

1.9 Operation

Before starting

1. Make sure once again that the product is of the correct voltage and frequency rating.



ATTENTION: Using the product at other than rated voltage and frequency will not only lower its performance but may damage the product.

Note: Confirm the rated voltage and frequency on the model nameplate.

2. Confirm the wiring, supply voltage, circuit breaker capacity, and motor insulation resistance.

Reference insulation resistance = 20 MΩ or greater.

Note: The reference insulation resistance (20 MΩ or greater) is the value when the pump is new or has been repaired. For the reference value after installation see Section 1.10 Maintenance and Inspection.

3. The setting on the circuit breaker or other overload protector should be made in accord with the rated current of the pump.

Note: See Section 1.5 Standard Specifications for its rated current.

Test operation



WARNING

NEVER operate the pump while it is suspended in the air. The recoil may result in injury or other major accident.



CAUTION

NEVER start the pump when people are standing next to it. An electrical leak can result in electrical shock.

Run the pump for a short time (3–10 minutes) and confirm the following:

- Using an ammeter (clamp-on type), measure the operating current at the L1 and L2 phase wires on the terminal.



COUNTERMEASURE: If the operating current exceeds the rated value, pump motor overload may be a cause. Make sure the pump has been installed under proper conditions as described in Section 1.6 Installation.

- Using an AC voltmeter (tester), measure voltage at the terminals. Supply voltage tolerance: within ±5% of rated voltage.



COUNTERMEASURE: If the supply voltage is outside the tolerance, possible causes are the power supply capacity or an inadequate extension cable. Look again at Section 1.7 Electrical Wiring and make sure the conditions are proper.



CAUTION

In case of very excessive vibration, unusual noise or odor, turn off the power immediately and consult with your nearest dealer or TSURUMI representative. Continuing to operate the pump under abnormal conditions may result in electrical shock, fire, or electrical leakage.

Operation



WARNING

The pump may become very hot during operation. Be careful not to contact the pump accidentally to avoid being burned.

Make sure no extraneous objects such as pins, nails or other metal objects are sucked into the pump. These can damage the pump or cause it to malfunction, and can result in electrical shock or electrical leakage.

When the pump is not used for an extended period, be sure to turn off the power (circuit breaker, etc.). Deterioration of the insulation may lead to electrical leakage, electrical shock, or fire.

In case of a power outage, turn off the power to the pump to avoid having it start unexpectedly when the power is restored, presenting serious danger to people in the vicinity.



1.9 Operation (cont.)

Pay careful attention to the water level while the pump is operating. Dry operation may cause the pump to malfunction.

Note: See section below, *Operating water level*, for the water level necessary for operation.

Sharp bends in the hose, especially near its base, may cause air pockets to form resulting in idle operation. Lessen the degree of bending while continuing to operate the pump.

Operating water level

CAUTION

DO NOT operate the pump below the C.W.L. (Continuous running Water Level) of 3-1/2" (90 mm) (min.). Failure to observe this condition may result in damage to the pump, electrical leakage or electrical shock.

Motor Protection System (Motor Protector)

The pump has a built-in motor protection system (Miniature Protector). If the motor overheats, for reasons such as the following, the pump will automatically stop operating regardless of the water level, to protect the motor:

- Change in supply voltage polarity
- Overload
- Open-phase operation or operation under constraint

Note: **ALWAYS** determine the cause of the problem and resolve it before resuming operation. Simply repeating cycles of stopping and restarting will result in damage to the pump. **DO NOT** continue operation at very low lift, low water level, or while the strainer is clogged with debris. Not only will performance suffer, but also such conditions may cause noise, heavy vibration, and malfunctioning.

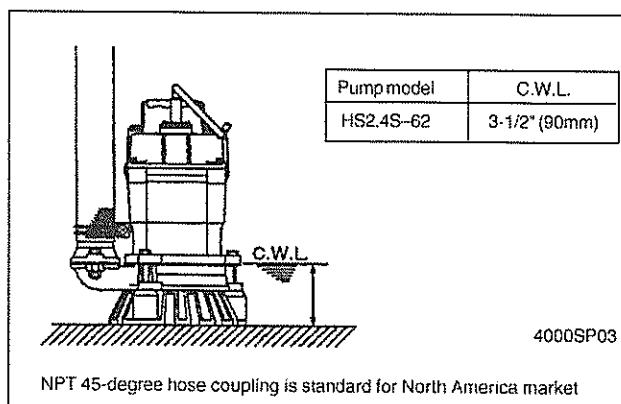


FIGURE 1.3