

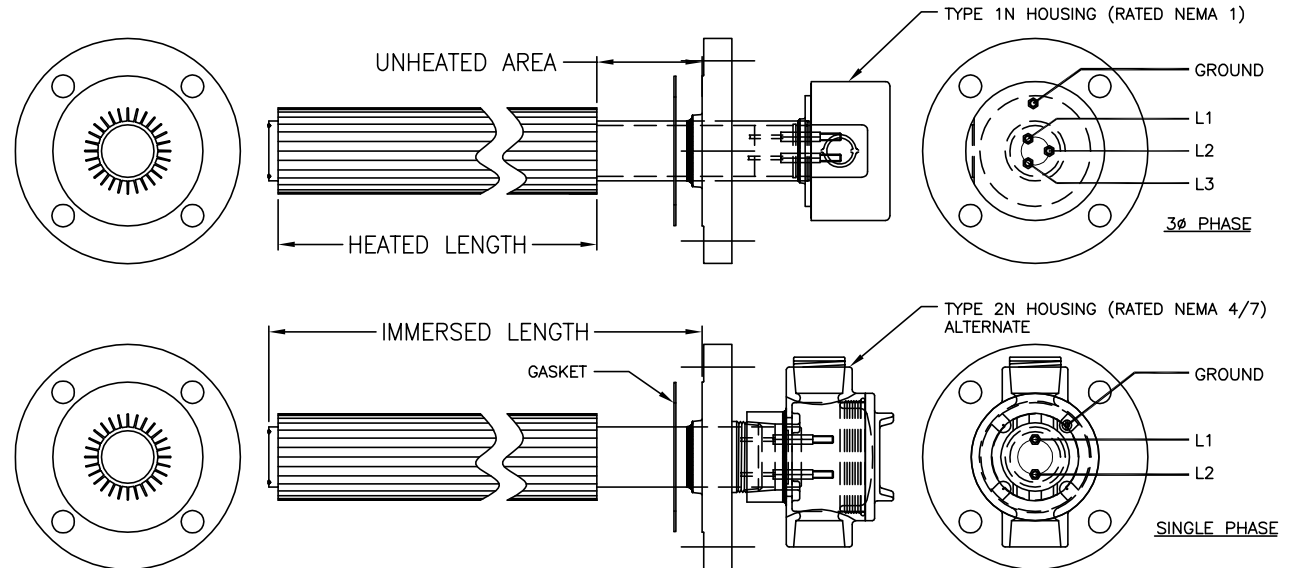
FAH FINNED ALUMINUM OIL IMMERSION HEATER

WIRING & INSTALLATION

1. LINE INPUT WIRING TO HEATER MUST BE INSTALLED AND SIZED FOR CURRENT CARRYING CAPACITY IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), NFPA 70/79, & LOCAL CODES. USE WIRES SUITABLE FOR AT LEAST 90C (194F). IF IN DOUBT, CONSULT A QUALIFIED ELECTRICIAN BEFORE WIRING OR CALL TEMPCO AT 800-323-6859.
2. IF ELEMENT WATTAGES OR VOLTAGE RATINGS ARE NOT EQUAL, HEATERS MUST NOT BE CONNECTED IN SERIES.
3. IF CORROSIVE OR HAZARDOUS VAPORS OR LIQUIDS ARE PRESENT, ELECTRICAL WIRING TO HEATER SHOULD BE ENCLOSED IN RIGID CONDUIT OR SEALED FLEXIBLE HOSE TO KEEP CONTAMINANTS OUT OF THE TERMINAL HOUSING. IF HIGH HUMIDITY IS ENCOUNTERED, THE CONDUIT & CONNECTIONS SHOULD SLOPE DOWN AND AWAY FROM THE HEATER.
4. IF FLEXIBLE CORD IS EMPLOYED, A LIQUID-TIGHT CONNECTOR SHOULD BE USED FOR ENTRY OF THE CORD INTO THE TERMINAL BOX. OUTDOOR APPLICATIONS REQUIRE LIQUID-TIGHT CONDUIT AND CONNECTORS.
5. INSTALL POWER WIRING INTO TERMINAL HOUSING USING CONDUIT OPENING(S) PROVIDED WITH WITH APPROVED STRAIN RELIEF CONNECTIONS. CONNECT LINE WIRES TO BUSSED TERMINALS AS SHOWN IN PROPER WIRING DIAGRAM.
6. **CAUTION:** FAH HEATERS DESIGNED FOR THREE PHASE ARE CONNECTED INTERNALLY & CAN NOT BE REWIRED TO SINGLE PHASE WITHOUT CAUSING PREMATURE HEATER FAILURE. CONSULT TEMPCO BEFORE ATTEMPTING ANY TERMINAL BUSSING OR EXTERNAL WIRING CHANGES
7. BE SURE INSTALLATION IS PROPERLY GROUNDED THROUGH GROUNDING MEANS PROVIDED.

OPERATION & MAINTENANCE

1. DO NOT OPERATE HEATERS AT VOLTAGES IN EXCESS OF THAT STAMPED ON THE HEATER.
2. UL 574 RECOGNIZED FAH HEATERS MUST NOT EXCEED 125C (257F) HEATED OIL TEMPERATURE WHEN MARKED.
3. FAH ASA PRESSURE RATED FLANGE DESIGNS HAVE BEEN TESTED & RATED BY UL TO A MAXIMUM OF 150 PSIG FOR USE IN OIL. SCREWPLUG DESIGNS HAVE A 60 PSIG OIL RATING.
4. ALWAYS MAINTAIN A MINIMUM OF 2" OF OIL OR CLEAN WATER ABOVE THE FINNED AREA OF THE HEATER TO PREVENT EXPOSURE OF FINNED HEATED LENGTH. IF THE HEATER IS NOT TOTALLY SUBMERGED, IT WILL OVERHEAT CAUSING A FIRE HAZARD & DAMAGE OR DEFORM THE HEATER. DO NOT ALLOW HEATER TO BE ENERGIZED IF PARTIALLY SUBMERGED OR DRY.
5. BLEED ALL TRAPPED AIR OUT OF HEATER CHAMBER AND LIQUID PIPING IN CLOSED SYSTEMS PRIOR TO ENERGIZING HEATER. SYSTEM MUST BE KEPT FILLED WITH LIQUID DURING HEATER OPERATION. LIQUID LEVEL CONTROLS SHOULD BE CONSIDERED TO PREVENT HEATER OPERATION IN EVENT OF LOW LEVEL OR RUN DRY CONDITION. HEATER MUST NOT BE ENERGIZED IF NO FLOW OR LOW LIQUID FLOW (UNDER 2 GPM) OCCURS IN THE SYSTEM.
6. HEATER MUST BE INSTALLED IN A MANNER TO MINIMIZE EXCESSIVE SCALE BUILDUP ON FINNED HEATED AREA & MOUNTED ABOVE SEDIMENT DEPOSITS.
7. THESE FAH HEATERS ARE PRIMARILY DESIGNED TO BE INSTALLED VERTICALLY IN OIL HEATING VESSELS AND OIL SEPARATION SYSTEMS. FLUIDS AND ADDITIVES CORROSIVE TO ALUMINUM SHOULD NOT BE USED.
8. IT IS A REQUIREMENT FOR UL 574 RECOGNIZED OIL HEATERS THAT THE HEATER IS INSTALLED WITH APPROPRIATE TEMPERATURE LIMITING CONTROL(S) IN THE END USE PRODUCT APPLICATION TO LIMIT TEMPERATURES ON THE FINNED ALUMINUM SURFACE FROM EXCEEDING 500-550~F DURING A RUN DRY OR LOW FLOW CONDITION. AN OPTIONAL, FACTORY INSTALLED, INTERNAL OVER-TEMP K OR J THERMOCOUPLE WITHIN THE HEATED AREA CAN BE PROVIDED TO BE USED WITH EXTERNAL CONTROLLER TO PREVENT HEATER FAILURE AND DETERMINE THE MAXIMUM O/T SET-POINT FOR THE APPLICATION. ABNORMAL-BURNOUT TESTS WITH THE HEATER OPERATED UNDER RUN DRY CONDITIONS ARE RECOMMENDED IN THE END USE APPLICATION WITH THE INTERNAL O/T T/C SET AT 700~F MAXIMUM. (TYPICAL FOR OIL APPLICATIONS)



OPERATION USING A THERMOSTAT (IF PROVIDED)

1. MAXIMUM THERMOSTAT TEMPERATURE (C/O POINT) FOR UL RECOGNIZED OIL HEATERS TO UL 574 IS 257F (125C)
2. DO NOT USE A THERMOSTAT AS A POWER SWITCH. USE SOME OTHER MEANS OF DISCONNECTING POWER TO THE HEATER FOR SERVICING. THERMOSTATS ARE NOT A FAIL-SAFE DEVICE. USE AN APPROVED TEMPERATURE LIMIT, PRESSURE/FLOW, OR LEVEL CONTROL FOR SAFE OPERATION IN SERIES WITH THE THERMOSTAT OR PREFERABLY ON A SEPARATE INDEPENDENT CIRCUIT.
3. WHEN INSTALLING A BULB/CAPILLARY STYLE T'STAT, AVOID KINKING OR BENDING THE CAPILLARY TUBE SHARPLY AS THIS WILL ALTER THE CALIBRATION &/OR RENDER THE T'STAT INOPERABLE. THERMOSTAT WITH SENSING BULB AND CAPILLARY SHOULD BE INSTALLED EXTERNAL TO THE HEATER IN A SUITABLE HOUSING AND PROTECTIVE THERMOWELL TO SENSE THE OIL OR FLUID TEMPERATURE DIRECTLY IN ORDER TO PROPERLY CONTROL THE SYSTEM. THE OPTIONAL INTERNAL T'WELL, IF PROVIDED, SHOULD BE USED ONLY FOR AN OVER-TEMP PROBE TO SENSE ABNORMAL TEMPERATURE CONDITIONS AS DETERMINED IN THE END USE APPLICATION.
4. A SINGLE POLE THERMOSTAT CAN NOT BE USED TO DIRECTLY CONTROL A THREE-PHASE HEATER. A CONTACTOR MUST BE USED. A DPST T'STAT IS REQUIRED FOR DIRECT HEATER CONTROL.
5. THE CAPILLARY TUBE MUST NEVER TOUCH THE HEATER OR THERMOSTAT TERMINALS AS THIS WILL CAUSE AN ELECTRICAL SHORT CAPABLE OF HARMING PERSONNEL AND/OR EQUIPMENT.
6. USE SPECIFIC INSTRUCTION SHEET FOR THERMOSTAT MODEL BEING INSTALLED. WHEN INSTALLING A TEMPCO BULB & CAPILLARY T'STAT EXTERNAL TO THE HEATER USE THE IDP INSTRUCTION SHEET PROVIDED WITH T'STAT.
7. IF HEATER VOLTAGE OR AMPERAGE EXCEEDS THERMOSTAT RATING, IT MUST BE CONNECTED TO OPERATE AN EXTERNAL CONTACTOR COIL AND NOT CONNECTED DIRECTLY IN LINE WITH HEATER. INSTALL PER PROPER WIRING DIAGRAM.

LOW MEGOHM CONDITION

THE REFRACTORY MATERIAL USED IN ELECTRIC HEATERS MAY ABSORB MOISTURE DURING TRANSIT OR WHEN SUBJECTED TO A HUMID ENVIRONMENT FOR EXTENDED PERIODS. IF MOISTURE ABSORPTION RESULTS IN A COLD INSULATION RESISTANCE DOWN TO 10-15 MEGOHMS, THE HEATER WILL NORMALLY CORRECT ITSELF UPON A FIRST "SOFT START" HEATUP AND DOES NOT AFFECT HEATER EFFICIENCY OR LIFE. A LOW MEGOHM CONDITION CAN EASILY BE CORRECTED BY REMOVING THE TERMINAL ENCLOSURE COVER, THERMOSTAT OR OVER-TEMP PROBE (IF EITHER PRESENT), & TERMINAL HARDWARE, THEN BAKING THE HEATER IN AN OVEN AT 225° TO 250°F FOR SEVERAL HOURS, PREFERABLY OVERNIGHT UNTIL MEGOHM READING INCREASES TO AT LEAST 25-50 MEGOHMS. DO NOT ALLOW THE TEMPERATURE AT THE SEALING MATERIAL TO EXCEED THIS RANGE. IF MEGOHM READING DOES NOT RISE PROPERLY, CONTACT TEMPCO FOR ASSISTANCE.

WARNING! HAZARD OF ELECTRIC SHOCK. DISCONNECT POWER BEFORE SERVICING OR INSTALLING HEATER. INSTALLATION MUST BE GROUNDED TO EARTH TO AVOID SHOCK HAZARD.

TITLE: FAH FINNED ALUMINUM OIL HEATER INSTALLATION, OPERATION, AND WIRING INSTRUCTIONS			
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TEMPCO
ELECTRIC HEATER CORPORATION
WWW.TEMPCO.COM

TEMPCO Electric Heater Corporation
607 N. Central Ave.
Wood Dale, IL 60191-1452 U.S.A.
Email: info@tempco.com