HEATER AND DEFROSTER

FRESH AIR HEATER AND DEFROSTER DESCRIPTION

The fresh air heater and defroster system is designed to provide fresh air ventilation for summer driving or fresh heated air within the car for winter driving.

COWL FRESH AIR INTAKE CJ-5/CJ-6

The body ventilating system incorporates the use of an air intake ventilator grille located on top of the cowl panel (fig. 13-1). The air entering the intake ventilator grille flows through a duct shroud and hose which guides the air into the vehicle. A wing door in the outlet assembly of the duct shroud regulates the flow of air and is adjusted by the use of a cable control mounted to the underside of the instrument panel to the right of the steering column.

Water entering the air inlet grille flows down a rubber drainage hose under the instrument panel and is discharged through an opening in the dash panel.

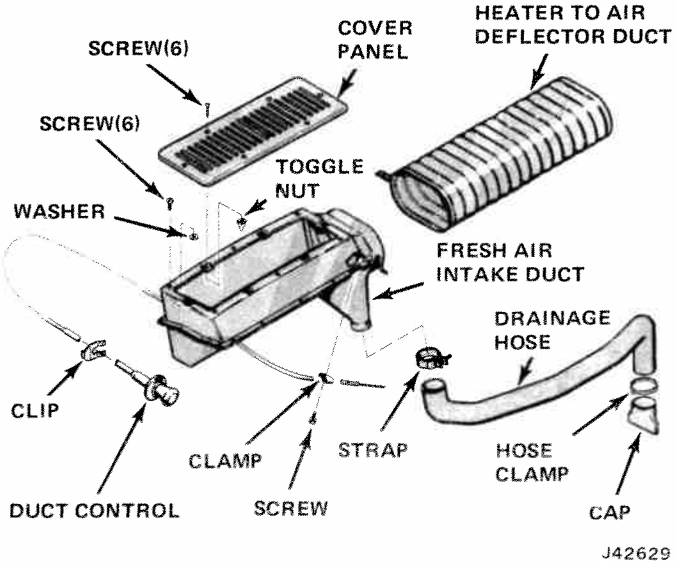

Fig. 13-1 Cowl Fresh Air Intake—CJ-5/CJ-6

Removal

(1) Remove fresh air intake system by removing fresh air heater and defroster.

(2) Remove screws from air intake ventilator grille located outside vehicle on top of cowl and remove grille and screen.

(3) Push down on ventilator grille duct shroud and remove the shroud from beneath the instrument panel.

(4) Pull out duct shroud hose from shroud and remove.

(5) Remove screw from hose clamp and remove drainage hose.

(6) Remove the cable from wing door.

(7) Remove bolt and clip from mounting bracket and remove cable from dash panel.

Installation

(1) Install cable to instrument panel and wing door.

(2) Install drainage hose and duct shroud hose to ventilator duct shroud.

(3) Place duct shroud in position under instrument panel and, using a waterproof sealer, make a positive seal where the cowl metal meets the shroud.

(4) Position screen and grille on cowl panel and secure the ventilator duct shroud to the cowl with screws.

COWL FRESH AIR DUCTS

Cherokee-Wagoneer-Truck

Fresh air ducts are located on the left and right side cowl trim panels (fig. 13-2). Fresh air entering the cowl air intake chamber is directed to the ducts.

The control knobs for the ducts are located on both sides of the steering column. The left knob controls the left duct and the right duct is controlled by the right knob.

HEATER AND DEFROSTER OPERATION

Air circulation of the heater and defroster unit is accomplished by use of a 12 volt fan motor (fig. 13-3).

Outside air is controlled by a push-pull vent control in the CJ Models (13-4) and by the HEAT button on Cherokee, Wagoneer, and Truck Models.

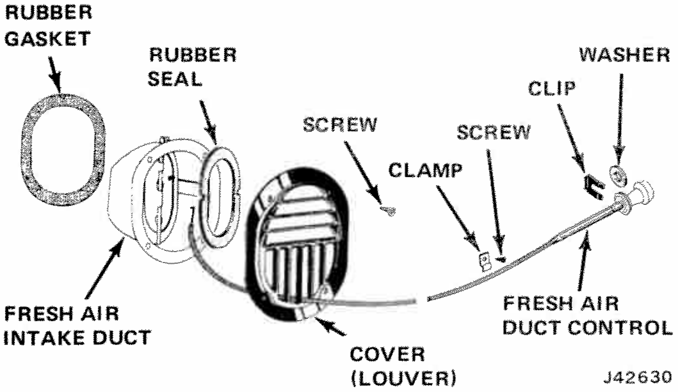

Fig. 13-2 Cowl Fresh Air Intake Duct and Control—Cherokee, Wagoneer, Truck

Outside air drawn into the vehicle by the fan motor is forced through or around the heater core. The air passing through the heater core is heated by the hot circulating coolant from the engine. The cold or unheated air passing around the core is then combined with the heated air and distributed to the defroster nozzles and/or the floor diffuser.

The heater and defroster controls are mounted in the switch panel on the instrument panel. A multiposition switch mounted in the switch panel operates the heater fan.

CJ-5/CJ-6 Models

The heater and defroster controls consist of push-pull knobs located on the heater control panel in the center of the instrument panel (13-4).

The push-pull knobs control the dampers in the heater/defroster housings.

The temperature control cable operates the blend-air door in the heater duct directing the full stream of air through the heater core when the control is pulled out to the maximum heat position. When the control is pushed into the off position, the blend-air door directs the air around the heater core (fig. 13-3) through a bypass and the air is not heated. When the control is between these two positions, some of the air is

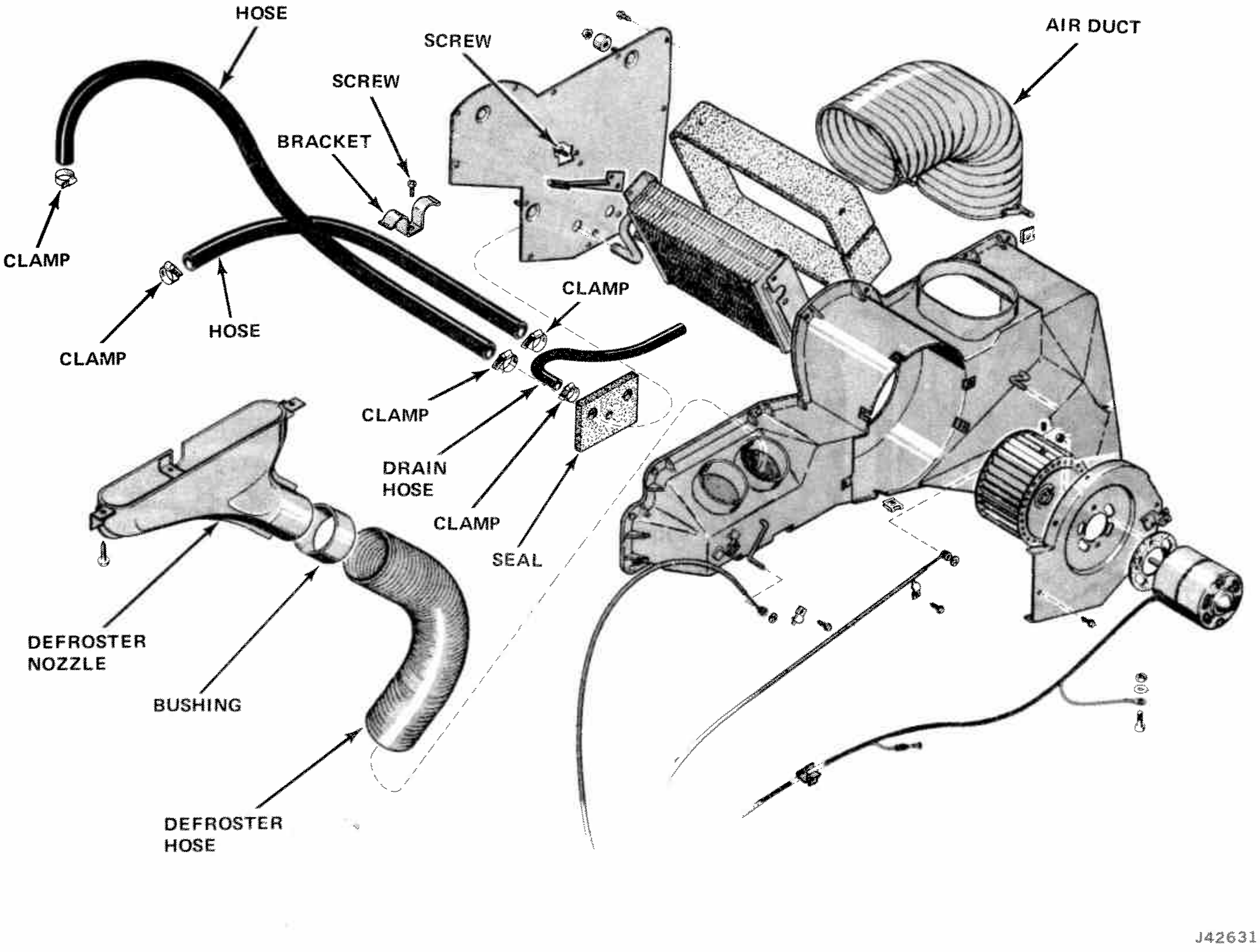

Fig. 13-3 Heater and Defroster—CJ Models

heated and some of the air bypasses the heater. The cool air and warm air are mixed in the transition duct and the desired temperature obtained.

The defroster control operates on the same principal in that the connecting cables operate a damper door to vary the amount of air passing to the defroster outlets.

The blower switch has three positions: OFF, LOW and HIGH. It regulates the amount of current going to the blower motor through a fixed resistance, thereby regulating the blower fan speed.

Cherokee-Wagoneer-Truck

The TEMPERATURE lever on the heater control panel is connected by a cable to a blend-air in the heater core duct. The blend-air door directs the full air stream through the heater core when the temperature lever is on the warmest temperature position.

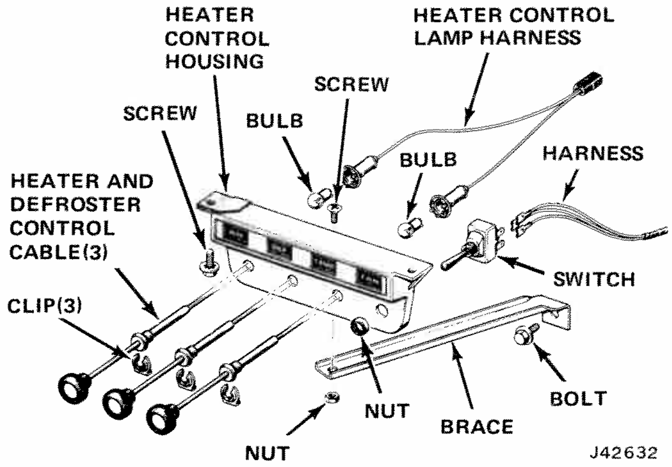

Fig. 13-4 Heater and Defroster Controls—CJ Models

When the temperature lever is on the coolest position, the blend-air door directs the air stream around the heater core (fig. 13-5) and the air is not heated.

When the temperature lever is between these two positions, some of the air is heated, some of the air bypasses the heater. The air mixes in the transition duct and the desired temperature is obtained.

The OFF, HEAT, and DEFROST buttons (fig. 13-6) on the heater control panel operate a vacuum valve. When the OFF button is depressed, the vacuum valve stops the vacuum to the vacuum actuator that holds the air door in the transition duct open. A spring closes this door and no air can enter from the heater. The air door in the transition duct must be open at all times except when the OFF button is depressed.

When the HEAT button is depressed the air door in the transition duct is opened by the vacuum actuator and air comes through the transition duct and out of the floor diffuser.

When the DEF button is depressed the vacuum valve directs vacuum to the defroster vacuum actuator. Air door remains in same position.

The blower switch has four positions, OFF, LOW, MEDIUM, and HIGH, and regulates the amount of current going to the blower motor through fixed resistances, thereby regulating the blower speed.

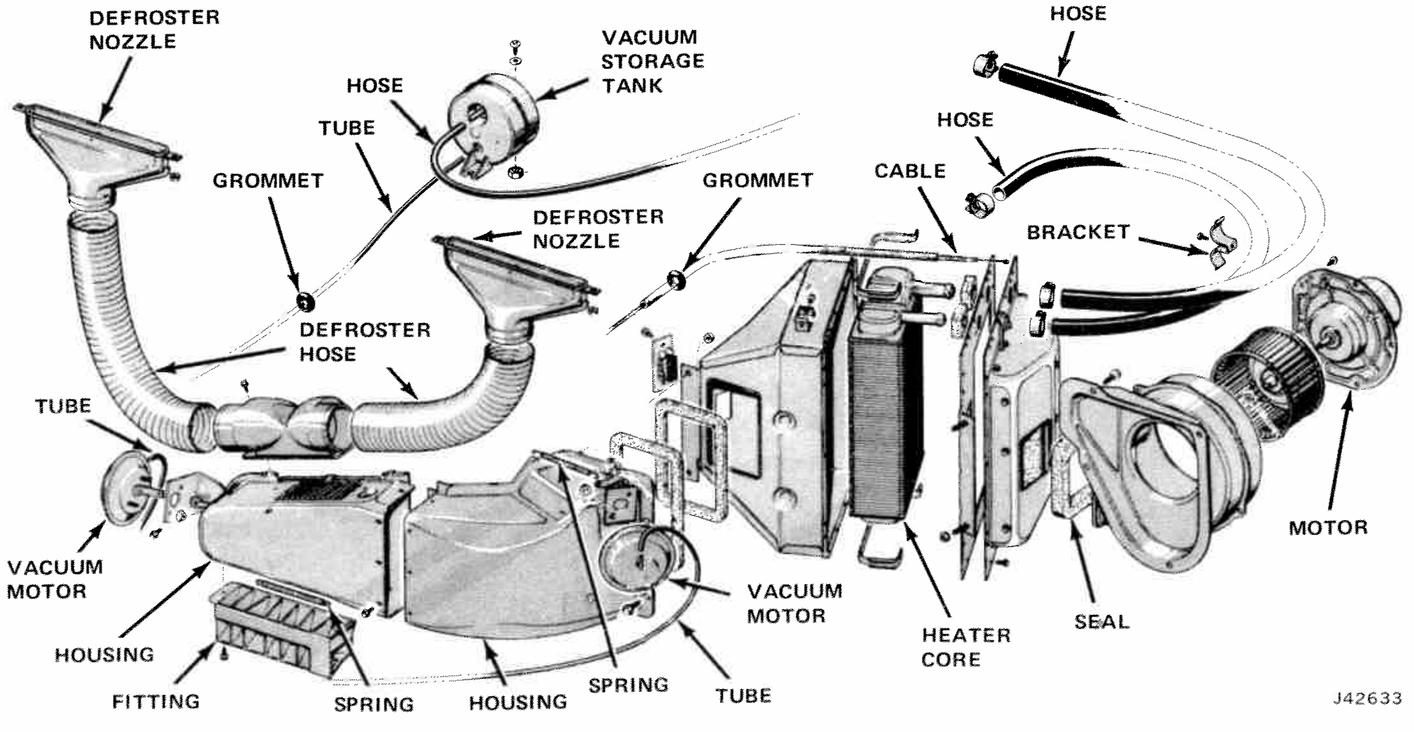

Fig. 13-5 Heater and Defroster—Cherokee-Wagoneer-Truck

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
FAN MOTOR WILL NOT RUN AT ANY SPEED	(1) Blown fuse (2) Loose connection (3) Poor ground (4) Faulty switch (5) Faulty motor (6) Faulty resistor	(1) Replace fuse (2) Inspect and tighten (3) Clean and tighten (4) Replace switch (5) Replace motor (6) Replace resistor
FAN MOTOR RUNS AT ONE SPEED ONLY	(1) Faulty switch (2) Faulty resistor	(1) Replace switch (2) Replace resistor
FAN RUNS BUT DOES NOT CIRCULATE AIR	(1) Intake blocked (2) Fan not secured to motor shaft	(1) Clean intake (2) Tighten securely
HEATER WILL NOT HEAT	(1) Coolant does not reach proper temperature (2) Heater core blocked internally (3) Heater core air-bound (4) Blend-air door not in proper position	(1) Check and replace thermostat if necessary (2) Flush or replace core if necessary (3) Purge air from core (4) Adjust cable
WILL NOT DEFROST (EITHER OR BOTH BELLOWS NOT OPERATING -CJ MODELS ONLY)	(1) Heat vacuum door actuator not operating (2) Control inoperative (3) Vacuum actuator not operating	(1) Check for vacuum at actuator (2) Check engine vacuum at heater control (3) Check vacuum at actuator

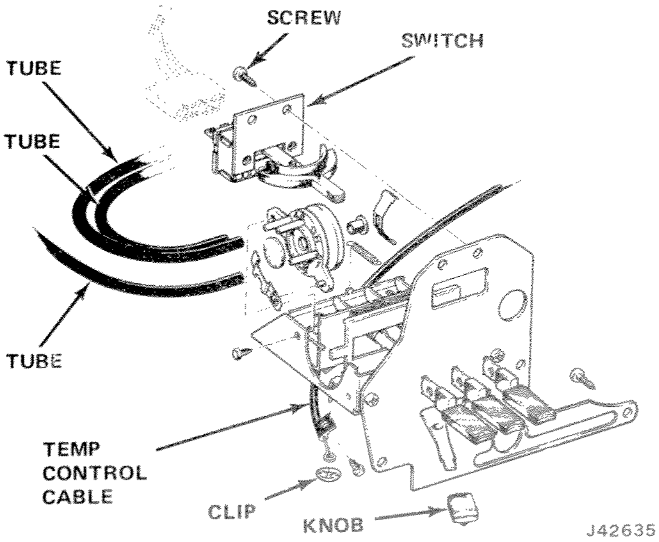

Fig. 13-6 Heater and Defroster Controls—Cherokee-Wagoneer-Truck

HEATER CORE

CJ Models

Removal

(1) Drain engine cooling system.

(2) Mark duct halves to be sure they are reassembled properly.

(3) Remove screws that fasten two halves of duct together.

(4) Remove four screws that secure heater core to the duct.

(5) Remove heater core.

Installation

(1) Install heater core in the housing and install four screws.

(2) Assemble duct halves and install heater housing.

(3) Fill cooling system to proper level.

Cherokee-Wagoneer-Truck

Removal

(1) Drain engine cooling system.

(2) Disconnect temperature control cable at heater.

(3) Disconnect heater hoses at inlet and outlet of heater.

(4) Disconnect heater resistor wires at plug type connector on heater resistor.

(5) Remove four nuts that secure heater core and duct to fire-wall.

NOTE: *Two of the nuts are on the inside of the vehicle just to the right of the transition duct.*

(6) Remove heater core and duct.

(7) Mark duct halves to be sure they are reassembled properly.

(8) Remove screws that fasten two halves of duct together.

(9) Remove four screws that secure heater core to the duct.

(10) Remove heater core.

Installation

(1) Install heater core in housing and install four attaching screws.

(2) Assemble two halves of heater core duct and install unit in vehicle. Install all attaching nuts.

(3) Connect heater resistor wires, heater hoses, and temperature control cable.

(4) Fill cooling system to proper level.

HEATER CONTROL SWITCH AND CABLE REPLACEMENT—CJ MODELS

(1) Remove knob by inserting wire into hole at side to release spring retaining clip.

(2) Remove trim nut on face of heater control panel.

(3) Disconnect wires from fan switch which is part of center control cable.

(4) Disconnect cable at damper end and remove cable.

(5) To install, route new cable through hole in control panel and to respective damper door.

(6) Connect and adjust cable; install trim nut and knob.

(7) Connect fan control wires if center cable has been removed.

HEATER CONTROL PANEL—CHEROKEE-WAGONEER-TRUCK

Removal

(1) Remove three vacuum lines from heater control.

(2) Remove clamp and cable from temperature control lever.

(3) Unsnap lamp bulb from heater control and disconnect terminal connector located in wiring.

(4) Remove two nuts and mounting bracket from bottom of control.

(5) Remove control panel by pushing out on bottom.

Installation

(1) Install heater control panel, bulb, and cable.

(2) Replace vacuum tubes as follows:

(*a*) Number 1 on the vacuum control valve goes to the defroster vacuum actuator.

(*b*) Number 3 on the vacuum control valve goes to the vacuum storage tank.

(*c*) Number 4 on the vacuum control valve goes to the vacuum actuator.

BLOWER MOTOR

Blower motor can be removed for repairs as follows:

(1) Disconnect electrical connection.

(2) Remove screws that hold motor in place.

(3) Remove blower motor and fan.

TECHNICAL SERVICE LETTER REFERENCE

Date	Letter No.	Subject	Changes information on Page No.