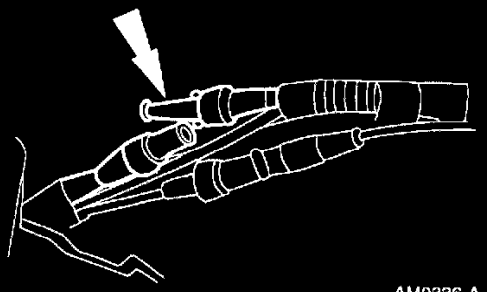
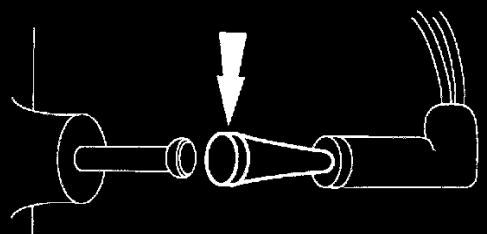
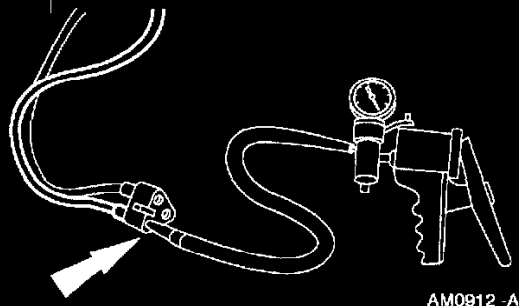
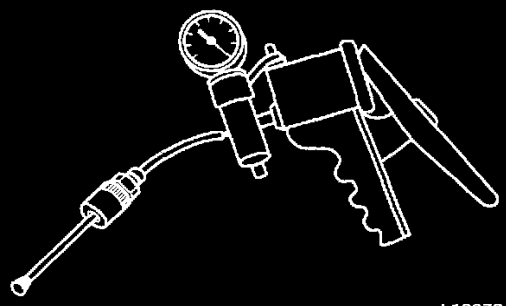
Heating and Air Conditioning: Testing and Inspection Procedures
A: Improper/Erratic Air Flow From Outlet(s)

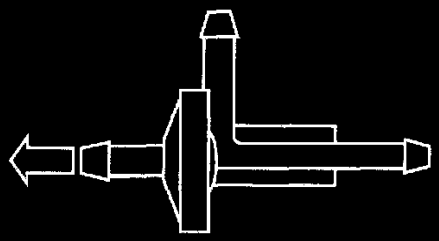
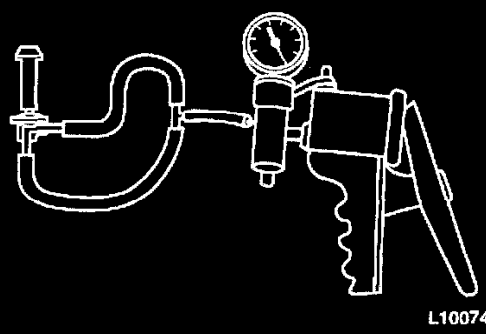
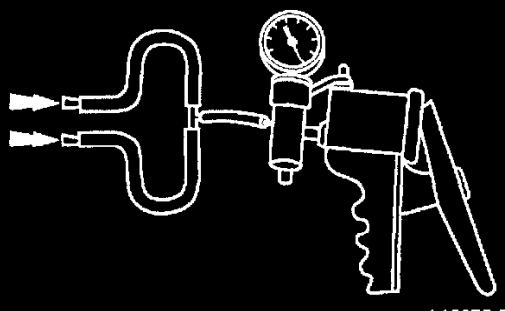
TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A1 CHECK THE SYSTEM AIRFLOW	
1  Start Engine	1 **WARNING: CARBON MONOXIDE IS COLORLESS, ODORLESS AND DANGEROUS. IF IT IS NECESSARY TO OPERATE THE ENGINE WITH THE VEHICLE IN A CLOSED AREA SUCH AS A GARAGE, ALWAYS USE AN EXHAUST COLLECTOR TO VENT THE EXHAUST GASES OUTSIDE OF THE CLOSED AREA.** Start the engine. 2 Set the heater blower motor switch to HIGH. 3 Check the system airflow in each function position to determine which position(s) have incorrect airflow. Refer to the vacuum schematic. • Is the airflow coming from the defroster nozzles in all of the positions? → **Yes** GO to **A2**. → **No** GO to **A14**.

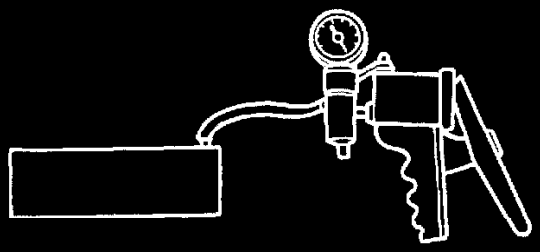
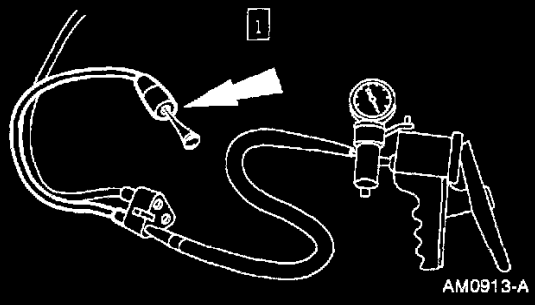
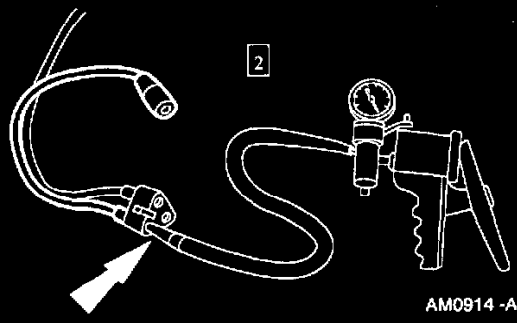
A1

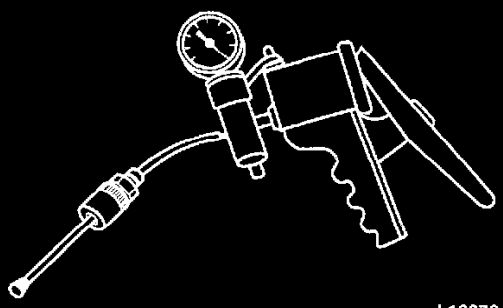
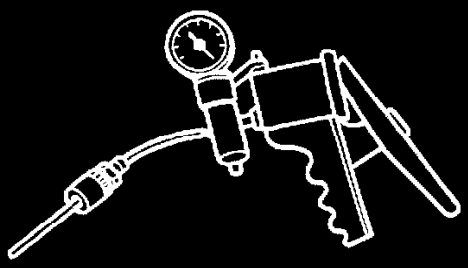
TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A2 CHECK THE VACUUM SUPPLY HOSE	
1  2  AM0336-A	2 Check the vacuum supply hose to be sure that it is connected. • Is the hose disconnected? → **Yes** RECONNECT the vacuum supply hose. RESTORE the vehicle. GO to **A13**. → **No** GO to **A3**.
A3 LEAK CHECK THE VACUUM TANK AND HOSES	
NOTE: The in-line vacuum harness connector is located in the vehicle, below the instrument panel, on the passenger side.	
1  Intake Manifold Vacuum Hose 2  In-Line Vacuum Harness 3  AM0337-A 4  AM0912 -A	3 Plug the vacuum supply hose at the intake manifold. 4 Perform a vacuum leak test on the vacuum tank, check valve and hoses. • Connect the vacuum pump to the in-line connector. • Apply a vacuum. • Check for a vacuum leak. • Is there leakage? → **Yes** GO to **A4**. → **No** GO to **A9**.

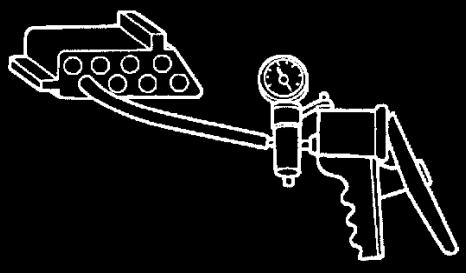
TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A4 LEAK CHECK THE VACUUM SUPPLY HOSE	
	[1] Remove the evaporator core housing.
[2]  Vacuum Supply Hose	
[3]  L10072-B	[3] Perform a vacuum leak test on the vacuum supply hose. • Plug one end of the hose. • Connect the vacuum pump to the other end. • Apply a vacuum. • Check for a vacuum leak. • Does the hose leak? → **Yes** REPAIR or REPLACE the vacuum supply hose. RESTORE the vehicle. TEST the system for normal operation.. → **No** GO to **A5**.

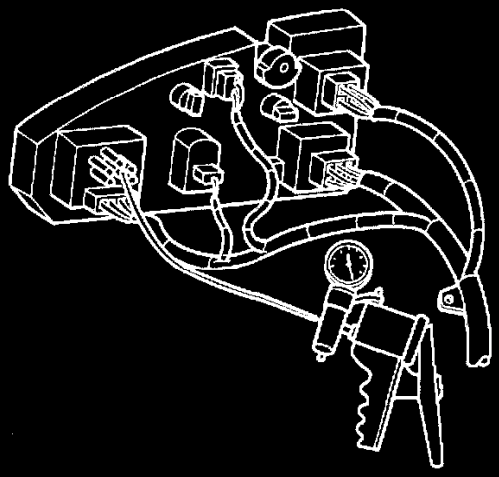
A4

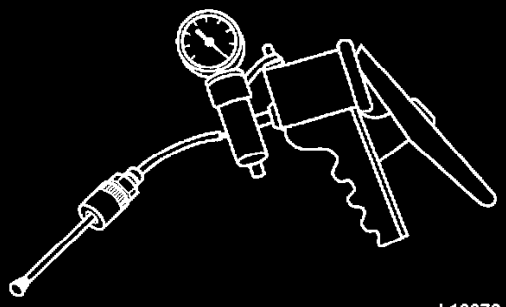
TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A5 INSPECT THE VACUUM CHECK VALVE	
1  Vacuum Check Valve 2  DM0003-B	2 Inspect the A/C vacuum check valve for any obstructions and proper operation. Airflow through the A/C vacuum check valve must be directed toward the engine. • Is the A/C vacuum check valve plugged or obstructed? → **Yes** REPLACE the A/C vacuum check valve. RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A6**.
A6 LEAK TEST THE VACUUM CHECK VALVE	
1  L10074-B 2  L10075-B	1 Perform a vacuum leak test on the A/C vacuum check valve. • Connect two hoses and a tee fitting to the outlet ports of the A/C vacuum check valve. • Connect the tee fitting to the vacuum pump. • Apply 51 kPa (15 in-Hg) of vacuum. 2 If the vacuum loss exceeds 3.37 kPa (1 in-Hg) per minute, then remove the A/C vacuum check valve and perform a vacuum leak test on the vacuum pump. • Plug both of the hoses. • Apply a vacuum. 3 If the vacuum pump loses vacuum, then correct the problem and repeat this procedure. • Does the A/C vacuum check valve leak? → **Yes** REPLACE the A/C vacuum check valve, RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A7**.

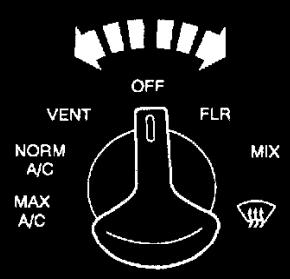
TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A7 CHECK THE VACUUM RESERVOIR	
1  Vacuum Reservoir 2  DM0006-A	2 Perform a vacuum leak test on the A/C vacuum reservoir tank and bracket. • Connect the vacuum pump to the A/C vacuum reservoir tank and bracket. • Apply a vacuum. • Check for a vacuum leak. • Does the A/C vacuum reservoir tank and bracket leak? → **Yes** REPLACE the A/C vacuum reservoir tank and bracket. RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A8**.
A8 CHECK THE SUPPLY HOSE	
1  AM0913-A 2  AM0914 -A	1 Check the supply hose for a vacuum leak. • Connect the vacuum pump to one end of the supply hose. • Install a plug in the other end of the hose. • Apply a vacuum. • Check for a vacuum leak. 2 Disconnect the control assembly supply hose from the A/C control and the A/C vacuum check valve. 3 Check the supply hose for a restriction or blockage. • Remove the plug. • Apply a vacuum. • Check for a restriction or blockage. • Does the supply hose have a leak, restriction, or blockage? → **Yes** REPAIR or REPLACE the supply hose. RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A9**.

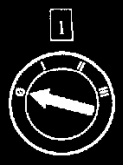
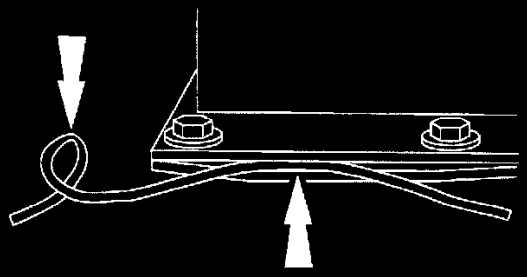
TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A9 CHECK THE CONTROL ASSEMBLY SUPPLY HOSE	
1  A/C-Heater Function Selector Switch Supply Hose	
2  L10072-B	2 Check the control assembly supply hose for a vacuum leak. • Connect the vacuum pump to one end of the control assembly supply hose. • Install a plug in the other end of the hose. • Apply a vacuum. • Check for a vacuum leak.
3  DM0007-A	3 Check the control assembly supply hose for a restriction or blockage. • Remove the plug. • Apply a vacuum. • Check for a restriction or blockage. • Does the control assembly supply hose have a leak, restriction, or blockage? → **Yes** REPAIR or REPLACE the A/C-heater function selector switch supply hose. RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A10**.

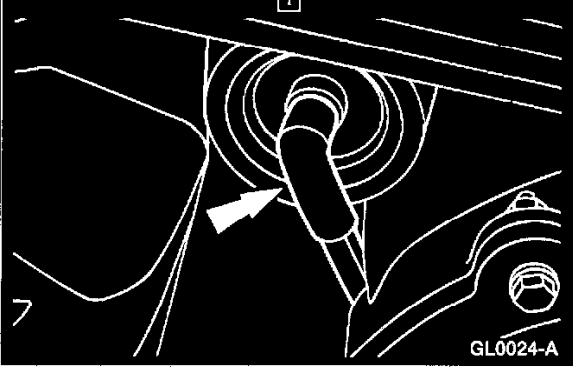
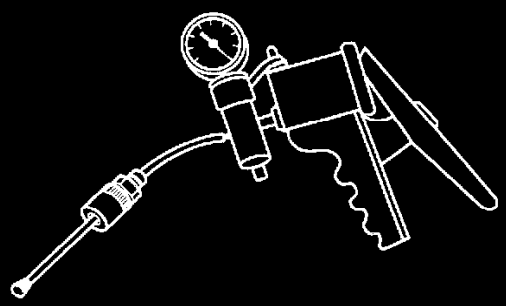
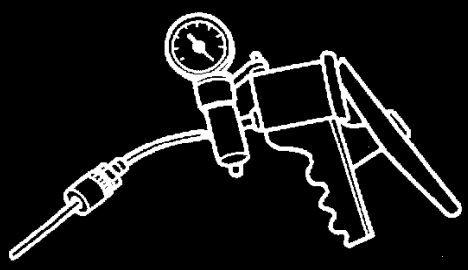
TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A10 CHECK THE CONTROL ASSEMBLY	
1  A/C-Heater Function Selector Switch Supply Hose 2  Vacuum Harness In-Line Multiple Connector 3  DM0008-A	3 Perform a vacuum leak test on each function position. • Plug all of the vacuum hoses except for the A/C-heater function selector switch supply hose. • Connect the vacuum pump to the A/C-heater function selector switch supply hose. • Set the A/C-heater function selector switch to a function position. • Apply 51 kPa (15 in-Hg) of vacuum. • Check for a vacuum drop exceeding 3.37 kPa (1 in-Hg) per minute. • Does the vacuum drop more than 3.37 kPa (1 in-Hg) per minute? → **Yes** NOTE which function position(s) leak. GO to **A11**. → **No** GO to **A15**.

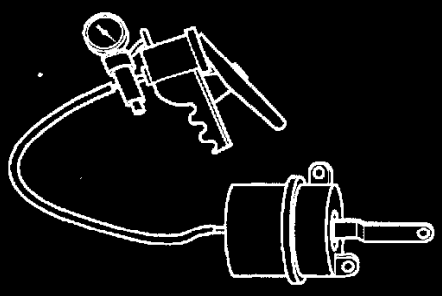
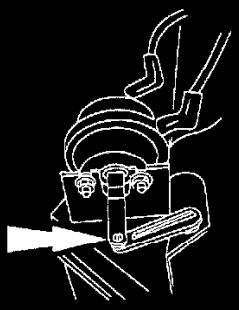
TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A11 LEAK TEST THE CONTROL ASSEMBLY	
1  A/C-Heater Function Selector Switch 2  DM0009-A	2 Perform a vacuum leak test on the A/C-heater function selector switch for the functions that were noted in Step A10. • Plug the leaking control port(s), as noted in Step A10. • Connect the vacuum pump to the A/C-heater function selector switch supply port. • Select the corresponding function position. • Apply 51 kPa (15 in-Hg) of vacuum. • Check for a vacuum drop exceeding 1.68 kPa (1/2 in-Hg) per minute. • Does the vacuum drop more than 1.68 kPa (1/2 in-Hg) per minute? → **Yes** REPLACE the A/C-heater function selector switch. RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A12**.

TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A12 LEAK TEST THE JUMPER VACUUM HARNESS	
1  Vacuum Hose(s) 2  L10072-B	1 Disconnect the vacuum hose(s) that indicated a leak in Step A10 from the corresponding vacuum control motor. 2 Perform a vacuum leak test on each of the hose(s). • Connect the vacuum pump to one end of the vacuum hose. • Install a plug in the other end of the hose. • Apply 51 kPa (15 in-Hg) of vacuum. • Check for a vacuum leak. • Do the vacuum hose(s) leak? → **Yes** REPAIR or REPLACE the vacuum hose harness. RESTORE the vehicle. TEST the system for proper operation. → **No** CHECK the vacuum hose harness connection. REPAIR or REPLACE the vacuum hose harness as necessary. RESTORE the vehicle. TEST the system for proper operation.
A13 EVALUATE THE SYSTEM AIRFLOW	
1 	2 Check the airflow that was noted in Step A1 for each function position. • Is the airflow in Step A1 correct for each function position? → **Yes** GO to **A14**. → **No** GO to **A15**.

TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A14 ISOLATE THE LEAKING VACUUM CIRCUIT	
1  Start Engine	1 **⚠ WARNING: CARBON MONOXIDE IS COLORLESS, ODORLESS AND DANGEROUS. IF IT IS NECESSARY TO OPERATE THE ENGINE WITH THE VEHICLE IN A CLOSED AREA SUCH AS A GARAGE, ALWAYS USE AN EXHAUST COLLECTOR TO VENT THE EXHAUST GASES OUTSIDE OF THE CLOSED AREA.** Start the engine.
	2 Set the heater blower motor switch to HIGH.
3  AM0777-A	3 Cycle the A/C-heater function selector switch to each function position during acceleration.
	4 Check for a change in the system airflow for each function position during acceleration. • Does the airflow go to defrost during engine acceleration? → **Yes** GO to **A19**. → **No** GO to **A15**.

TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A15 REVIEW THE VEHICLE HISTORY	
	[2] Review the vehicle history to determine if the system operated properly prior to the complaint. • Did the system operate properly prior to this complaint? → **Yes** GO to **A18**. → **No** GO to **A16**.
A16 CHECK THE VACUUM HARNESS	
	[1] Compare the colors on each vacuum hose to those shown on the vacuum schematic. • Do the vacuum hoses agree with what is shown on the vacuum schematic? → **Yes** GO to **A17**. → **No** REPLACE the vacuum hose harness. RESTORE the vehicle. TEST the system for proper operation.
A17 CHECK THE VACUUM CIRCUIT	
[1]  AM0351-B	[1] Inspect each vacuum hose to determine if it is pinched or kinked. • Are any of the vacuum hoses pinched or kinked? → **Yes** REPAIR the damaged vacuum hose(s) or REPLACE the vacuum hose harness. RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A18**.

TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A18 CHECK THE VACUUM CIRCUIT CONNECTIONS	
1  GL0024-A	1 Check vacuum hose connections to determine if any are disconnected or partially connected. • Are any of the vacuum hoses disconnected or partially connected? → **Yes** RECONNECT the vacuum hose(s). RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A19**.
A19 CHECK THE VACUUM HOSES	
1  Vacuum Hose(s)	1 Disconnect each suspected vacuum hose from the system.
2  L10072-B	2 Perform a vacuum leak test on each suspected hose. • Connect the vacuum pump to one end of the vacuum hose. • Install a plug in the other end of the hose. • Apply a vacuum. • Check for a vacuum leak.
3  DM0007-A	3 Check each suspected hose for a restriction or blockage. • Remove the plug. • Apply a vacuum. • Check for a restriction or blockage. • Do any of the vacuum hose(s) have a leak, restriction, or blockage? → **Yes** REPAIR the vacuum hose(s) or REPLACE the vacuum hose harness. RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A20**.

TEST CONDITIONS	TEST DETAILS/RESULTS/ACTIONS
A20 CHECK THE VACUUM MOTOR	
1  Vacuum Control Motors	1 Disconnect the suspected vacuum control motor.
2  AL0136-A	2 Perform a vacuum leak test on each of the suspected vacuum control motor (s). • Connect the vacuum pump to the vacuum control motor (s). • Apply a vacuum. ▪ Do any of the suspected vacuum control motor (s) leak? → **Yes** REPLACE the vacuum control motor (s). RESTORE the vehicle. TEST the system for proper operation. → **No** GO to **A21**.
A21 CHECK THE VACUUM MOTOR INSTALLATION	
1  AL0158-A	1 Check for proper attachment of the vacuum control motor arm to the damper door or damper door crank arm. • Is the vacuum motor arm properly attached to the damper door or damper door crank arm? → **Yes** CHECK for a binding or damaged damper door. REPAIR or REPLACE the damper door as necessary. RESTORE the vehicle. TEST the system for proper operation. → **No** CONNECT the vacuum motor arm to the damper door or damper door crank arm. CHECK the damper door operation. RESTORE the vehicle. TEST the system for proper operation.