

84 - WIPERS AND WASHERS

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FRONT SCREEN WIPER AND WASHER CIRCUIT OPERATION

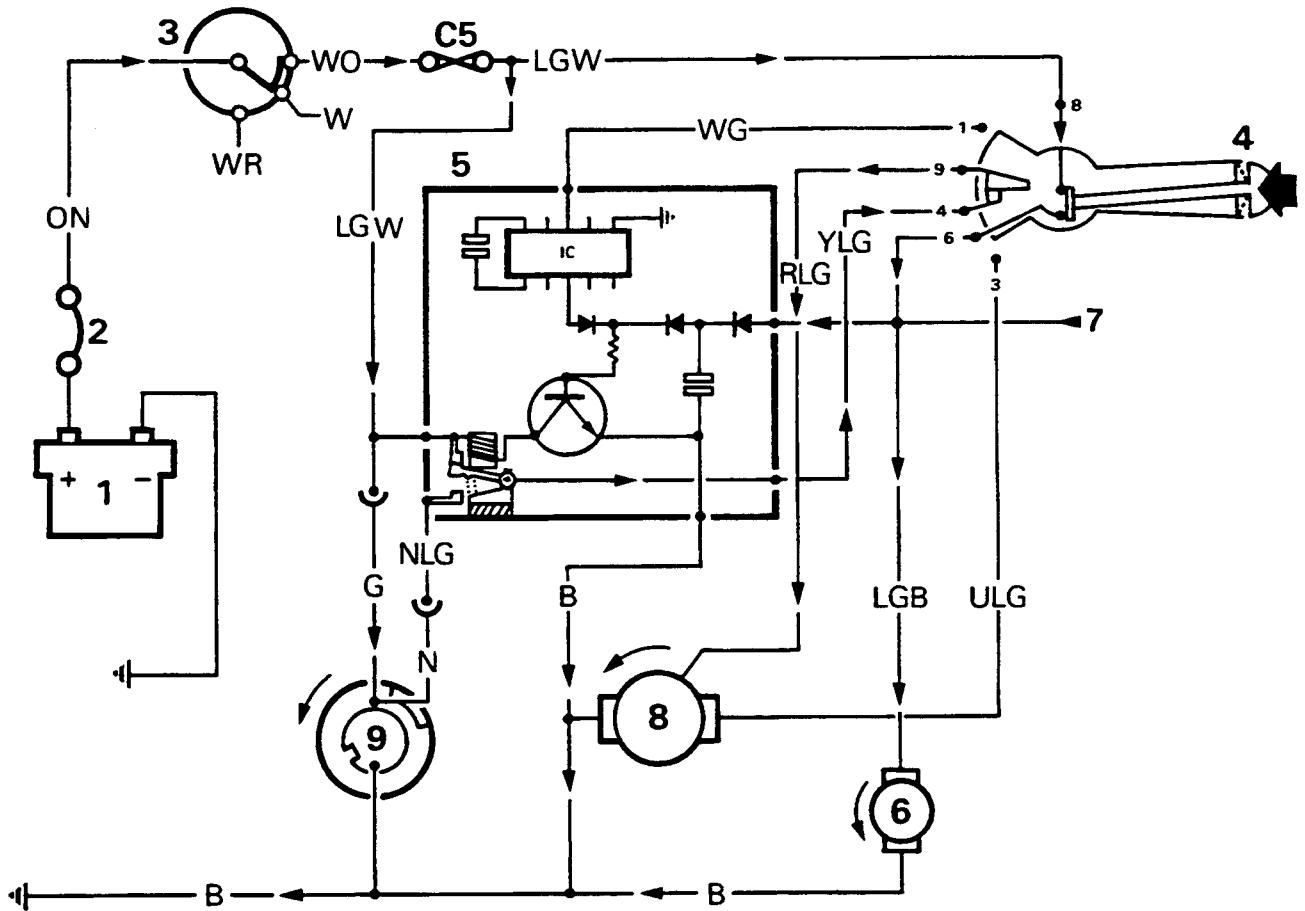
The system is operated by the multi position wiper switch, which is located on the right side of the steering column. All functions of the switch and circuit are explained in the following paragraphs by reference to diagrams RR3694M and RR3720M.

Wash wipe function (timed) RR3694M

With the ignition switched ON, power is supplied via Fuse C5 to the multi position switch 4, control unit 5, and park switch 9 which is driven by the wiper motor 8.

Momentary depression of switch 4 connects the power supply at terminal (8) to terminal (6) causing the washer pump 6 to operate for as long as switch 4 is held depressed. Depression of switch 4 will also energize the relay inside the control unit 5 which powers the wiper motor 8 via terminals (4) and (9). The earth for the relay windings in control unit 5 is timed to allow the wipers to make three return sweeps of the screen before parking. The timed cycle begins at the moment switch 4 is released.

See head lamp power wash circuit, connection 7.



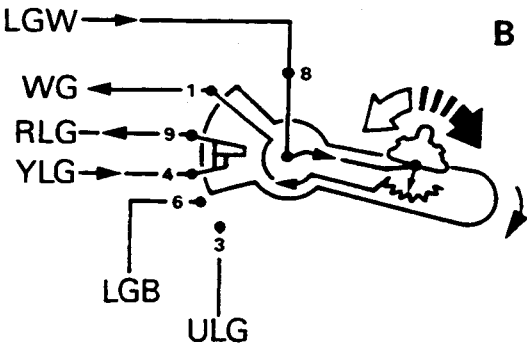
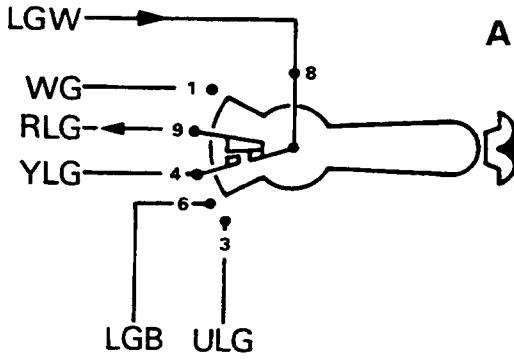
RR3694M

- 1. Battery
- 2. Fuse link
- 3. Ignition switch
- 4. Wiper/washer, multi position switch
- 5. Delay/timer control unit

- 6. Front screen washer motor/pump
- 7. Connection to head lamp power wash
- 8. Wiper motor
- 9. Park switch, driven by wiper motor
- C5. Fuse 20 amp

Manual wiper function (A) RR3720M

Lifting the lever towards the driver causes the wipers to operate for as many sweeps as required, parking when the switch is released.



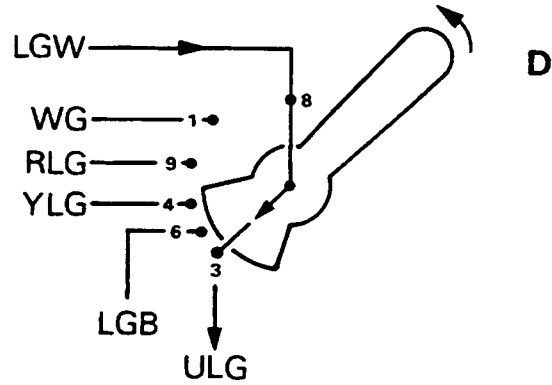
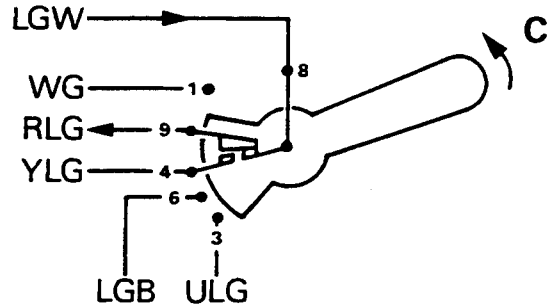
RR3720M

Intermittent variable delay wiper function (B) RR3720M

Moving switch 4 downwards as seen in (B) RR3720M, to the intermittent variable delay wiper function, causes the wipers to perform one return sweep of the screen with a time delay. The time between each sweep of the screen is adjusted by the rheostat in the switch lever.

Continuous slow speed function (C) RR3720M

When the lever is moved upwards to the first position, the wipers are caused to operate continuously at slow speed.



Continuous fast speed function (D) RR3720M

When the lever is moved fully upwards the wipers operate continuously at fast speed.



HEATED WASHER JETS AND LOW WATER INDICATOR

Operation

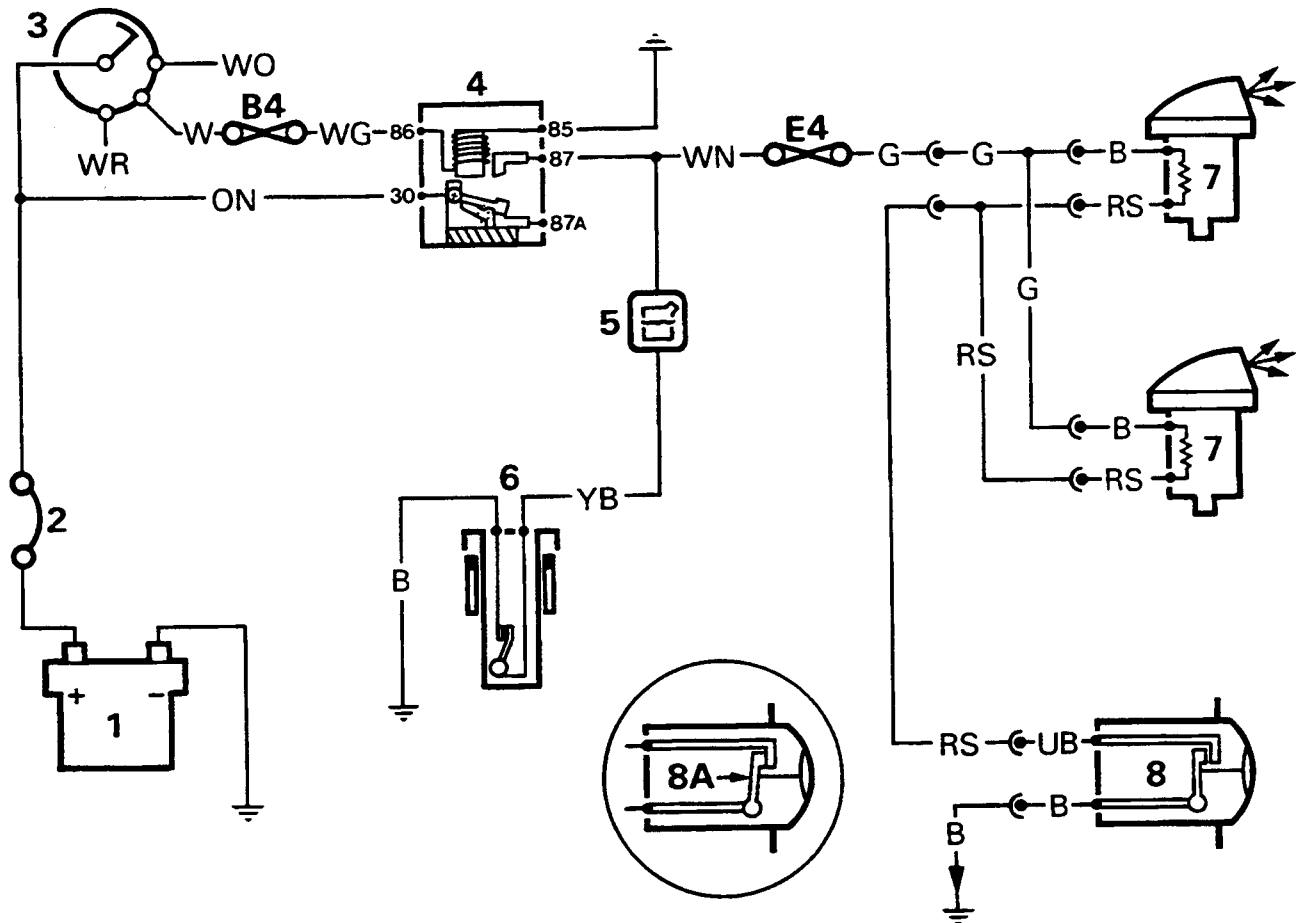
The heated washer jets and low water indicator circuit is provided with power via Fuse B4 and the ignition load relay 4. The water level indicator has a direct feed from the ignition load relay and the heated washer jets are supplied by Fuse E4.

Low water indicator

The low water monitor 6 which is located in the water bottle, consists a magnetic float which will close the switch contacts and provide an earth for the warning indicator 5, when the water level falls.

Heated jets

To prevent freezing of the washer jets 7, both jets are fitted with heating elements which are automatically earthed by the thermostat 8 when the temperature nears freezing. The thermostat which is located at the right hand end of the radiator grill is shown in operation in 8A.



RR3685M

- 1. Battery
- 2. Fuse link
- 3. Ignition switch
- 4. Ignition load relay
- 5. Low water indicator

- 6. Low water monitor
- 7. Heated jets
- 8. Thermostat, contacts open
- 8a. Thermostat, contacts closed

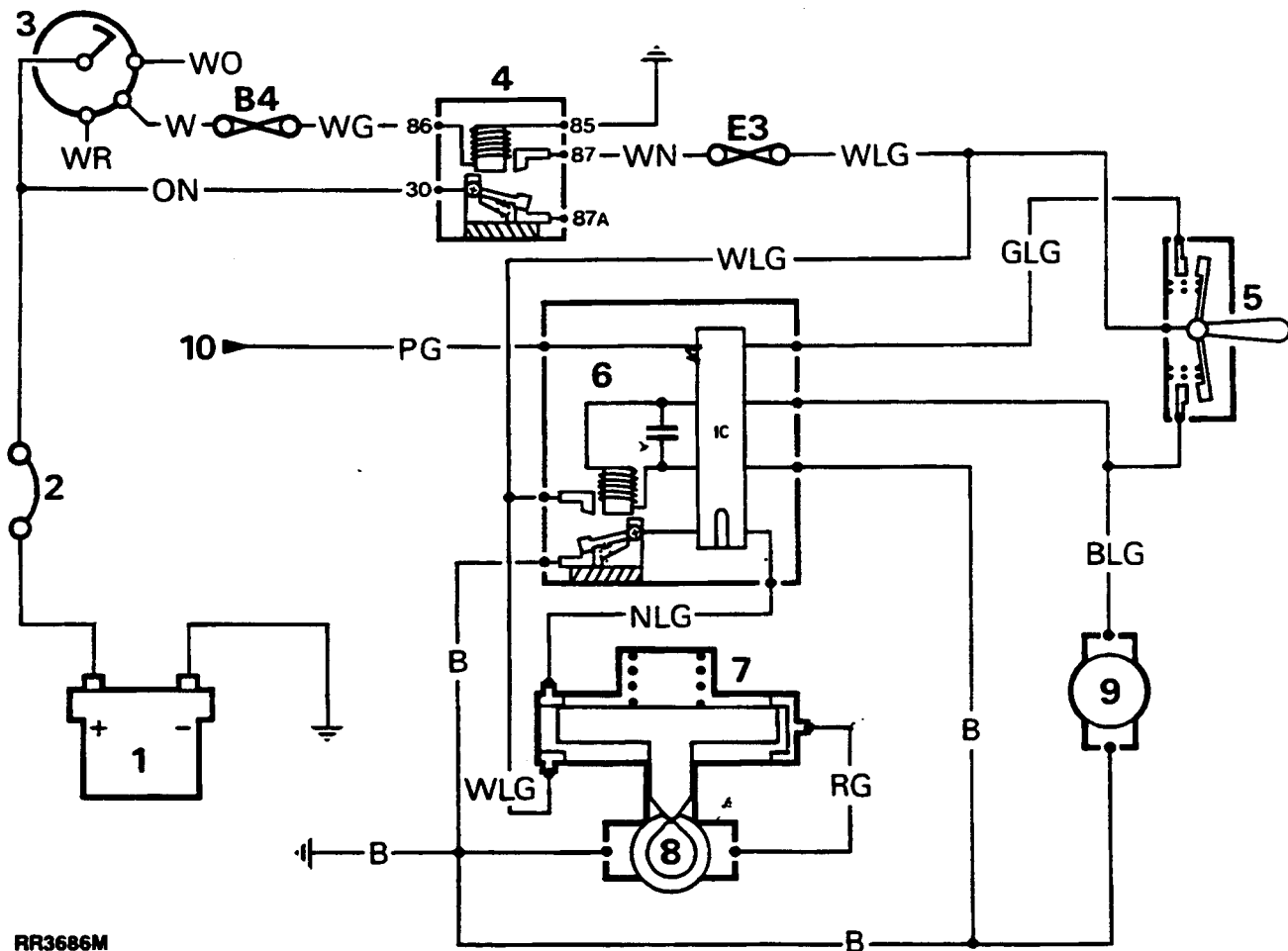
REAR WINDOW WASH WIPE

Operation

The rear window wash wipe circuit is provided with power only when the ignition is switched on via Fuse B4, the operation of the ignition load relay 4 and Fuse E3. A permanent supply to the park switch is also supplied through Fuse B5.

The circuit is operated by a double pole centre biased switch 5 located to the right of the steering column.

When the switch 5 is moved away from the steering wheel, the washer 9 and wiper 8 will operate for as long as the switch 5 is held. However when the switch is released the washer 9 will stop, but the wiper motor 8 through the action of the timer/delay unit 6, will continue to make three complete sweeps of the screen before parking. The parking switch 7 is cam operated by the wiper motor 8.



RR3686M

- | | |
|-------------------------|--|
| 1. Battery | 6. Timer/delay unit |
| 2. Fuse link | 7. Park switch |
| 3. Ignition switch | 8. Wiper motor |
| 4. Ignition load relay | 9. Wash motor/pump |
| 5. Centre biased switch | 10. Connection to (interior light connection 16) |



When switch 5 is momentarily lifted towards the steering wheel the wiper will operate and make four sweeps of the screen before parking for approximately five seconds, after which the wipe cycle will repeat. The wipe cycle will continue intermittently until the switch is again momentarily lifted to switch the system off.

The rear wiper system is connected to the courtesy light switch via connection 10. This ensures that the wiper automatically switches off when any door is opened and prevents possible damage to the wiper arm which might occur if the rear window was opened with the wiper in operation.

When the doors are again closed, the wiper will re-commence operation after approximately 15 seconds.



WIPER MOTOR CHECKING



NOTE: These instructions apply to
Windscreen and Tailgate wiper motors.

If unsatisfactory operation of wiping equipment is experienced, a systematic check to determine fault should be carried out:

1. Check blades for signs of excessive friction. This reduces wiping speed of motor and cause increased current draw which may damage armature. Check by substitution.
2. Check windscreen wiper motor light running current and speed with motor coupling link disconnected from wiper shaft transmission linkage.

Check tailgate glass wiper motor with wiper connected and glass wet. Connect a ammeter in series with motor supply. Measure current consumption when motor is switched on. Check operating speed by timing speed of rotation of motor coupling link. The results should compare with figures given in 'General Specification Data'.



NOTE: If vehicle wiring connections are disconnected and an alternative supply source is applied it is essential that correct polarity is observed. Failure to observe this will cause motor to rotate in reverse direction, which may result in limit switch contacts being damaged.

3. If motor does not run satisfactorily or takes higher than normal current, a fault exists and must be remedied.
4. If current consumption and speed of motor are satisfactory. A check should be carried out for proper functioning of transmission linkage and wiper arm shafts.



NOTE: Service parts are not available for windscreen and tailgate wiper motors with exception of windscreen wiper rotary connecting link.

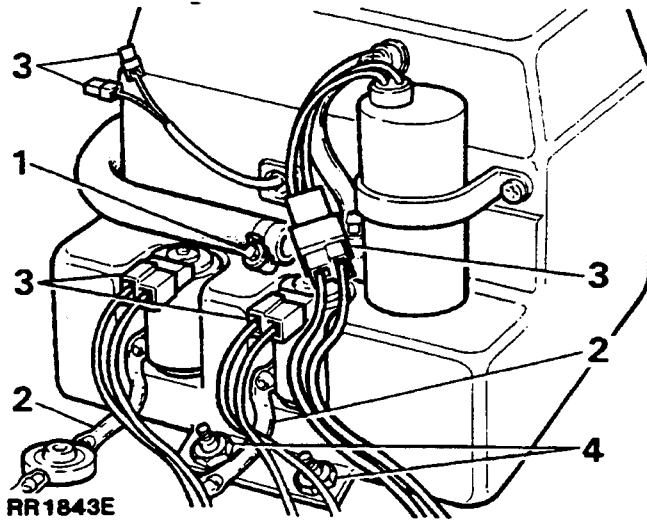


WASHER RESERVOIR

Service repair no - 84.10.03.

Remove and refit

Remove



1. Loosen hose clamp and remove power wash hose.
2. Disconnect tubing from washer pumps.
3. Disconnect electrical leads from pumps and low level warning unit.
4. Remove 3 bolts and withdraw reservoir.

Refit

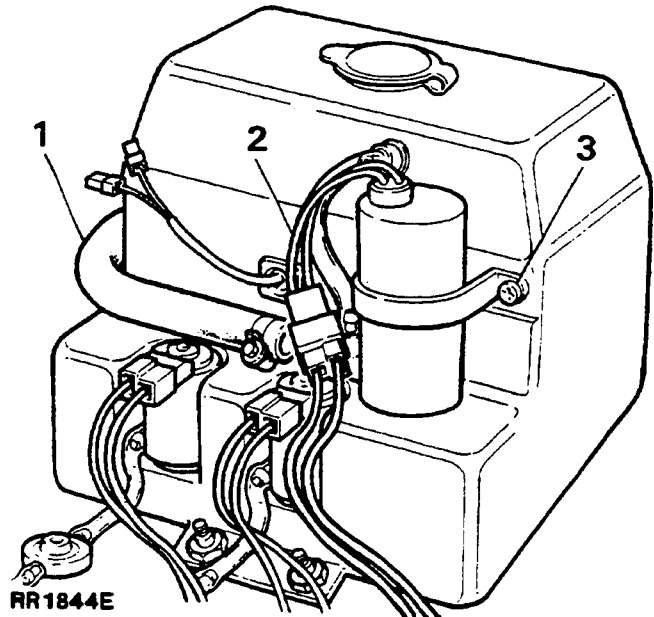
5. Reverse removal procedure.

POWER WASH PUMP

Service repair no - 84.20.21.

Remove and refit

Remove



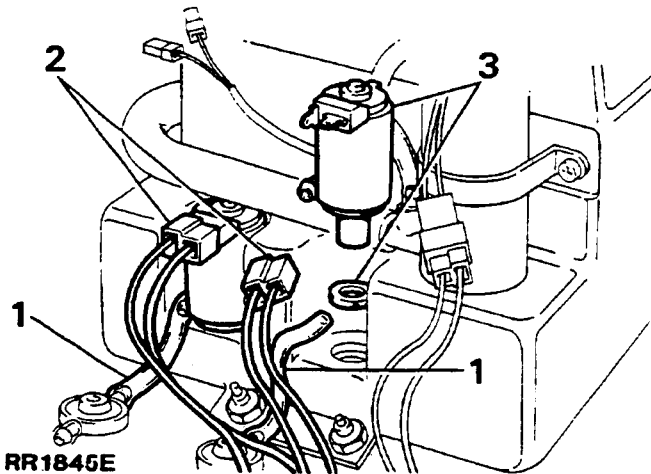
1. Disconnect hose from power wash pump.
2. Disconnect electrical leads from pump.
3. Remove two screws and withdraw power wash pump.

Refit

4. Reverse removal procedure.

WASHER PUMP - WINDSCREEN OR TAILGATE

Service repair no - 84.10. 21.

Remove and refit**Remove**

1. Disconnect washer tubing from pump.
2. Disconnect electrical leads from pump.
3. Pull top of pump away from its location in reservoir and remove pump. Note position of sealing gasket in reservoir.

Refit

4. Reverse removal procedure.

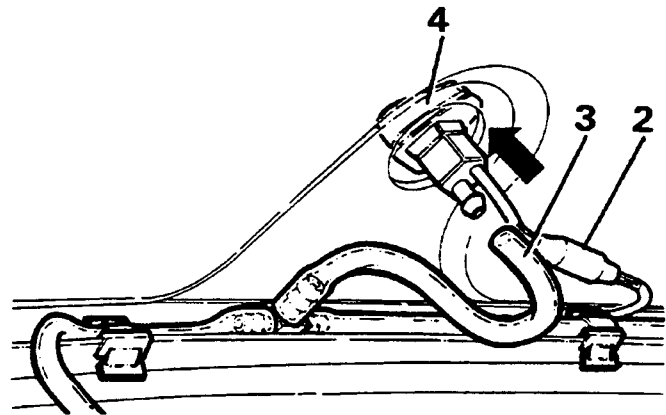
HEATED WINDSCREEN WASHER JETS

Service repair no - 84.10. 09.

Remove and refit**Remove**

△ **NOTE:** The thermostat will close at $4^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and re-open at $10^{\circ}\text{C} \pm 3^{\circ}\text{C}$.

1. Disconnect the battery negative lead.



RR2549M

2. Disconnect electrical connection at plug.
3. Withdraw washer tube from jet.
4. Push jet upwards to remove from its mounting.
5. Remove washer jet mounting from bonnet, if necessary.

Refit

6. Reverse removal procedure.



**HEATED WINDSCREEN WASHER JETS
THERMOSTAT**

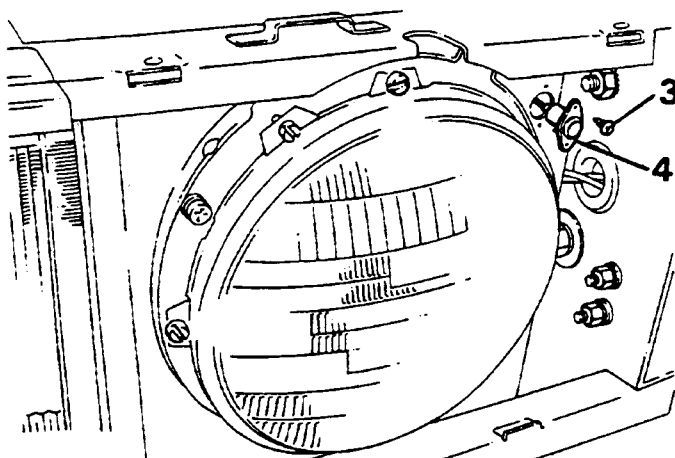
Service repair no - 84.10.12.

Remove and refit

The thermostat is located on right headlamp mounting panel.

Remove

1. Disconnect the battery negative lead.
2. Remove radiator grill. *See CHASSIS AND BODY, Repair, Radiator grill*



3. Remove two screws securing thermostat to right hand headlamp mounting panel.
4. Withdraw thermostat, disconnecting electrical connector.

Refit

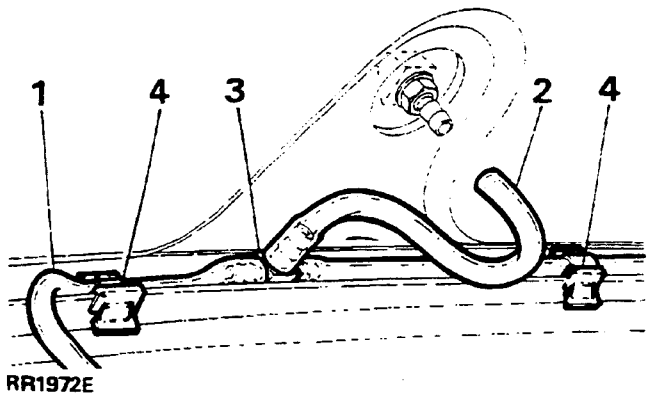
5. Reverse removal procedure.

WINDSCREEN WASHER TUBES

Service repair no - 84.10.15.

Remove and refit

Remove



1. Disconnect tubing from reservoir pump.
2. Disconnect tubing from washer jets.
3. Disconnect tubing from three-way tee piece.
4. Release tubing from edge clips.

Refit

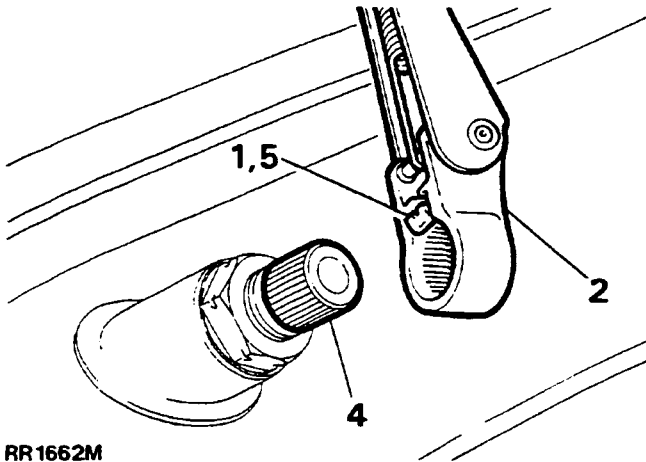
5. Reverse removal procedure.

WIPER ARMS - WINDSCREEN

Service repair no - 85.15.01

Remove and refit**Remove**

1. Hold back small spring clip which retains wiper arm on shaft boss using a suitable tool.
2. Gently pry off wiper arm from shaft boss.

**Refit**

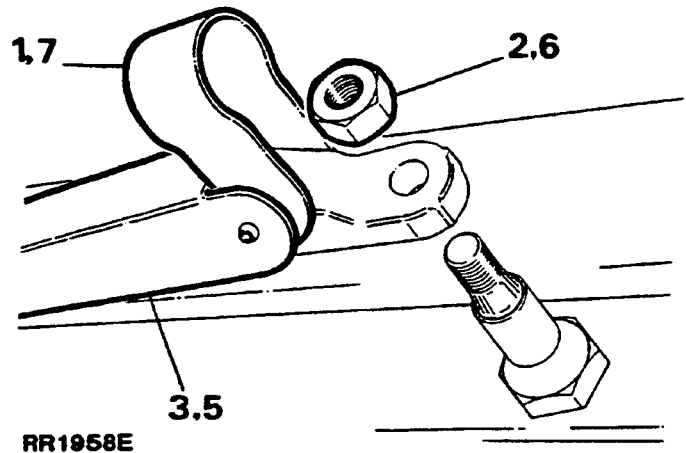
3. Allow motor to move to 'park' position.
4. Push arm on to boss, locating it on splines so that wiper blades are clear of screen rail.
5. Ensure that spring retaining clip is located in retaining groove on shaft boss.
6. Operate wiper on a wet screen to ensure blades do not over travel.

WIPER ARM - TAILGATE

Service repair no - 84.35.01.

Remove and refit**Remove**

1. Lift wiper arm end cap to access wiper motor shaft.
2. Remove wiper arm securing nut.



3. Withdraw wiper arm from shaft.

Refit

4. Allow motor to move to 'park' position.
5. Fit wiper arm to shaft, locating it on the splines so that wiper blade is clear of screen surround.
6. Fit and tighten securing nut.
7. Push end cap back into position.
8. Check correct operation of wiper.

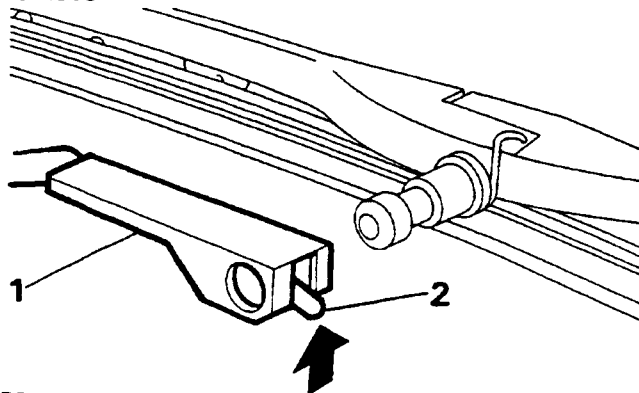


WIPER BLADES - WINDSCREEN AND TAILGATE

Service repair no - 84.15.05.

Remove and refit

Remove



RR1663M

1. Pull wiper arm away from glass.
2. Lift spring clip and withdraw blade from arm.

Refit

3. Reverse removal procedure.

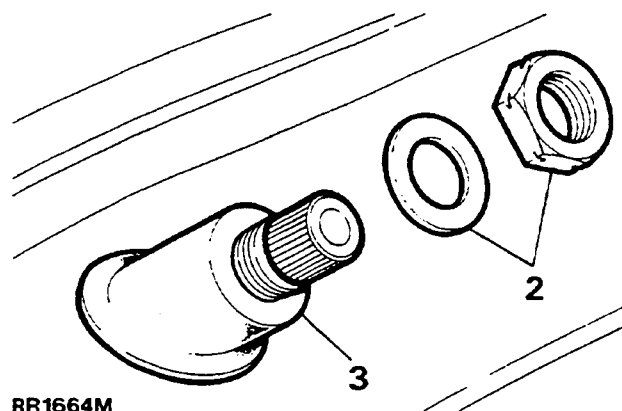
WINDSCREEN WIPER MOTOR, LINKAGE AND WHEEL BOXES

Service repair no - 84.15.12.

Remove and refit

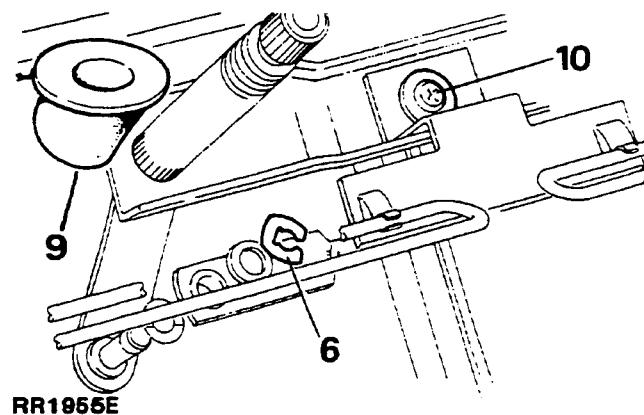
Remove

1. Disconnect the battery negative lead. Remove wiper arms.



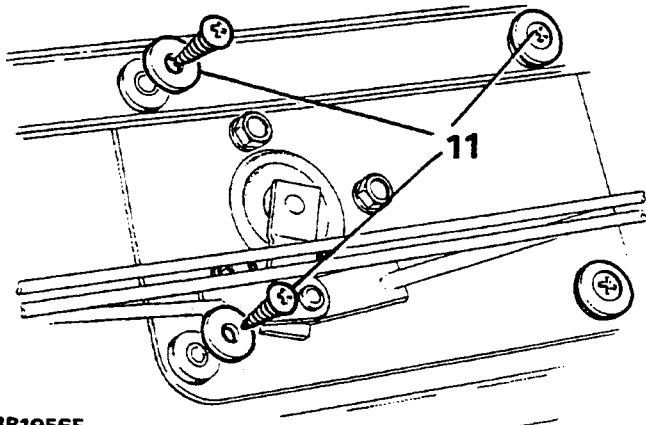
RR1664M

2. Remove locknuts from wheel boxes.
3. Remove grommet from wheel boxes.
4. Remove bonnet. *See CHASSIS AND BODY, Repair, Bonnet*
5. Remove front decker panel. *See CHASSIS AND BODY, Repair, Decker panel*



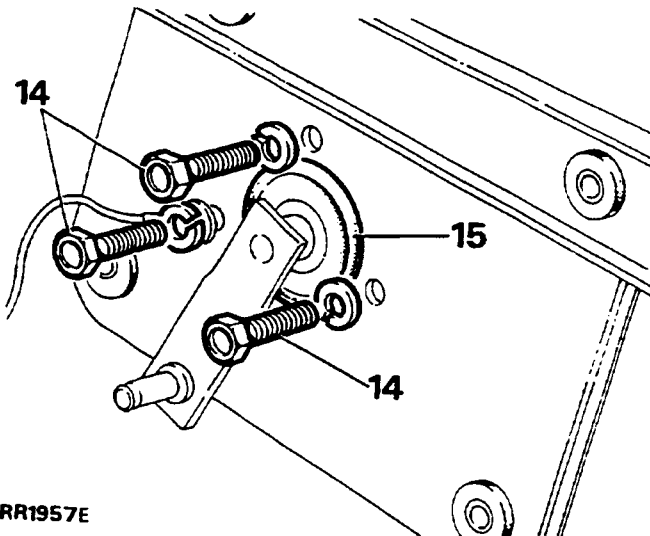
RR1955E

6. Remove spring clips securing primary links to wheelbox shaft links.
7. Remove spring clips securing primary links to motor crank.
8. Remove primary links.
9. Remove lower grommet from wheelboxes.
10. Remove screw securing bonnet torsion bar bracket. Unclip bracket from torsion bar.



RR1956E

11. Remove remaining screws securing motor and linkage assembly to bulkhead.
12. Ease unit from mounting location and disconnect electrical leads at plug and socket.
13. Withdraw unit.



RR1957E

14. Remove three bolts securing motor to mounting plate.
15. Separate motor from mounting plate by pulling motor crank through grommet.

Refit

16. Reverse removal procedure.
17. Ensure primary links are mounted with bushes on inside, towards wiper motor. The shorter primary link is mounted on driver side.
18. Replace front decker panel.
19. Replace bonnet.
20. Replace wiper arms.

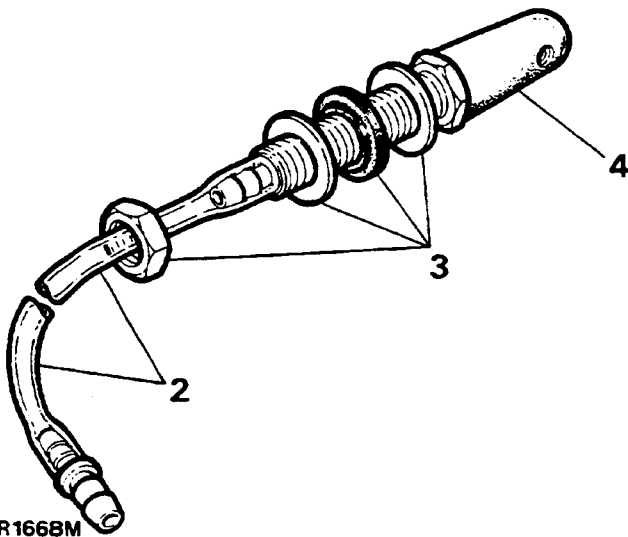


TAILGATE GLASS WASHER JET

Remove and refit

Remove

1. Lower or remove headlining rear section to gain access to jet securing nut and washer tube connection.



RR166BM

2. Disconnect washer tube. Remove grommet. Drain away water in tube to avoid damaging trim.
3. Hold base of jet and remove nut and washer.
4. Withdraw washer jet from outside vehicle.

Refit

5. Reverse removal procedure.

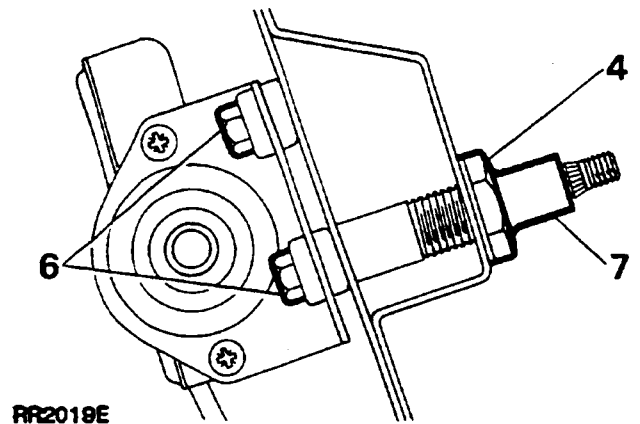
TAILGATE GLASS WIPER MOTOR

Service repair no - 84.35.12.

Remove and refit

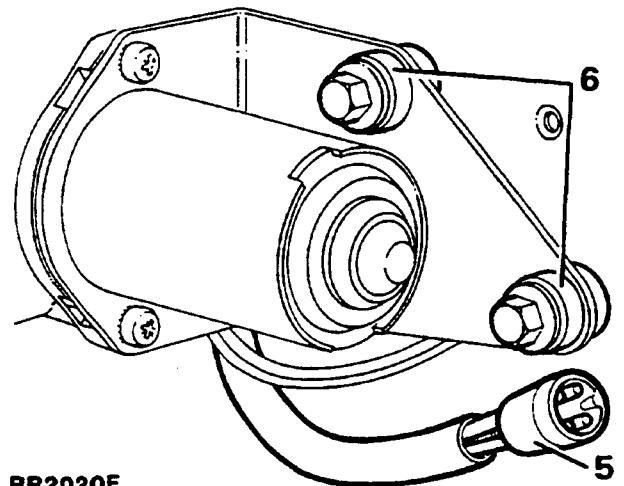
Remove

1. Disconnect the battery negative lead.
2. Lower headlining rear section to access wiper motor assembly.
3. Remove wiper arm and blade.



RR2019E

4. Loosen nut securing wiper motor to body. **DO NOT** remove at this stage.



RR2020E

5. Disconnect electrical leads at multi-plug.
6. Remove two bolts securing wiper motor to inner body.
7. Support wiper motor remove nut loosened at instruction 4, complete with protective cover, washer and seal. Simultaneously withdraw wiper motor.

Refit

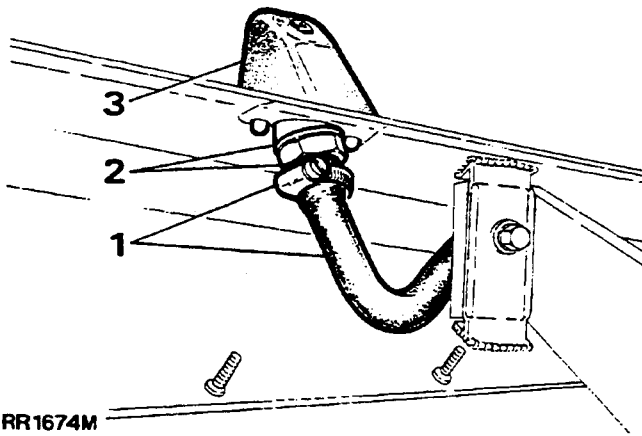
8. Reverse removal procedure. Ensuring that spacer is correctly positioned before fitting motor.

HEADLAMP POWER WASH JET

Service repair no - 84.20.08.

Remove and refit**Remove**

1. Disconnect hose from power wash jet.
2. Remove nut securing jet to bumper.
3. Remove power wash jet.

**Refit**

4. Reverse removal procedure.

POWER WASH HOSE

Remove and refit**Remove**

1. Disconnect hoses from jets and washer pump.
2. Release clamps locating hose.
3. Remove power wash hose.

Refit

4. Reverse removal procedure. Locating hose in its original position.