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## HEATING AND VENTILATION

## DESCRIPTION

Hot coolant from the engine pumped through the matrix of the heater, passes through a thermostatically operated water valve. The valve has a manual setting control to provide regulation between hot and cold airflow positions.

An electrically driven fan, having fast and slow speeds, boosts the airflow through the heater. The heater unit is mounted on the engine side of the bulkhead. A system of shutters and deflectors directs the air stream inside the car as required.

The 'AIR' control operates a flap that routes air from the fan either through the heater matrix and into the car, or out through a dump aperture in the base of the heater unit. Cold air flow is therefore achieved by setting the 'AIR' control to 'ON' and the temperature control to 'COLD'.

## HEATER AIR FLOW CONTROL CABLE

## Remove and refit

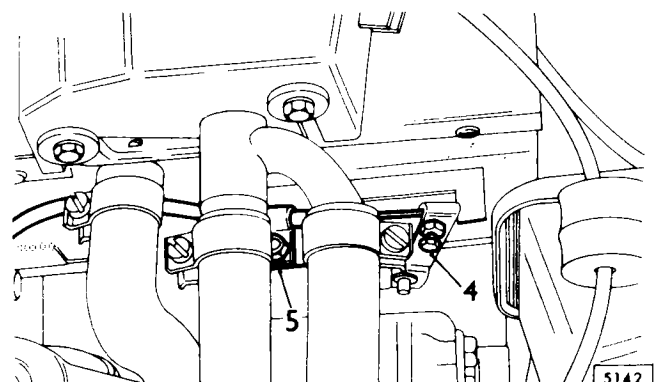
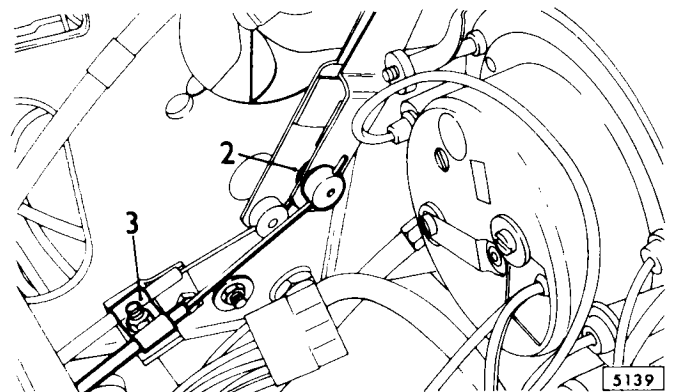
80.10.06

## Removing

1. Remove screen rail crash roll assembly – 76.46.04.
2. Slacken setscrew on control lever securing inner control wire.
3. Slacken setscrew on clamp securing outer casings of control cables to bracket.
4. Under bonnet slacken lock bolt at air flap lever.
5. Slacken setscrew on clamp securing outer casing.
6. Withdraw cable through grommet into car.

## Refitting

Reverse operations 1 to 6.



## HEATER WATER VALVE CONTROL CABLE

### Remove and refit

80.10.07.

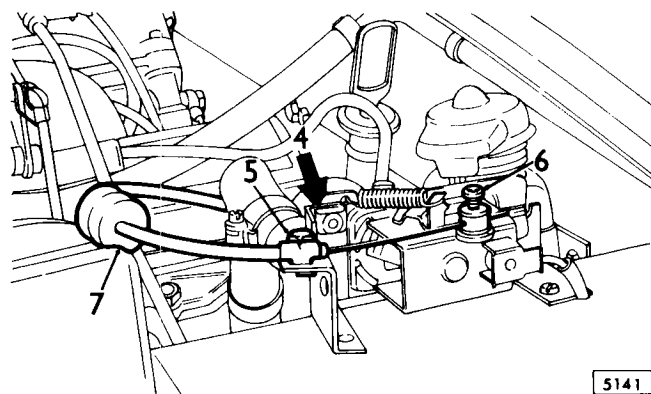
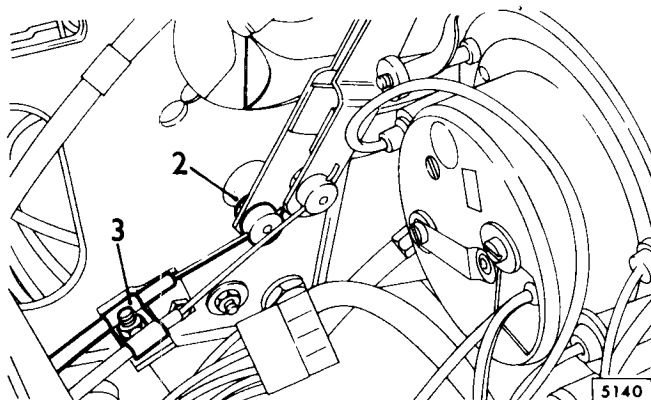
#### Removing

1. Remove screen rail crash roll assembly – 76.46.04.
2. Slacken setscrew on control lever securing inner control wire.
3. Slacken nut on clamp securing outer casings of control cables to bracket.
4. Under bonnet, slacken two setscrews and remove heater valve cover.
5. Slacken nut securing outer cable clamp.
6. Slacken setscrew securing inner cable to control lever.
7. Pull insulating material from cable.
8. Draw cable into engine compartment.

#### Refitting

Reverse operations 1 to 8.

**NOTE:** Ensure insulation material fitted to cable sheath before connecting to control valve. Position insulation above left hand air cleaner.



## HEATER TEMPERATURE CONTROL VALVE

The heater temperature control valve comprises a capillary sensing element positioned in the hot air flow from the heater radiator matrix. The associated bulb operates linkage in the water control valve to maintain the air temperature as selected by the driver.

The temperature control is an integral part of the heater water control valve and, should the automatic facility fail, the control valve assembly complete must be changed.

### Remove and refit

80.10.08

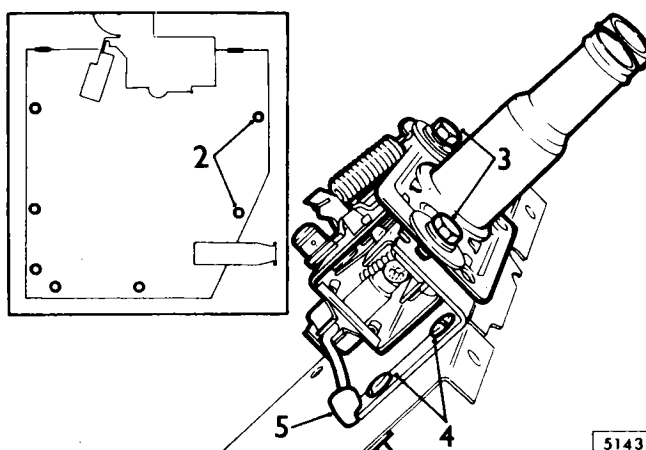
#### Removing

1. Remove heater unit – 80.20.01.
2. Remove nine self-tapping screws securing top plate of heater unit: remove plate.

**NOTE:** Take care not to bend temperature control capillary. It will be used as a model in preforming the replacement.

3. Remove two setscrews securing control valve to brackets.
4. Remove two self-tapping screws securing control valve bracket to top plate.
5. Slide rubber sleeve insulation from capillary.

**NOTE:** Replace sleeve if perished.

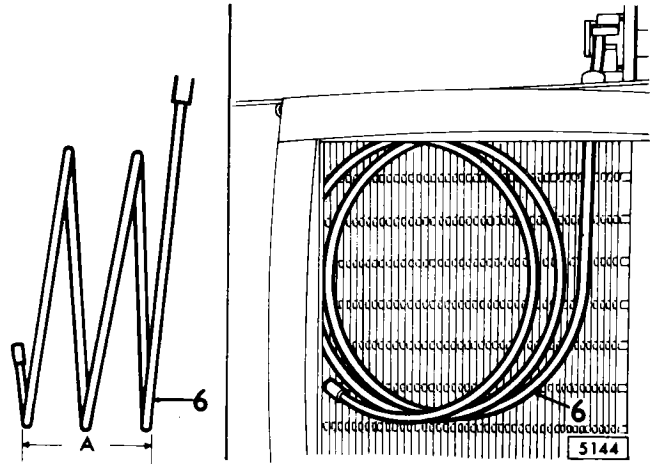


**Refitting**

The capillary of the replacement control valve must be preformed before fitting. This is important for correct operation of the automatic control.

**CAUTION:** The capillary tube must be carefully bent in any direction only once. It must not, under any circumstances, be kinked or worked back and fore.

6. Form capillary – dimension A – 19 mm (0.75 in.).
7. Fit short piece of rubber insulation sleeve to capillary, positioned correctly.
8. Position control valve against fixed bracket and loosely secure.
9. Fit bracket to top plate using two self-tapping screws.
10. Carefully locate top plate on heater box and secure using nine self-tapping screws.
11. Refit heater unit.

**HEATER AIR FLOW AND HEAT CONTROLS****Remove and refit**

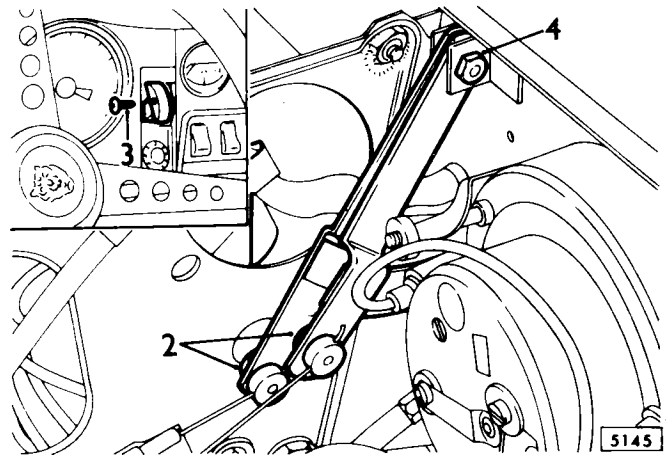
**Air flow control – 80.10.09**  
**Water flow control – 80.10.10**

**Removing**

1. Remove screen rail crash roll assembly – 76.46.04.
2. Slacken setscrew on control lever securing inner control wire.
3. Pull control lever to OFF position and remove drive screw securing knob. Press lever in through facia.
4. Remove setscrew, spacing washer and self-locking nut at pivot of levers, and lift lever clear. Temporarily replace setscrew to retain remaining lever.

**Refitting**

Reverse operations 1 to 4.

**HEATER WATER CONTROL VALVE****Remove and refit****80.10.16**

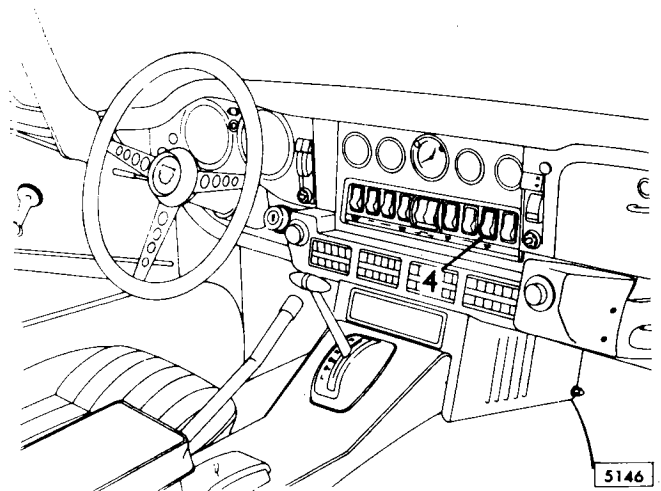
See procedure given for heater temperature control valve – 80.10.08.

**HEATER FAN SWITCH****Remove and refit****80.10.22****Removing**

1. Disconnect battery – 86.15.19.
2. Remove two knurled finger nuts and hinge facia centre panel down.
3. Note connections on heater fan switch. Remove connectors.
4. Use two screwdrivers to depress plastic locking tabs on switch body, and press out through front of panel.

**Refitting**

5. Ensure switch right way up and square to aperture. Press into panel until locking tabs engage.
6. Fit connectors.
7. Refit facia centre panel.
8. Reconnect battery.



## AIR DIRECTION BOX

### Remote control

#### Remove and refit

80.10.31

##### Removing

1. Disconnect battery — 86.15.19.
2. Beneath left hand parcel tray, remove split pin securing remote control cable to air direction box; detach cable.
3. Rotate outer cable end clockwise to unscrew it from facia.

**NOTE:** Attach a piece of strong cord to inner cable before withdrawing it from facia. This will facilitate fitting of replacement cable.

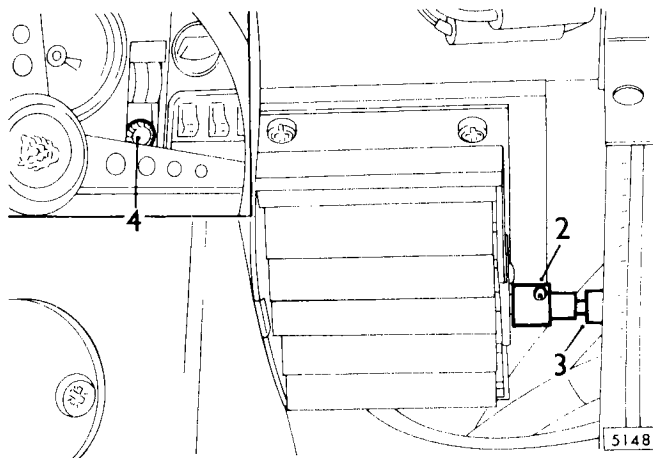
4. Draw cable from facia; detach cord and leave it in position.

##### Refitting

5. Attach cord to replacement cable inner, and draw cable into position.
6. Rotate outer cable end anti-clockwise to screw it into facia.

**NOTE:** Ensure threads do not cross.

7. Close louvres of air direction box and turn control knob at facia fully anti-clockwise
8. Locate inner cable at air direction box, and secure with a new split pin.
9. Reconnect battery.



## AIR DIRECTION BOX

### Remove and refit

Left hand/right hand 80.10.33

#### Removing

##### Left hand only

1. Detach split pin securing remote control cable inner to air box.

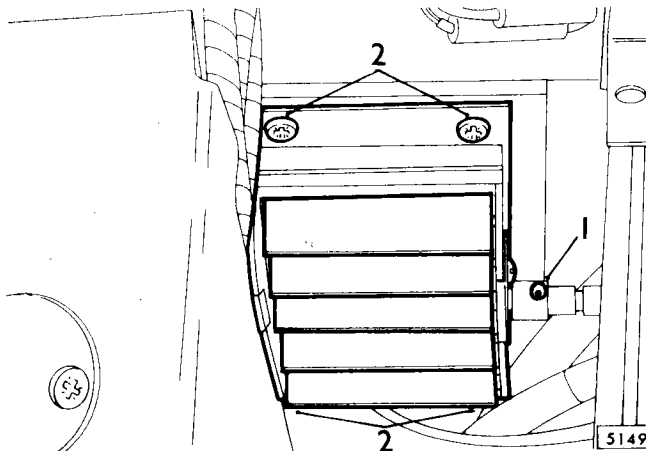
##### Both boxes

2. Remove four self-tapping screws securing box.

**NOTE:** Move footwell trim as necessary.

##### Refitting

Reverse operations 1 and 2 using new seal if necessary.



**WINDSCREEN DEMIST FLAP****Remote control and cable****Remove and refit****80.10.36****Removing****If vehicle fitted with air conditioning**

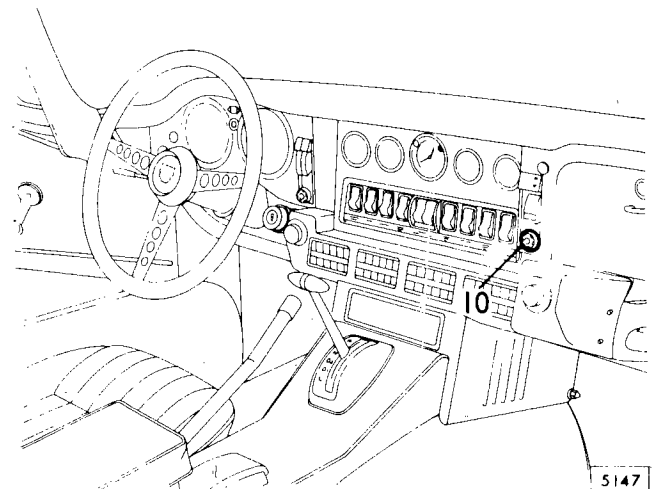
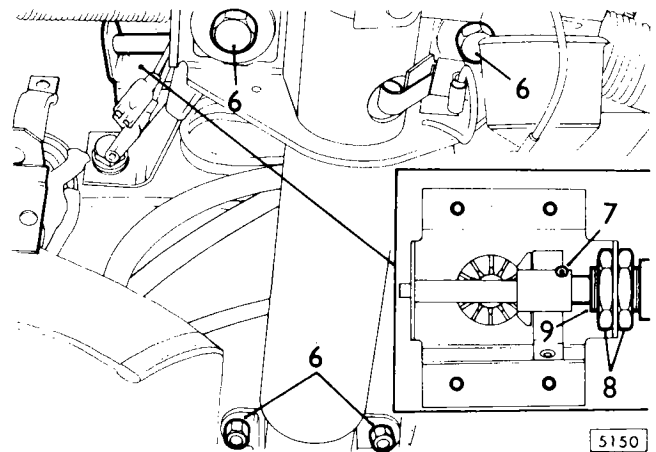
1. Remove evaporator unit, operations 1 to 21 – 82.25.20.

**If vehicle not fitted with air conditioning**

2. Remove radio panel and radio (if fitted) – 82.50.03 – 86.50.04.
3. Remove left hand parcel tray and dash liner – 76.67.04 – 76.46.11.
4. Set left hand seat fully to rear.

**If vehicle left hand steering continue with operations 6 and 7. If not, continue with operation 8.**

5. Fully collapse steering column adjustment.
6. Remove two bolts securing steering column to bracket, and two setscrews securing clip. Lower steering wheel in front of seat.
7. Remove split pin securing remote control inner cable to control gears.
8. Remove locknuts securing outer cable.
9. Rotate outer cable clockwise to unscrew it from fascia.
10. Draw control cable from fascia.

**Refitting**

11. Feed cable into position.

**NOTE:** Ensure cable passes behind electrical connectors.

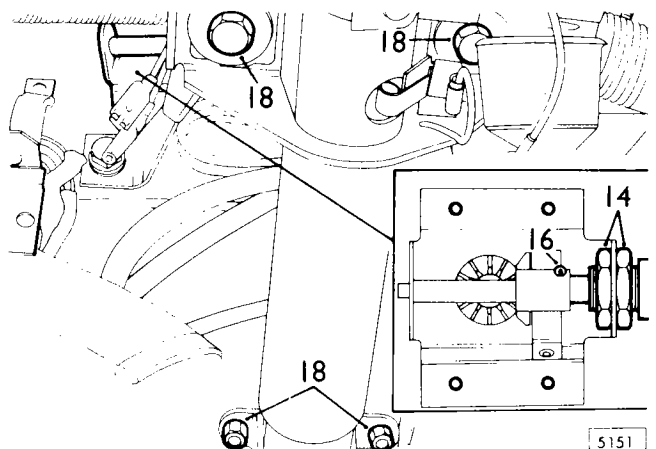
12. Lightly grease threads at both ends of outer cable.
13. Rotate outer cable end anti-clockwise to screw it into fascia.

**NOTE:** Ensure threads do not cross.

14. Fit one locknut to end of cable outer sheath, locate sheath in bracket, and fit second locknut.
15. Adjust locknuts so that input gear is firmly located by inner cable.
16. Rotate remote control knob and secure gear to cable using a new split pin.

**NOTE:** If necessary adjust locknuts to get correct depth of engagement of cable.

17. Tighten locknuts.
18. Reposition and secure steering column to bracket. Replace clip and secure.
19. Refit left hand parcel tray and dash liner.
20. Refit radio panel and evaporator unit as appropriate.
21. Reconnect battery.



## WINDSCREEN DEMIST FLAP

### Control Gears and Flap

#### Remove and refit

80.10.37

#### Removing

##### If vehicle fitted with air conditioning

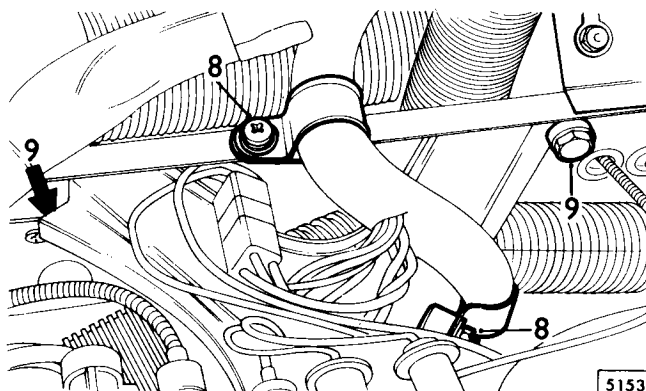
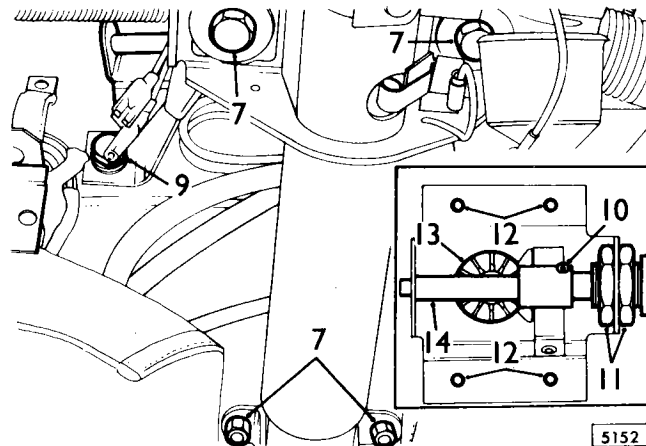
1. Remove evaporator unit, operations 1 to 21 – 82.25.20.

##### If vehicle not fitted with air conditioning

2. Remove radio panel and radio (if fitted) – 86.50.03 – 86.50.04.
3. Remove left hand parcel tray and dash liner – 76.67.04 – 76.46.11.
4. Set left hand seat fully to rear.
5. Remove screen rail facia assembly – 76.46.04.

##### If vehicle left hand steering continue with operations 6 to 9. If not, continue with operation 10.

6. Fully collapse steering wheel adjustment.
7. Remove two bolts securing steering column to bracket, and two setscrews securing clip. Lower steering wheel in front of seat.
8. Release cable clip on steering column bracket.
9. Remove four setscrews and withdraw steering column bracket.
10. Remove split pin securing remote control inner cable to control gears.
11. Remove locknut securing outer cable; disengage cable from bracket.
12. Slacken four self-tapping screws securing control gear bracket to duct.
13. Move bracket to right, disengage and remove input gear.
14. Use a thin blade to lever pinion from spindle.



If control gears only are to be changed, continue with 'Refitting' operation 22. If flap and/or shaft are to be changed continue with operation 15.

15. Remove self-tapping screws and recover bracket and bush.
16. Remove heater unit – 80.20.01.
17. Reach through heater inlet hole to duct and grip flap.
18. Draw spindle from duct into car; withdraw flap from heater inlet hole.

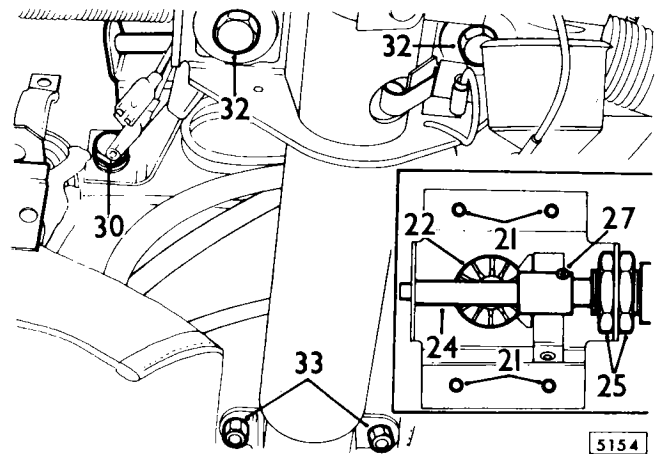
**Refitting**

19. Place flap into heater inlet hole with straight edge of flap towards front of car. Position flap at pivot hole and locate by passing spindle through from inside car, pivot point first. Ensure point locates at front of duct.
20. Place bush on end of shaft.
21. Fit bracket over end of shaft, large hole to right hand side, and loosely secure with four self-tapping screws.
22. Locate pinion over end of spindle and secure with a pressed on new spring clip.
23. Reach down through fascia top rail and locate pointed end of spindle. Press a suitable hard implement against the point, and press spring clip fully home to retain gear.
24. Press bracket to right, and fit input gear, teeth towards duct and with lower detent flap against spring.

**NOTE:** Split pin hole will be angled upwards and out towards operator.

25. Fit remote control cable to bracket and loosely secure with locknut.
26. Turn remote control knob fully anti-clockwise.
27. Manipulate control knob about fully anti-clockwise position to permit fitting of split pin. Secure.
28. Tighten locknut.
29. Slide bracket to left to engage gears to best advantage and tighten four self-tapping screws.

**NOTE:** Check operation, and lightly oil gears.



**If vehicle right hand steering, continue with operation 34.**

30. Fit steering column bracket and secure with four setscrews, spring and plain washers.
31. Secure cable harness clip to bracket.
32. Raise steering column into position, and secure to bracket with bolt, plain washer and locknut.
33. Fit clip and spacer at lower end of upper column using two setscrews, plain and spring washers.
34. Fit screen rail fascia assembly.
35. Fit left hand parcel tray and dash liner.
36. Fit radio panel and evaporator unit as appropriate.
37. Fit heater unit.

**FRESH AIR INTAKE****Remove and refit**

80.15.29

**Removing**

1. Raise bonnet.
2. Remove air intake assembly fixings.
3. Withdraw fresh air intake from bonnet duct.

**Refitting**

4. Apply a suitable sealing compound to the flanges of the intake assembly.
5. Reverse operations 1 to 3.





## HEATER UNIT

### Remove and refit

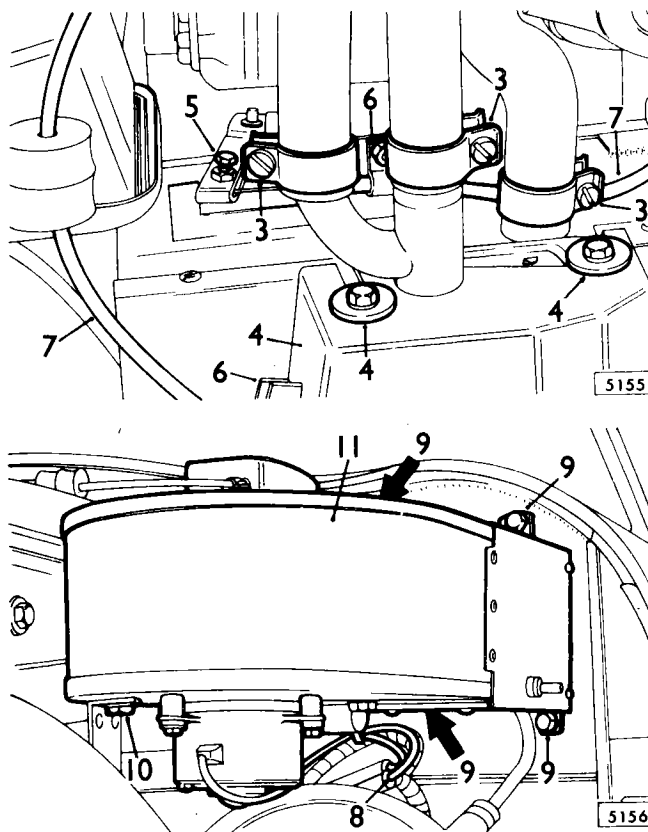
80.20.01

#### Removing

1. Drain cooling system – 26.10.01.
2. Disconnect battery – 86.15.19.
3. Slacken hose clips at input and output water hoses on heater unit. Pull hoses from connections.
4. Slacken two setscrews securing heater control valve cover; remove cover.
5. Slacken clamp screws securing inner cables of AIR and TEMPERATURE control cables.
6. Slacken clamp setscrews securing outer casings of control cables to brackets.
7. Disconnect both control cables.
8. Disconnect electrical leads to heater fan.
9. Remove four setscrews, plain and spring washers securing heater to bulkhead.
10. Remove setscrew securing heater unit to support bracket on sub frame.
11. Lift out heater unit.

#### Refitting

Reverse operations 1 to 11 using a new seal between heater unit and bulkhead, and checking controls when connected.



## HEATER UNIT

### Overhaul

80.20.08

#### Dismantling

1. Remove heater radiator – 80.20.29.
2. Remove heater motor/fan assembly 80.20.15.

#### Inspection

3. Clean out heater case.
4. Check condition of foam pad on air flap, and replace if necessary. Use a non-inflammable foam material, and a non-petrol based adhesive.
5. Clear all debris from heater radiator, and blow out with shop air line.

**NOTE:** Take great care not to damage radiator matrix fins by mishandling. Any distortion must be made good with a fin comb.

6. Thoroughly clean out heater fan.

#### Reassembly

7. Refit heater motor/fan assembly.
8. Refit heater radiator.
9. Lightly oil flap spindle at bushes.

## HEATER MOTOR/FAN ASSEMBLY

## Remove and refit

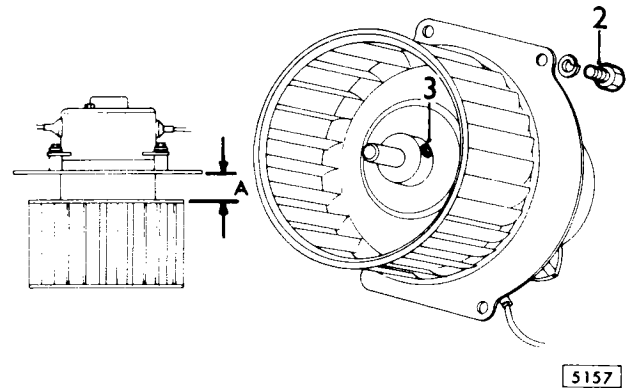
80.20.15

## Removing

1. Remove heater unit — 80.20.01.
2. Remove two setscrews securing motor mounting plate to heater unit, lift out heater motor and fan assembly.
3. Using an Allen key, slacken the clamping grub screw; pull fan from motor shaft.

## Refitting

4. Fit fan to motor shaft to obtain dimension A of 18,26 mm (23/32 in.) between bottom edge of fan and motor mounting plate. Check at three stations.
5. Use Allen key to tighten clamping grub screw.
6. Enter heater motor and fan assembly into case, and secure with two setscrews and spring washers.
7. Refit heater unit.



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## HEATER RADIATOR

## Remove and refit

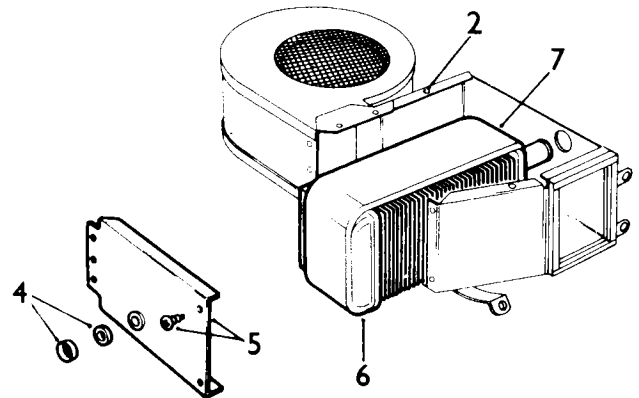
80.20.29

## Removing

1. Remove heater unit — 80.20.01.
2. Remove nine self-tapping screws and lift off top cover and control valve complete.

**CAUTION:** Take care not to damage control valve capillary.

3. Set air flap down.
4. Prise spring clip from air flap spindle. Recover one plain washer.
5. Remove seven self-tapping screws retaining side plate; draw side plate from heater box.
6. Carefully draw heater radiator matrix from heater box.
7. Remove self adhesive packing material from old matrix, and fit, positioned identically, to new.



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## Refitting

8. Install replacement radiator matrix in heater box, taking great care not to damage fins.
9. Fit side plate into position and secure using seven self-tapping screws.
10. Fit plain washer to air flap spindle and retain with spring clip.
11. Fit top cover and secure using nine self-tapping screws.
12. Refit heater unit.