

Chapter 4 RUNNING THE MOTOR

4.1 Running the Motor for a Test

4.1.1 Inspection and preparation prior to the operation

Check the following prior to starting the operation.

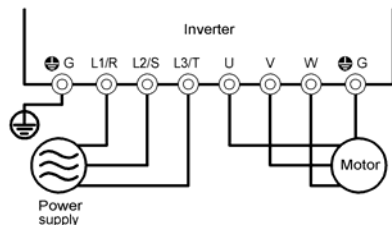
- (1) Check if connection is correct.

Especially check if the power wires are connected to inverter output terminals U, V and W and that the grounding wire is connected to the ground electrode correctly.

WARNING

- Do not connect power supply wires to the inverter output terminals U, V, and W. Otherwise, the inverter may be broken if you turn the power on.
- Be sure to connect the grounding wires of the inverter and the motor to the ground electrodes. **Otherwise, electric shock may occur.**

- (2) Check for short circuits between terminals and exposed live parts and ground faults.
- (3) Check for loose terminals, connectors and screws.
- (4) Check if the motor is separated from mechanical equipment.
- (5) Turn the switches off so that the inverter does not start or operate erroneously at power-on.
- (6) Check if safety measures are taken against runaway of the system, e.g., a defense to protect people from unexpectedly approaching your power system.



<for three-phase power supply>
Figure 4.1 Connection of Main Circuit Terminals
(Three-phase power supply)

4.1.2 Turning on power and checking

WARNING

- Be sure to install the covers for both the main circuit terminal block and control circuit terminal block before turning the power on. Do not remove the cover during power application.
- Do not operate switches with wet hands. **Otherwise electric shock could occur.**

Turn the power on and check the following points. This is a case when no function code data is changed from the factory setting.

- (1) Check that the LED monitor displays *0.00* (meaning that the reference frequency is 0 Hz) that is blinking. (See Figure 4.2.)

If the LED monitor displays numbers except *0.00*, then rotate the potentiometer to set *0.00* as the reference frequency.

- (2) Check if a built-in cooling fan rotates (for models with 2HP or more).



Figure 4.2 Display of the LED Monitor after Power-on

4.1.3 Preparation before running the motor for a test--Setting function code data

Before starting running the motor, set function code data specified in Table 4.1 to the motor ratings and your system design values. For the motor, check the rated values printed on the nameplate of the motor. For your system design values, ask system designers about them.


 For details about how to change function code data, refer to Chapter 3, Section 3.2.2 "Programming mode [1] Setting the Function Codes." If the motor capacity is different from the inverter capacity, refer to Chapter 5, function code H03.

Table 4.1 Settings of Function Code Data before Driving the Motor for a Test

Function code	Name	Function code data	Factory setting
<i>F 04</i>	Base frequency	Motor ratings (printed on the nameplate of the motor)	60.0 (Hz)
<i>F 05</i>	Rated Voltage (at base frequency)		0 (V) (Output voltage interlocked with the source voltage)
<i>P 02</i>	Motor Parameter (Rated capacity)		Applicable motor rated capacity
<i>P 03</i>	Motor Parameter (Rated current)		Rated current of applicable motor
<i>P 99</i>	Motor Selection		0: Characteristic of motor, 0 (Fuji standard 8-series motors)
<i>F 03</i>	Maximum frequency	System design values * For a test-driving of the motor, increase values so that they are longer than your system design values. If the set time is short, the inverter may not start running the motor.	60.0 (Hz)
<i>F 07</i>	Acceleration time 1*		6.00 (s)
<i>F 08</i>	Deceleration time 1*		6.00 (s)

4.1.4 Test run

WARNING

If the user set the function codes wrongly or without completely understanding this Instruction Manual and the FRENIC-Mini User's Manual, the motor may rotate with a torque or at a speed not permitted for the machine.




Accident or injury may result.

Follow the descriptions given in Section 4.1.1, "Inspection and Preparation prior to the Operation" to Section 4.1.3, "Preparation before running the motor for a test," and begin test-driving of the motor.

CAUTION

If any abnormality is found to the inverter or motor, immediately stop operation and determine the cause referring to Chapter 6, "TROUBLESHOOTING."

----- Procedure for Test Run -----

- (1) Turn the power on and check that the LED monitor blinks while indicating the  Hz frequency.
- (2) With the built-in potentiometer clockwise, set a low frequency such as 5 Hz. (Check that the frequency displayed on the LED monitor blinks.)
- (3) Press the  key to start running the motor in the forward direction. (Check that the reference frequency is displayed on the LED monitor correctly.)
- (4) To stop the motor, press the  key.


<Check the following points>

- Check if the direction of rotation is correct.
- Check for smooth rotation without motor humming or excessive vibration.
- Check for smooth acceleration and deceleration.

When no abnormality is found, rotate the potentiometer clockwise to raise the reference frequency. Check the above points for the test-driving of the motor.

4.2 Operation

After confirming that the inverter normally drives the motor in a test run, make mechanical connections (connections to the machine system) and electrical connections (wiring and cabling), and configure the necessary function codes properly before starting a production run.

 **Note** Depending on the production run conditions, further adjustments can be required, such as adjustments of torque boost (F09), acceleration time (F07/E10), and deceleration time (F08/E11).