 0,78 | 0,82 | 19,0 | |
| 20 | 15 | 324/6T | 118 | G | 5,0 | 2,0 | 2,2 | 9,79 | 24 | 53 | 452 | 56,0 | 1,25 | 880 | 87,5 | 89,5 | 89,5 | 0,55 | 0,67 | 0,74 | 28,4 | |
| 25 | 18,5 | 324/6T | 147 | G | 5,1 | 2,2 | 2,3 | 11,9 | 19 | 42 | 509 | 56,0 | 1,25 | 880 | 87,5 | 89,5 | 89,5 | 0,53 | 0,66 | 0,73 | 35,5 | |
| 30 | 22 | 364/5T | 177 | G | 6,0 | 1,6 | 2,2 | 23,5 | 17 | 37 | 776 | 60,0 | 1,25 | 880 | 91,0 | 91,7 | 91,0 | 0,67 | 0,77 | 0,82 | 37,0 | |
| 40 | 30 | 364/5T | 235 | G | 5,7 | 1,6 | 2,1 | 29,0 | 13 | 29 | 831 | 60,0 | 1,25 | 880 | 91,0 | 91,7 | 91,0 | 0,67 | 0,77 | 0,82 | 50,5 | |
| 50 | 37 | 404/5T | 296 | G | 6,2 | 1,7 | 2,4 | 34,6 | 12 | 26 | 992 | 60,0 | 1,00 | 875 | 91,7 | 91,7 | 91,7 | 0,70 | 0,79 | 0,83 | 61,0 | |
| 60 | 45 | 404/5T | 353 | G | 6,3 | 1,8 | 2,5 | 36,9 | 11 | 24 | 1047 | 60,0 | 1,25 | 880 | 91,7 | 92,4 | 91,7 | 0,70 | 0,80 | 0,83 | 74,2 | |
| 75 | 55 | 444/5T | 439 | F | 5,6 | 1,7 | 2,0 | 73,6 | 20 | 44 | 1444 | 63,0 | 1,25 | 885 | 93,0 | 93,0 | 93,0 | 0,67 | 0,76 | 0,80 | 92,8 | |
| 100 | 75 | 444/5T | 585 | G | 5,7 | 1,8 | 2,0 | 87,3 | 18 | 40 | 1599 | 63,0 | 1,25 | 885 | 93,0 | 93,6 | 93,0 | 0,67 | 0,76 | 0,80 | 127 | |
| 125 | 90 | 445/7T | 732 | F | 5,8 | 1,8 | 2,0 | 104 | 15 | 33 | 1806 | 63,0 | 1,15 | 885 | 93,6 | 94,1 | 93,6 | 0,67 | 0,76 | 0,80 | 151 | |
| 150 | 110 | 445/7T | 878 | F | 5,7 | 1,7 | 2,0 | 134 | 15 | 33 | 1965 | 63,0 | 1,15 | 885 | 94,1 | 94,1 | 93,6 | 0,67 | 0,76 | 0,80 | 184 | |
| 200 | 150 | 447/9T | 1164 | G | 5,9 | 1,9 | 2,1 | 161 | 14 | 31 | 2430 | 66,0 | 1,15 | 890 | 94,1 | 94,5 | 94,5 | 0,65 | 0,75 | 0,79 | 252 | |
| 250 | 185 | 586/7T | 1447 | G | 6,0 | 1,3 | 2,1 | 358 | 26 | 57 | 3649 | 75,0 | 1,15 | 895 | 94,8 | 95,4 | 95,0 | 0,67 | 0,77 | 0,81 | 302 | |
| 300 | 220 | 586/7T | 1737 | G | 6,4 | 1,5 | 2,2 | 462 | 26 | 57 | 4035 | 75,0 | 1,15 | 895 | 94,8 | 95,4 | 95,0 | 0,66 | 0,77 | 0,81 | 359 | |
| 350 | 260 | 586/7T | 2026 | G | 6,4 | 1,5 | 2,2 | 484 | 22 | 48 | 4311 | 75,0 | 1,15 | 895 | 94,8 | 95,4 | 95,0 | 0,66 | 0,77 | 0,81 | 424 | |
| Optional | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 7,5 | 284TS | 58,9 | G | 5,7 | 2,0 | 2,2 | 7,20 | 30 | 66 | 373 | 54,0 | 1,25 | 880 | 87,5 | 88,5 | 88,5 | 0,62 | 0,72 | 0,77 | 13,8 | |
| 15 | 11 | 284/6TS | 88,3 | G | 5,7 | 2,0 | 2,2 | 8,18 | 22 | 48 | 417 | 54,0 | 1,25 | 880 | 87,5 | 88,5 | 88,5 | 0,68 | 0,78 | 0,82 | 19,0 | |
| 100 | 75 | 445/7T | 585 | G | 5,7 | 1,8 | 2,0 | 87,3 | 18 | 40 | 1643 | 63,0 | 1,25 | 885 | 93,0 | 93,6 | 93,0 | 0,67 | 0,76 | 0,80 | 127 | |
| 125 | 90 | 504/5T | 728 | F | 5,8 | 1,8 | 2,0 | 104 | 23 | 51 | 2110 | 66,0 | 1,15 | 890 | 93,6 | 94,1 | 93,6 | 0,67 | 0,76 | 0,80 | 151 | |
| 150 | 110 | 504/5T | 873 | F | 5,8 | 1,8 | 2,0 | 134 | 21 | 46 | 2293 | 66,0 | 1,15 | 890 | 94,1 | 94,5 | 94,1 | 0,68 | 0,77 | 0,81 | 181 | |
| 200 | 150 | 586/7T | 1158 | G | 6,0 | 1,3 | 2,1 | 261 | 40 | 88 | 3334 | 75,0 | 1,15 | 895 | 94,0 | 94,1 | 94,5 | 0,65 | 0,76 | 0,80 | 249 | |
| 250 | 185 | 586/7TS | 1447 | G | 6,0 | 1,3 | 2,1 | 358 | 26 | 57 | 3649 | 75,0 | 1,15 | 895 | 94,8 | 95,4 | 95,0 | 0,67 | 0,77 | 0,81 | 302 | |
| 300 | 220 | 586/7TS | 1737 | G | 6,4 | 1,5 | 2,2 | 462 | 26 | 57 | 4035 | 75,0 | 1,15 | 895 | 94,8 | 95,4 | 95,0 | 0,66 | 0,77 | 0,81 | 359 | |
| 350 | 260 | 586/7TS | 2026 | G | 6,4 | 1,5 | 2,2 | 484 | 22 | 48 | 4311 | 75,0 | 1,15 | 895 | 94,8 | 95,4 | 95,0 | 0,66 | 0,77 | 0,81 | 424 | |



W22 - NEMA Premium Efficiency

| Output | | Frame | Full Load Torque (ft.lb) | Locked Rotor Current | | Locked Rotor Torque Tl/Tn | Break-down Torque Tb/Tn | Inertia J (sq.ft.lb) | Allowable locked rotor time (s) | | Weight (lb) | Sound dB(A) | Service Factor | 460 V | | | | | | Full load current In (A) | |
|----------|------|----------|--------------------------|----------------------|------|---------------------------|-------------------------|----------------------|---------------------------------|------|-------------|-------------|----------------|-------------------|----------------|------|------|--------------|------|--------------------------|------|
| | | | | Code | I/In | | | | Hot | Cold | | | | Rated speed (rpm) | % of full load | | | Power Factor | | | |
| | | | | | | | | | | | | | | | 50 | 75 | 100 | 50 | 75 | | 100 |
| VI Poles | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0,75 | 143/5T | 4,51 | K | 6,2 | 2,6 | 3,0 | 0,1595 | 28 | 62 | 51,5 | 50,0 | 1,25 | 1150 | 77,0 | 82,0 | 82,5 | 0,45 | 0,57 | 0,66 | 1,73 |
| 1,5 | 1,1 | 182/4T | 6,64 | M | 7,8 | 3,2 | 4,0 | 0,4879 | 16 | 35 | 70,3 | 52,0 | 1,25 | 1170 | 84,0 | 86,5 | 87,5 | 0,45 | 0,54 | 0,62 | 2,54 |
| 2 | 1,5 | 182/4T | 8,86 | L | 7,5 | 3,0 | 3,5 | 0,6210 | 31 | 68 | 87,5 | 52,0 | 1,25 | 1170 | 86,5 | 87,5 | 88,5 | 0,46 | 0,58 | 0,66 | 3,22 |
| 3 | 2,2 | 213/5T | 13,2 | K | 7,0 | 2,0 | 2,8 | 1,20 | 58 | 128 | 121 | 55,0 | 1,25 | 1175 | 86,5 | 88,5 | 89,5 | 0,50 | 0,63 | 0,70 | 4,41 |
| 5 | 3,7 | 213/5T | 22,1 | J | 6,8 | 1,7 | 2,6 | 1,47 | 57 | 125 | 170 | 55,0 | 1,25 | 1170 | 88,5 | 89,5 | 89,5 | 0,58 | 0,70 | 0,76 | 6,83 |
| 7,5 | 5,5 | 254/6T | 33,1 | H | 6,8 | 2,5 | 3,0 | 3,92 | 30 | 66 | 262 | 59,0 | 1,25 | 1175 | 89,5 | 90,2 | 91,0 | 0,63 | 0,74 | 0,80 | 9,48 |
| 10 | 7,5 | 254/6T | 44,1 | H | 6,5 | 2,3 | 2,8 | 4,43 | 26 | 57 | 287 | 59,0 | 1,25 | 1175 | 90,2 | 91,0 | 91,0 | 0,63 | 0,74 | 0,78 | 13,3 |
| 15 | 11 | 284/6T | 66,1 | G | 6,4 | 2,3 | 2,7 | 7,85 | 20 | 44 | 379 | 59,0 | 1,25 | 1175 | 91,0 | 91,7 | 91,7 | 0,69 | 0,80 | 0,84 | 17,9 |
| 20 | 15 | 284/6T | 88,2 | G | 6,2 | 2,3 | 2,6 | 9,16 | 16 | 35 | 426 | 59,0 | 1,25 | 1175 | 91,0 | 91,7 | 91,7 | 0,70 | 0,80 | 0,85 | 24,2 |
| 25 | 18,5 | 324/6T | 110 | G | 6,2 | 2,1 | 2,6 | 11,5 | 26 | 57 | 560 | 62,0 | 1,25 | 1180 | 91,7 | 93,0 | 93,0 | 0,65 | 0,77 | 0,82 | 30,4 |
| 30 | 22 | 324/6T | 132 | G | 6,2 | 2,3 | 2,6 | 13,2 | 21 | 46 | 628 | 62,0 | 1,25 | 1180 | 91,7 | 93,0 | 93,0 | 0,65 | 0,76 | 0,82 | 36,2 |
| 40 | 30 | 364/5T | 175 | G | 6,4 | 2,0 | 2,4 | 29,0 | 21 | 46 | 833 | 66,0 | 1,25 | 1185 | 93,6 | 93,6 | 94,1 | 0,73 | 0,82 | 0,86 | 46,5 |
| 50 | 37 | 364/5T | 220 | G | 6,4 | 2,0 | 2,4 | 32,4 | 18 | 40 | 869 | 66,0 | 1,25 | 1180 | 93,6 | 94,1 | 94,1 | 0,74 | 0,83 | 0,86 | 57,4 |
| 60 | 45 | 404/5T | 262 | H | 7,1 | 2,0 | 2,3 | 36,9 | 20 | 44 | 1036 | 68,0 | 1,25 | 1185 | 94,1 | 94,5 | 94,5 | 0,74 | 0,82 | 0,86 | 69,5 |
| 75 | 55 | 404/5T | 329 | G | 6,4 | 2,0 | 2,3 | 40,2 | 17 | 37 | 1089 | 68,0 | 1,25 | 1180 | 94,1 | 94,5 | 94,5 | 0,74 | 0,83 | 0,86 | 84,9 |
| 100 | 75 | 444/5T | 437 | G | 6,2 | 2,2 | 2,6 | 87,3 | 20 | 44 | 1577 | 69,0 | 1,25 | 1185 | 94,5 | 95,0 | 95,0 | 0,68 | 0,78 | 0,82 | 121 |
| 125 | 90 | 444/5T | 547 | G | 6,4 | 2,1 | 2,4 | 104 | 19 | 42 | 1751 | 69,0 | 1,15 | 1185 | 95,0 | 95,4 | 95,0 | 0,70 | 0,79 | 0,83 | 143 |
| 150 | 110 | 445/7T | 656 | G | 6,2 | 2,4 | 2,6 | 134 | 20 | 44 | 2042 | 69,0 | 1,15 | 1185 | 95,0 | 95,4 | 95,8 | 0,67 | 0,78 | 0,82 | 176 |
| 200 | 150 | 447/9T | 872 | G | 6,6 | 2,3 | 2,4 | 145 | 15 | 33 | 2247 | 70,0 | 1,15 | 1188 | 95,0 | 95,4 | 95,8 | 0,68 | 0,79 | 0,83 | 237 |
| 250 | 185 | 447/9T | 1093 | G | 6,1 | 2,4 | 2,4 | 145 | 12 | 26 | 2538 | 70,0 | 1,15 | 1185 | 95,0 | 95,4 | 95,8 | 0,68 | 0,79 | 0,83 | 292 |
| 300 | 220 | 447/9T | 1306 | J | 7,7 | 2,7 | 3,0 | 145 | 10 | 22 | 3197 | 70,0 | 1,15 | 1190 | 95,4 | 95,8 | 95,8 | 0,63 | 0,75 | 0,81 | 356 |
| 350 | 260 | 586/7T | 1524 | G | 6,0 | 2,0 | 2,1 | 328 | 29 | 64 | 3784 | 77,0 | 1,15 | 1190 | 95,4 | 95,8 | 95,8 | 0,67 | 0,77 | 0,81 | 421 |
| 400 | 300 | 586/7T | 1741 | G | 6,0 | 2,2 | 2,1 | 368 | 29 | 64 | 4115 | 77,0 | 1,00 | 1190 | 95,4 | 95,8 | 96,2 | 0,67 | 0,77 | 0,81 | 483 |
| 450 | 330 | 586/7T | 1959 | G | 6,1 | 2,1 | 2,1 | 368 | 25 | 55 | 4384 | 77,0 | 1,00 | 1190 | 95,8 | 96,2 | 96,2 | 0,67 | 0,77 | 0,81 | 532 |
| 500 | 370 | 586/7T | 2177 | G | 6,0 | 2,2 | 2,1 | 368 | 25 | 55 | 4403 | 77,0 | 1,00 | 1190 | 95,8 | 96,2 | 96,2 | 0,66 | 0,76 | 0,80 | 603 |
| 550 | 400 | 588/9T | 2395 | G | 6,5 | 2,2 | 2,3 | 389 | 30 | 66 | 4734 | 77,0 | 1,00 | 1190 | 95,2 | 96,0 | 96,1 | 0,63 | 0,74 | 0,79 | 661 |
| 600 | 440 | 588/9T | 2612 | G | 6,3 | 2,2 | 2,3 | 449 | 31 | 68 | 5173 | 77,0 | 1,00 | 1190 | 95,4 | 96,1 | 96,2 | 0,63 | 0,74 | 0,79 | 727 |
| Optional | | | | | | | | | | | | | | | | | | | | | |
| 2 | 1,5 | L182/4T | 8,86 | L | 7,5 | 3,0 | 3,5 | 0,6210 | 31 | 68 | 87,5 | 52,0 | 1,25 | 1170 | 86,5 | 87,5 | 88,5 | 0,46 | 0,58 | 0,66 | 3,22 |
| 30 | 22 | 364/5T | 132 | G | 6,2 | 1,9 | 2,4 | 13,2 | 27 | 59 | 781 | 66,0 | 1,25 | 1180 | 93,0 | 93,6 | 93,0 | 0,72 | 0,81 | 0,85 | 34,9 |
| 50 | 37 | 404/5T | 220 | G | 6,3 | 2,0 | 2,4 | 32,4 | 20 | 44 | 975 | 68,0 | 1,25 | 1180 | 93,6 | 94,1 | 94,1 | 0,73 | 0,82 | 0,85 | 58,1 |
| 75 | 55 | 444/5T | 328 | F | 5,6 | 2,0 | 2,2 | 74,3 | 25 | 55 | 1555 | 69,0 | 1,25 | 1185 | 93,8 | 94,0 | 94,5 | 0,68 | 0,78 | 0,82 | 89,1 |
| 100 | 75 | 447/9T | 437 | G | 6,2 | 2,2 | 2,6 | 87,3 | 20 | 44 | 1577 | 70,0 | 1,25 | 1185 | 94,5 | 95,0 | 95,0 | 0,68 | 0,78 | 0,82 | 121 |
| 150 | 110 | 504/5T | 653 | G | 6,2 | 2,3 | 2,5 | 134 | 29 | 64 | 2249 | 70,0 | 1,15 | 1190 | 94,5 | 95,4 | 95,8 | 0,67 | 0,78 | 0,82 | 176 |
| 200 | 150 | 504/5T | 871 | G | 6,2 | 2,2 | 2,3 | 145 | 21 | 46 | 2459 | 70,0 | 1,15 | 1190 | 95,0 | 95,4 | 95,8 | 0,70 | 0,80 | 0,83 | 237 |
| 200 | 150 | 445/7T | 874 | G | 6,3 | 2,3 | 2,4 | 145 | 15 | 33 | 2247 | 69,0 | 1,15 | 1185 | 95,0 | 95,4 | 95,8 | 0,68 | 0,79 | 0,83 | 237 |
| 250 | 185 | 586/7T | 1088 | G | 6,1 | 1,9 | 2,1 | 226 | 30 | 66 | 3206 | 77,0 | 1,15 | 1190 | 95,0 | 95,4 | 95,8 | 0,68 | 0,77 | 0,81 | 299 |
| 300 | 220 | 586/7T | 1306 | G | 6,0 | 1,6 | 1,9 | 277 | 30 | 66 | 3495 | 77,0 | 1,15 | 1190 | 95,4 | 95,8 | 95,8 | 0,69 | 0,78 | 0,81 | 356 |
| 300 | 220 | L447/9T | 1306 | G | 6,7 | 2,5 | 2,4 | 278 | 18 | 40 | 3682 | 71,0 | 1,15 | 1190 | 95,7 | 95,8 | 95,8 | 0,72 | 0,81 | 0,84 | 343 |
| 350 | 260 | L447/9T | 1524 | H | 6,9 | 2,5 | 2,7 | 278 | 23 | 51 | 3574 | 71,0 | 1,15 | 1190 | 95,4 | 95,8 | 95,8 | 0,66 | 0,77 | 0,82 | 415 |
| 400 | 300 | L447/9T* | 1741 | H | 6,9 | 2,4 | 2,5 | 278 | 13 | 29 | 3682 | 71,0 | 1,00 | 1190 | 95,4 | 95,8 | 95,8 | 0,68 | 0,78 | 0,82 | 477 |

* Motor with class F (105K) temperature rise.

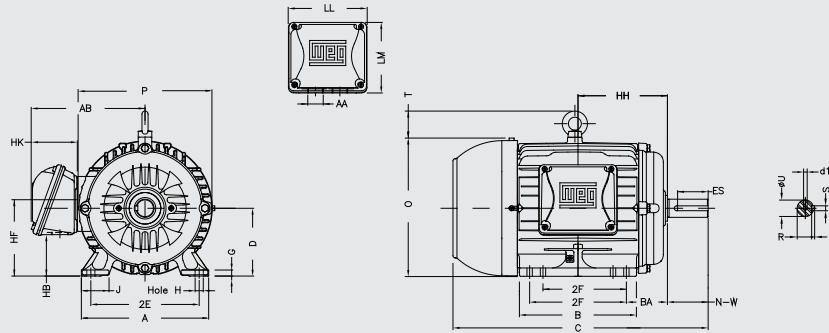
| Output | | Frame | Full Load Torque (ft.lb) | Locked Rotor Current | | Locked Rotor Torque Tl/Tn | Break-down Torque Tb/Tn | Inertia J (sq.ft.lb) | Allowable locked rotor time (s) | | Weight (lb) | Sound dB(A) | Service Factor | 460 V | | | | | | | Full load current In (A) |
|-------------------|------|----------|--------------------------|----------------------|------|---------------------------|-------------------------|----------------------|---------------------------------|------|-------------|-------------|----------------|-------------------|----------------|------|------|--------------|------|------|--------------------------|
| | | | | Code | I/In | | | | Hot | Cold | | | | Rated speed (rpm) | % of full load | | | Power Factor | | | |
| | | | | | | | | | | | | | | | 50 | 75 | 100 | 50 | 75 | 100 | |
| VIII Poles | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0,75 | 182/4T | 5,92 | M | 6,0 | 3,0 | 3,5 | 0,3991 | 22 | 48 | 94,8 | 50,0 | 1,25 | 875 | 74,0 | 77,0 | 78,5 | 0,32 | 0,42 | 0,52 | 2,30 |
| 1,5 | 1,1 | 182/4T | 8,98 | K | 5,9 | 2,9 | 3,4 | 0,5766 | 17 | 37 | 111 | 50,0 | 1,25 | 865 | 80,0 | 82,5 | 82,5 | 0,43 | 0,54 | 0,62 | 2,70 |
| 2 | 1,5 | 213/5T | 11,8 | M | 7,6 | 2,4 | 2,9 | 1,79 | 39 | 86 | 149 | 52,0 | 1,25 | 875 | 82,5 | 84,0 | 85,5 | 0,45 | 0,55 | 0,65 | 3,39 |
| 3 | 2,2 | 213/5T | 17,9 | K | 6,8 | 2,3 | 2,8 | 2,11 | 44 | 97 | 176 | 52,0 | 1,25 | 870 | 84,0 | 85,5 | 85,5 | 0,50 | 0,63 | 0,71 | 4,55 |
| 5 | 3,7 | 254/6T | 29,4 | H | 5,3 | 1,9 | 2,5 | 3,41 | 44 | 97 | 258 | 54,0 | 1,25 | 880 | 85,5 | 87,5 | 87,5 | 0,49 | 0,62 | 0,70 | 7,58 |
| 7,5 | 5,5 | 254/6T | 44,2 | G | 5,3 | 2,0 | 2,5 | 4,43 | 33 | 73 | 284 | 54,0 | 1,25 | 880 | 85,5 | 87,5 | 87,5 | 0,50 | 0,63 | 0,71 | 11,1 |
| 10 | 7,5 | 284/6T | 58,9 | G | 5,6 | 2,0 | 2,4 | 7,20 | 32 | 70 | 373 | 54,0 | 1,25 | 880 | 89,5 | 90,2 | 90,2 | 0,61 | 0,72 | 0,78 | 13,4 |
| 15 | 11 | 284/6T | 88,3 | G | 5,5 | 2,0 | 2,3 | 8,18 | 25 | 55 | 417 | 54,0 | 1,25 | 880 | 85,5 | 90,0 | 90,2 | 0,62 | 0,72 | 0,78 | 19,6 |
| 20 | 15 | 324T | 118 | G | 5,0 | 1,9 | 2,2 | 9,37 | 27 | 59 | 452 | 56,0 | 1,25 | 880 | 89,5 | 91,0 | 91,0 | 0,54 | 0,66 | 0,73 | 28,3 |
| 20 | 15 | 324/6T | 118 | G | 5,0 | 1,9 | 2,2 | 9,37 | 27 | 59 | 452 | 56,0 | 1,25 | 880 | 89,5 | 91,0 | 91,0 | 0,54 | 0,66 | 0,73 | 28,3 |
| 25 | 18,5 | 324/6T | 147 | G | 5,2 | 2,0 | 2,3 | 11,9 | 23 | 51 | 509 | 56,0 | 1,25 | 880 | 89,5 | 91,0 | 91,0 | 0,51 | 0,64 | 0,71 | 35,9 |
| 30 | 22 | 364/5T | 177 | G | 6,2 | 1,7 | 2,4 | 23,5 | 20 | 44 | 803 | 60,0 | 1,25 | 880 | 92,4 | 92,4 | 92,4 | 0,63 | 0,74 | 0,80 | 37,0 |
| 40 | 30 | 364/5T | 234 | G | 5,9 | 1,7 | 2,3 | 29,0 | 18 | 40 | 875 | 60,0 | 1,25 | 885 | 92,4 | 93,0 | 92,4 | 0,63 | 0,74 | 0,78 | 52,2 |
| 50 | 37 | 404/5T | 294 | H | 6,8 | 1,7 | 2,6 | 34,6 | 15 | 33 | 1012 | 60,0 | 1,25 | 880 | 93,0 | 93,0 | 93,0 | 0,68 | 0,78 | 0,83 | 60,0 |
| 60 | 45 | 404/5T | 353 | H | 6,5 | 1,8 | 2,7 | 40,2 | 13 | 29 | 1111 | 60,0 | 1,25 | 880 | 93,0 | 93,0 | 93,0 | 0,68 | 0,78 | 0,83 | 73,0 |
| 75 | 55 | 444/5T | 437 | G | 6,0 | 1,8 | 2,1 | 73,6 | 18 | 40 | 1444 | 63,0 | 1,25 | 890 | 93,0 | 93,6 | 93,6 | 0,64 | 0,74 | 0,79 | 93,0 |
| 100 | 75 | 444/5T | 582 | G | 6,0 | 1,9 | 2,2 | 87,3 | 15 | 33 | 1599 | 63,0 | 1,25 | 890 | 93,6 | 94,1 | 94,1 | 0,63 | 0,74 | 0,79 | 127 |
| 125 | 90 | 445/7T | 728 | G | 6,0 | 1,8 | 2,1 | 104 | 17 | 37 | 1887 | 63,0 | 1,15 | 890 | 94,5 | 94,5 | 94,5 | 0,64 | 0,74 | 0,79 | 151 |
| 150 | 110 | 445/7T | 873 | G | 6,0 | 1,9 | 2,1 | 125 | 15 | 33 | 2042 | 63,0 | 1,15 | 890 | 94,5 | 94,5 | 94,5 | 0,64 | 0,74 | 0,79 | 185 |
| 200 | 150 | 586/7T | 1158 | G | 6,3 | 1,4 | 2,1 | 350 | 40 | 88 | 3334 | 75,0 | 1,15 | 895 | 95,0 | 95,4 | 95,4 | 0,65 | 0,75 | 0,80 | 247 |
| 250 | 185 | 586/7T | 1447 | G | 6,2 | 1,4 | 2,1 | 395 | 40 | 88 | 3649 | 75,0 | 1,15 | 895 | 95,4 | 95,8 | 95,8 | 0,66 | 0,76 | 0,81 | 299 |
| 300 | 220 | 586/7T | 1737 | H | 6,7 | 1,5 | 2,2 | 451 | 40 | 88 | 4035 | 75,0 | 1,15 | 895 | 95,4 | 95,8 | 95,8 | 0,66 | 0,77 | 0,81 | 356 |
| 350 | 260 | 586/7T | 2026 | G | 6,4 | 1,6 | 2,3 | 484 | 34 | 75 | 4309 | 75,0 | 1,00 | 895 | 95,4 | 95,8 | 95,8 | 0,64 | 0,75 | 0,80 | 426 |
| 400 | 300 | 588/9T | 2315 | H | 6,7 | 1,5 | 2,4 | 537 | 25 | 55 | 4851 | 75,0 | 1,00 | 895 | 95,0 | 95,6 | 95,7 | 0,62 | 0,73 | 0,79 | 498 |
| 450 | 330 | 588/9T | 2605 | G | 6,6 | 1,6 | 2,3 | 617 | 27 | 59 | 5281 | 75,0 | 1,00 | 895 | 95,2 | 95,7 | 95,8 | 0,65 | 0,75 | 0,81 | 534 |
| Optional | | | | | | | | | | | | | | | | | | | | | |
| 7,5 | 5,5 | 284T | 44,2 | G | 5,6 | 2,0 | 2,4 | 7,20 | 34 | 75 | 344 | 54,0 | 1,25 | 880 | 87,5 | 88,5 | 88,5 | 0,60 | 0,72 | 0,78 | 10,0 |
| 100 | 75 | 447/9T | 582 | G | 6,0 | 1,9 | 2,2 | 87,3 | 15 | 33 | 1599 | 66,0 | 1,25 | 890 | 93,6 | 94,1 | 94,1 | 0,63 | 0,74 | 0,79 | 127 |
| 125 | 90 | 504/5T | 728 | G | 5,9 | 1,8 | 2,0 | 104 | 23 | 51 | 2110 | 66,0 | 1,15 | 890 | 94,5 | 94,5 | 94,5 | 0,66 | 0,76 | 0,80 | 149 |
| 150 | 110 | 504/5T | 873 | F | 5,8 | 1,8 | 2,0 | 125 | 21 | 46 | 2293 | 66,0 | 1,15 | 890 | 94,5 | 94,5 | 94,5 | 0,68 | 0,77 | 0,81 | 180 |
| 150 | 110 | 504/5TS | 873 | F | 5,8 | 1,8 | 2,0 | 125 | 21 | 46 | 2293 | 66,0 | 1,15 | 890 | 94,5 | 94,5 | 94,5 | 0,68 | 0,77 | 0,81 | 180 |
| 200 | 150 | 447/9T | 1164 | H | 6,4 | 2,0 | 2,2 | 161 | 13 | 29 | 2509 | 66,0 | 1,15 | 890 | 94,5 | 95,0 | 95,0 | 0,62 | 0,73 | 0,78 | 254 |
| 250 | 185 | L447/9T | 1455 | G | 6,0 | 2,0 | 2,3 | 255 | 24 | 53 | 3550 | 64,0 | 1,15 | 890 | 95,4 | 95,4 | 95,4 | 0,65 | 0,75 | 0,79 | 308 |
| 300 | 220 | L447/9T* | 1746 | G | 6,3 | 2,2 | 2,4 | 285 | 16 | 35 | 3704 | 64,0 | 1,15 | 890 | 95,4 | 95,4 | 95,4 | 0,62 | 0,73 | 0,78 | 371 |

* Motor with class F (105K) temperature rise.

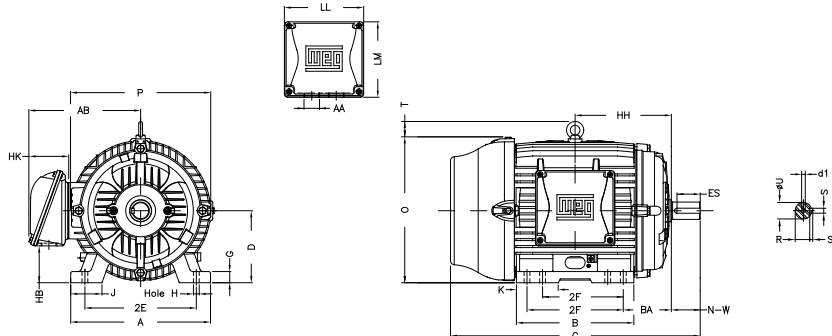
| Output | | Frame | Full Load Torque (ft.lb) | Locked Rotor Current | | Locked Rotor Torque Tl/Tn | Break-down Torque Tb/Tn | Inertia J (sq.ft.lb) | Allowable locked rotor time (s) | | Weight (lb) | Sound dB(A) | Service Factor | 460 V | | | | | | Full load current In (A) | |
|---------------------|------|---------|--------------------------|----------------------|-------|---------------------------|-------------------------|----------------------|---------------------------------|------|-------------|-------------|----------------|-------------------|------|------|--------------|------|------|--------------------------|------|
| | | | | Code | II/In | | | | Hot | Cold | | | | % of full load | | | Power Factor | | | | |
| | | | | | | | | | | | | | | Rated speed (rpm) | 50 | 75 | 100 | 50 | 75 | | 100 |
| HP | kW | | | | | | | | | | | | | | | | | | | | |
| Optional - IV Poles | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0,75 | 143/5T | 2,94 | L | 9,0 | 2,6 | 3,3 | 0,1554 | 33 | 73 | 50,7 | 51,0 | 1,25 | 1760 | 84,0 | 86,5 | 87,5 | 0,59 | 0,70 | 0,79 | 1,33 |
| 1 | 0,75 | 145T | 2,94 | L | 9,0 | 2,6 | 3,3 | 0,1554 | 33 | 73 | 50,7 | 51,0 | 1,25 | 1760 | 84,0 | 86,5 | 87,5 | 0,59 | 0,70 | 0,79 | 1,33 |
| 3 | 2,2 | L182T | 8,81 | K | 8,3 | 2,3 | 3,2 | 0,3961 | 36 | 79 | 92,6 | 56,0 | 1,25 | 1765 | 87,5 | 88,5 | 91,0 | 0,63 | 0,75 | 0,81 | 3,75 |
| 7,5 | 5,5 | 213/5T | 22,0 | K | 8,5 | 2,3 | 3,5 | 1,51 | 20 | 44 | 172 | 58,0 | 1,25 | 1770 | 91,0 | 92,4 | 93,0 | 0,65 | 0,76 | 0,83 | 8,94 |
| 25 | 18,5 | 284TS | 73,0 | K | 8,3 | 3,0 | 3,4 | 4,94 | 26 | 57 | 406 | 63,0 | 1,25 | 1775 | 93,0 | 94,1 | 94,5 | 0,62 | 0,74 | 0,81 | 30,3 |
| 30 | 22 | 284/6TS | 87,6 | J | 8,0 | 3,2 | 3,5 | 5,67 | 25 | 55 | 450 | 63,0 | 1,25 | 1775 | 93,0 | 94,1 | 94,5 | 0,64 | 0,76 | 0,82 | 35,6 |
| 40 | 30 | 324TS | 116 | K | 8,4 | 3,2 | 3,5 | 8,83 | 22 | 48 | 534 | 66,0 | 1,25 | 1780 | 93,6 | 94,5 | 95,0 | 0,64 | 0,75 | 0,81 | 48,9 |
| 50 | 37 | 326TS | 146 | H | 7,4 | 2,6 | 3,0 | 9,82 | 20 | 44 | 598 | 66,0 | 1,25 | 1780 | 94,1 | 95,0 | 95,4 | 0,62 | 0,73 | 0,81 | 60,1 |
| 60 | 45 | 364/5TS | 175 | J | 8,5 | 2,7 | 3,2 | 16,9 | 24 | 53 | 897 | 67,0 | 1,25 | 1780 | 94,5 | 95,4 | 95,8 | 0,69 | 0,80 | 0,84 | 70,2 |
| 75 | 55 | 364/5TS | 218 | J | 8,4 | 2,8 | 3,2 | 16,9 | 16 | 35 | 919 | 67,0 | 1,25 | 1780 | 94,5 | 95,4 | 95,8 | 0,68 | 0,78 | 0,83 | 86,8 |
| 100 | 75 | 404/5TS | 291 | K | 8,8 | 2,7 | 3,1 | 28,7 | 12 | 26 | 1188 | 68,0 | 1,25 | 1780 | 95,4 | 95,8 | 96,2 | 0,70 | 0,80 | 0,84 | 116 |
| 125 | 90 | 444/5TS | 363 | J | 8,2 | 2,4 | 3,0 | 58,4 | 38 | 84 | 1722 | 73,0 | 1,25 | 1785 | 95,0 | 95,8 | 96,2 | 0,68 | 0,79 | 0,84 | 140 |
| 150 | 110 | 444/5TS | 435 | K | 8,9 | 2,5 | 3,0 | 73,0 | 30 | 66 | 1951 | 73,0 | 1,25 | 1785 | 95,4 | 96,2 | 96,5 | 0,68 | 0,79 | 0,84 | 170 |
| 200 | 150 | 447/9TS | 580 | J | 7,7 | 2,8 | 3,0 | 98,7 | 24 | 53 | 2293 | 75,0 | 1,25 | 1785 | 95,8 | 96,5 | 96,8 | 0,66 | 0,77 | 0,83 | 234 |
| 250 | 185 | 447/9TS | 726 | H | 7,5 | 2,7 | 2,9 | 104 | 21 | 46 | 2536 | 75,0 | 1,25 | 1785 | 96,2 | 96,5 | 96,8 | 0,68 | 0,78 | 0,84 | 286 |
| VI Poles | | | | | | | | | | | | | | | | | | | | | |
| 3 | 2,2 | 213/5T | 13,2 | K | 7,2 | 1,8 | 2,9 | 1,53 | 90 | 198 | 172 | 55,0 | 1,25 | 1175 | 87,5 | 89,5 | 90,2 | 0,51 | 0,63 | 0,71 | 4,31 |
| 5 | 3,7 | L213/5T | 22,1 | J | 7,0 | 1,9 | 2,5 | 1,80 | 70 | 154 | 198 | 55,0 | 1,25 | 1170 | 89,5 | 91,0 | 91,0 | 0,56 | 0,68 | 0,75 | 6,80 |
| 7,5 | 5,5 | 254/6T | 33,1 | H | 6,8 | 2,5 | 3,1 | 4,57 | 50 | 110 | 304 | 59,0 | 1,25 | 1175 | 90,2 | 91,7 | 92,4 | 0,60 | 0,72 | 0,79 | 9,46 |
| 10 | 7,5 | 254/6T | 43,9 | H | 6,8 | 2,4 | 3,0 | 5,40 | 40 | 88 | 344 | 59,0 | 1,25 | 1180 | 91,0 | 92,4 | 92,4 | 0,62 | 0,74 | 0,80 | 12,7 |
| 15 | 11 | 284/6T | 65,9 | H | 7,1 | 2,6 | 3,0 | 7,69 | 25 | 55 | 410 | 59,0 | 1,25 | 1180 | 91,7 | 92,4 | 93,0 | 0,65 | 0,76 | 0,82 | 18,1 |
| 20 | 15 | 284/6T | 87,8 | J | 7,4 | 2,7 | 3,0 | 9,29 | 20 | 44 | 474 | 59,0 | 1,25 | 1180 | 91,7 | 92,4 | 93,0 | 0,67 | 0,78 | 0,83 | 24,4 |
| 25 | 18,5 | 324/6T | 109 | J | 7,3 | 2,6 | 3,1 | 11,2 | 30 | 66 | 527 | 62,0 | 1,25 | 1185 | 92,4 | 93,6 | 94,1 | 0,61 | 0,73 | 0,80 | 30,8 |
| 30 | 22 | 324/6T | 131 | H | 7,0 | 2,6 | 3,0 | 12,9 | 27 | 59 | 584 | 62,0 | 1,25 | 1185 | 92,4 | 93,6 | 94,1 | 0,60 | 0,73 | 0,80 | 36,7 |
| 40 | 30 | 364/5T | 174 | K | 8,4 | 2,6 | 3,2 | 24,2 | 22 | 48 | 875 | 66,0 | 1,25 | 1190 | 93,6 | 94,5 | 95,0 | 0,64 | 0,76 | 0,81 | 48,9 |
| 50 | 37 | 364/5T | 218 | K | 8,5 | 2,6 | 3,3 | 25,0 | 12 | 26 | 895 | 66,0 | 1,25 | 1190 | 93,6 | 94,5 | 95,0 | 0,63 | 0,75 | 0,81 | 60,3 |
| 60 | 45 | 404/5T | 262 | J | 7,9 | 2,8 | 3,2 | 39,1 | 22 | 48 | 1111 | 68,0 | 1,25 | 1185 | 94,1 | 95,0 | 95,4 | 0,65 | 0,77 | 0,82 | 72,2 |
| 75 | 55 | 404/5T | 327 | J | 8,0 | 2,8 | 3,0 | 41,3 | 15 | 33 | 1125 | 68,0 | 1,25 | 1190 | 94,1 | 95,0 | 95,4 | 0,64 | 0,75 | 0,81 | 89,3 |
| 100 | 75 | 444/5T | 435 | J | 7,6 | 2,6 | 3,2 | 106 | 27 | 59 | 1896 | 69,0 | 1,25 | 1190 | 94,5 | 95,4 | 95,8 | 0,60 | 0,72 | 0,79 | 124 |
| 125 | 93 | 444/5T | 544 | J | 7,6 | 2,4 | 2,6 | 114 | 25 | 55 | 1945 | 69,0 | 1,25 | 1190 | 95,0 | 95,8 | 95,8 | 0,62 | 0,74 | 0,80 | 152 |
| 150 | 110 | 447/9T | 653 | J | 7,5 | 2,6 | 3,2 | 145 | 22 | 48 | 2256 | 70,0 | 1,25 | 1190 | 95,0 | 95,8 | 96,2 | 0,62 | 0,74 | 0,80 | 179 |
| 200 | 150 | 447/9T | 871 | J | 7,5 | 2,6 | 3,0 | 156 | 15 | 33 | 2326 | 70,0 | 1,25 | 1190 | 95,4 | 95,8 | 96,2 | 0,60 | 0,72 | 0,80 | 245 |
| 250 | 185 | 586/7T | 1088 | G | 6,4 | 2,1 | 2,1 | 226 | 50 | 110 | 3638 | 77,0 | 1,25 | 1190 | 95,0 | 95,9 | 96,3 | 0,67 | 0,77 | 0,81 | 298 |
| Optional | | | | | | | | | | | | | | | | | | | | | |
| 3 | 2,2 | L213T | 13,2 | K | 7,2 | 1,8 | 2,9 | 1,53 | 90 | 198 | 172 | 55,0 | 1,25 | 1175 | 87,5 | 89,5 | 90,2 | 0,51 | 0,63 | 0,71 | 4,31 |
| 15 | 11 | 284TS | 65,9 | H | 7,1 | 2,6 | 3,0 | 7,69 | 25 | 55 | 410 | 59,0 | 1,25 | 1180 | 91,7 | 92,4 | 93,0 | 0,65 | 0,76 | 0,82 | 18,1 |
| 20 | 15 | 284/6TS | 87,8 | J | 7,4 | 2,7 | 3,0 | 9,29 | 20 | 44 | 474 | 59,0 | 1,25 | 1180 | 91,7 | 92,4 | 93,0 | 0,67 | 0,78 | 0,83 | 24,4 |
| 25 | 18,5 | 324TS | 109 | J | 7,3 | 2,6 | 3,1 | 11,2 | 30 | 66 | 527 | 62,0 | 1,25 | 1185 | 92,4 | 93,6 | 94,1 | 0,61 | 0,73 | 0,80 | 30,8 |
| 30 | 22 | 326TS | 131 | H | 7,0 | 2,6 | 3,0 | 12,9 | 27 | 59 | 584 | 62,0 | 1,25 | 1185 | 92,4 | 93,6 | 94,1 | 0,60 | 0,73 | 0,80 | 36,7 |
| 40 | 30 | 364/5TS | 174 | K | 8,4 | 2,6 | 3,2 | 24,2 | 22 | 48 | 875 | 66,0 | 1,25 | 1190 | 93,6 | 94,5 | 95,0 | 0,64 | 0,76 | 0,81 | 48,9 |
| 50 | 37 | 364/5TS | 218 | K | 8,5 | 2,6 | 3,3 | 25,0 | 12 | 26 | 895 | 66,0 | 1,25 | 1190 | 93,6 | 94,5 | 95,0 | 0,63 | 0,75 | 0,81 | 60,3 |
| 60 | 45 | 404/5TS | 262 | J | 7,9 | 2,8 | 3,2 | 39,1 | 22 | 48 | 1111 | 68,0 | 1,25 | 1185 | 94,1 | 95,0 | 95,4 | 0,65 | 0,77 | 0,82 | 72,2 |
| 75 | 55 | 404/5TS | 327 | J | 8,0 | 2,8 | 3,0 | 41,3 | 15 | 33 | 1125 | 68,0 | 1,25 | 1190 | 94,1 | 95,0 | 95,4 | 0,64 | 0,75 | 0,81 | 89,3 |
| 100 | 75 | 444/5TS | 435 | J | 7,6 | 2,6 | 3,2 | 106 | 27 | 59 | 1896 | 69,0 | 1,25 | 1190 | 94,5 | 95,4 | 95,8 | 0,60 | 0,72 | 0,79 | 124 |
| 125 | 93 | 444/5TS | 544 | J | 7,6 | 2,4 | 2,6 | 114 | 25 | 55 | 1945 | 69,0 | 1,25 | 1190 | 95,0 | 95,8 | 95,8 | 0,62 | 0,74 | 0,80 | 152 |
| 150 | 110 | 447/9TS | 653 | J | 7,5 | 2,6 | 3,2 | 145 | 22 | 48 | 2256 | 70,0 | 1,25 | 1190 | 95,0 | 95,8 | 96,2 | 0,62 | 0,74 | 0,80 | 179 |
| 200 | 150 | 447/9TS | 871 | J | 7,5 | 2,6 | 3,0 | 156 | 15 | 33 | 2326 | 70,0 | 1,25 | 1190 | 95,4 | 95,8 | 96,2 | 0,60 | 0,72 | 0,80 | 245 |

15. Mechanical Data

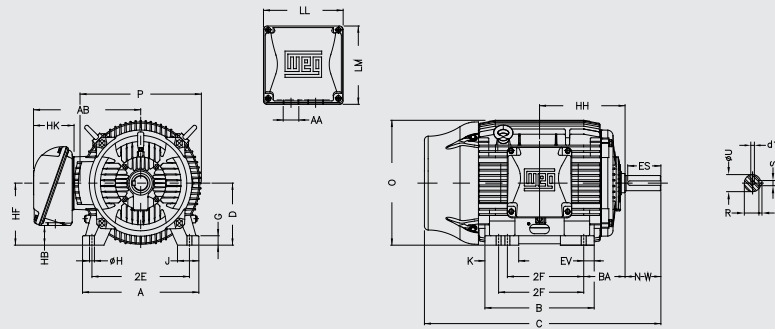
Frames 143T to 215T



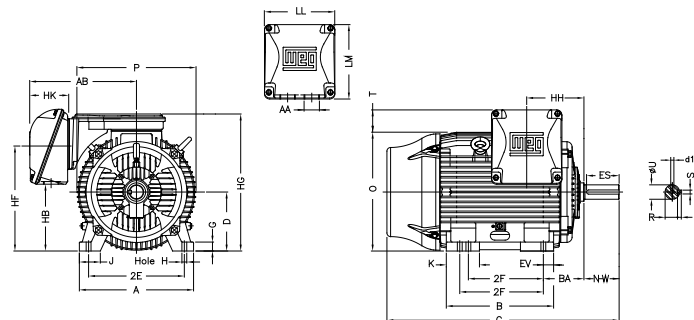
Frames 254T to 326T



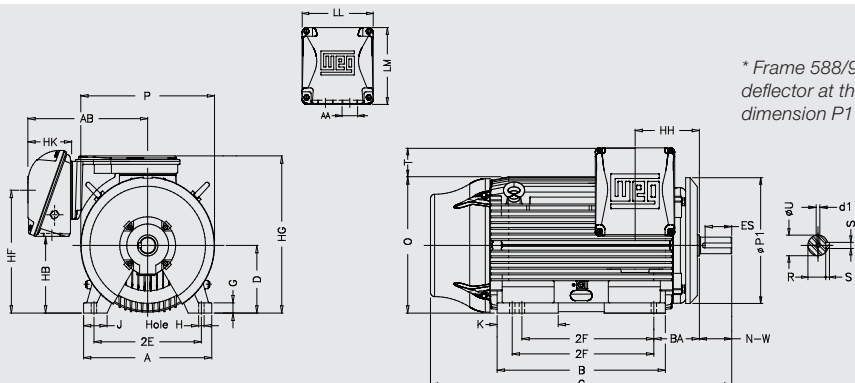
Frames 364 to 444/5T



Frames 445/7T to 586/7T



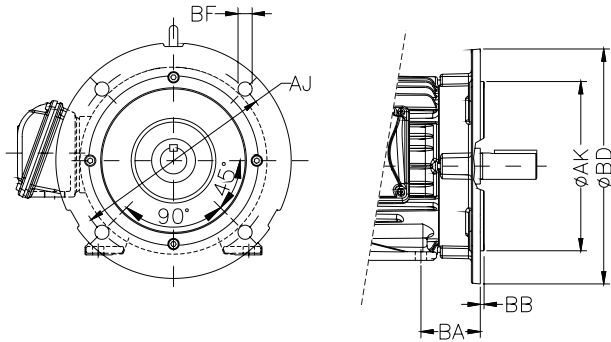
Frame 588/9T



* Frame 588/9T is equipped with an air deflector at the DE. In this case the dimension P1 is 34.650"

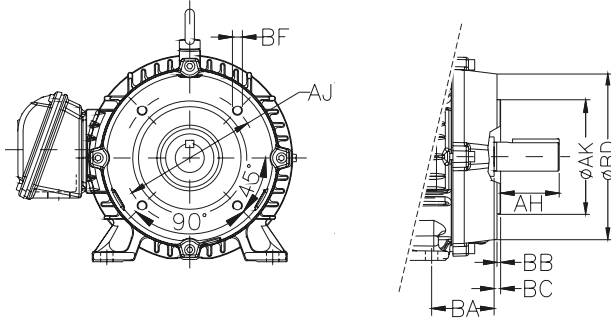
Flange Mounted Motors

“D” Flange



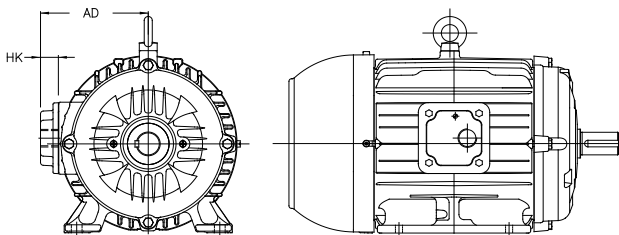
| Frame | Flange | BA | BB | AK | BD | AJ | BF | |
|----------|--------|--------|-------|--------|--------|--------|----------|----------|
| | | | | | | | Tap size | Quantity |
| 143/5TD | D-254 | 2.250 | 0.197 | 9.000 | 11.000 | 10.000 | 0.551 | 4 |
| 182/4TD | | 2.750 | | | | | | |
| 213/5TD | | 3.500 | | | | | | |
| 254/6TD | D-317 | 4.250 | 0.203 | 11.000 | 14.000 | 12.500 | 0.828 | 8 |
| 284/6TD | | 4.750 | | | | | | |
| 284/6TSD | D-406 | 5.250 | 0.197 | 14.000 | 18.000 | 16.000 | 0.828 | 8 |
| 324/6TD | | 5.250 | | | | | | |
| 324/6TSD | | 5.250 | | | | | | |
| 364/5TD | D-508 | 6.625 | 0.203 | 18.000 | 21.650 | 20.000 | 0.828 | 8 |
| 364/5TSD | | 6.625 | | | | | | |
| 404/5TD | | 7.500 | | | | | | |
| 404/5TSD | D-558 | 8.500 | 0.250 | 28.000 | 32.000 | 30.000 | 0.828 | 8 |
| 444/5TD | | 8.500 | | | | | | |
| 444/5TSD | | 8.500 | | | | | | |
| 445/7TD | D-762 | 10.000 | 0.250 | 28.000 | 32.000 | 30.000 | 0.828 | 8 |
| 445/7TSD | | 10.000 | | | | | | |
| 447/9TD | | 10.000 | | | | | | |

“C” Flange



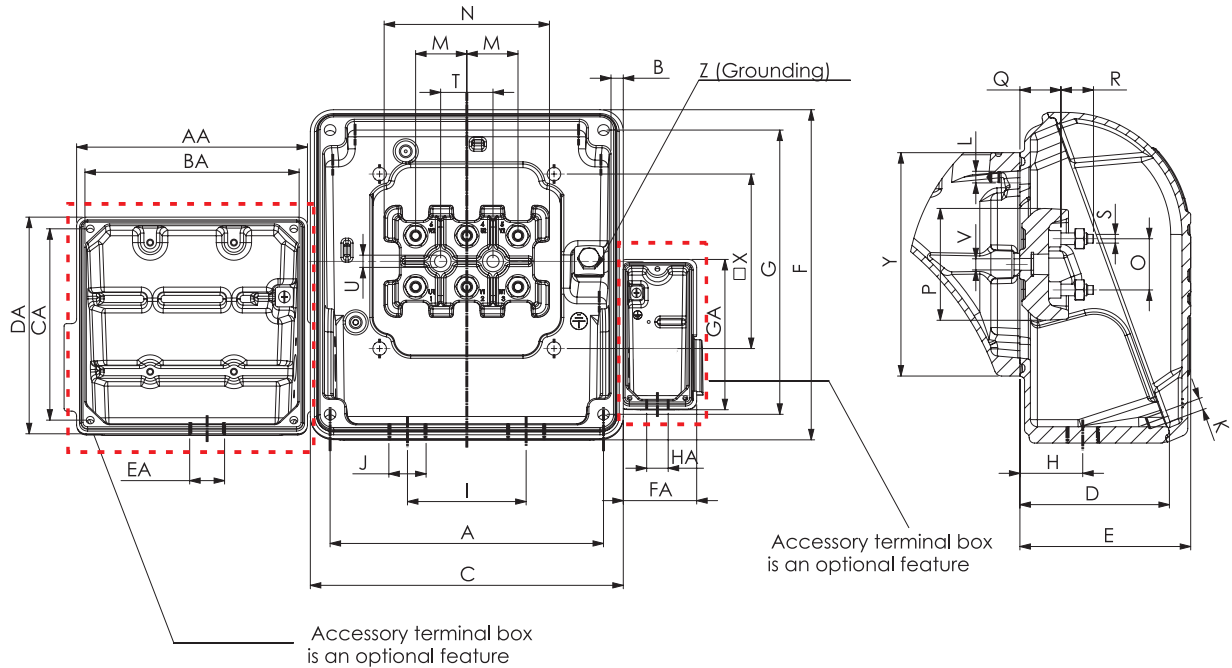
| Frame | Flange | BA | BB | BC | AK | BD | AH | AJ | BF | |
|----------|--------|--------|-------|-------|--------|--------|--------|--------|-------------|----------|
| | | | | | | | | | Tap size | Quantity |
| 143/5TC | FC-149 | 2.250 | 0.157 | 0.125 | 4.500 | 6.496 | 2.125 | 5.875 | UNC 3/8"x16 | 4 |
| 182/4TC | | 2.750 | | | | | | | | |
| 213/5TC | | 3.500 | | | | | | | | |
| 254/6TC | FC-184 | 4.250 | 0.250 | 0.250 | 8.500 | 8.858 | 3.125 | 7.250 | UNC 1/2"x13 | 8 |
| 284/6TC | | 4.750 | | | | | | | | |
| 284/6TSC | FC-228 | 5.250 | 0.250 | 0.250 | 10.500 | 11.03 | 4.375 | 9.000 | UNC 5/8"x11 | 8 |
| 324/6TC | | 5.250 | | | | | | | | |
| 324/6TSC | | 5.250 | | | | | | | | |
| 364/5TC | FC-279 | 6.625 | 0.250 | 0.250 | 12.500 | 13.580 | 5.000 | 11.000 | UNC 5/8"x11 | 8 |
| 364/5TSC | | 6.625 | | | | | | | | |
| 404/5TC | | 7.500 | | | | | | | | |
| 404/5TSC | FC-355 | 7.500 | 0.250 | 0.250 | 16.000 | 17.913 | 8.250 | 14.000 | UNC 5/8"x11 | 8 |
| 444/5TC | | 7.500 | | | | | | | | |
| 444/5TSC | | 7.500 | | | | | | | | |
| 445/7TC | FC-368 | 8.500 | 0.250 | 0.250 | 16.500 | 17.91 | 10.375 | 14.500 | UNC 5/8"x11 | 8 |
| 445/7TSC | | 8.500 | | | | | | | | |
| 447/9TC | | 8.500 | | | | | | | | |
| 447/9TSC | FC-368 | 10.000 | 0.250 | 0.250 | 16.500 | 17.91 | 11.375 | 14.500 | UNC 5/8"x11 | 8 |
| 504/5TC | | 10.000 | | | | | | | | |
| 504/5TSC | | 10.000 | | | | | | | | |
| 586/7TC | FC-368 | 10.000 | 0.250 | 0.250 | 16.500 | 17.91 | 11.375 | 14.500 | UNC 5/8"x11 | 8 |
| 586/7TSC | | 10.000 | | | | | | | | |
| 588/9TC | | 10.000 | | | | | | | | |

Dimensions for motors with terminal box base



| Frame | Thread size ≤ M20 or 1/2" | | Thread size > M20 or 1/2" | |
|-------|---------------------------|-------|---------------------------|-------|
| | HK | AD | HK | AD |
| 63 | 1.575 | 4.173 | 1.575 | 4.173 |
| 71 | | 4.488 | | 4.488 |
| 80 | 0.787 | 4.055 | 1.181 | 4.449 |
| 90 | | 4.449 | | 4.843 |
| 100 | | 4.843 | | 5.236 |
| 112 | 0.984 | 5.512 | 1.772 | 6.299 |
| 132 | | 6.614 | | 7.402 |

16. Terminal Box Drawing



| Frames | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | | | |
|---------|--------|-------|--------|-------|--------|--------|--------|-------|-------|------------|----------|----------|-------|-------|-------|-------|-------|-------|----------|---------|---------|---------|-------|--|
| 143/5T | 3.858 | | 4.252 | 2.283 | 2.323 | 3.858 | 3.583 | 1.220 | 1.654 | NPT 3/4" | M5x0.8 | M5x0.8 | 0.630 | 2.087 | 0.630 | 1.378 | 0.610 | 0.472 | M4x0.7 | 0.787 | 0.228 | | | |
| 182/4T | 4.606 | 0.276 | 5.512 | 2.717 | 3.150 | 5.236 | 4.606 | 1.417 | 2.126 | NPT 1" | M6x1.0 | M6x1.0 | 0.906 | 2.953 | 0.906 | 2.047 | 0.669 | 0.630 | M5x0.8 | 0.906 | 0.256 | | | |
| 213/5T | | | | | | | | | | | | | | | | | | | | | | | | |
| 254/6T | 6.890 | 0.335 | 7.815 | 3.386 | 3.976 | 7.480 | 6.890 | 1.811 | 3.307 | NPT 1 1/2" | M8x1.25 | M8x1.25 | 1.102 | 3.543 | 1.102 | 2.362 | 0.846 | 0.807 | M6x1.0 | 1.102 | 0.260 | | | |
| 284/6T | | | | | | | | | | | | | | | 1.378 | 4.409 | 1.378 | 2.913 | 0.945 | 0.945 | M8x1.25 | 1.378 | 0.374 | |
| 324/6T | 8.031 | 0.374 | 9.055 | 3.996 | 4.705 | 8.661 | 8.031 | 2.205 | 3.701 | NPT 2" | M10x1.5 | M10x1.5 | 1.732 | 5.512 | 1.732 | 3.701 | 1.280 | 1.102 | M10x1.5 | | | | | |
| 364/5T | 9.252 | 0.492 | 10.591 | 5.000 | 6.024 | 11.220 | 10.236 | 2.677 | 4.331 | NPT 3" | | | | | 2.559 | 8.268 | 2.559 | 5.748 | 2.008 | 1.772 | M16x2.0 | 2.559 | | |
| 404/5T | | | | | | | | | | | | | | | | | | | | | | | | |
| 444/5T | 10.827 | 0.531 | 12.362 | 5.118 | 5.965 | 12.283 | 10.827 | | 4.961 | 2xNPT 3" | M12x1.75 | M12x1.75 | 1.772 | 6.024 | 1.772 | 4.252 | 1.398 | 1.575 | M12x1.75 | 1.772 | 0.413 | | | |
| 445/7T | 13.386 | | 14.921 | 6.142 | 6.929 | 15.039 | 13.583 | 3.228 | 6.299 | | | | | | | | | | | | | | | |
| 447/9T | 14.370 | 0.571 | 15.905 | 7.697 | 8.661 | 17.165 | 15.354 | 3.819 | 7.874 | | | | | | | 2.559 | 8.268 | 2.559 | 5.748 | 2.008 | 1.772 | M16x2.0 | 2.559 | |
| 504/5T | | | | | | | | | | | | | | | | | | | | | | | | |
| L447/9T | 16.339 | - | 18.110 | 9.843 | 12.913 | 21.417 | 18.898 | 5.000 | 6.299 | 2xNPT 4" | M10x1.5 | | 3.150 | - | 4.134 | - | - | - | - | M20x2.5 | - | - | | |
| 586/7T | | | | | | | | | | | | | | | | | | | | | | | | |
| 588/9T | | | | | | | | | | | | | | | | | | | | | | | | |

| Frames | V | X | Y | Z | AA | BA | CA | DA | EA | FA | GA | HA | Maximum connector number | | | Volume (in ³) | | |
|---------|----------|--------|--------|------------------------|-------|-------|-------|-------|----------|-------|-------|----------|--------------------------|-------------|--------------|---------------------------|--|--|
| | | | | | | | | | | | | | Main | Accessories | Space heater | | | |
| 143/5T | M5x0.8 | 2.205 | 3.031 | 0.5-6 mm ² | 4.291 | 3.543 | 3.346 | 3.858 | | | | | 4 | 16 | | 25 | | |
| 182/4T | | 2.756 | 4.213 | 2-10 mm ² | | | | | | | | | 6 | | | 50 | | |
| 213/5T | | | | | | | | | | | | | | | | | | |
| 254/6T | M6x1.0 | 4.331 | 5.669 | 5.2-25 mm ² | | | | | | | 4.016 | | | | | 135 | | |
| 284/6T | | | | | | | | | | | | | | | | | | |
| 324/6T | M8x1.25 | 4.724 | 6.102 | 5.2-35 mm ² | 5.472 | 4.606 | 4.606 | 5.236 | NPT 3/4" | 2.657 | | NPT 3/4" | 15 | 26 | 4 | 592 | | |
| 364/5T | M10x1.5 | 5.906 | 7.559 | 25-50 mm ² | | | | | | | | | | | | | | |
| 404/5T | | 7.874 | 10.236 | 35-70 mm ² | | | | | | | | | | | | | | |
| 444/5T | | | | | | | | | | | | | | | | | | |
| 445/7T | M10x1.5 | 10.236 | 12.008 | 85-120 mm ² | | | | | | | | | | | | 1100 | | |
| 447/9T | | | | | | | | | | | | | | | | | | |
| 504/5T | | | | | | | | | | | | | | | | | | |
| L447/9T | 4xM6x1.5 | 11.417 | | | | | | | | | | | | | | 1696 | | |
| 586/7T | | | | | | | | | | | | | | | | | | |
| 588/9T | | | | | | | | | | | | | | | | 3300 | | |

Note: terminal block is optional on NEMA motors.

17. Drip Cover Data

Utilization of a rain drip cover increases the total length of the motor. The additional land length can be seen on the table 20.

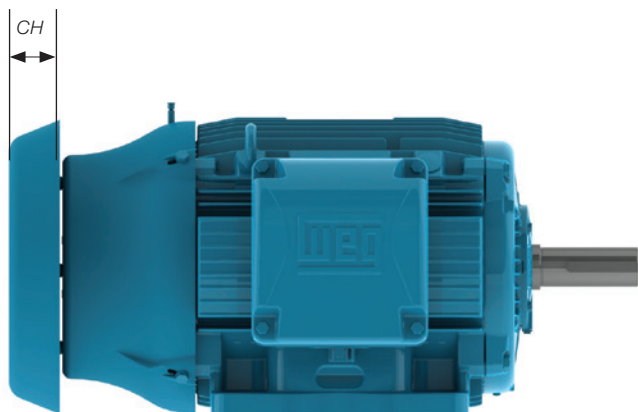


Figure 28 - Motor with drip cover.

| Frame | Dimension CH [increase motor length (inches)] |
|--------|---|
| 143/5T | 0.719 |
| 182/4T | 1.337 |
| 213/5T | 1.378 |
| 254/6T | 1.850 |
| 284/6T | 2.244 |
| 324/6T | 2.638 |
| 364/5T | 3.189 |
| 404/5T | |
| 444/5T | |
| 445/7T | 3.583 |
| 447/9T | |
| 504/5T | |
| 586/7T | 3.583 |
| 588/9T | |

Table 20 - Increasing the total length of the motor with drip cover.

18. Distance From Fan Cover to Wall

See in the table 21 the distance from fan cover to wall.

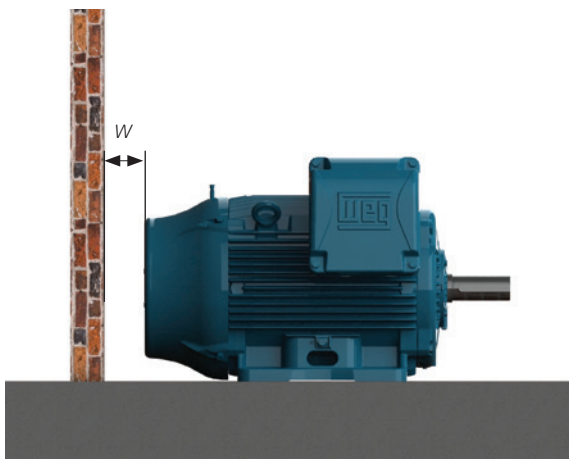


Figure 29 - Distance from fan cover to wall.

| Frame | W - Distance from fan cover to wall [in] |
|--------|--|
| 143/5 | 1.30 |
| 182/4 | 1.61 |
| 213/5 | 1.98 |
| 254/6 | 2.56 |
| 284/6 | 2.66 |
| 324/6 | 3.08 |
| 364/5 | 3.35 |
| 404/5 | |
| 444/5 | 4.23 |
| 445/7 | |
| 447/9 | |
| L447/9 | 4.80 |
| 504/5 | |
| 586/7 | 5.35 |
| 588/9 | |

Table 21 - Distance from fan cover to wall.

19. Jacking Screws and Dowel Pins Data

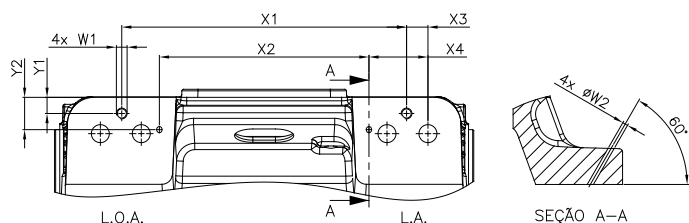


Figure 30 - Dimensions for motors with jacking screws and dowel pins

| Frame | Threaded hole W1 | Ø W2 | X1 | X2 | X3 | X4 | Y1 | Y2 |
|---------|------------------|-------|--------|--------|-------|-------|-------|-------|
| 254T | M10 x 1.50 | 0.197 | 6.496 | 5.118 | 0.886 | 1.575 | 0.394 | 0.984 |
| 254/6T | M10 x 1.50 | 0.197 | 8.228 | 4.882 | 0.886 | 2.559 | 0.394 | 0.984 |
| 256T | M10 x 1.50 | 0.197 | 8.425 | 4.882 | 0.787 | 2.559 | 0.394 | 0.984 |
| 284T | M10 x 1.50 | 0.197 | 7.913 | 6.732 | 0.787 | 1.378 | 0.591 | 0.984 |
| 284/6T | M10 x 1.50 | 0.197 | 9.409 | 6.654 | 0.787 | 2.165 | 0.591 | 0.984 |
| 286T | M10 x 1.50 | 0.197 | 9.409 | 6.654 | 0.787 | 2.165 | 0.591 | 0.984 |
| 324T | M10 x 1.50 | 0.197 | 8.937 | 7.756 | 0.787 | 1.378 | 0.591 | 1.181 |
| 324/6T | M10 x 1.50 | 0.197 | 10.433 | 7.677 | 0.787 | 2.165 | 0.591 | 1.181 |
| 326T | M10 x 1.50 | 0.197 | 10.433 | 9.252 | 0.787 | 1.378 | 0.591 | 1.181 |
| 364/5T | M12 x 1.75 | 0.197 | 11.063 | 8.701 | 0.591 | 1.772 | 0.591 | 1.378 |
| 404/5T | M12 x 1.75 | 0.197 | 12.559 | 8.622 | 0.591 | 2.559 | 0.591 | 1.575 |
| 444/5T | M16 x 2.0 | 0.197 | 14.134 | 10.984 | 1.181 | 2.756 | 0.787 | 1.575 |
| 445/7T | M16 x 2.0 | 0.197 | 16.85 | 14.528 | 1.575 | 2.756 | 0.787 | 1.575 |
| 447/9T | M16 x 2.0 | 0.197 | 21.85 | 16.653 | 1.575 | 5.512 | 0.787 | 1.575 |
| L447/9T | M16 x 2.0 | 0.197 | 14.134 | 10.984 | 1.181 | 2.756 | 0.787 | 1.575 |
| 504/5T | M16 x 2.0 | 0.197 | 15.63 | 11.063 | 1.181 | 3.937 | 0.787 | 1.772 |
| 586/T | M16 x 2.0 | 0.197 | 21.063 | 16.929 | 1.968 | 3.937 | 1.181 | 2.362 |
| 588/9T | M16 x 2.0 | 0.197 | 19.324 | 15.281 | 1.466 | 3.794 | 0.952 | 1.964 |

Table 22 - Dimensions for motors with jacking screws and dowel pins

20. Packaging

20.1 Frames 143T to 215T

W22 motors in frames 143T to 215T are packaged in cardboard boxes (see figure 31), following the dimensions, weights and volumes of the tables 23 and 24.



Figure 31 - Cardboard box.

| Frame | External height (in) | External width (in) | External length (in) | Weight (lbf) | Volume (ft ³) |
|-------|----------------------|---------------------|----------------------|--------------|---------------------------|
| 143T | 12.598 | 10.630 | 17.008 | 2.0 | 1.3 |
| 145T | 12.598 | 10.630 | 17.008 | 2.0 | 1.3 |
| 213T | 16.535 | 12.992 | 23.425 | 3.7 | 2.9 |
| 215T | 16.535 | 12.992 | 23.425 | 3.7 | 2.9 |

*F-3 mounting not available for frames 182 and 184.

Table 23 - Cardboard box dimensions, weights and volumes for top mounting.

| Frame | External height (in) | External width (in) | External length (in) | Weight (lbf) | Volume (ft ³) |
|-------|----------------------|---------------------|----------------------|--------------|---------------------------|
| 143T | 9.252 | 12.402 | 15.669 | 1.8 | 1.0 |
| 145T | 9.252 | 12.402 | 15.669 | 1.8 | 1.0 |
| 182T | 11.811 | 14.961 | 18.307 | 2.6 | 1.9 |
| 184T | 11.811 | 14.961 | 18.307 | 2.6 | 1.9 |
| 213T | 13.780 | 16.535 | 23.425 | 4.5 | 3.1 |
| 215T | 13.780 | 16.535 | 23.425 | 4.5 | 3.1 |

Table 24 - Cardboard box dimensions, weights and volumes for side mounting.

20.2 Frames 254T to 588/9T

For frames 254T to 588/9T, the motors are packaged in wooden crates (see figure 32). Dimensions, weights and volumes are in tables 25 and 26.



Figure 32 - Wooden crates.

| Frame | External height (in) | External width (in) | External length (in) | Weight (lbf) | Volume (ft ³) |
|---------|----------------------|---------------------|----------------------|--------------|---------------------------|
| 254T | 19.764 | 15.827 | 29.134 | 20.2 | 5.3 |
| 256T | 19.764 | 15.827 | 29.134 | 20.2 | 5.3 |
| 284T | 20.945 | 17.008 | 32.283 | 27.0 | 6.7 |
| 286T | 20.945 | 17.008 | 32.283 | 27.0 | 6.7 |
| 324T | 23.307 | 20.157 | 34.646 | 29.7 | 9.4 |
| 326T | 23.307 | 20.157 | 34.646 | 29.7 | 9.4 |
| 364/5T | 35.433 | 33.465 | 45.276 | 114.4 | 31.1 |
| 404/5T | 35.433 | 33.465 | 49.213 | 120.3 | 33.8 |
| 444/5T | 44.488 | 33.465 | 55.118 | 149.7 | 47.5 |
| 445/7T | 44.488 | 33.465 | 62.992 | 177.7 | 54.3 |
| 447/9T | 44.488 | 33.465 | 66.929 | 182.3 | 57.7 |
| L447/9T | 44.488 | 33.465 | 66.929 | 182.3 | 57.7 |
| 504/5T | 44.488 | 33.465 | 61.024 | 154.1 | 52.6 |
| 586/7T | 52.874 | 41.339 | 71.654 | 284.4 | 90.6 |
| 588/9T | 56.063 | 50.787 | 80.709 | 427.7 | 133.0 |

Table 25 - Wooden crates dimensions, weights and volumes for top mounting.

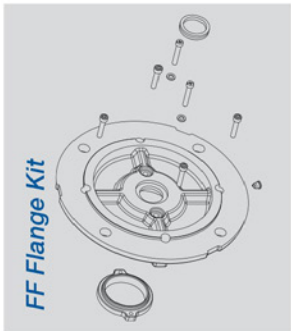
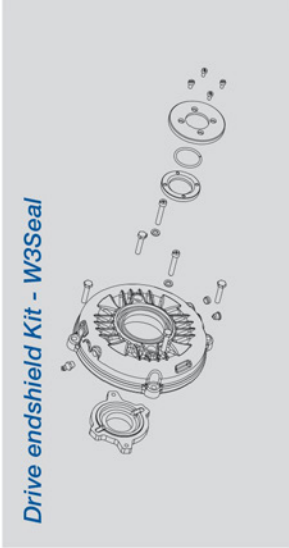
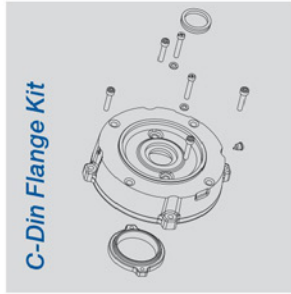
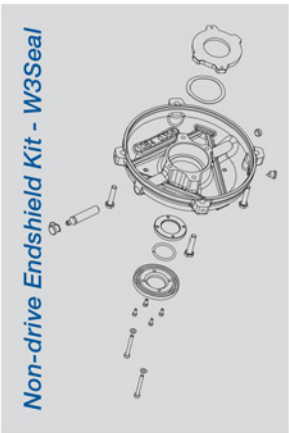
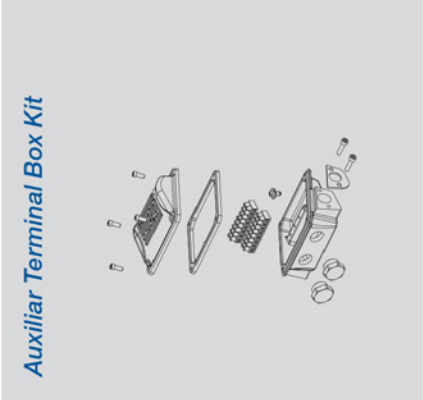
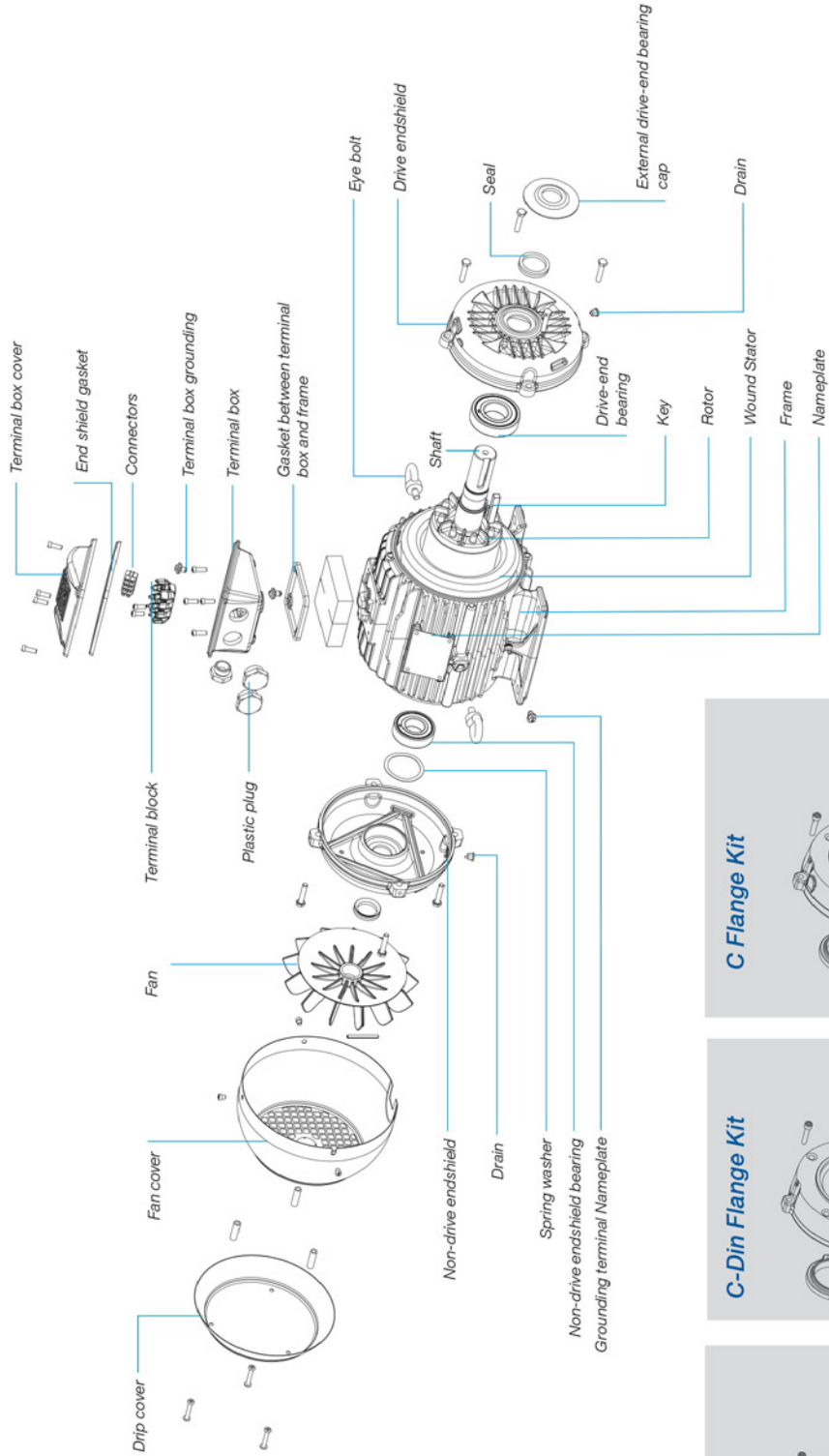
| Frame | External height (in) | External width (in) | External length (in) | Weight (lbf) | Volume (ft ³) |
|---------|----------------------|---------------------|----------------------|--------------|---------------------------|
| 254T | 15.827 | 20.157 | 29.134 | 21.7 | 5.4 |
| 256T | 15.827 | 20.157 | 29.134 | 21.7 | 5.4 |
| 284T | 17.795 | 22.520 | 32.283 | 29.6 | 7.5 |
| 286T | 17.795 | 22.520 | 32.283 | 29.6 | 7.5 |
| 324T | 19.370 | 24.882 | 34.646 | 32.1 | 9.7 |
| 326T | 19.370 | 24.882 | 34.646 | 32.1 | 9.7 |
| 364/5T | 31.496 | 33.465 | 45.276 | 109.6 | 27.6 |
| 404/5T | 35.433 | 33.465 | 49.213 | 115.1 | 33.8 |
| 444/5T | 37.402 | 37.402 | 55.118 | 157.9 | 44.6 |
| 445/7T | 37.402 | 43.307 | 62.992 | 172.8 | 59.0 |
| 447/9T | 37.402 | 43.307 | 66.929 | 188.1 | 62.7 |
| L447/9T | 37.402 | 43.307 | 66.929 | 188.1 | 62.7 |
| 504/5T | 44.488 | 43.307 | 62.992 | 204.8 | 70.2 |
| 586/7T | 44.488 | 46.850 | 71.654 | 324.1 | 86.4 |
| 588/9T | 46.220 | 50.866 | 80.709 | 403.4 | 109.8 |

Note: values to be added to the net motor weight.

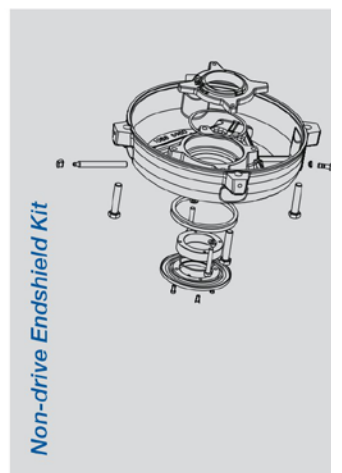
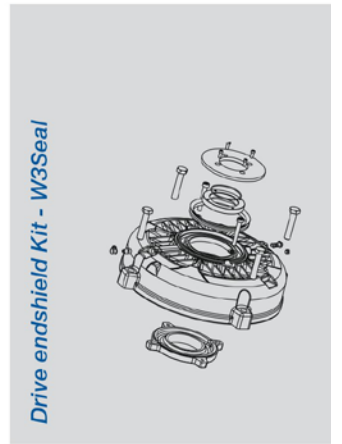
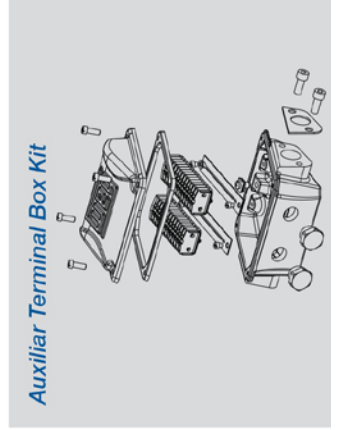
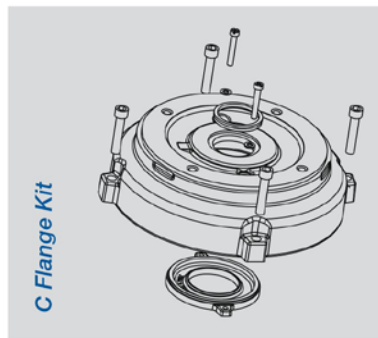
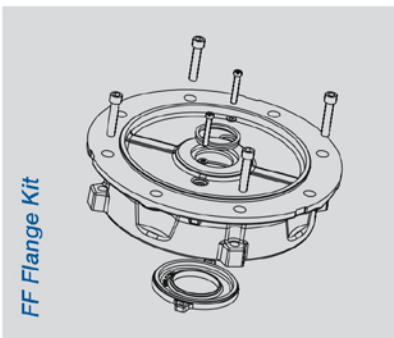
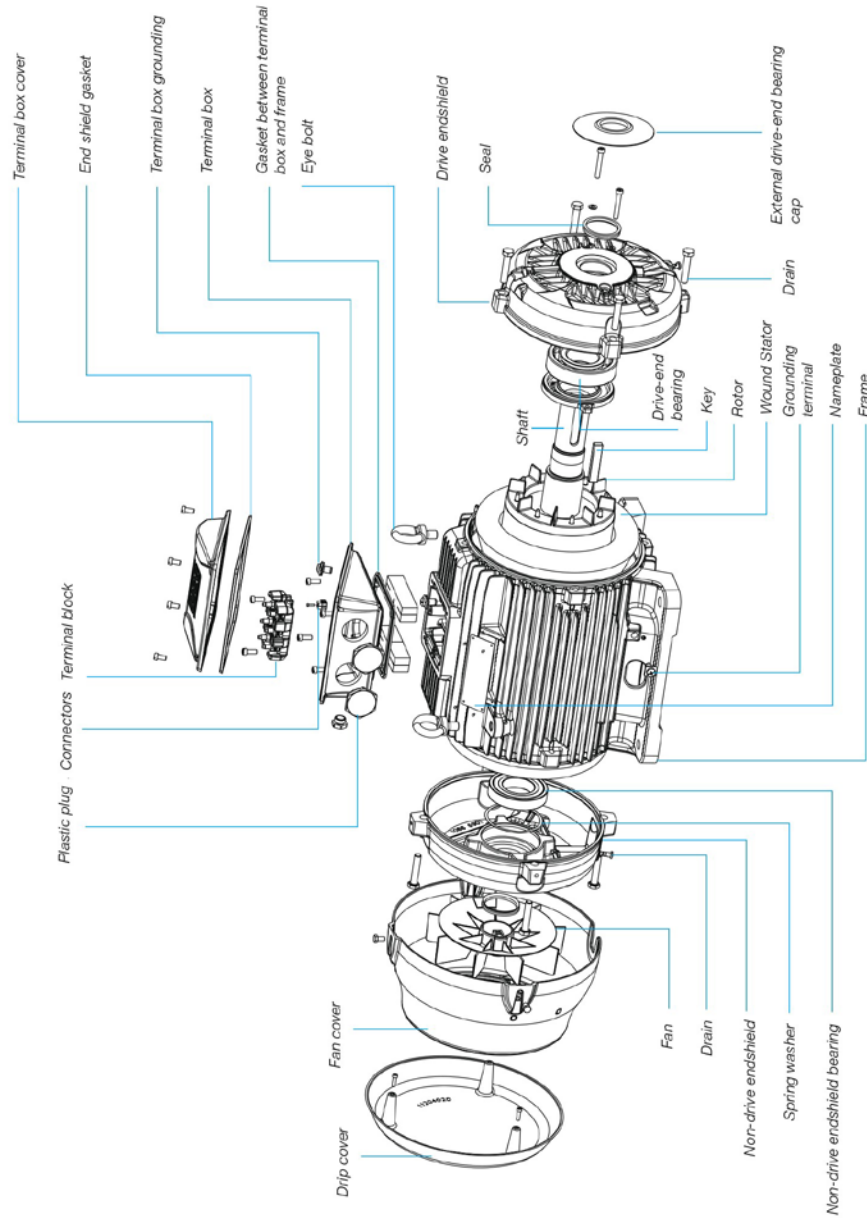
Table 26 - Wooden crates dimensions, weights and volumes for side mounting.

21. Spare Parts

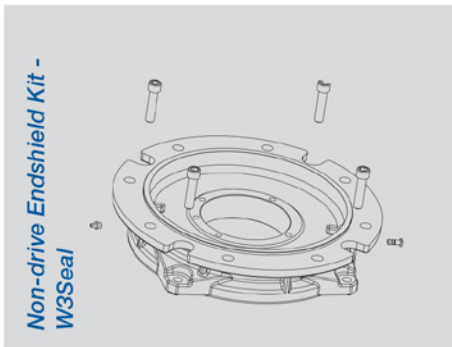
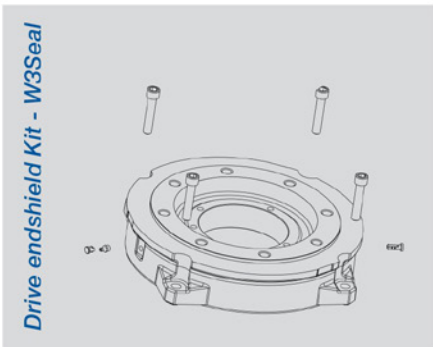
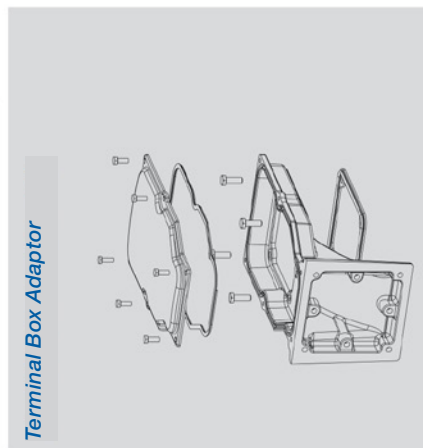
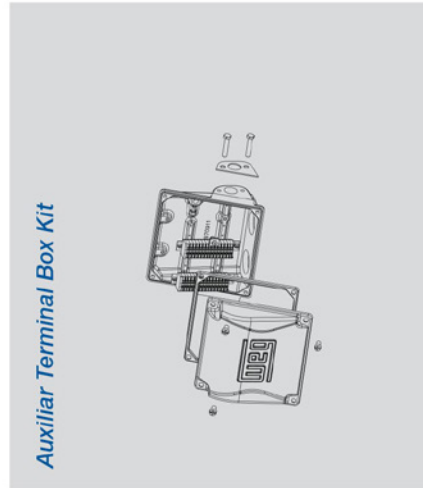
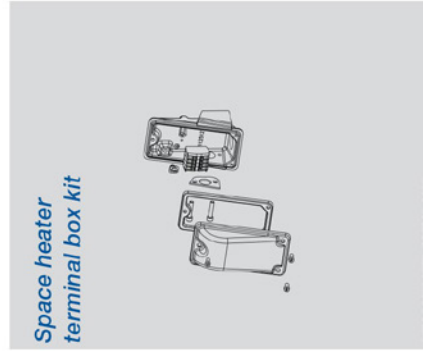
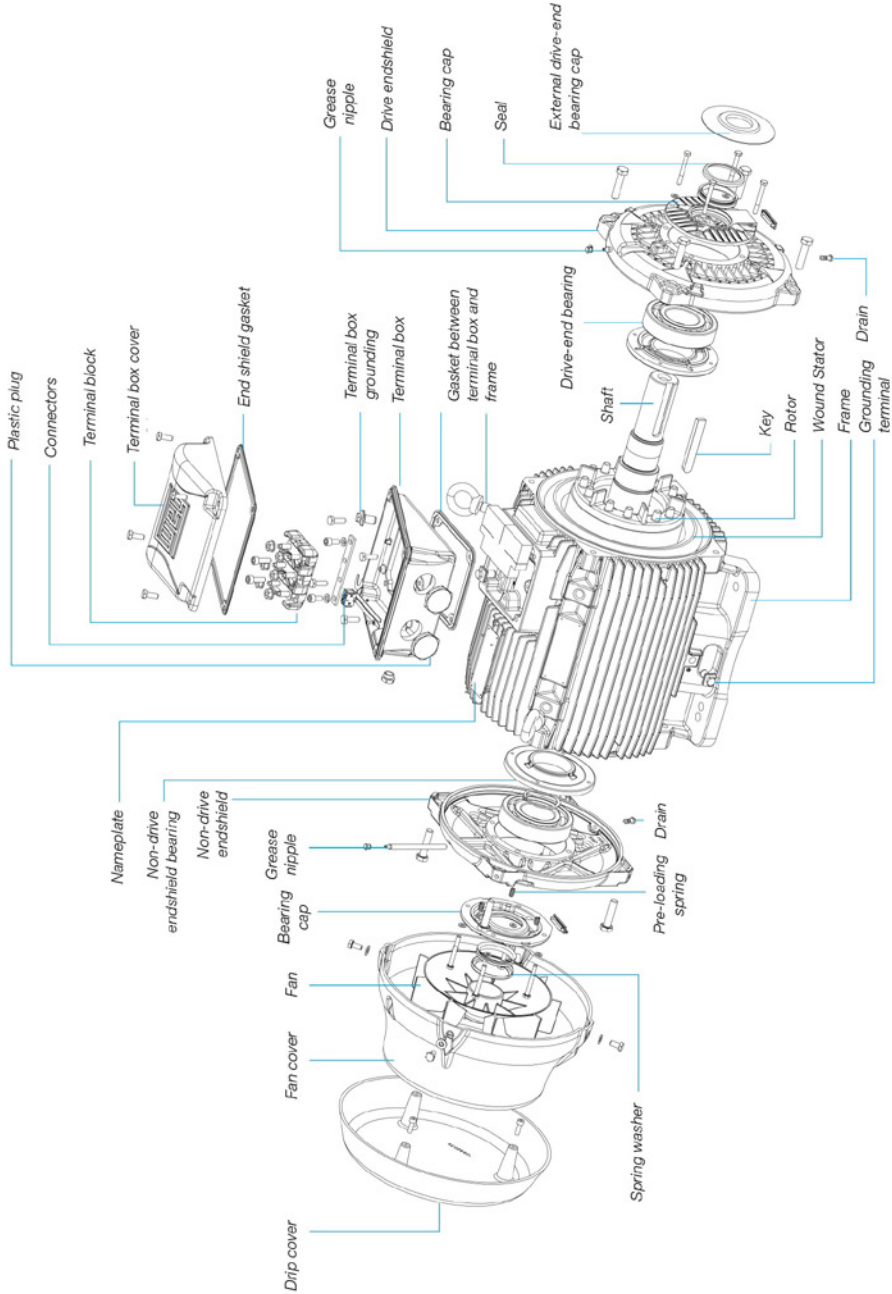
Frames 143T to 184T



Frames 213T to 326T



Frames 364/5T to 588/9T






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