

Quick Guide

W80 AXgen





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Language: English

Document: 50168992

Review: 00

Date: 10/2026

1 INTERFACE WITH APPLICATION

Figure 1.1 below shows a W80AXgen motor and its main interface features.

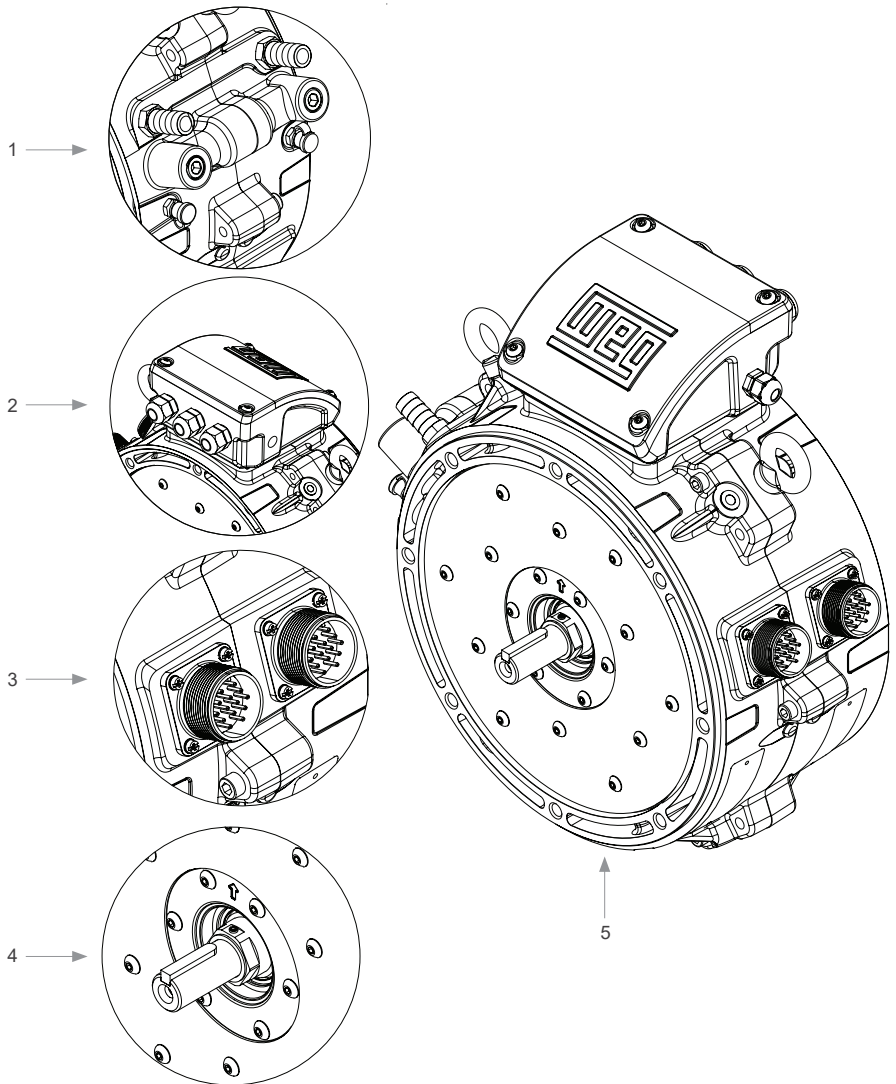


Figure 1.1: Main interface features

- | | |
|---|----------------------------|
| 1. Water inlet/outlet connections | 4. Hollow shaft-end |
| 2. Terminal box with cable gland | 5. Flange with UNC threads |
| 3. Connectors for accessories | |
| a. Accessories: Male connector with 14 pins,
180° angle, contact arrangement 20-27 | |

2 NAMEPLATE

Figure 2.1 below shows the motor nameplate that describes the specific characteristics of the motor as terminal connection diagram, cooling water data, grease, lubrication interval and quantity.

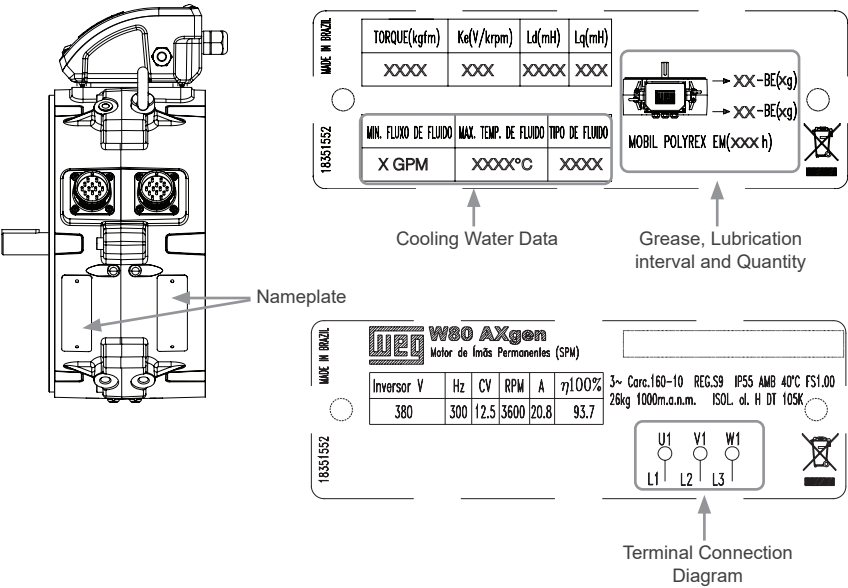


Figure 2.1: Nameplate

3 WATER AND GREASING CONNECTION HOLES AND DRAIN LOCATIONS

Figure 3.1 below shows locations of the water inlet and water outlet holes, as well as the grease inlet and grease outlet connections. It also shows the positions of the water jacket drain plugs and motor drain plugs. The connections and drains on the right side correspond to the drive end, while those on the left side correspond to the non-drive end, providing access to the cooling jacket and motor internal cavities.

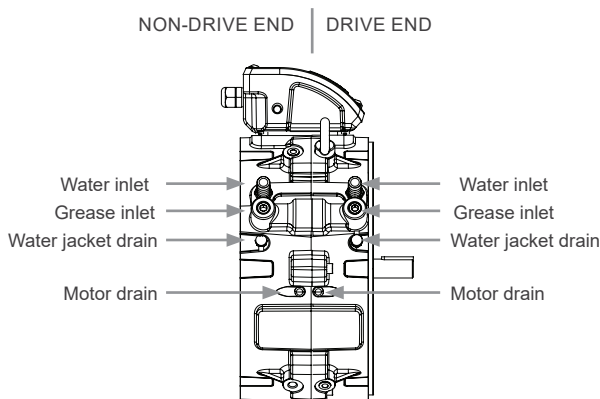


Figure 3.1: Water and Grease Connection Holes and Drain Locations (Drive End and Non-Drive End)

The water inlet and outlet connections are configured according to applicable standards and the specific model of each motor. The hoses must be secured to the barbed fittings using hose clamps.

The drain plugs are manufactured from brass in accordance with each motor drawing. It can be used either to empty the motor water jacket or to purge air from the system. Note that air purging can be performed at any point in the system, not necessarily at the motor. The required tightening torque for both the water connections and the drain plugs are as follows Table 3.1:

Tabela 3.1: – Tightening torque for Water Connections and Drain Plugs

Frame	Water connectors		Water Drain Plugs	
	Size	T [N.m] [lbf.ft]	Size	T [N.m] [lbf.ft]
250CHY/ 160	NPT 1/4	5 - 7	NPT 1/4	5 - 7
280CHY/ 180		3.7 - 5.2		3.7 - 5.2
320CHY/ 200	NPT 1/2	6 - 8 4.4 - 5.9	NPT 3/8	6 - 8 4.4 - 5.9
360CHY/ 225	NPT 3/4	7 - 9	NPT 1/2	6 - 8
400CHY/ 250		5.2 - 6.6		4.4 - 5.9

Cooling Circuit Filling Procedure

1. Connect the water inlet and outlet piping to the corresponding motor fittings, as identified on the motor.
2. Ensure that all connections are properly tightened and free of leaks.
3. Start water circulation through the cooling circuit, maintaining the flow rate and pressure specified on the motor nameplate or in the technical documentation.
4. Allow water to circulate for at least 5 minutes before starting the motor to ensure the cooling jacket is completely filled and all air pockets are removed.
5. Check all connections for leaks.
6. Start the motor only after proper water flow through the cooling system has been verified.

Cooling Circuit Draining Procedure



IMPORTANT!

Perform this procedure with the motor stopped and the cooling circuit depressurized.

1. Disconnect the water supply piping from the motor.
2. Remove the drain plugs located next to the water inlet and outlet fittings.
3. Position the motor so that the fittings and drain plugs are facing downward, as shown in the Figure 3.2 .
4. Allow the water to drain naturally until dripping stops.
5. Apply clean, dry compressed air through both the inlet and outlet fittings to remove any residual water from the cooling jacket.
6. Continue applying compressed air until no more water is discharged from the motor.
7. Reinstall the drain plugs after all water has been removed.
8. If the motor will remain out of service or in storage for an extended period, ensure that no liquid remains inside the cooling jacket.



NOTE!

For extended shutdown periods or when there is a risk of freezing, the cooling circuit should be completely drained to prevent damage to the motor water jacket.

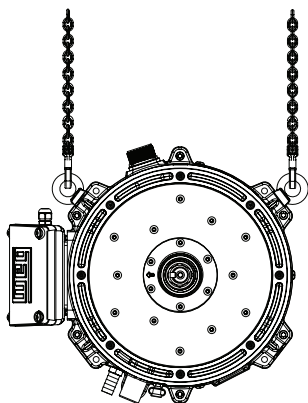


Figure 3.2: Position the motor fittings and drain plugs are facing downward

4 TERMINAL BOX

Figure 4.1 below shows the terminal box layout.

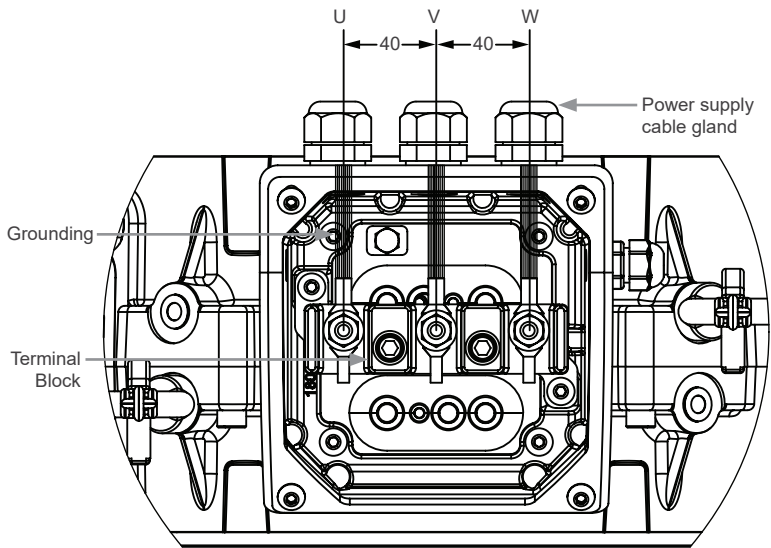


Figure 4.1: Terminal box layout

The terminal box is equipped with a cable gland for the motor power cables. Inside the box, a grounding terminal is provided. The terminal block accommodates three power connectors, one for each phase (U, V, and W). Tightening torques for each connection are as follows Tabela 4.1 :

Tabela 4.1: Tightening torque for Terminal Box Connections

Frame	Screws (all)		Power Supply Cable Gland		Grounding Terminals		Terminal Block	
	Size	T [N.m] [lbf.ft]	Size	T [N.m] [lbf.ft]	Size	T [N.m] [lbf.ft]	Size	T [N.m] [lbf.ft]
250CHY/ 160	M5	3.5 - 5	M16	6 - 8	M5	3.5 - 5	M6	6 - 8
280CHY/ 180		2.6 - 3.7	M20	4.4 - 5.9		2.6 - 3.7		4.4 - 5.9
320CHY/ 200	M6	6 - 8.5	M25	10 - 14 7.4 - 10.3	M6	6 - 8.5	M8	8 - 10
360CHY/ 225		4.4 - 6.3				4.4 - 6.3		5.9 - 7.4
400CHY/ 250	M8	14 - 18 10.3 - 13.3	M32		M8	14 - 18 10.3 - 13.3	M10	15 - 25 11 - 18.4

5 CONNECTORS

As shown in Figure 5.1 below, the thermal sensor connectors are located on the right side of the motor when viewed from the shaft end.

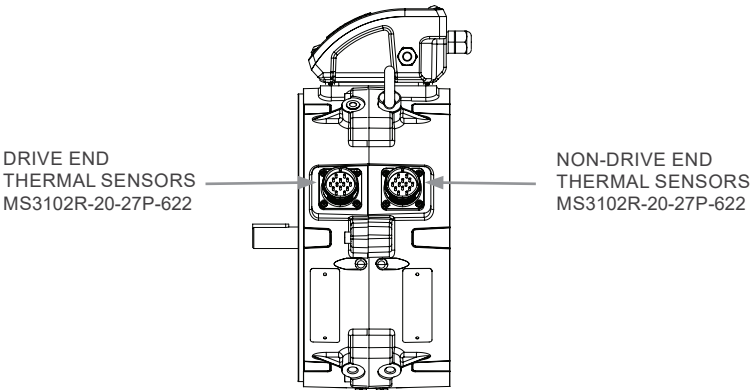
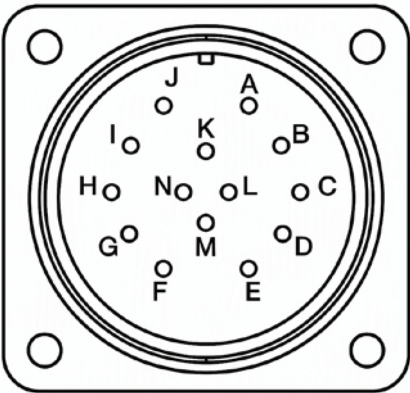


Figure 5.1: Connectors

Connector specifications:

- Thermal sensors: Male connector with 14 pins, 180° angle, contact arrangement 20-27
- The screws of the connector are factory-tightened and must not be loosened or disassembled.

The pin layout for the thermal sensor connectors can be seen in Figure 5.2 .



PIN	Sensor			Motor Side	
	Type	Location	Terminal	DE	NDE
A	PT-100	Phase R	R	1RT1	4RT1
B			R	1RT2	4RT2
C			W	1RT3	4RT3
D		Phase S	R	2RT1	5RT1
E			R	2RT2	5RT2
F			W	2RT3	5RT3
G		Phase T	R	3RT1	6RT1
H			R	3RT2	6RT2
I			W	3RT3	6RT3
J		Bearing	R	1RTb1	2RTb1
K			R	1RTb2	2RTb2
L			W	1RTb3	2RTb3
M	PTC	Phase R-S-T	–	1TP1	2TP1
N			–	1TP2	2TP2

Figure 5.2: Pin layout

6 WATER DATA

Tabela 6.1 below shows the water proprieties for the cooling system. It is ideally using distilled water, but fresh water can also be an option.

Tabela 6.1: Water Proprieties

Parameters	Treated Water
Inlet water temperature	= 41 °F to 95 °F (5 °C to 35 °C)
Total water hardness	≤ 87.7 ppm (1.50 mmol/L)
Carbonate hardness	≤ 64.1 ppm (1.10 mmol/L)
Non-carbonate hardness	≤ 23.3 ppm (0.40 mmol/L)
pH value	= 6.5 to 8.0
Electrical conductivity	≤ 200 µmho/cm (200 µS/cm)
Iron level (Fe)	≤ 0.30 ppm (0.30 mg/L)
Manganese level (Mn)	≤ 1.0 ppm (1.0 mg/L)
Calcium Level (Ca)	≤ 50 ppm (50 mg/L)
Magnesium level (Mg)	≤ 10 ppm (10 mg/L)
Sodium level (Na)	≤ 50 ppm (50 mg/L)
Chloride level (Cl)	≤ 20 ppm (20 mg/L)
Sulphate level (SO ₄)	≤ 50 ppm (50 mg/L)
Nitrate level (NO ₃)	≤ 10 ppm (10 mg/L)
Settleable substances after 0.5 hours	≤ 0.134 US fl oz/gal (1 mL/L)

The water inlet / outlet holes are represented in Figure 2.1 , and its connections are configured according to applicable standards and the specific model of each motor.

If the use of glycol is required, please contact WEG to verify the maximum glycol concentration permitted for the motor.

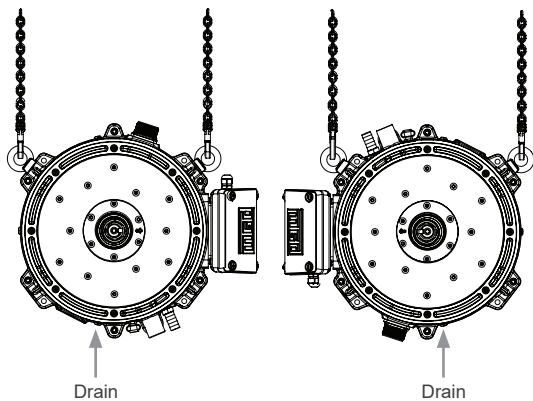
Cooling water may remain inside the motor water jacket for up to 10 days, provided that its quality is maintained within the specified limits. For shutdown periods exceeding 10 days, it is recommended to drain the water jacket whenever possible. If draining is not feasible, the cooling water should be recirculated for a few minutes at least every 5 days to minimize prevent deposits, scaling, and localized corrosion. For shutdown periods longer than 30 days, the water jacket must be fully drained and dried.

- Pressure and temperature data are specified on the motor nameplate.

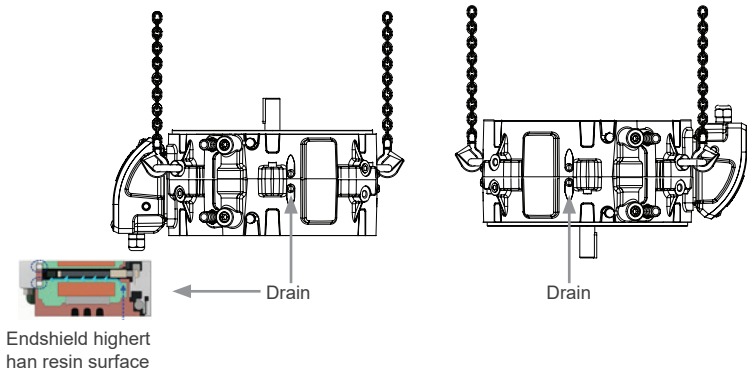
7 MOUNTING AND LIFTING

Figures a below shows the motor mounting and lifting. The motor must be lifted only by means of the two eyebolts and must never be lifted using a single eyebolt. Use always suitable lifting devices to lift the motor. Handle it carefully to avoid bearing damage.

Horizontal mounting - B14D or B14E



Vertical mounting - V18 or V19



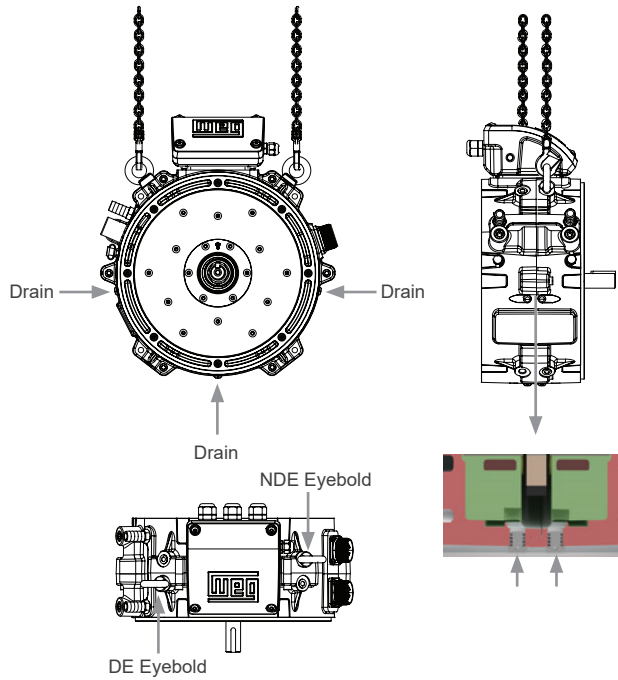


Figure 7.1: Mounting and Lifting

8 BEARING LUBRICATION AND MAINTENANCE

Figure 8.1 below shows the bearing maintenance and lubrication system.

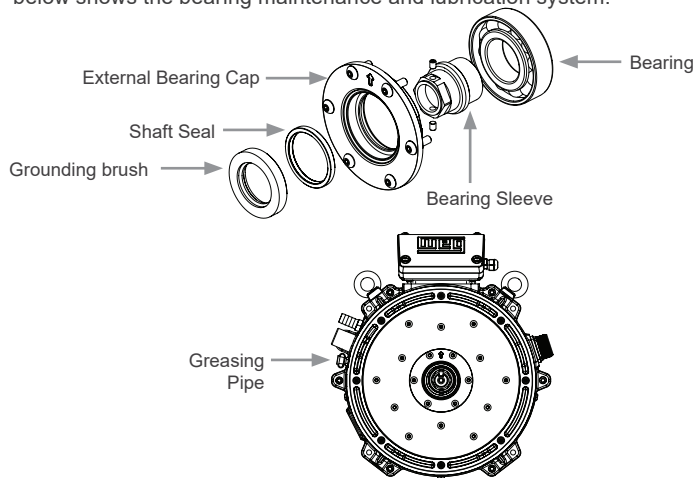


Figure 8.1: Bearing Lubrication and Maintenance

Remove the components identified as items 1, 2, and 3. Then, disassemble the bearing housing using an appropriately sized hex key, allowing the bearing to be released. After gaining access to the internal region of the motor, perform the cleaning of the grease chamber.

For reassembly, proceed in the reverse order of disassembly. During the tightening of the sleeve, ensure proper repositioning of the bearing in its seat. Complete the procedure by reinstalling the remaining components.

- Grease is introduced through the greasing pipe, as indicated in the Figure 8.1 .
- The specified grease is indicated on the nameplate.

Tightening torques for external bearing cap and bearing sleeve are as follows Figure 8.1 :

Tabela 8.1: Tightening torque for external bearing cap and bearing sleeve

Frame	External Bearing Cap		Bearing Sleeve	
	Size	T [N.m] [lbf.ft]	Size	T [N.m] [lbf.ft]
250CHY/ 160	M5	2.75 - 3.25 2 - 2.4	M4	1.5 - 3 1.1 - 2.2
280CHY/ 180			M5	3 - 5 2.2 - 3.7
320CHY/ 200				
360CHY/ 225				
400CHY/ 250	M8	11 - 12 8.1 - 8.9		



NOTE!
Each bearing cap is marked with an arrow pointing upward (toward the terminal box side). This marking helps ensure the correct orientation of the outer ring during assembly.

9 VARIABLE FREQUENCY DRIVE (VFD)

General Requirements

This motor is a permanent-magnet synchronous motor and must be operated only with a Variable Frequency Drive (VFD) suitable for controlling permanent-magnet synchronous motors. Direct connection to the power supply is not permitted.

The VFD must be selected according to the motor rated voltage, current, power, torque, speed range, overload requirements, and application duty cycle. The VFD output current rating must be at least 10% greater than the motor rated current, considering the required operating conditions and overload capability.

Before commissioning, enter the motor data specified on the motor nameplate into the VFD, including, as applicable:

- Rated power;
- Rated voltage;
- Rated current;
- Rated frequency;
- Rated speed;
- Number of poles;
- Rated torque;
- Permanent-magnet motor control mode;
- Maximum permissible operating speed;
- Motor thermal protection parameters.

Additional motor parameters required by the VFD manufacturer must be obtained from WEG.

Motor Control

The VFD must use a control method suitable for superficial permanent-magnet synchronous motors, such as sensorless vector control or closed-loop vector control, according to the application requirements and the approved motor configuration.

The acceleration and deceleration ramps must be adjusted to prevent excessive current, torque, DC-bus overvoltage, mechanical stress, and loss of rotor synchronization. The maximum speed, current, torque, and power limits must be configured so that the motor cannot operate beyond the values specified on the nameplate or in the application documentation.

If the application can drive the motor during deceleration, shutdown, or load reversal, the motor may operate as a generator. The VFD system must therefore be capable of managing regenerative energy by means of an appropriate braking resistor, braking unit, regenerative converter, or another approved solution.

VARIABLE FREQUENCY DRIVE (VFD)

Thermal Protection

The motor is equipped with thermal sensors accessible through the accessory connector described in the Connectors section. The connector pin assignment must be followed when connecting the sensors to the control and protection system.

The winding thermistors have a nominal response temperature of 155 °C (311 °F). The thermistors must be connected to a compatible VFD input or to an appropriate thermistor protection relay.

The protection circuit must be configured to automatically remove the VFD output and stop the motor when the thermistor protection is activated. Restarting the motor is permitted only after:

1. The motor temperature has decreased to an acceptable level;
2. The cause of the overheating has been identified and corrected;
3. Proper cooling-water circulation has been verified;
4. The thermal protection signal has returned to its normal state.

The thermistors are protective devices and must not be used as the primary means of continuously measuring the winding temperature unless the installed sensor type and monitoring equipment are specifically designed for this purpose.

Do not apply insulation-resistance test voltage, dielectric test voltage, or VFD output voltage to the thermal sensor terminals

10 SAFETY INFORMATION

**IMPORTANT!**

The permanent magnets in the rotor produce voltage at the motor terminals whenever the shaft is rotating, even when the VFD is switched off or disconnected from the power supply.

Before performing installation, inspection, or maintenance:

1. Stop the motor and the driven equipment;
2. Disconnect and isolate all electrical power sources;
3. Apply the required lockout/tagout procedures;
4. Wait for the VFD DC-bus discharge time specified by the VFD manufacturer;
5. Verify the absence of voltage at the motor terminals;
6. Prevent the shaft from rotating; and
7. Confirm that cooling-system pressure has been released when working on the water circuit.

Do not rely solely on the VFD stop command as a means of electrical isolation.



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