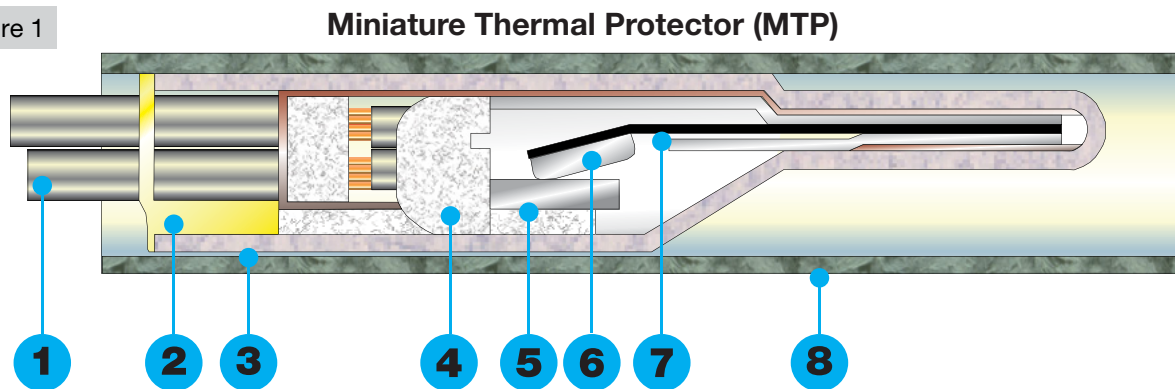


MINIATURE THERMAL PROTECTOR

Common sense dictates that, since a submersible pump operates in it's own liquid environment it is necessary to provide built in motor protection. It is not practical to rely solely on overload protection in the control panel that is subject to a different set of ambient conditions. Tsurumi therefore incorporates built in motor protection for all submersible pumps that they manufacture.

The Miniature Thermal Protector, (MTP) shown in **Figure 1**, is supplied as standard on all fractional hp units and units from 15 to 400 HP.

Figure 1



MATERIALS OF CONSTRUCTION

- 1 Neoprene Leads
- 2 Epoxy Sealing Compound
- 3 Plated Steel Casing
- 4 Ceramic Insulator
- 5 Stationary Silver Contact
- 6 Movable Silver Contact
- 7 Bi-Metal Strip
- 8 Mylar Sleeve

PRINCIPLES OF OPERATION

The MTP is placed in the winding as shown in **Figure 2**.

Should the winding temperature rise to the actuating temperature the Bimetal Strip will snap the movable contact open.

Tsurumi incorporates three MTPs in all three phase units. (one in each winding) The MTPs are connected in series as shown in **Figure 3**, If only one winding reaches the actuating temperature the power is cut-off to all windings.

The MTP circuit is wired in series with the motor control circuit. The control circuit is to be wired to a relay in the user's control panel. After the MTP circuit trips, the relay will shut-off power to the motor. A manual reset of power is required once the temperature lowers to a safe level.

Figure 2

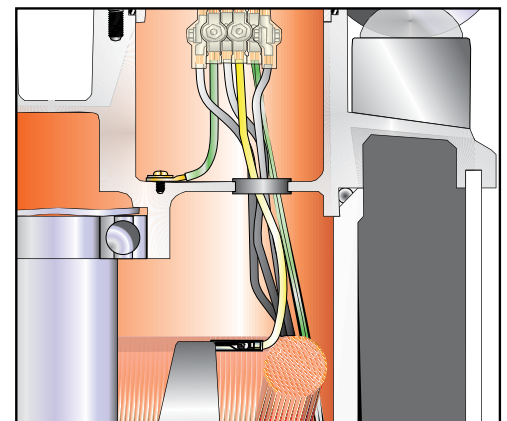
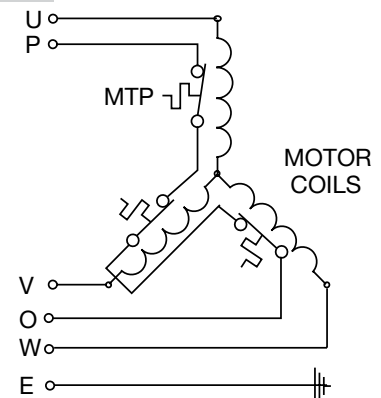


Figure 3



THREE PHASE MOTOR

*See next page for actuating and reset temperatures.