

MAVERICK T.E.C. II TWO ZONE CONTROL

START-UP AND TEST PROCEDURES

THIS PROCEDURE IS INTENDED FOR USE BY A QUALIFIED TECHNICIAN TO VERIFY THE PROPER OPERATION OF THE ELECTRICAL CIRCUITS ON A MAVERICK T.E.C. CONTROL PANEL. THIS IS NOT A GUIDE FOR A COMPLETE HEATING OR COOLING SYSTEM START-UP.

TEST EQUIPMENT REQUIRED: ONE ANALOG OR DIGITAL MULTIMETER

DEFINITIONS

D1 IS THE DAMPER IN THE DUCT FEEDING ZONE 1.

STAT 1 IS THE THERMOSTAT LOCATED IN ZONE 1

D2 IS THE DAMPER IN THE DUCT FEEDING ZONE 2

STAT 2 IS THE THERMOSTAT LOCATED IN ZONE 2

PROCEDURE:

STEP 1 - BE SURE ALL SOURCES OF POWER ARE OFF.

STEP 2 - BE SURE THE CONTROL PANELS AND DAMPERS ARE WIRED IN ACCORDANCE WITH THE ATTACHED INSTRUCTIONS

THE FOLLOWING STEPS 3 & 4 WILL CHECK THE ELECTRICAL SOLENOID AND THE CONNECTING WIRING TO THE T.E.C. DAMPERS.

STEP 3 - CAREFULLY REMOVE THE WIRE(S) CONNECTED TO THE D-COM AND CHECK THE RESISTANCE BETWEEN THIS WIRE AND THE TERMINAL MARKED D1. THE RESISTANCE SHOULD BE APPROXIMATELY 17 OHMS, +/- 2 OHMS. CHECK THE RESISTANCE BETWEEN THE LOOSE WIRE AND D2. AGAIN, THE RESISTANCE SHOULD BE APPROXIMATELY 17 OHMS, +/- 2 OHMS.

IF EITHER READING IS LESS THAN 15 OHMS, A SHORT CIRCUIT IS INDICATED. RECHECK ALL WIRING BETWEEN THE DAMPER AND THE CONTROL PANEL, AND CLEAR THE SHORT CIRCUIT BEFORE CONTINUING WITH THIS TEST PROCEDURE.

IF EITHER READING IS MORE THAN 19 OHMS, A HIGH RESISTANCE OR OPEN CIRCUIT IS INDICATED. RECHECK ALL CONNECTIONS FOR TIGHTNESS AND ALL WIRING BETWEEN THE SOLENOID AND THE CONTROL PANEL FOR BROKEN OR LOOSE WIRES. DO NOT CONTINUE

WITH THIS TEST PROCEDURE UNTIL THE PROPER RESISTANCE READINGS ARE OBTAINED.

STEP 4 - WHEN THE PROPER RESISTANCE READINGS HAVE BEEN OBTAINED, AS REQUIRED IN STEP 3, RE-CONNECT THE WIRE(S) REMOVED FROM D-COM.

STEPS 5, 6, 7 & 8 WILL CHECK THE ELECTRICAL OPERATION OF THE TEC CONTROL PANEL WHEN ONLY ONE THERMOSTAT IS CALLING FOR HEAT OR COOL. THIS TEST MAY BE PERFORMED WITH BOTH THERMOSTATS IN THE HEATING OR COOLING POSITION.

STEP 5 - SET BOTH THERMOSTATS TO THE “TEMPERATURE SATISFIED” POSITION.

STEP 6 - TURN ON THE POWER SUPPLY TO THE AIR HANDLER THEN READ THE VOLTAGE AT TERMINALS R AND C OF THE PRINTED CIRCUIT BOARD. THE VOLTAGE AT THESE TERMINALS SHOULD BE 24 VOLTS A.C. +/- 3 VOLTS.

STEP 7 - CONNECT THE VOLT METER TO READ D.C. VOLTS AT TERMINALS D-COM (+) AND D2 (-).

SET THE THERMOSTAT IN AREA 1 TO “CALL”

THE D.C. VOLTAGE AT D-COM (+) AND D2 (-) SHOULD BE APPROXIMATELY 28 VOLTS D.C. AT THE INSTANT THE THERMOSTAT CALLS, AND WILL BEGIN DECREASING. WITHIN ABOUT 3 SECONDS, THE VOLTAGE WILL STABILIZE AT APPROXIMATELY 9 VOLTS.

NOTE: THE ACTUAL VOLTAGE READING MAY VARY, DEPENDING ON THE TYPE OF VOLTMETER USED AND THE INPUT VOLTAGE. THE IMPORTANT FEATURE TO OBSERVE, IS THAT THE VOLTAGE STARTS HIGH, TO PULL THE DAMPER FULLY CLOSED, THEN RAMPS DOWN TO HOLD THE DAMPER CLOSED.

STEP 8 - CHECK THE A.C. VOLTAGE FROM TERMINAL C (COMMON) TO THE TERMINALS MARKED STAT 1-1, STAT 1-2, STAT 1-3, THEN STAT 1-4. THIS VOLTAGE SHOULD BE APPROXIMATELY 24 VOLTS A.C. WHEN THE PROPER SELECTION IS MADE AT THERMOSTAT 1. CHECK THE VOLTAGE FROM TERMINAL C (COMMON) TO THE TERMINALS MARKED AIR HANDLER 1, AIR HANDLER 2, AIR HANDLER 3, THEN AIR HANDLER 4. THIS VOLTAGE SHOULD BE APPROXIMATELY 24 VOLTS A.C. WHEN THE CORRESPONDING INPUT TERMINAL FROM STAT 1 OR STAT 2 IS ENERGIZED.

EXAMPLE: IF EITHER THE TERMINAL MARKED STAT 1-1 OR THE TERMINAL MARKED STAT 2-1 IS HOT AT THE INPUT, THEN THE TERMINAL MARKED AIR HANDLER 1 SHOULD BE HOT ALSO.

STEPS 9 AND 10 WILL CHECK THE OPERATION OF THE DAMPERS WHEN BOTH THERMOSTATS ARE CALLING AND HAVE EQUAL PRIORITY IN OPERATION. IN THIS CASE THE "PRIORITY JUMPER" IS NOT CONNECTED BETWEEN THE TERMINALS MARKED STAT 1-5 AND STAT 2-5.

STEP 9 - WITH THE ZONE 1 THERMOSTAT "CALLING", SET THE ZONE 2 THERMOSTAT TO "CALL".

STEP 10 - CHECK THE D.C. VOLTAGE AT TERMINALS D-COM (+) AND D2 (-). THE D.C. VOLTAGE SHOULD BE ZERO (0). CHECK THE D.C. VOLTAGE AT TERMINALS D-COM (+) AND D1 (-). AGAIN THE VOLTAGE SHOULD BE ZERO (0). WITH ZERO VOLTS TO BOTH D1 AND D2, BOTH DAMPERS SHOULD BE OPEN.

STEP 11 - MOVE THE TEMPERATURE SELECTOR ON STAT 1 UNTIL STAT 1 IS "SATISFIED" THEN, REPEAT STEP 8 WITH STAT 2 "CALLING". MEASURE THE A.C. VOLTAGES AT THE INPUT TERMINALS MARKED STAT 2 AND THE OUTPUT VOLTAGES AT THE TERMINALS MARKED AIR HANDLER.

STEPS 12, 13, 14, 15, AND 16 WILL CHECK THE OPERATION OF THE DAMPERS WHEN BOTH THERMOSTATS ARE CALLING BUT AREA 1 HAS PRIORITY OVER AREA 2. IN THIS CASE THE "PRIORITY JUMPER" WILL BE CONNECTED BETWEEN TERMINALS MARKED STAT 1-5 AND STAT 2-5.

STEP 12 - IF THE PRIORITY JUMPER IS USED AREA 1 WILL HAVE FIRST PRIORITY TO THE FULL OUTPUT OF THE HEATING OR COOLING UNIT. CONNECT THE VOLTMETER TO READ D.C. VOLTS AT TERMINALS D-COM (+) AND D2 (-).

SET THE ZONE 1 THERMOSTAT TO "CALL". THE VOLTAGE SHOULD BE APPROXIMATELY 28 VOLTS AT THE INSTANT THE THERMOSTAT CALLS AND SHOULD RAMP DOWN TO APPROXIMATELY 9 VOLTS AFTER 3 SECONDS.

STEP 13 - CONNECT THE VOLTMETER TO THE READ D.C. VOLTS AT TERMINALS D-COM (+) AND D1 (-). THE VOLTAGE AT THESE TERMINALS SHOULD BE ZERO (0) VOLTS WHEN THE THERMOSTAT IN ZONE 1 IS "CALLING".

WITHOUT CHANGING THE THERMOSTAT IN ZONE 1, SET THE THERMOSTAT IN ZONE 2 TO “CALL”.

THE D.C. VOLTAGE AT TERMINALS D-COM (+) AND D1 (-) SHOULD REMAIN UNCHANGED AT ZERO VOLTS AND THE D.C. VOLTAGE AT TERMINALS D-COM (+) AND D2 (-) SHOULD REMAIN UNCHANGED AT APPROXIMATELY 9 VOLTS.

STEP 14 - CONNECT THE VOLTMETER TO READ D.C. VOLTS AT TERMINALS D-COM (+) AND D1 (-).

ADJUST THE THERMOSTAT IN ZONE 1 UNTIL IT IS “SATISFIED”. THE VOLTAGE AT D-COM (+) AND D1 (-) SHOULD BE 28 VOLTS AT THE INSTANT THE ZONE 1 THERMOSTAT IS “SATISFIED”, AND WILL BEGIN DECREASING. WITHIN 3 SECONDS, THE VOLTAGE WILL STABILIZE AT APPROXIMATELY 9 VOLTS.

THE VOLTAGE BETWEEN TERMINALS D-COM (+) AND D2 (-) SHOULD BE ZERO (0).

SEE NOTE AT STEP 7.

STEP 15 - SET THE VOLTMETER TO READ A.C. VOLTAGE, THEN CHECK THE VOLTAGE FROM TERMINAL C (COMMON) AND THE TERMINALS MARKED STAT 2-1, STAT 2-2, STAT 2-3, AND STAT 2-4. THIS VOLTAGE SHOULD BE APPROXIMATELY 24 VOLTS WHEN THE PROPER SELECTION IS MADE AT THE THERMOSTAT IN ZONE 2. CHECK THE VOLTAGE FROM TERMINAL C (COMMON) TO THE TERMINALS MARKED AIR HANDLER 1, AIR HANDLER 2, AIR HANDLER 3, AND AIR HANDLER 4. THIS VOLTAGE SHOULD BE APPROXIMATELY 24 VOLTS A.C.

SEE NOTE AT STEP 8.

STEP 16 - ADJUST THE THERMOSTAT IN ZONE 2 SO THAT IT IS “SATISFIED”. THE D.C. VOLTAGE AT TERMINALS D-COM (+) AND D1 (-) SHOULD BE ZERO (0). LIKEWISE THE D.C. VOLTAGE AT TERMINALS D-COM (+) AND D2 (-) SHOULD BE ZERO (0). ALL VOLTAGE INPUTS AND OUTPUTS SHOULD BE ZERO (0), EXCEPT AT TERMINALS R (HOT) AND C (COMMON).