Heating System Type 356 B/ T 6, Acceptance Code No. S 50

(This heating system is being manufactured on account of a legal regulation for Western Germany)

Description of the 356 B/ T 6 Heating System

The entire fresh air supply enters through slots in the engine compartment lid (1), being drawn in by the cooling air blower. Part of the fresh air flow, required for heating of the passenger compartment, is diverted from the cooling air blower (2) into a separate duct (3).

The fresh air (outside air) flows from the supply duct through the two heat exchangers (4) at the engine. The heat exchangers consist of closed sheetmetal jackets which enclose the exhaust pipes (5). All detachable and welded joints of the exhaust system (6) have been excluded from the confines of the heat exchanger jackets.

The heating air flows from both heat exchangers through connecting hoses (7), air gates (8), guide ducts (9), and silencers included within the longitudinal chassis support members, to outlets which are arranged in pairs.

Warm air outlets are provided as follows:
For defrosting windshield (11) and the rear window (12) by way of defroster nozzles.
For the forward leg area (pedal area) by way of sliding gates (13) located alongside the longitudinal chassis supports next to both seats.

The air gates (8) are so designed as to permit a continuous flow of air through the heat exchangers (over the exhaust pipes) regardless whether the heat is turned on or off.

Additionally, cold outside air may be let in through the ventilating system (14) in front of the windshield, independently of the car's heating system.

The heater is controlled by a turning knob located in front of the gearshift lever.

By turning the knob counter-clockwise, the heater is turned on; it is turned off by turning the knob clockwise. When the knob is turned, control flaps in the air gates (8) are actuated by way of cables. Should the control cable break, the hot air flow automatically shuts off and, simultaneously, the safety outlet opens up.

Sliding gates (13) are provided for the forward leg room and are located on the right and left inboard sides of the longitudinal support members next to the front seats. Part of the inflowing warm air, namely that flowing to the leg area, may thus be regulated or completely shut off.

When the sliding gate is pushed forward, the air outlet for the leg area is shut off.

When the sliding gate is closed, the entire warm air supply enters the passenger compartment through the defroster nozzles (11 and 12).

Additional ventilation is possible through the ventilating system (14) which is controlled by means of control levers mounted on the dashboard.

Caution!

To ensure proper cooling of engine, a certain amount of backpressure must exist within the heating system, which is achieved -with the engine installed -through the existence of heating ducts and air gates.

Therefore, when running performance tests on engines which are dismounted from the car, it is absolutely essential to create a backpressure within the heating system.

Proper backpressure may be maintained on dismounted engines by installing an air flow restrictor cap on the hot air discharge ducts of the heat exchangers; the caps are fastened to the heat exchangers by hose clamps.

Reference Fig. 1 for specifications for local manufacture of restrictor caps.

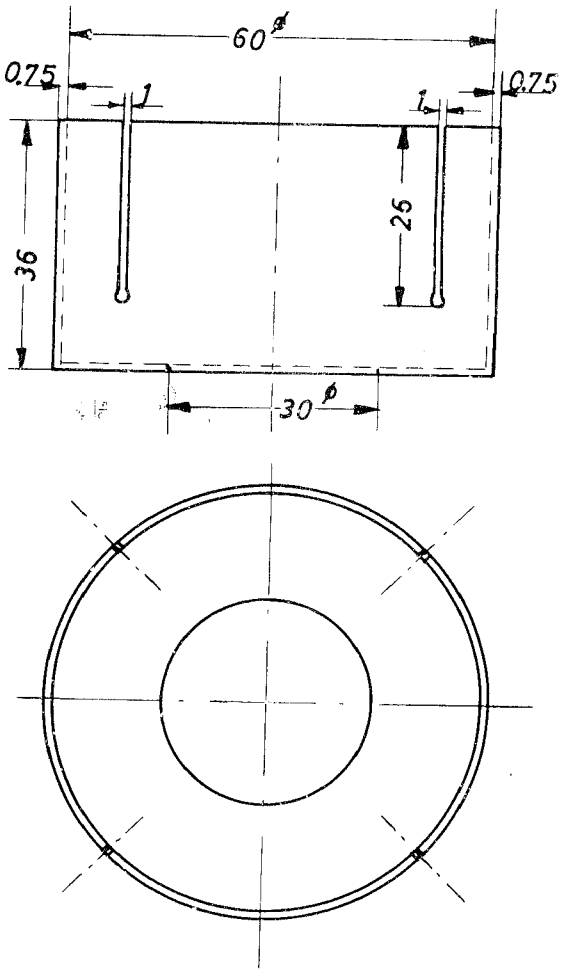


Fig. 1

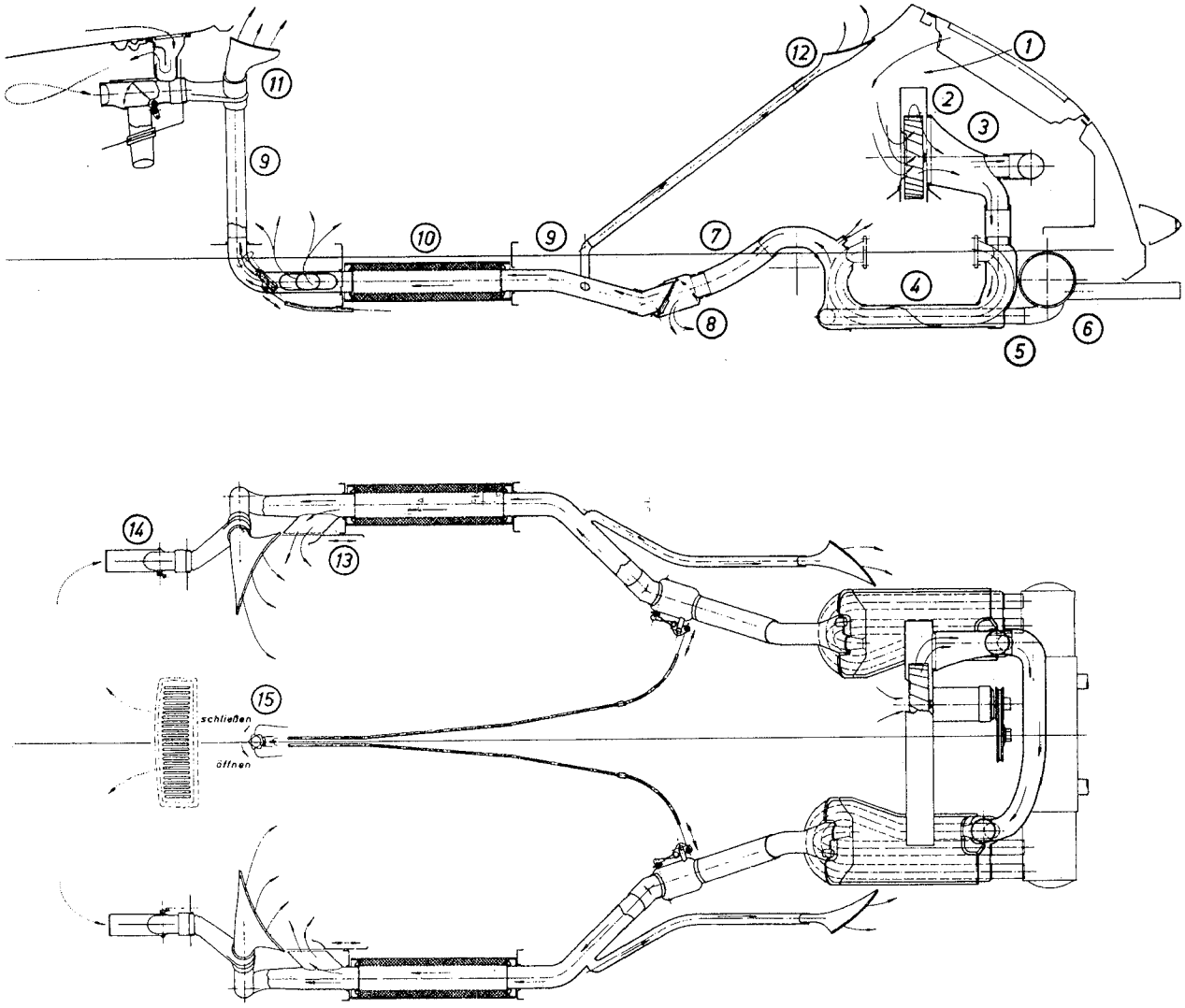


Fig. 2

Schematic View of Type 356 B/ T 6 Heating System

1 Engine compartment lid
2 Cooling air blower
3 Connecting duct
4 Heat exchangers
5 Exhaust pipes
6 Exhaust muffler
7 Connecting hoses
8 Air gates
9 Duct tubes
10 Silencers
11 Defroster nozzles, windshield
12 Defroster nozzles, rear window
13 Sliding gate, leg room
14 Ventilating system
15 Turning knob

Removing and Installing Engine

Note: As a result of the introduction of the 356 B/T 6 heating system, certain changes ensued in the engine removal and installation procedures.

Removal

1. Jack up car or place it on stand.
2. Disconnect battery terminal cables.
3. Shut off fuel valve.
4. Raise engine compartment lid.
5. Disconnect heater air hose in engine compartment.

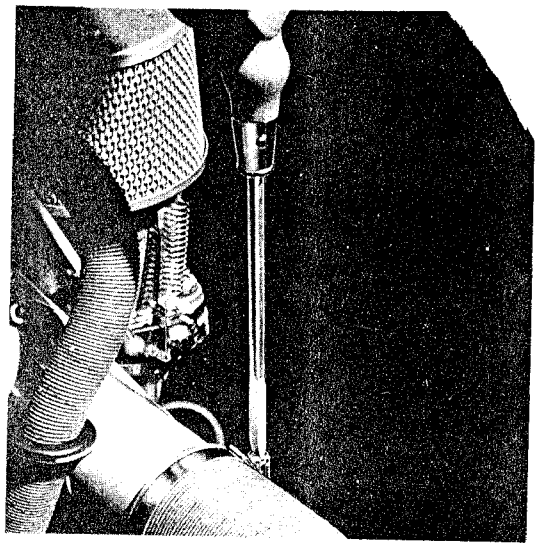


Fig. 3

6. Detach connecting duct from air blower housing (ref. page SE 37).
7. Remove fuel pump shield.

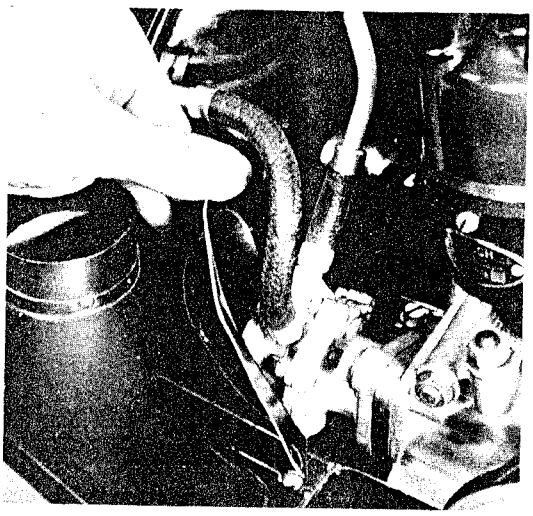


Fig. 4

8. Remove retaining screws from rear engine cover plate and pull it up diagonally.

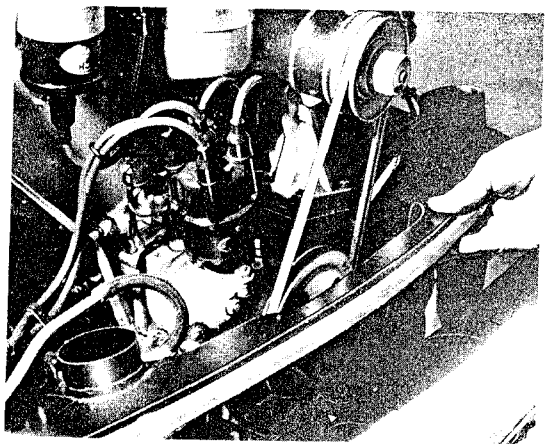


Fig. 5

9. Pull out cable connecting oil temperature sender (black/green).
10. Disconnect (black) lead from ignition coil (Terminal 15).
11. Disconnect (green) lead from oil pressure sender.
12. Disconnect generator leads D- (yellow/white), DF (black), and D+ (red).
13. Detach ball joint throttle linkage and pull it out downward.

Fig. 6

14. Loosen both heater flex hoses from engine.
15. Loosen tail pipe clamp screws at muffler and remove tail pipes.
16. Disconnect fuel line by sliding hose off tubing.
17. Detach tachometer drive.
18. Remove two engine mounting nuts from lower mounting studs.
19. Place dolly or engine jack under engine.
20. Hold two upper engine mounting bolts and have assistant remove the nuts.
21. When using a dolly: lower the car until engine comes to rest on dolly.
    When using an engine jack: raise jack until engine rests on its platform.
22. Move engine away from the gearbox until mainshaft clears the clutch plate.
23. Lower the engine and pull it out to the rear.

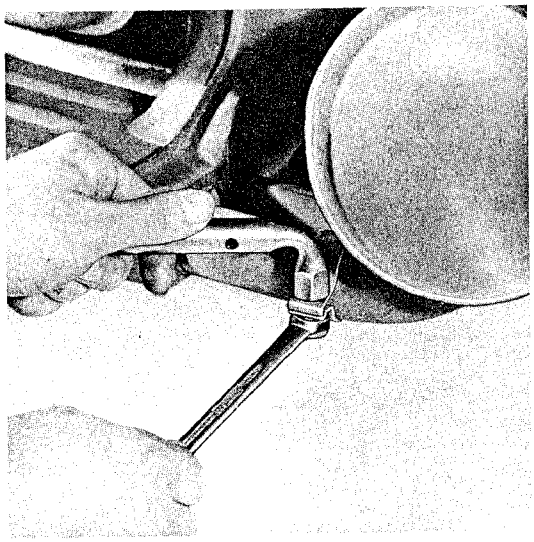
Installation

The engine is installed in reversed order of the above, following instructions outlined on page E 6, Section 1 EN; however, points 11 and 12 should be disregarded.

Removing and installing muffler

Removal

1. Loosen exhaust pipe clamps at muffler and remove tail pipe extensions.
2. Loosen clamp bolts.



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3. Loosen and remove both muffler clamps.

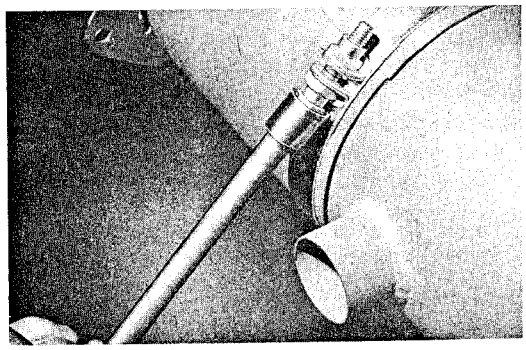


Fig. 8

4. Remove muffler by gently tapping with a rubber mallet on exhaust pipe joints.

Installation

Installation is accomplished in reversed order of the above, noting the following points:

1. Prior to installation, carefully inspect the muffler and exhaust pipes for damage or leaks.
2. Straighten dented or bent pipes, replace if necessary. Leaks in the exhaust pipes could allow exhaust gasses to enter the engine compartment and, with heater turned on, into the car's interior.
3. Once the engine is installed, the muffler or exhaust pipes should not touch the body.

Removal (engine dismounted from car)

1. Loosen carburetor heating hose clamps at heat exchangers and pull the hose off.

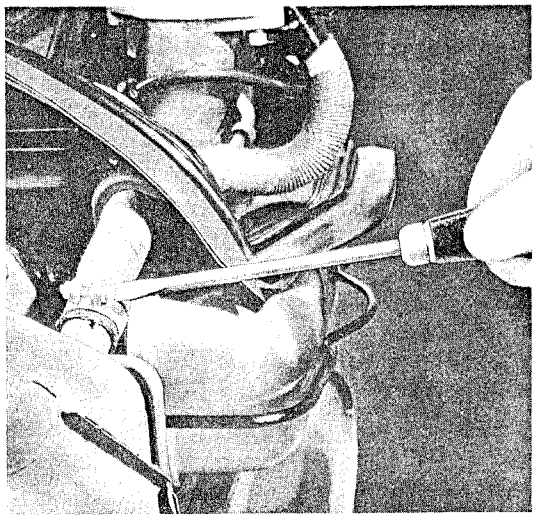


Fig. 9

2. Detach forward engine cover plate

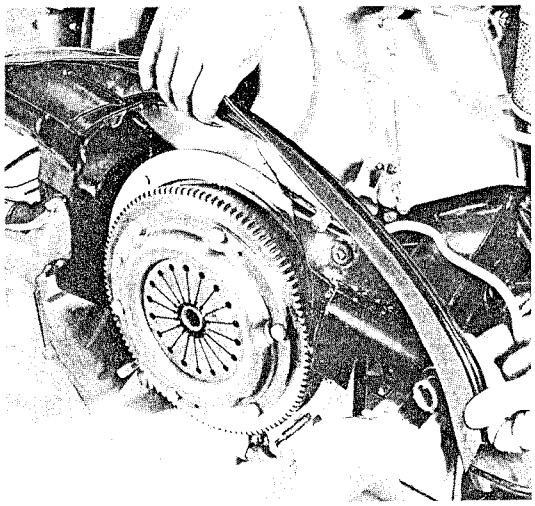


Fig. 10

3. Remove attaching bolt on front part of heat exchanger.

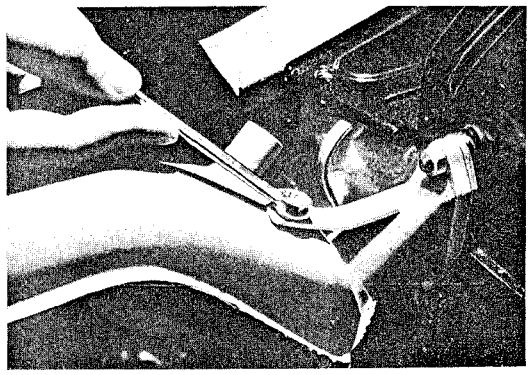


Fig. 11

4. Remove front and rear exhaust flange retaining nuts.

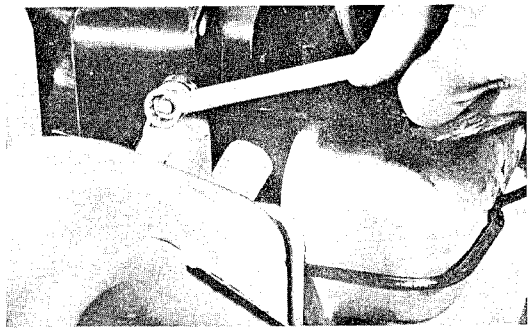


Fig. 12

5. Remove lower air guides.

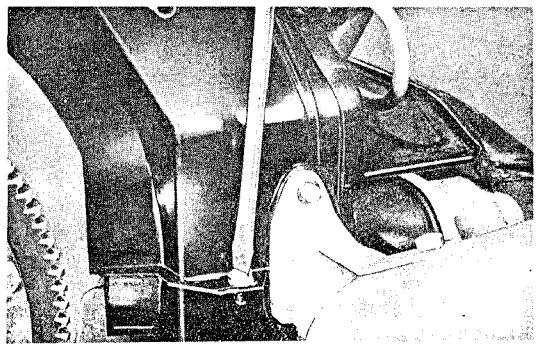


Fig. 13

6. Pull front and rear exhaust pipes away so that flanges clear the studs, remove heat exchanger assembly by moving it downward.

Note:
In the early versions, where the front part of the heat exchangers is screwed on, it is necessary to first detach it when disassembling or assembling the unit in order to gain clearance necessary for pulling the exhaust pipes off the studs.

Installation

The installation is accomplished in reversed order of the above, observing the following points:

1. Inspect heat exchangers and exhaust pipes for leaks or damage.
2. Flange sealing surfaces must be straight and clean; warped flanges should be straightened.
3. Use new gaskets.
4. Slip edge of lower air guides between the first fins of cylinder head.

Removing and installing air blower connecting duct

Note:

The air blower housing utilized with 356 B/T 6 heating system differs from earlier models, but only inasmuch as it has an air outlet for the heating system. For assembly or disassembly, follow instructions outlined in Section 4 EN, Basic Volume, 356 B Workshop Manual.

1. Detach heating hose from connecting stack.

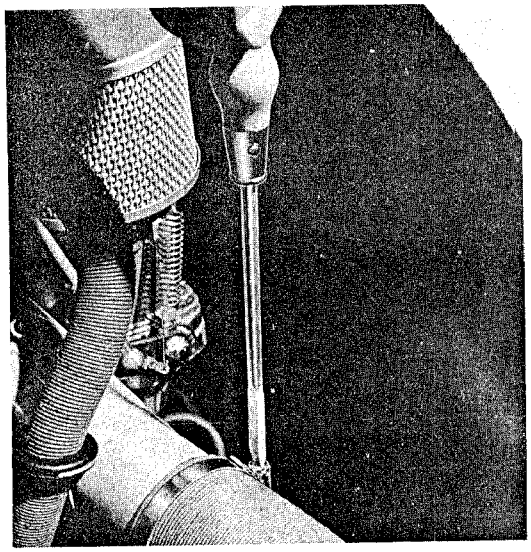


Fig. 14

2. Withdraw breather hose, with grommet, from bracket at the connecting duct and remove duct by moving it up diagonally.

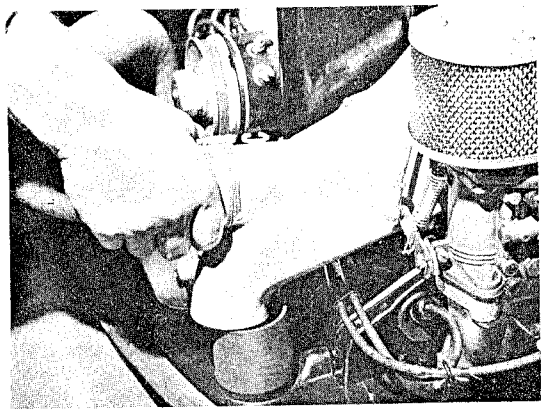


Fig. 15

Installation

1. Check position of counter nut on stud which secures the connecting duct. The position of the hext nut should be so as to ensure proper alignment of the duct with the air blower housing and, also, exclude the possibility of misalignment when tightened.

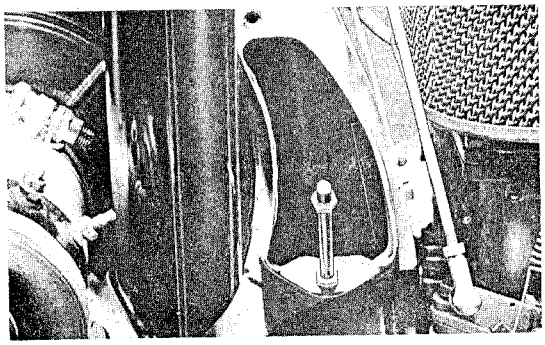


Fig. 16

2. Inspect heating and breather hoses for leaks or damage.

Removing and installing 356 B/T 6 heater cables

General

The heater cables need not be removed, except when replacement is contemplated.

Removal

1. Detach cable ends from connecting levers at air gate assemblies.
2. Remove floor tunnel cover.
3. Mark original position of shift lever base to simplify reassembly.

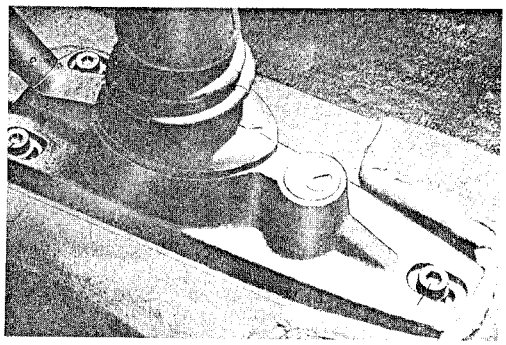


Fig. 17

4. Remove the three retaining bolts from shift lever base.
5. Lay shift lever base on its side.
6. Remove lock ring from heater spindle with a small screwdriver, turn spindle now until spindle nut is removed.

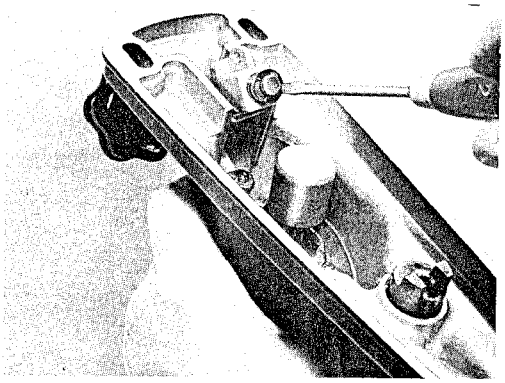


Fig. 18

7. Pull out heater cables.

Installation

1. Thread one end of heater cable through eye in spindle nut and pull cable through to the bend.
2. Insert both ends of cable into conduit tubes; make certain that cables do not cross.
3. Install spindle nut on heater control spindle with cable eye pointing to the front of car.

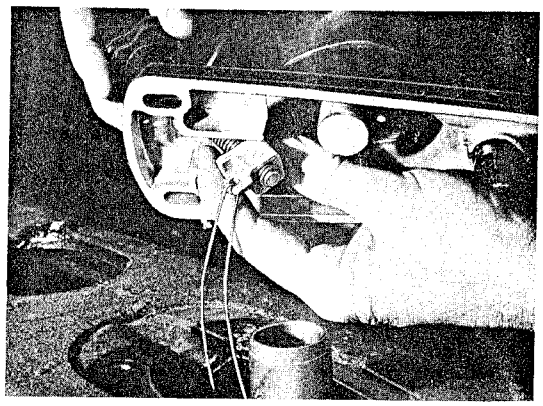


Fig. 19

4. Install lock ring on control spindle.

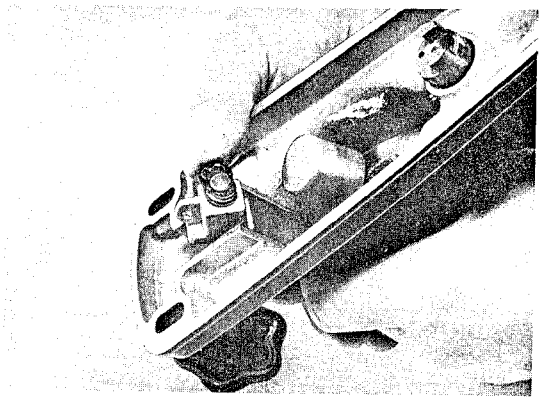


Fig. 20

5. Install gearshift base and start the three Allen-head screws, do not tighten.

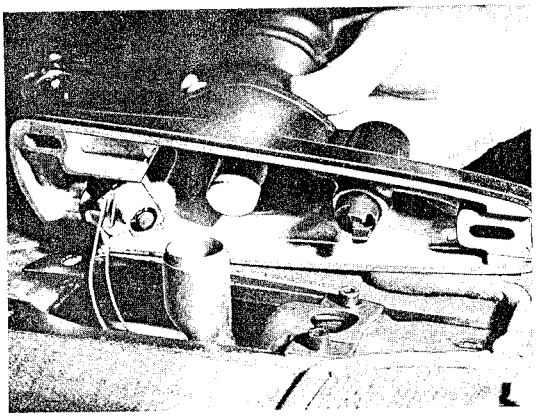


Fig. 21

6. Align gearshift base with markings, tighten screws.

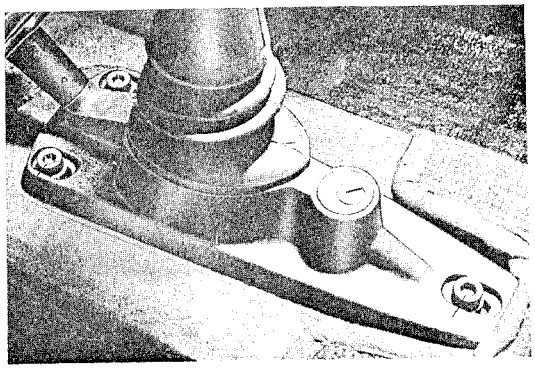


Fig. 22

7. Turn control knob to the lowest position of spindle nut, that is, until it rests against the lock ring.

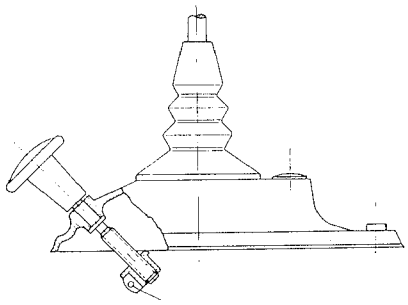
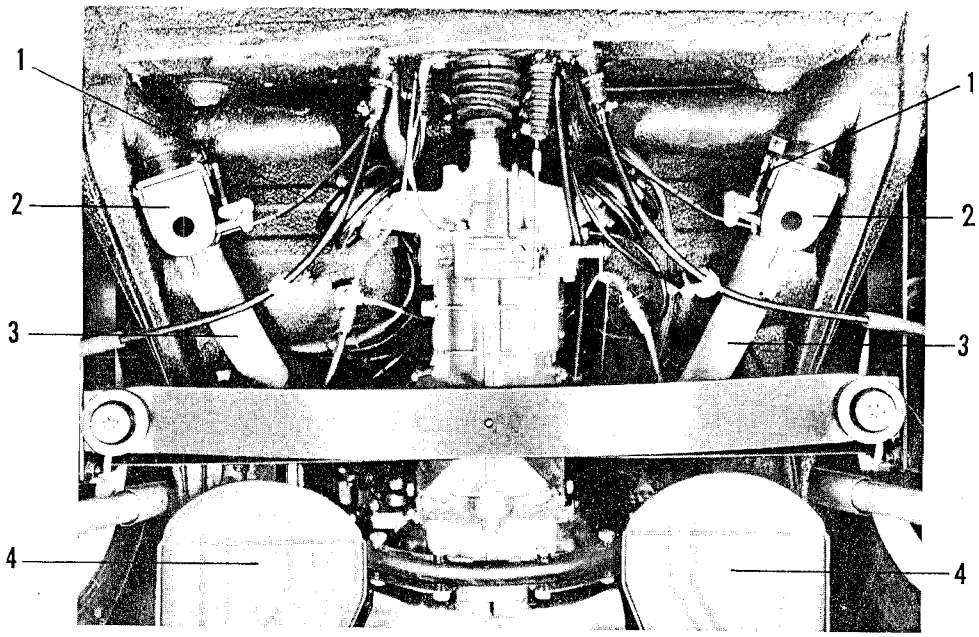


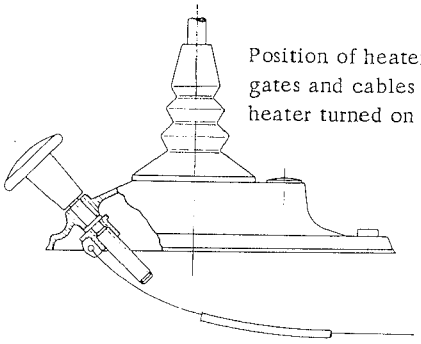
Fig. 23

8. Attach control cable ends to connecting levers at air gate assemblies. Make certain that the heater flaps work in unison, opening and closing fully.

Bottom View



1 Heater cable
2 Air gate assemblies
3 Heater hose
4 Heat exchanger



Position of heater control gates and cables with heater turned on

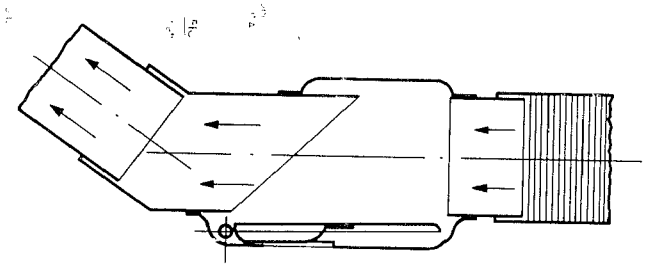
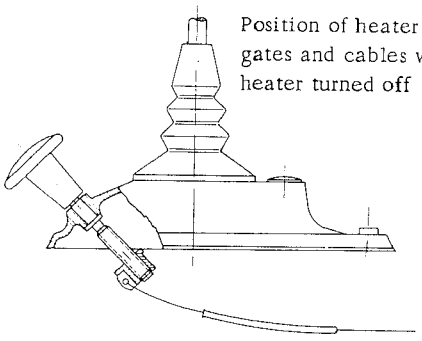


Fig. 25



Position of heater control gates and cables with heater turned off

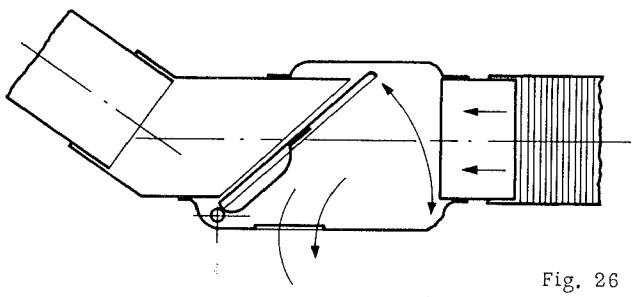


Fig. 26

Beginning with the following Chassis Serial Nos., a heater control lever is utilized in place of the control knob:

Coupe	126 001 or 215 001, respectively
Cabriolet	159 001

The lever is more convenient to use for setting the heater output; also, it is possible to visually check the setting position.

Removing and Installing Heater Control Cable

Removal

1. Detach cable ends from connecting levers at the air gate assemblies.
2. Remove floor tunnel cover.
3. Mark original position of shift lever base to ensure quick reassembly.
4. Remove the three retaining bolts from shift lever base.
5. Withdraw shift lever assembly.
6. Move heater control lever slightly away from the tunnel and pull out control cable.

Installation

Note:
It should be noted that there are two connecting holes in the control lever. Cars originally delivered in Germany and Sweden are equipped with the 356 B/T 6 heating system (page SE 31) which connects to the smaller hole in the control lever (Point 1, Fig. 1); in all other cars, the control cables are connected to the larger hole in the lever (Point 2, Fig. 1).

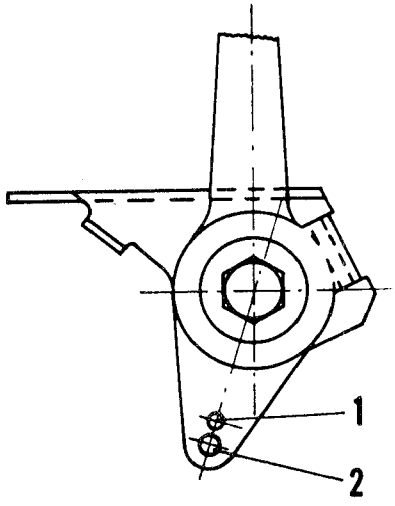


Fig. 1

1. Thread one end of control cable through the respective hole in the control lever and pull through to the bent end.

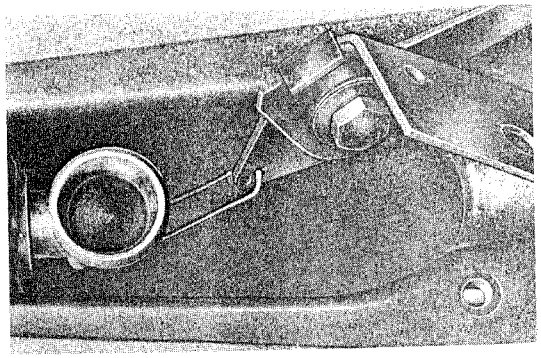


Fig. 2

2. Insert both ends of cable into conduit tubes; make certain that cables do not cross.
3. Mount shift lever assembly taking care that the guide dowel fits into the hole provided for aligning the lever bracket (Fig. 3).

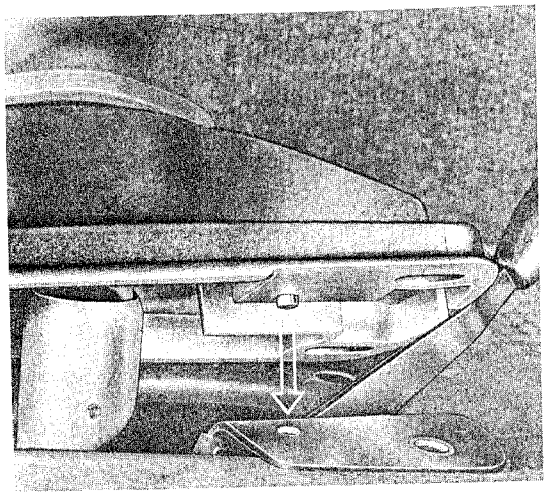


Fig. 3

4. Align gearshift lever assembly according to markings made during disassembly, and tighten Allen-head retaining bolts.
5. Move control lever forward to stop, into "closed" position.
6. Attach cable ends to connecting levers at the air gate assemblies. Make certain that the heater flaps work in unison, opening and closing fully.

Disassembling and Reassembling Control Lever Assembly

Disassembly

1. Hold head of hexagon bolt in a vise and remove self-locking nut.
2. Remove component parts one by one.

Reassembly

1. Hold head of hexagon bolt in a vise.
2. Install component parts as shown in Fig. 4.
3. Tighten self-locking nut to 0,5 mkg (3,6 lbs/ft), then turn back one complete turn (360°).
4. Adjust by testing friction of lever brake, which should be 10 ± 1 kg (22 lbs ± 2,2 lbs), measured with a spring scale attached to the lever, through the upper hole, at a 90° angle (Fig. 5).

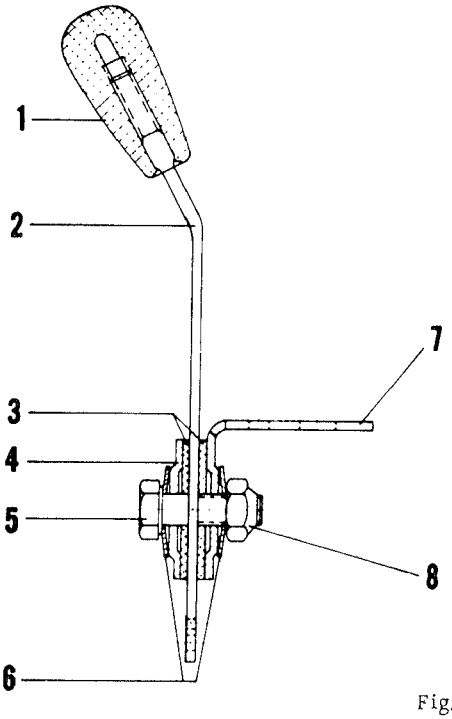


Fig. 4

1. Control lever grip
2. Control lever (left-hand drive cars)
3. Friction discs
4. Pressure disc
5. Hexagon bolt
6. Diaphragm spring
7. Supporting bracket
8. Self-locking nut

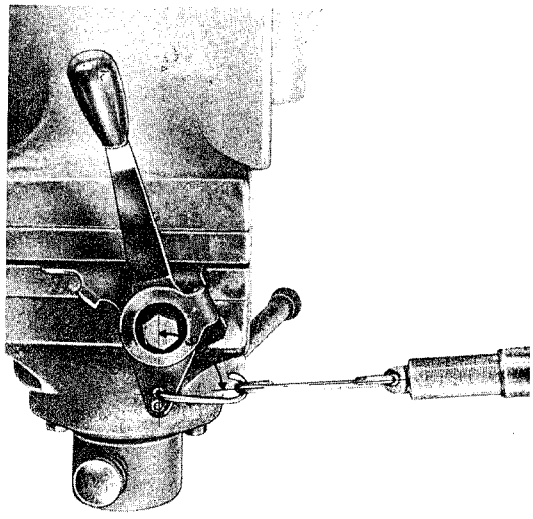


Fig. 5

Lever friction will increase when the hexagon nut is tightened, and decrease when the nut is loosened.