



# INSTALLATION INSTRUCTIONS TCF-D & TCP SERIES OVER TEMPERATURE & SEAL LEAKAGE RELAYS

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**Potentially hazardous voltages are present. Electrical shock can cause death or serious injury. Installation should be done by qualified personnel following all National, State & Local Codes.**

*Présence de tensions potentiellement dangereuses. Une décharge électrique peut causer la mort ou des blessures graves. L'installation devrait être effectuée par du personnel qualifié suivant tous les codes nationaux, provinciaux et locaux.*

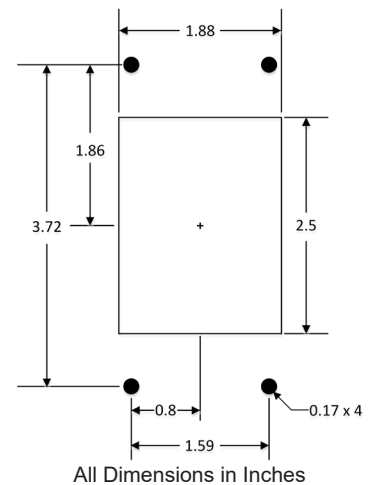
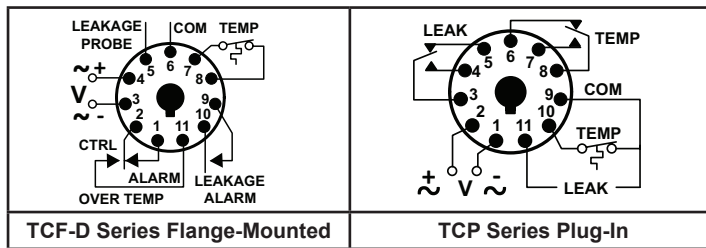
**BE SURE TO REMOVE ALL POWER SUPPLYING THIS EQUIPMENT BEFORE CONNECTING OR DISCONNECTING WIRING. READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.**

### Installation & Setup

(TCF-D Series Flange-Mounted) First, use the Cutout Drawing at right to cut the appropriate size hole in the door and drill the four mounting holes. After mounting the relay, use the appropriate 11 pin back-mounted socket (IDEC SR6P-M11G included with relay).

(TCP Series Plug-in) Mount the appropriate 11 pin octal socket (Macromatic 70170-D) in a suitable enclosure.

Wire the socket per the wiring diagram on the side of the relay or as shown below. **Make sure to match the terminal numbers on the socket to the ones shown on the wiring diagram (the wiring diagram on the relay is the view looking towards the bottom of the relay vs. the top of the socket).** Use one or two #12-22 solid or stranded copper or copper-clad aluminum conductors with terminals of the above sockets--a terminal tightening torque of 12 in-lbs (70170-D) or 10 in-lbs (SR6P-M11G) should be used. Plug the relay into the socket, making sure the key on the center post is in the proper orientation before insertion. **If the relay must be removed from the socket, do NOT rock the relay back & forth excessively—the center post could be damaged.**



### Setting the Seal Leakage Sensitivity

All TCF-D & TCP Series products come with a fixed 5KΩ sensitivity for over temperature protection and an adjustable sensitivity range for the seal leak as indicated on the nameplate and by the Catalog Number. Use the sensitivity setting specified by the pump manufacturer. For more accurate setting, isolate the leakage probe from the appropriate terminals as shown on the wiring diagram. Connect a resistor with the desired trip value across these two terminals. Slowly adjust the potentiometer to the point where the SEAL LED turns from Green to Red. Then remove the resistor and reconnect the probe wires. **Note: The tick marks are for reference only.**

### Operation

Two wires from the relay are connected to a N.C. thermal switch in the windings of the pump motor to monitor for overheating. A low-voltage DC signal is applied to check the status of the thermal switch. Two additional wires are connected to a single or dual resistance-sensing probe and the grounded motor housing, or across two probes to monitor for seal leakage using a low-voltage DC signal. These products have isolated output contact relays, one for over temperature and one for seal leakage. The over temperature set-point is fixed at 5K ohms.

With input voltage applied, normal temperature condition (thermal switch closed) and no seal leakage, the over temperature relay is energized and the seal leak relay is de-energized. Both LEDs are Green, indicating normal conditions and input voltage applied. When the motor temperature rises and the N.C. thermal switch opens, the over temperature relay is de-energized, opening a contact that had been closed and turning off the pump contactor. The TEMP LED turns Red. (TCF-D Series only) If the over temperature condition is cleared, the unit will reset based on the setting of the Over Temp switch. In the AUTO mode, the unit will reset automatically. In the MANUAL mode, the Over Temp Reset button must be pushed for a minimum of 1 second to clear the alarm and reset the relay. (TCP Series only) If the over temperature condition is cleared, the unit will reset automatically.

If the seal starts to leak, contaminating fluid enters the pump motor cavity. This lowers the resistance between the internal probe and the common connection. When the resistance drops below the user-adjustable sensitivity set-point of the relay, the output relay energizes and closes a contact, which can be used to give an alarm indication of a leaking seal. The SEAL LED turns Red.

### Troubleshooting

If the unit fails to operate properly, check that all connections are correct per the appropriate wiring diagram above. If problems continue, contact Macromatic via e-mail at [tech-support@macromatic.com](mailto:tech-support@macromatic.com) for assistance.

### Warranty

All catalog-listed TCF-D & TCP Series products manufactured by Macromatic are warranted to be free from defects in workmanship or material under normal service and use for a period of five (5) years from date of manufacture.