

Full Parts Breakdown Available Online

Heater Assembly [555001107](#)Control Panel Assembly [555001416](#)Plenum DUCT Assembly [555001321](#)

SERVICING AND TROUBLESHOOTING

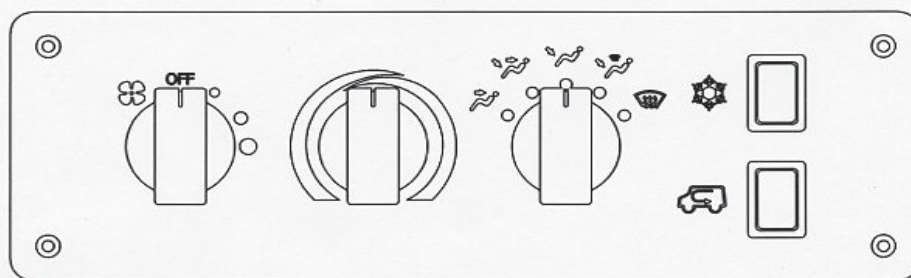
A/C-HEATER-DEFROSTER

CONTROL PANEL OPERATION


BLOWER CONTROL The BLOWER CONTROL provides three choices of air velocity in every operating mode. When the blower switch knob is rotated fully counterclockwise (with the knob indicator pointing straight up) the blower is turned OFF. Rotating the knob clockwise will progressively increase the air velocity.


TEMPERATURE


CONTROL The TEMPERATURE CONTROL KNOB controls the discharge air temperature in all operating modes. Turning the knob to the right (red zone) increases temperature; turning the knob to the left (blue zone) decreases air temperature. Temperature control is achieved through the regulation of engine coolant through the heater coil.





MODE SELECTION SWITCH

 **Dash** When this mode is selected, all air is discharged through the dash louvers.


 **Bi-Level** With this setting, air is discharged through the dash louvers and onto the floorboard. This is the ideal mode for rapid warm-up in cold weather.

 **Floor** This mode will direct all air to the floorboard. This mode is most frequently selected when heating is required.


 **Floor/Windshield** When this mode is selected, air is discharged onto the floorboard and onto the windshield.

 **Defrost/De-fog** This mode will direct most of the air to the windshield and provides for rapid defrosting of the outside of the windshield and defogging of the inside surface. A reduced volume of air is provided for floor heating.

A/C CONTROL

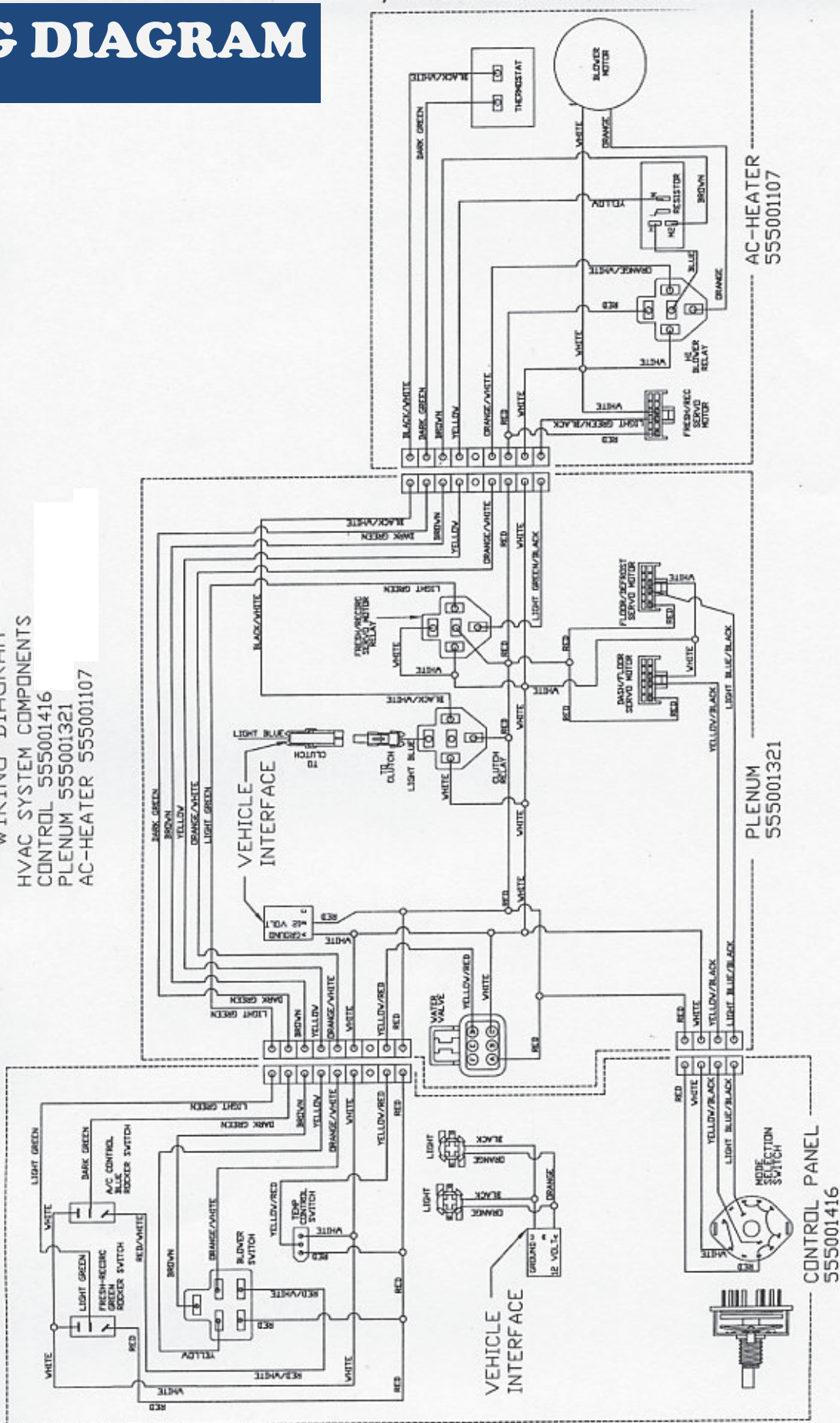
 The blue rocker switch will engage the A/C system compressor when the upper edge of the switch is pressed. Pressing the lower side of the switch will turn the A/C compressor off.

AIR SOURCE CONTROL

 The green rocker switch permits the driver to re-circulate cabin air or introduce outside air into the HVAC system. Pressing the upper edge of the green switch will block outside air and permit the re-circulation of inside air. Pressing the lower edge of the switch will introduce outside air.

WIRING DIAGRAM

WIRING DIAGRAM
HVAC SYSTEM COMPONENTS
CONTROL 555001416
PLENUM 555001321
AC-HEATER 555001107



TROUBLESHOOTING

SECTION A: AIRFLOW PROBLEMS

PROBLEM A-1, *No air flow, blower does not operate*

POSSIBLE CAUSE #1 ~ Faulty Blower Motor

CORRECTIVE ACTION ~ With ignition turned ON, unplug the 2-pin connector at the blower motor. Check the orange wire for +12 volts and the white wire for a fully grounded circuit. If power is present and the circuit grounded, remove the motor and wheel from the blower housing. Inspect for any evidence of entrapped debris or a broken blower wheel that might have prevented rotation. If no such evidence exists, replace the blower motor.

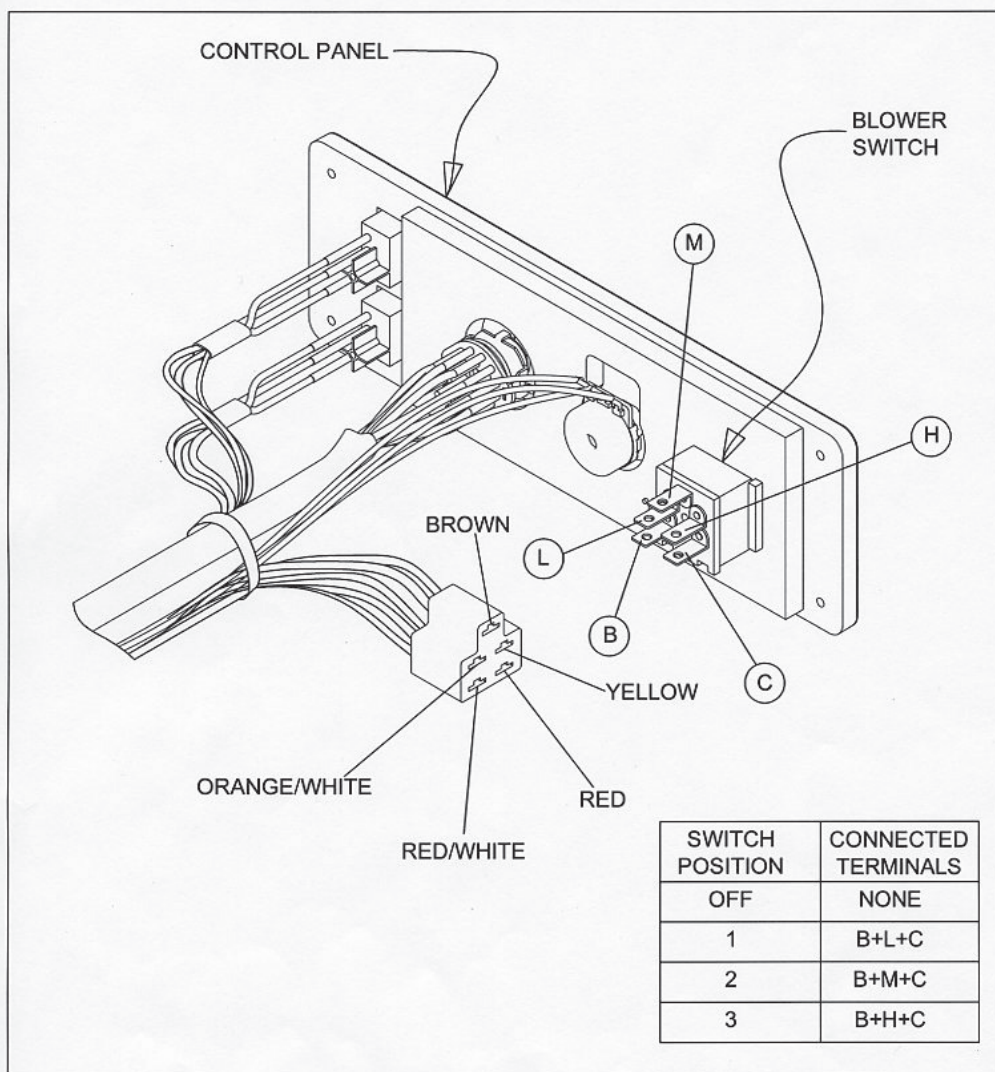
POSSIBLE CAUSE #2 ~ Blown fuse due to short in wire harness

CORRECTIVE ACTION ~ Refer to the **HVAC Wiring Diagram** and the Chassis Manufacturer's wiring information. Trace the entire HVAC wiring for an electrical short. Replace or repair as required.

POSSIBLE CAUSE #3 ~ Defective Blower Switch

CORRECTIVE ACTION ~ Refer to the **Blower Switch Continuity Diagram** and check the blower switch for continuity through the switch in all four switch positions. Replace the blower switch as required.

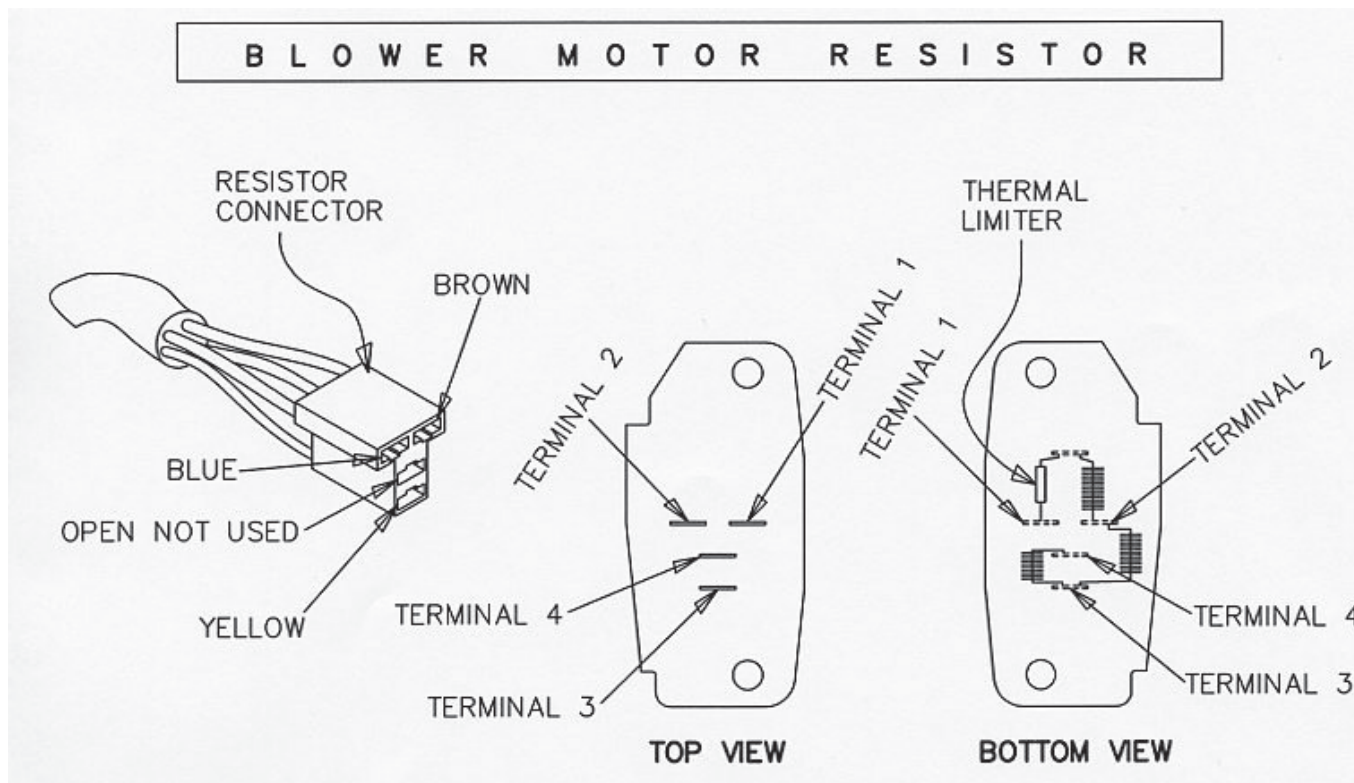
BLOWER SWITCH CONTINUITY DIAGRAM



PROBLEM A-2, *Blower operates, but not in all blower switch settings*

POSSIBLE CAUSE #1 ~ Blower resistor failure.

CORRECTIVE ACTION ~ If the blower operates only on the highest blower speed (blower switch rotated fully clockwise), the blower resistor has, most likely, failed. [Hint: The resistor is bypassed when the highest blower speed is selected.] Refer to the **Blower Motor Resistor** illustration (below); remove the three-wire connector from the resistor. Check for electrical continuity between terminal 1 and 2. If an open circuit exists between 1 and 2, the thermal limiter has blown and it will be necessary to replace the resistor. [Note: A failed resistor is often the results of a problem with the blower motor. Make sure that the blower motor is fully operable and is not bound in any sort of way by a broken blower wheel or entrapped debris within the blower housing.]



POSSIBLE CAUSE #2 ~ High-blower relay failure

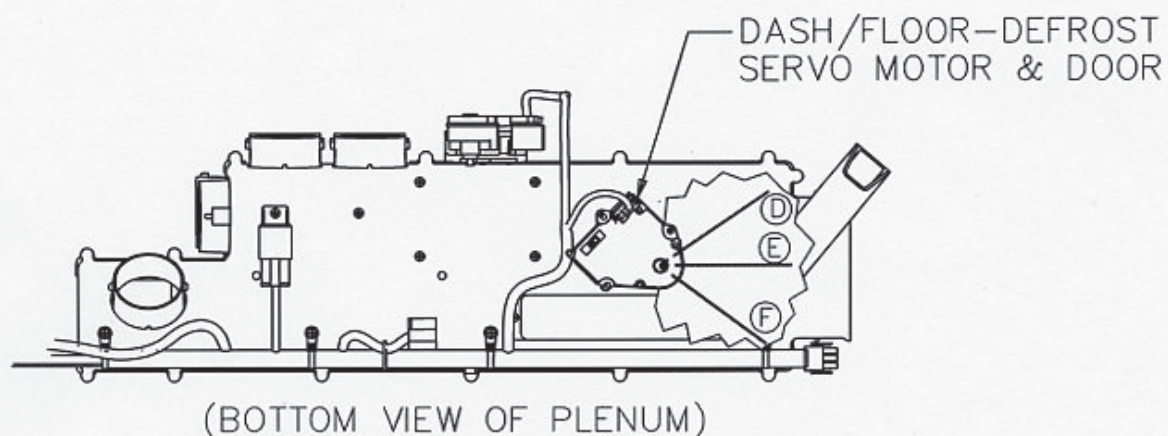
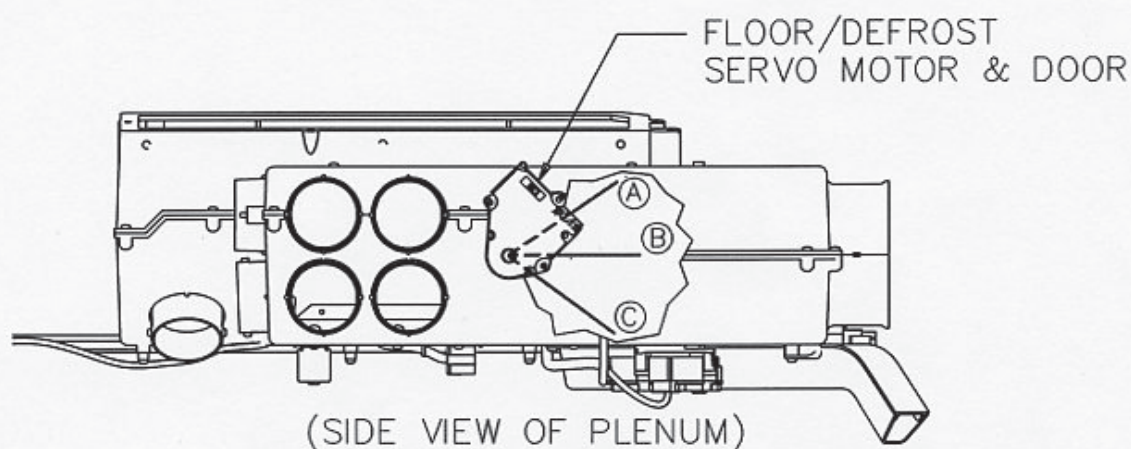
CORRECTIVE ACTION ~ If the blower operates in all speed selections except for the highest selection there is a possibility that the high-blower relay has failed. [Note: The high-blower relay is activated when the highest blower speed is selected. The relay extends the life of the blower switch and insures the highest voltage for the motor.] Remove the relay and test for an open circuit across terminals 85 and 86. If the circuit is open, replace the relay.






PROBLEM A-3 ~ *Air does not flow from the selected outlets*

POSSIBLE CAUSE #1 ~ Plenum directional doors obstructed

CORRECTIVE ACTION ~ Examine the air distribution Plenum for any possible obstruction that might have become entrapped internally. Refer to the **Mode Selection & Servo Motor Position Correlation Diagram** for the position of each of the doors in every mode selection. The output shafts of the servo motors can be observed, externally, as they move through their approximate 100 degrees of travel. Also, the doors can be physically touched by removing the 5" flexible inlet duct and reaching into the plenum's air intake. If a physical obstruction is suspected, it may be necessary to remove the plenum. [Note: Access to the plenum's mounting hardware will require removal of the defroster ducts from atop the dash.]

MODE SELECTION & SERVO MOTOR POSITION CORRELATION DIAGRAM

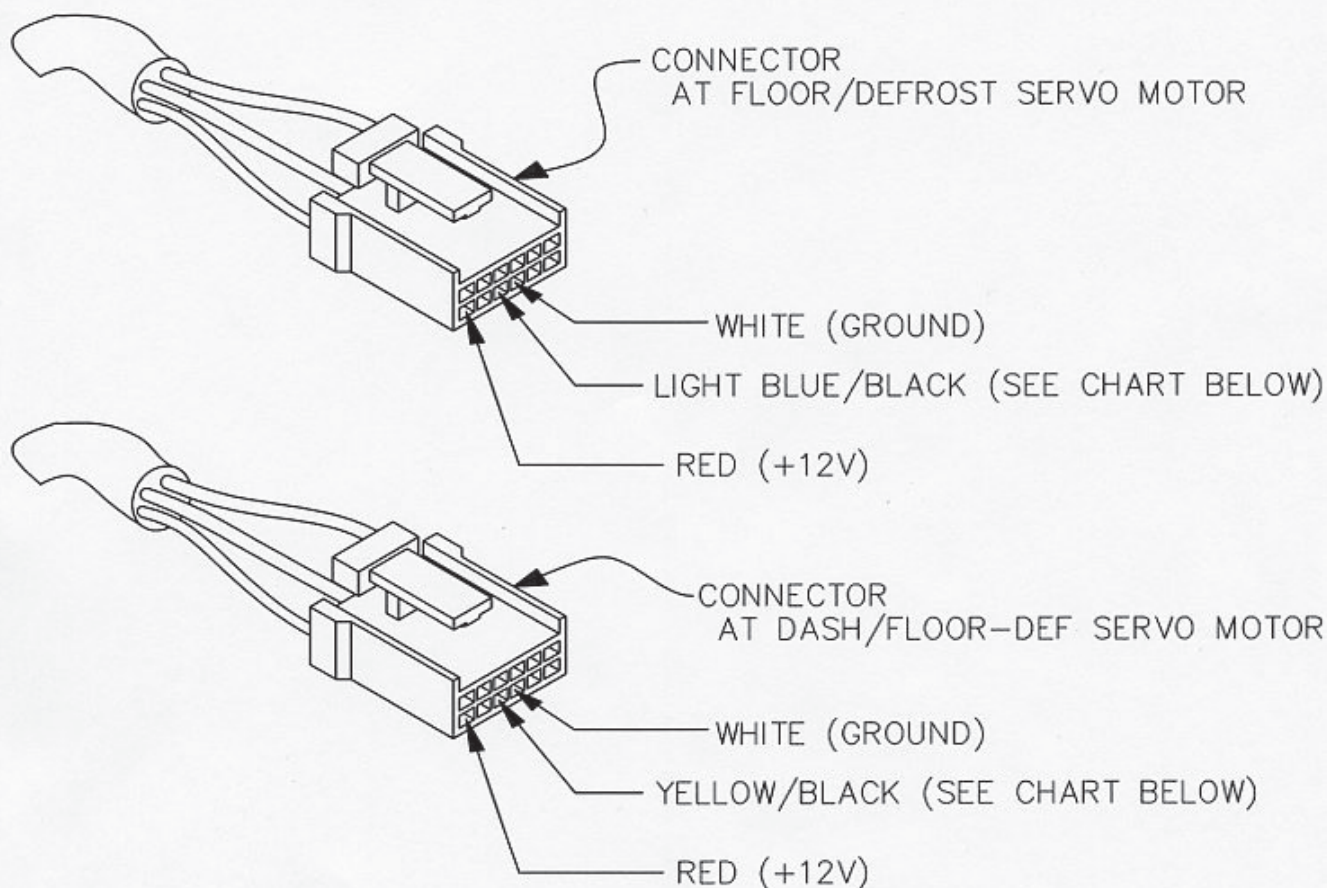







CONTROL PANEL MODE SELECTION	SERVO MOTOR		AIR DISTRIBUTION
	FLOOR/DEFROST	DASH/ FLOOR-DEFROST	
	 B	F	DASH LOUVERS
	 A	E	DASH LOUVERS AND FLOOR
	 A	D	FLOOR
	 B	D	FLOOR AND WINDSHIELD
	C	D	WINDSHIELD

POSSIBLE CAUSE #2 ~ Servo motor failure

CORRECTIVE ACTION ~ If servo motor failure is suspected, the first step is to confirm that the electrical connections at the servo motors are delivering the correct signal to the motors. With the ignition switch turned to **Accessory**, unplug each of the servo connectors and test according to the information in the **Electrical Connection To Plenum Servo Motors Diagram**. If the electrical check is in agreement with the **Diagram** and if the directional doors are not obstructed, the likely problem is a failed servo motor. Replace servo motor as required.

ELECTRICAL CONNECTION TO PLENUM SERVO MOTORS



CONTROL PANEL MODE SELECTION	SERVO MOTOR CONNECTOR		
	FLOOR/DEFROST	DASH/FLOOR-DEFROST	
	LIGHT BLUE/BLACK WIRE	YELLOW/BLACK WIRE	
		OPEN CIRCUIT	GROUND
		+12V	OPEN CIRCUIT
		+12V	+12V
	OPEN CIRCUIT	+12V	
	GROUND	+12V	

POSSIBLE CAUSE #3 ~ Control Panel Selector Switch is defective

CORRECTIVE ACTION ~ With the ignition turned to Accessory, unplug each of the connectors from the Plenum servo motors and test according to the information in the **Electrical Connection To Plenum Servo Motors Diagram**. If the test fails to find agreement with the **Diagram** there is a good possibility that the Mode Selection Switch at the control panel is defective. Replace the Mode Selection Switch.

SECTION B: TEMPERATURE CONTROL PROBLEMS

PROBLEM B-1, Air temperature cannot be controlled

POSSIBLE CAUSE #1 ~ Water valve not operating

CORRECTIVE ACTION ~ Valve may not be receiving a signal from control panel, or valve is defective. Disconnect the electrical connector from the valve. With the ignition switch turned to **Accessory**, check for the presence of 12 volts between the red wire (+12 V) and the white wire (ground) as noted in the **Water Valve Electrical Diagram**. The yellow/red signal wire will provide +12 V (full cold position) dropping to zero volts (full hot position) as the temperature control knob is rotated clockwise. If the condition at the connector is in agreement with the **Diagram**, proceed as follows:

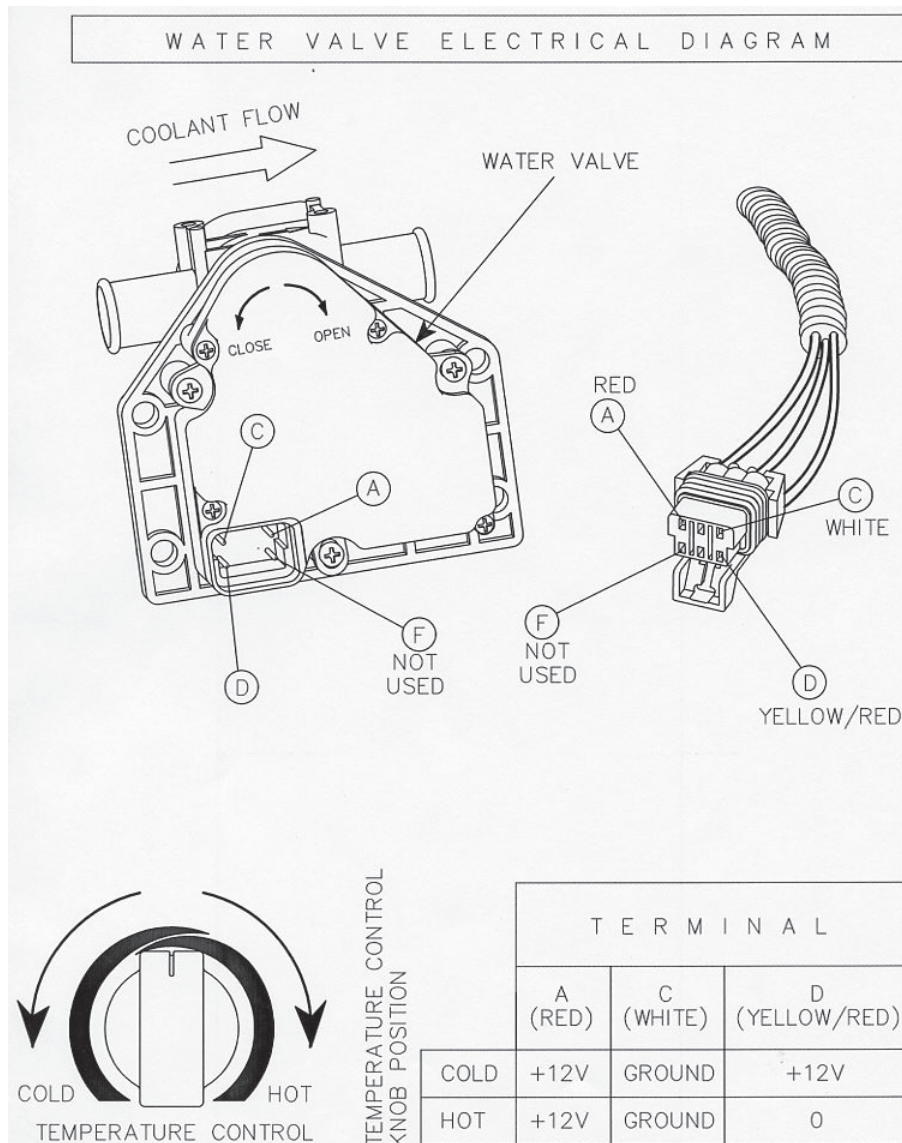
Step 1 Disconnect the water valve from the 5/8" heater hoses,

Step 2 Carefully inspect the four small terminal pins on the motor, make sure that they are not damaged,

Step 2 Reconnect the valve to the electrical connector,

Step 3 Rotate the Temperature Control Knob and watch for any response from the valve,

Step 4 If no valve rotation is observed, replace the valve.



POSSIBLE CAUSE #2 ~ Water valve not electrically connected

CORRECTIVE ACTION ~ Disconnect the electrical connector from the valve. With the ignition switch turned to **Accessory**, check for the presence of 12 volts between the red wire (+12 V) and the white wire (ground) as noted in the Water Valve Electrical Diagram. The yellow/red signal wire will provide +12 V (full cold position) dropping to zero volts (full hot position) as the temperature control knob is rotated clockwise. If none of these conditions exist, refer to the **Wiring Diagram** and examine the system's wire harness for any loss of continuity. Repair as required.

PROBLEM B-2, A/C system not providing cool air

POSSIBLE CAUSE #1 ~ Loss of refrigerant

CORRECTIVE ACTION ~ Verify the presence of 1.75 pounds of refrigerant R134a. If the AC system is either partially low, or completely empty, a search will be required for leakage. Replace and repair as required.

POSSIBLE CAUSE #2 ~ Compressor not engaged

CORRECTIVE ACTION ~ Confirm that the system is fully charged. With the ignition switch turned to **Accessory**, the blower switch turned to the highest speed and the AC (blue) rocker switch engaged, proceed as follows:

Step 1: Check for the presence of 12 volts at the compressor. If yes, make certain that the compressor clutch is fully grounded. If the ground circuit is intact, the compressor clutch has, most likely, failed and requires replacement.

Step 2: If no voltage is present at the compressor clutch, refer to the **Wiring Diagram** and check for voltage at each of the system pressure switches. [Note: The low pressure switch is located on the suction hose near the firewall and opens on a pressure drop to 8 psi. The binary (high/low) pressure switch is located on the liquid hose near the receiver/drier and opens on a pressure rise to approximately 400 psi and a pressure drop to 28 psi.] With the system fully charged, there should be continuity through both switches. Replace as required.

Step 3: If no voltage is present at the pressure switches, check for voltage at the thermostat (located externally on the HVAC housing). Assuming that the evaporator coil is fully warmed to ambient conditions, the thermostat should be a closed circuit. [Note: The thermostat circuit opens when the evaporator coil surface temperature drops below 32 degrees F; this action prevents the accumulation of ice on the evaporator coil surface.] If the thermostat presents an open circuit, replacement is required. Thermostat replacement requires the complete removal and disassembly of the HVAC housing. When replacing thermostat, take special care to not kink the capillary tube. Also, install the new capillary tube in the same location as the original.

POSSIBLE CAUSE #3 ~ Perceived lack of cooling due to extreme conditions

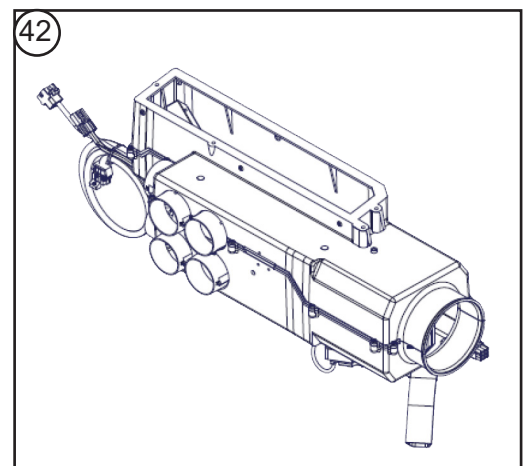
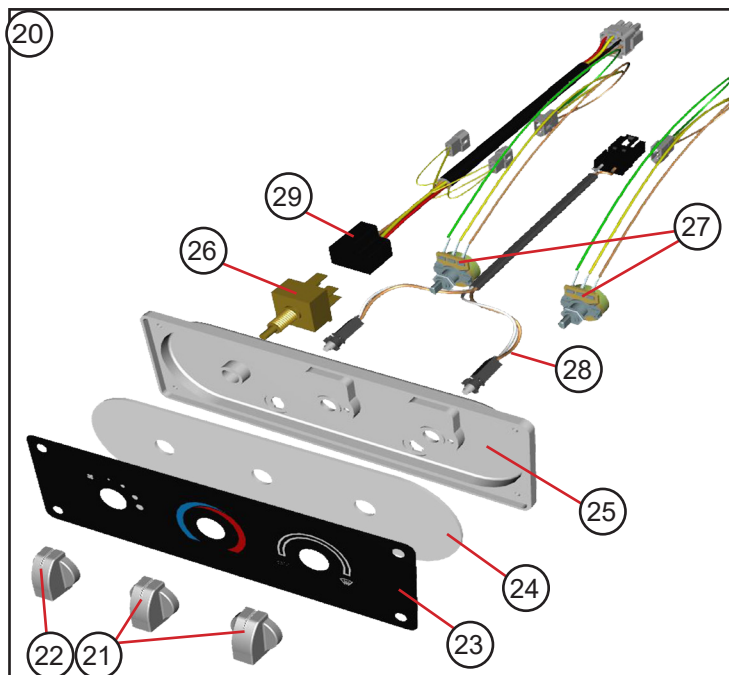
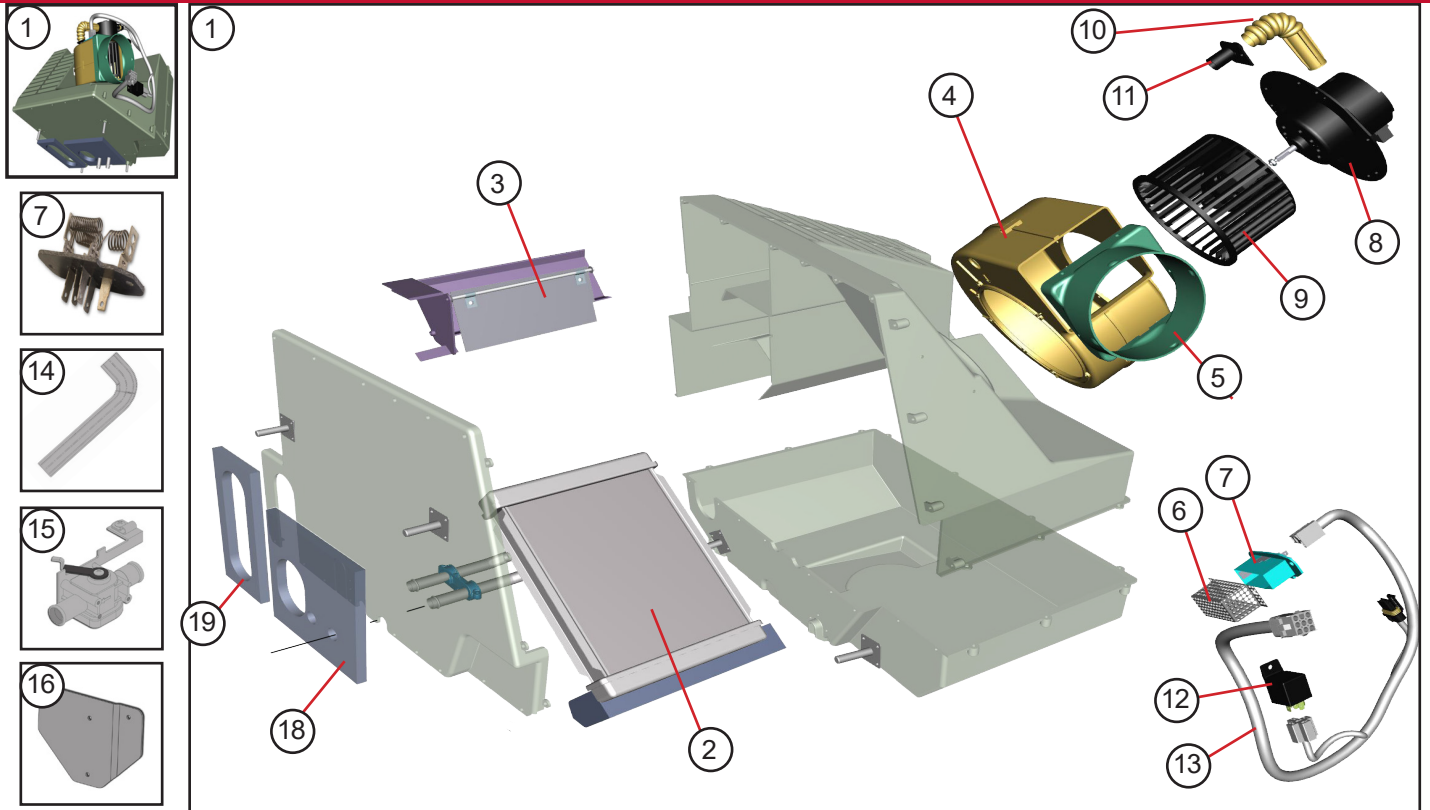
CORRECTIVE ACTION ~ Note that extremely high humidity can reduce the effectiveness of the evaporator. The **Ambient Temperature vs. Relative Humidity Chart** (below) illustrates how very high humidity can raise the louver temperatures. This test is best performed with the doors and windows open, the blower turned to the highest speed and the AC system fully engaged. Run the engine at 1500 rpm and allow time for the system to stabilize. Measure the discharge air temperature at one of the dash louvers and compare to the **Chart**.

AMBIENT TEMPERATURE						
RELATIVE HUMIDITY		60	70	80	90	100
	10%	*	*	38	48	58
	20%	*	*	39	49	59
	30%	*	*	45	49	63
	40%	*	39	48	53	68
	50%	*	42	53	57	73
	60%	*	46	57	60	79
	70%	*	49	61	67	82
	80%	39	52	64	71	85
	90%	42	55	68	74	88
	100%	46	57	71	77	90
* VALUES IN THE SHADED AREA SUBJECT TO FLUCTUATION DUE TO CYCLING OF THE COMPRESSOR						

SECTION C: DIAGNOSIS OF REFRIGERANT RELATED PROBLEMS

Consult the following *Refrigerant System Evaluation* chart (below) for a list of refrigerant related symptoms and their recommended resolution:

REFRIGERANT SYSTEM EVALUATION				
SYMPTOM	LOW-SIDE GAUGE	HIGH-SIDE GAUGE	DIAGNOSIS	CORRECTION
AIR SLIGHTLY COOL	NORMAL	NORMAL	AIR & MOISTURE IN SYSTEM	REPLACE RECEIVER/DRIVER RECHARGE
SYSTEM OPERATED NORMALLY FOR A SHORT PERIOD, BUT AIR WARMS AS LOW SIDE DROPS TO ZERO	INITIALLY NORMAL	INITIALLY NORMAL	EXCESS MOISTURE IN SYSTEM TURNING TO ICE WITHIN EXPANSION VALVE	REPLACE RECEIVER/DRIER, RECHARGE
SYSTEM OPERATED NORMALLY, BUT AIR FLOW GRADUALLY DECREASES	INITIALLY NORMAL, BUT DROPS AS AIR FLOW DECREASES	NORMAL, BUT DROPS AS AIR FLOW DROPS	THERMOSTAT FAILURE ALLOWING SURFACE OF EVAPORATOR COIL TO FREEZE	REPLACE THERMOSTAT
POOR COOLING	LOW	LOW	LOW REFRIGERANT CHARGE	REPAIR SYSTEM LEAKS, RECHARGE
POOR COOLING, ICE FORMING ON SURFACE OF EXPANSION VALVE	LOW	LOW	EXPANSION VALVE STUCK IN CLOSED POSITION	REPLACE EXPANSION VALVE, RECHARGE
POOR COOLING, SWEATING MAY APPEAR ON HIGH-SIDE COMPONENTS	LOW	LOW	RESTRICTED REFRIGERANT FLOW ON HIGH SIDE	REPAIR/REPLACE DEFECTIVE HIGH SIDE COMPONENTS, RECHARGE
POOR COOLING NOISY COMPRESSOR	LOW	LOW	COMPRESSOR MALFUNCTION	REPLACE COMPRESSOR RECHARGE
POOR COOLING HIGH SIDE LINES HOT	HIGH	HIGH	SYSTEM OVER CHARGE	RECHARGE SYSTEM (1.75 #R134A)
POOR COOLING HIGH SIDE LINES HOT	HIGH	HIGH	POOR CONDENSING	INSPECT CONDENSER FOR OBSTRUCTIONS THAT COULD REDUCE AIR FLOW
POOR COOLING	HIGH	HIGH	EXPANSION VALVE STUCK OPEN	REPLACE EXPANSION VALVE, RECHARGE



ITEM #	PART #	DESCRIPTION	QTY	UNIT
1	555001107	HEATER CORE ASSEMBLY	1	EA
2	47008760	HEATER COIL W/GASKET & CLAMP	1	EA
3	47008753	DOOR W/SEAL	1	EA
4	47008754	BLOWER HOUSING	1	EA
5	47008755	BLOWER ADAPTER	1	EA
6	47008732	RESISTER CAGE	1	EA
7	47008357	RESISTER	1	EA
8	47008756	BLOWER MOTOR	1	EA
9	47008757	BLOWER WHEEL	1	EA
10	47008730	VENT TUBE	1	EA
11	47008731	VENT TUBE ADAPTER	1	EA
12	47008716	RELAY	1	EA
13	47008758	HARNESS	1	EA
14	47008580	FORMED HEATER HOSE	2	EA
15	555002053	VALVE WATER	1	EA
16	105080401	PLATE MOUNTING FOOT DUMP AL .07X4.25X5.53	1	EA
17	090080401	DUCT FT DUMP SPECIAL	1	EA
18	N/A	GASKET - PART OF HEATER ASSEMBLY	1	EA
19	N/A	GASKET - PART OF HEATER ASSEMBLY	1	EA
20	555001416	CONTROL PANEL ASSEMBLY	1	EA
21	47008706	KNOB	2	EA
22	47008735	KNOB	1	EA
23	47008707	DECAL	1	EA
24	47008708	LIGHT PANEL	1	EA
25	47008709	CONTROL SUB PANEL	1	EA
26	47008700	BLOWER SWITCH	1	EA
27	47008710	POTENTIOMETER SWITCH	2	EA
28	47008711	HARNESS ILLUMINATION W/BULBS	1	EA
29	47008712	HARNESS BLOWER MOTOR	1	EA
30	555001721	DEFROST DUCT CURBSIDE METAL	1	EA
31	555001722	DEFROST DUCT ROADSIDE METAL	1	EA
32	093080400	HOLD DOWN PLATE DEFROSTER DUCTS	4	EA
33	555001524	HOSE DEFROSTER 2.5X30	1	EA
34	555001525	HOSE DEFROSTER 2.5X38 (2x DEFROSTER / 1xFOOT DUMP)	3	EA
35	555002003	COLLAR FRESH AIR INTAKE	1	EA
36	555001715	LOUVER BALL	6	EA
37	555002007	PLENUM FRESH AIR SIDE WALL (DRAIN HOSE - 555002008)	1	EA
38	107027405	BRACKET HEATER VENT	1	EA
39	555001533	HOSE BLOWER HEATER/DEFROSTER 5"X7.5"	1	EA
40	005780402	MOUNTING PLATE	1	EA
41	002080400	BRACKET HEATER CONTROL AL .102X3X11.67	1	EA
42	555001321	DUCT HVAC	1	EA
43	555001523	HOSE DEFROSTER 2.5X16	1	EA
44	47008017	CONNECTOR STRAIGHT .62ID BLACK NYLON	2	EA
NS	555002164	CAP DEFROSTER PORT 2.5IN DIA ROUND	2	EA