

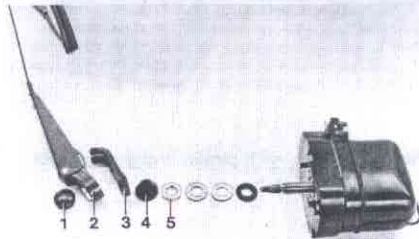
122 223

- | | | | |
|---|------------------------|----|-------------------|
| 1 | Relay, low-speed | 6 | Relay, high-speed |
| 2 | Windscreen wiper motor | 7 | Switch |
| 3 | Relay, high-speed | 8 | Rheostat |
| 4 | Relay, low-speed | 9 | Fuse B5 |
| 5 | Windscreen wiper motor | 10 | Switch |

Windscreen wipers

Removing

1. Remove the cover from the batteries and disconnect the negative cable from the battery.
2. Remove the protective cap and wiper arm.
3. Remove the flange, dust cover, nut, washer and seal.



- | | | | |
|----|----------------|----|------------|
| 1. | Protective cap | 4. | Dust cover |
| 2. | Wiper arm | 5. | Nut |
| 3. | Flange | | |

4. Lift forwards the wiper motor, mark for correct re-installation and disconnect the cables.

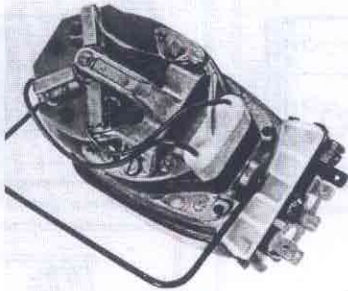
Installing

1. Connect up the cables according to the marking and fit the wiper motor with seal, washers and nut.
2. Fit the dust cover. Adjust and fit the flange so that the wiper arm is located properly.
3. Secure the wiper arm to the wiper shaft with the protective cap.
4. Connect up the negative cable to the battery and fit the cover over the battery.

Indscreen wiper motor

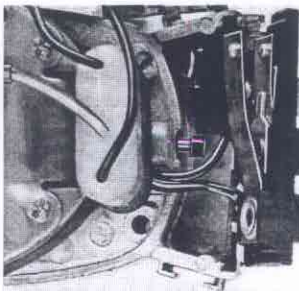
Disassembling

Remove the casing from the wiper motor and the two screws securing the brush retainer bridge. Pull the rotor straight up and remove the two screws securing the stator.



115 844

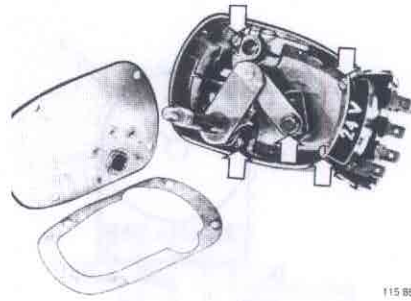
Remove the plastic plate over the parking switch. Remove the switch, brush retainer bridge and radio suppressor from the housing.



115 851

Removing the parking switch

Remove the end and gasket from the output shaft. Remove the output shaft and tooth segment. Remove the four screws securing the lower housing half.



115 852

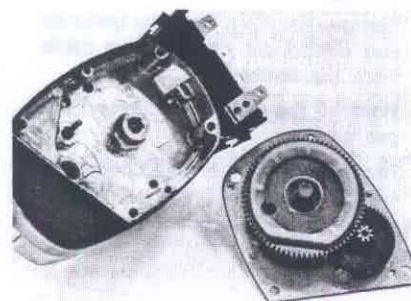
4. Remove the lower housing half and gasket.



115 853

Removing housing and gasket

5. Lift off the plate, gasket, gear wheel and pinion from the pinion housing.



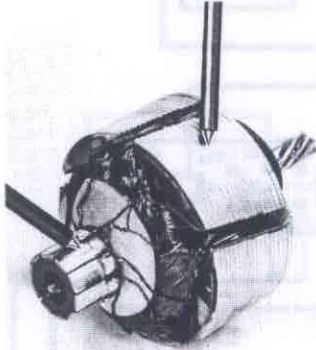
115 854

Pinion housing with pinion and gear wheel

Checking and replacing parts

Clean all the parts and check for wear or any other defect. Check also the rotor for flash-over between commutator and rotor body as well as flash-over between, and breakage in, the winding coils.

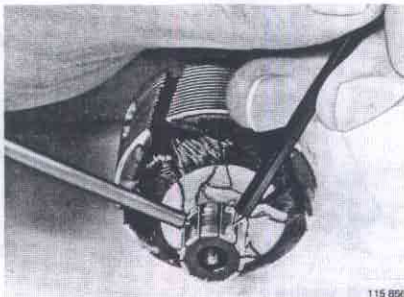
Test for flash-over between commutator and rotor body by connecting a test lamp (40 V A.C.) between them. The lamp must not light.



115 855

Insulation test, rotor

Test for flash-over between the winding coils with a smaller type of growler or with a Bosch coil tester EFAW 90 or 95 with ancillary test probe EFAW 96 or corresponding. Total breakage in any of the commutator discs can be checked with a test lamp (12 V D.C.). One of the measuring points of the test lamp is placed on a commutator disc and the other measuring point is moved round the commutator. The lamp should light.



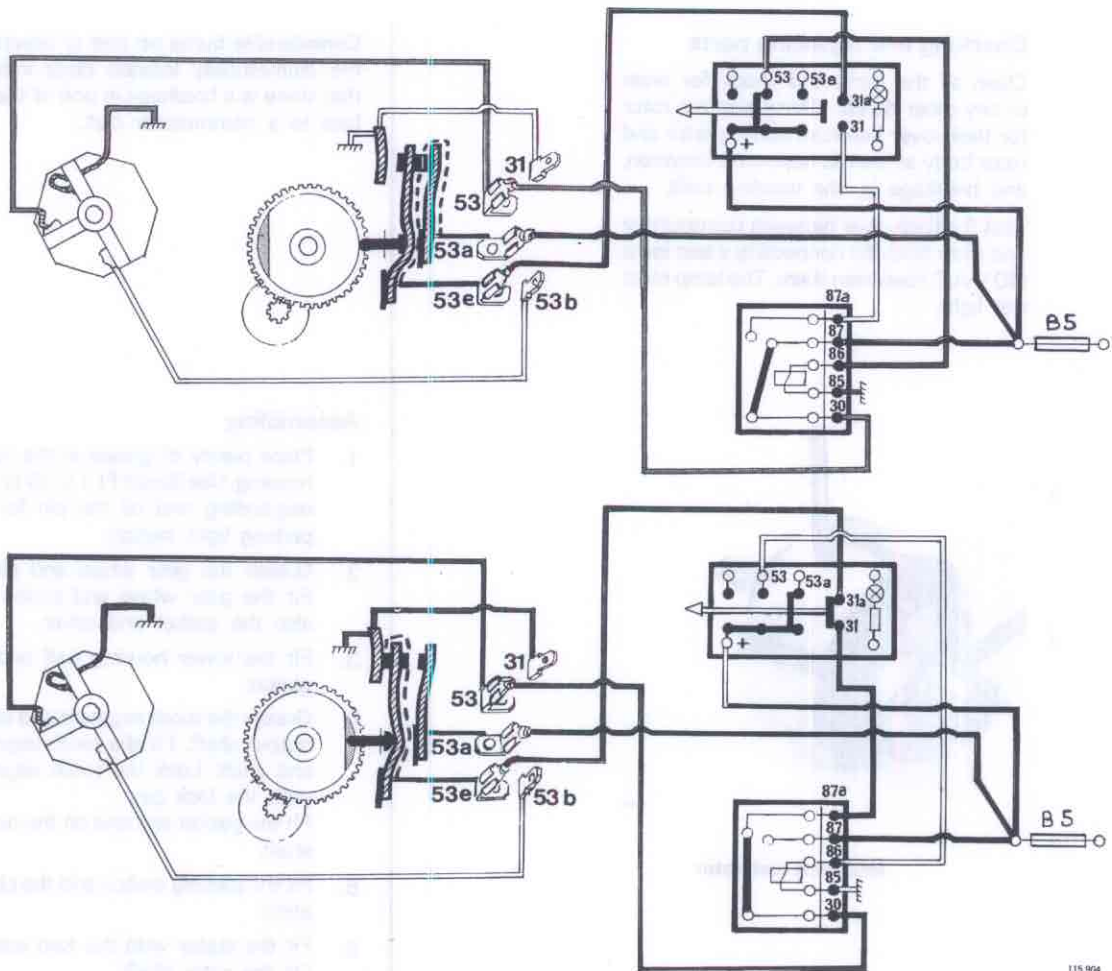
115 856

Breakage test, rotor

Considerable burns on one or several of the diametrically located discs indicate that there is a breakage in one of the cables to a commutator disc.

Assembling

1. Place plenty of grease in the pinion housing. Use Bosch Ft 1 V 35 or corresponding and oil the pin for the parking light switch.
2. Grease the gear wheel and pinion. Fit the gear wheel and pinion and also the gasket and cover.
3. Fit the lower housing half and the gasket.
4. Grease the tooth segment and oil the output shaft. Fit the tooth segment and shaft. Lock the tooth segment with the lock pin. Fit the gasket and end on the output shaft.
5. Fit the parking switch and the plastic plate.
6. Fit the stator with the two screws. Oil the rotor shaft. Fit the rotor and secure the suppressor.
7. Fit the brush retainer bridge on the stator.
8. Fit the protective casing and test-run the windscreen wiper motor. Check the parking function. See the layout diagram on the next page.



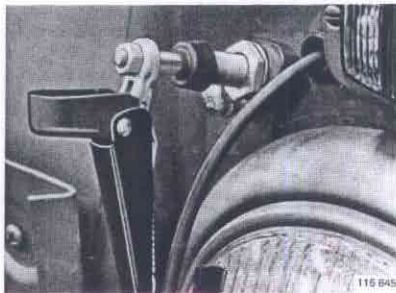
115 904

Layout diagram for parking function

Headlamp wiper motor moving

Remove the clamp and washer hose from the wiper arm.

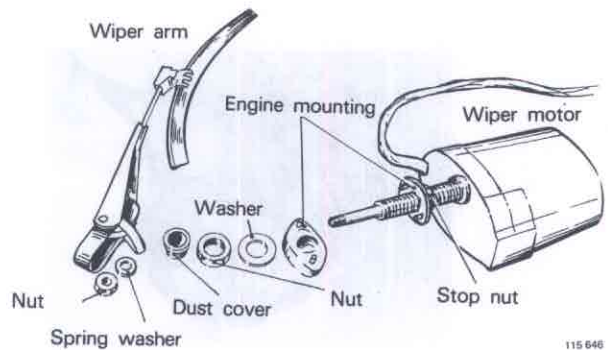
Bend up the cover and remove the nut as well as the wiper arm from the shaft.



115 645

Removing the wiper arm

3. Remove the dust cover, nut, washer and spacer, and lift forwards the wiper motor.
4. Mark where the cables are connected and disconnect them.

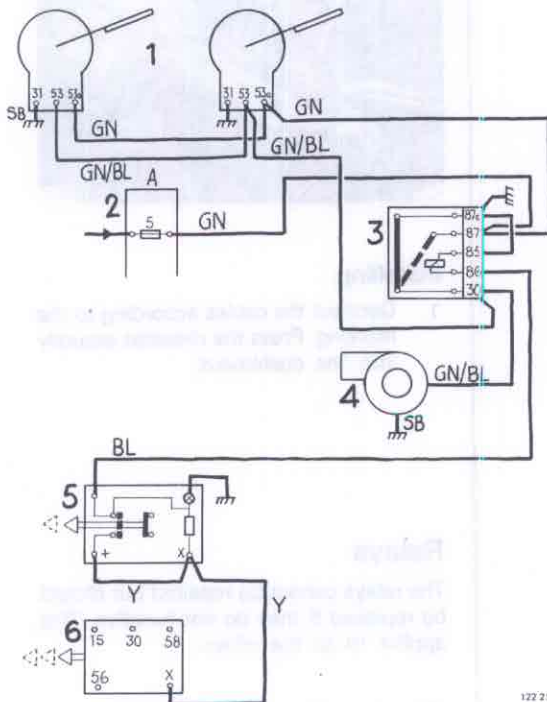


115 646

Headlamp wiper assembly complete

Installing

1. Connect up the cables according to the marking.
2. Fit the wiper motor and wiper mounts (make sure that the guide pins fit in the guide holes), also the washer, nut and dust cover.
3. Switch on the ignition and the parking lights. Start the wiper motor and allow it to take up the parking position by manipulating with the switch button. The parking position is taken up automatically.
4. Fit the wiper arm and nut and connect the washer hose to the nozzle.
5. Clamp the hose to the wiper arm with the clamps.



Layout diagram for headlamp wipers and washers

- 1 Headlamp wiper
- 2 Fusebox (A5)
- 3 Relay, headlamp wiper
- 4 Headlamp washer
- 5 Switch
- 6 Switch, lighting

Washer motor

Removing

1. Remove the screws securing the motor.
2. Mark-up for correct re-installation and disconnect the hoses and cables from the washer motor.

Installing

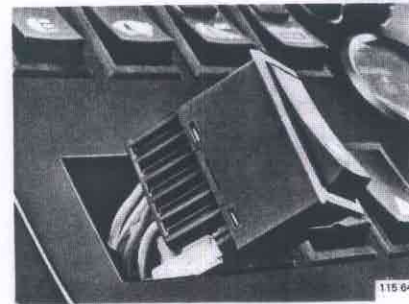
1. Connect up the hoses and cables according to the markings. See Fig. 36-4.
2. Screw tight the motor to the body.

Switches

Rocker-type switches

Removing

1. Remove the cover over the batteries and disconnect the negative cable from the battery.
2. Push out from the reverse side of the instrument panel the switch complete with connector and bulb holder.



3. Separate the connector and bulb holder from the switch.

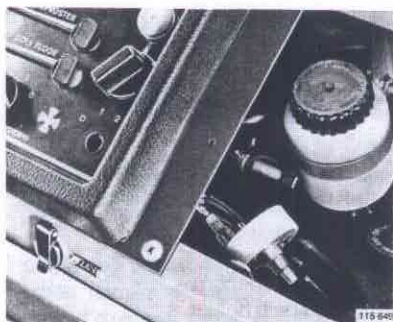
Installing

1. Fit the bulb holder and connector to the new switch.
2. Push in and secure the switch on the instrument panel.
3. Connect-up the negative cable to the battery. Fit the cover over the batteries.

Turn switch (car heater)

Removing

1. Remove the cover over the batteries and disconnect the negative cable from the battery.
2. Remove the cover to the right of the switches.
3. Remove the knob from the switch by pulling it straight out and unscrewing the nut.
4. Lift forwards the switch. Mark how the cables are connected and then disconnect them.



Installing

1. Connect-up the cables according to the marking and fit the switch.
2. Fit the nut, knob and cover.
3. Connect the negative cable to the battery and fit the cover over the batteries.

Push-push switches

Removing

1. Lift out the switch from the panel.



2. Mark-up for correct re-installation and disconnect the cables from the switch.

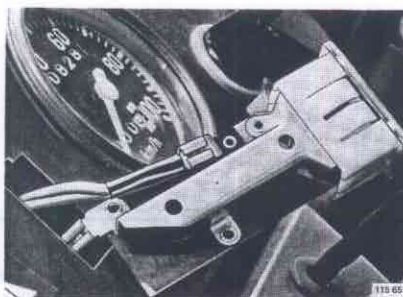
Installing

1. Connect-up the cables according to the marking.
2. Secure the switch to the panel.

Rheostat

Removing

1. Make sure that the ignition is switched off. Mark-up for correct re-installation and disconnect the cables from the rheostat.
2. Push out the rheostat from the reverse side of the dashboard.



Installing

1. Connect the cables according to the marking. Press the rheostat securely into the dashboard.

Relays

The relays cannot be repaired but should be replaced if they do not function. This applies to all the relays.

Cut-in relays (type mini)

Replacing

1. Pull the relay straight out from the relay socket.
2. Check that the new relay is of the correct rating before fitting it. Push the new relay securely into the socket.

Flasher device

Removing

1. Remove the screws securing the flasher device clamp.



2. Remove the flasher device from the clamp and separate it from the connector.

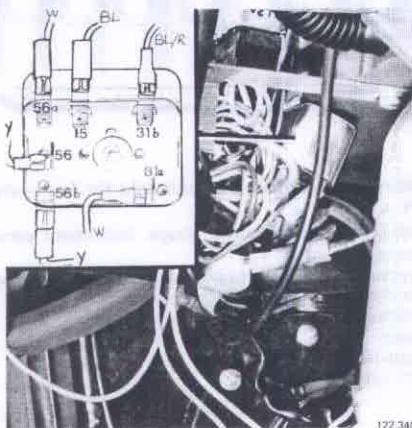
Installing

1. Wire the connector to the new flasher device.
2. Place the device in position behind the clamp and tighten up the screws.

Step relay for main-beams / dipped beams

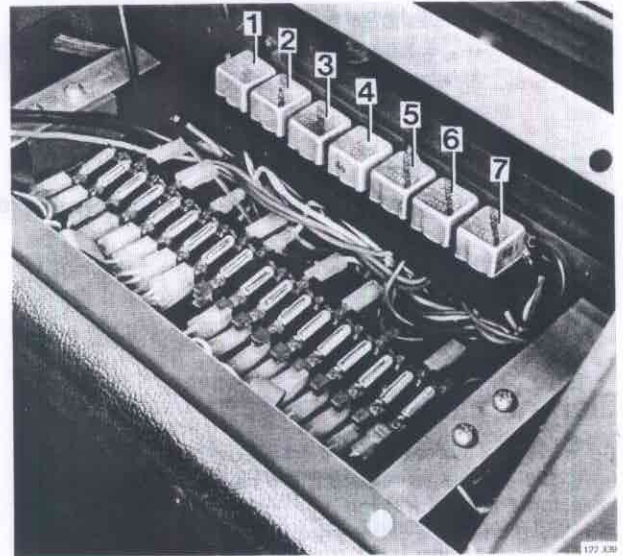
Removing

1. Remove the cover from over the batteries and disconnect the negative cable from the battery.
2. Mark-up and disconnect the cables from the step relay.
3. Remove the screws securing the relay.



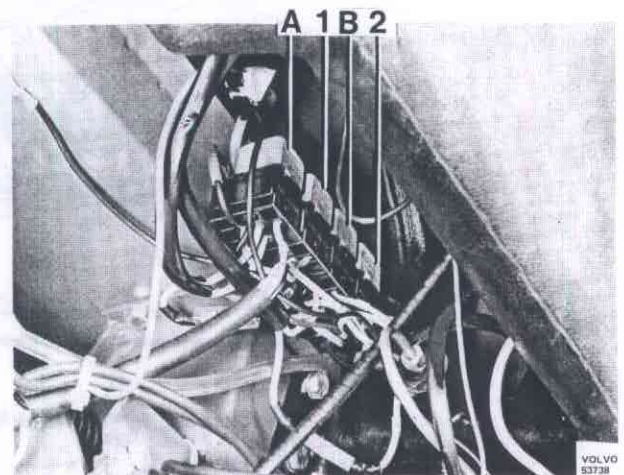
Installing

1. Fit the relay.
2. Connect the cables according to the markings.
3. Connect the negative cable of the battery and fit the cover over the batteries.



Relays underneath oddments locker

- | | | | |
|---|-----------------|----|----------------------|
| 1 | Reversing light | 5* | Motor and cab heater |
| 2 | Headlamp wiper | 6* | Motor and cab heater |
| 3 | Parking light | 7* | Motor and cab heater |
| 4 | Headlamp | * | Not standard |



Relays under dashboard

- | | |
|---|----------------------------------|
| A | L/H windscreen wiper, low-speed |
| 1 | L/H windscreen wiper, high-speed |
| B | R/H windscreen wiper, low-speed |
| 2 | R/H windscreen wiper, high-speed |

Group 37 Cables and Fuses

Construction and Function

Cables

The cables installed in the vehicle have different colours. These have been abbreviated in the fold-out diagram and the layout diagrams as follows:

B = blue, GN = green, R = red, Y = yellow, SB = black, G = grey, W = white and BN = brown.

Fuses

The vehicle is fitted with two fuseboxes, each of which has

9 fuses. The fuseboxes are located under the oddments locker in the dashboard, right-hand side. Each fuse is rated for a current of 8 A.

Connectors

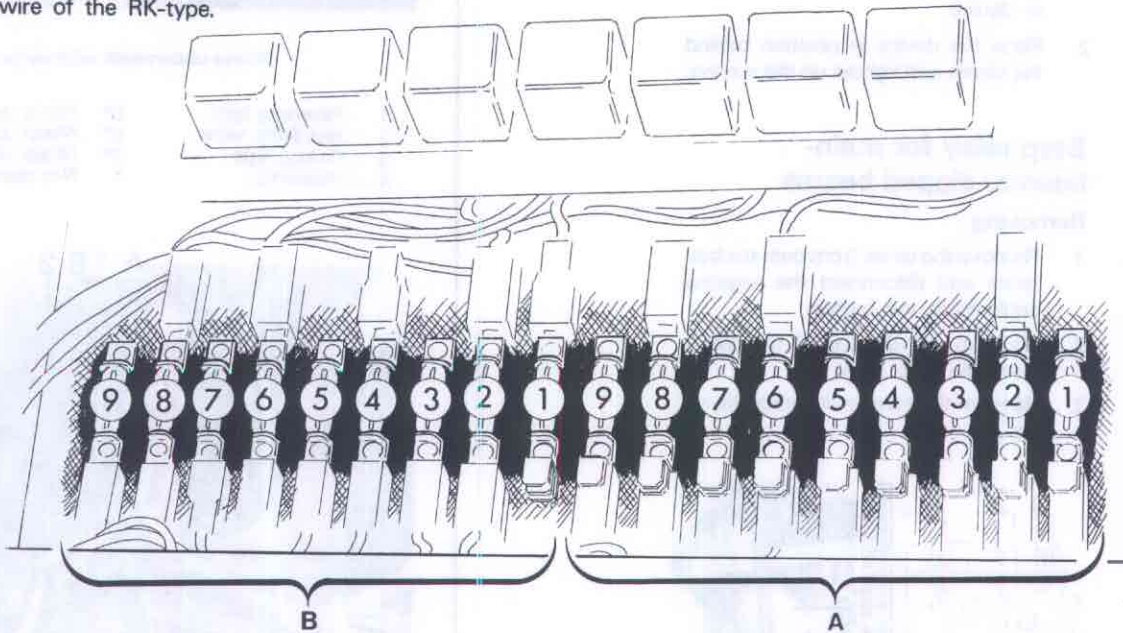
The vehicle is equipped with two connectors: a 6-pole and an 8-pole connector. They are located at the right-hand side of the rear engine cover.

Service Procedures

Electric cables

In the event of a breakage or short-circuit on a cable, it must be replaced. The new cable must have the same area, colour and insulation as the old one and also be of the same type.

Fuses



- A1 Interior lighting, socket, warning light
- A2 Left-hand parking light
- A3 Left-hand tail light
- A4 Right-hand tail light
- A5 Right-hand parking light, headlamp wiper
- A6 Left-hand dipped beam
- A7 Right-hand dipped beam
- A8 Left-hand fullbeam
- A9 Right-hand fullbeam, fullbeam indicator light
- B1 Spare

- B2 Fan motor, solenoid, indicator light for front-wheel drive and diff. lock
- B3 Fuel gauge, temperature gauge, instrument panel light, horn, reversing lights
- B4 Direction indicators, brake warning light, lighting
- B5 Windscreen wipers, oil pressure
- B6 Headlamp flasher, brake light contact
- B7 Spare
- B8 Right-hand stop light
- B9 Left-hand stop light

Group 38 Instruments, Contacts and Indicator/Warning Lights

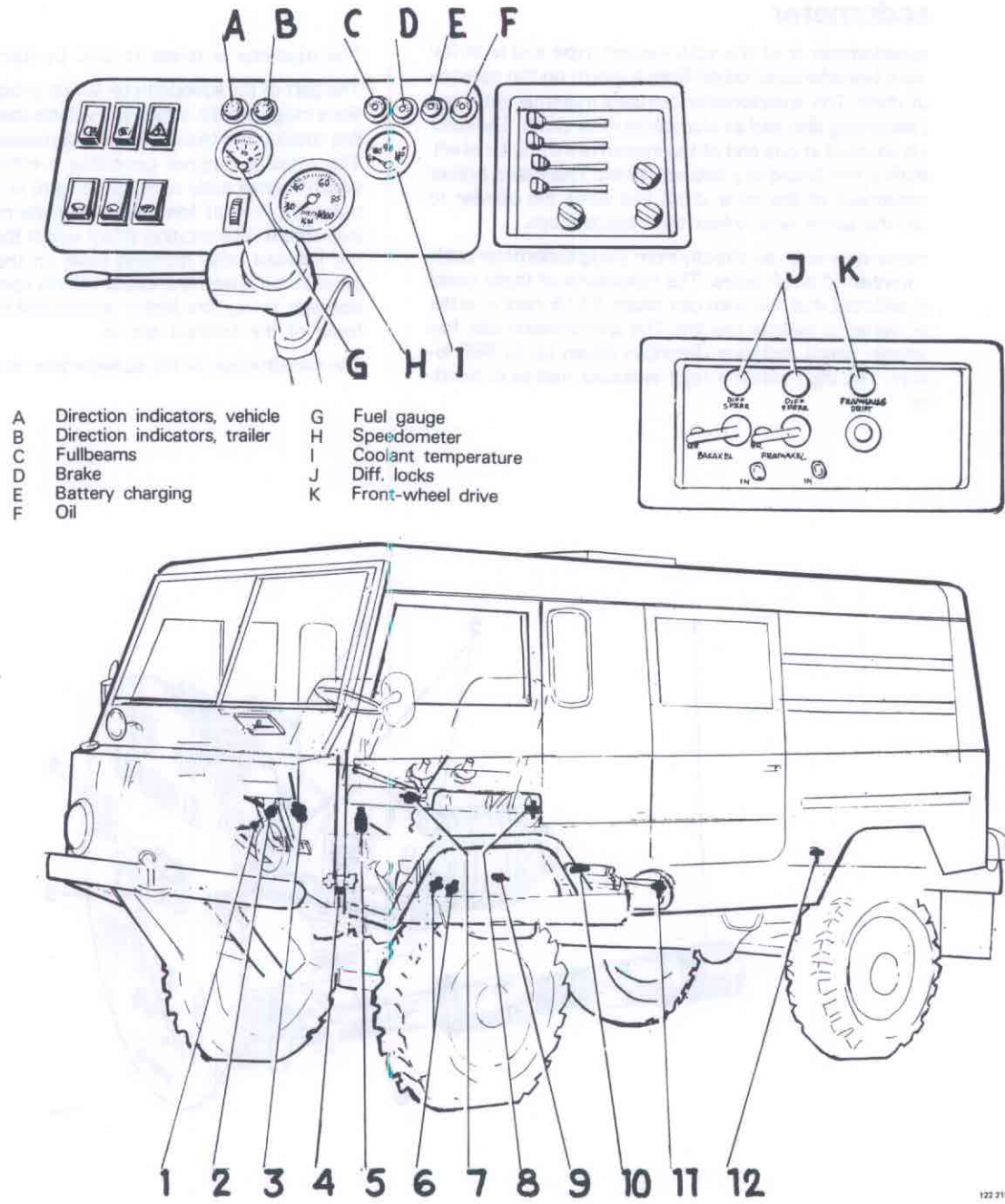


Fig. 38-1. Instruments, contacts and indicator/warning lights

- | | | | |
|---|-----------------------------|----|---------------------|
| 1 | Pedal movement | 7 | Parking brake |
| 2 | Stop lights | 8 | Coolant temperature |
| 3 | Front-wheel drive | 9 | Oil pressure |
| 4 | Brake-circuit failure | 10 | Reversing light |
| 5 | Solenoid, front-wheel drive | 11 | Front-wheel drive |
| 6 | Diff. locks | 12 | Fuel level |

Construction and Function

Speedometer

The speedometer is of the eddy-current type and is driven by a speedometer cable (speedometer cable) from a worm on the gearbox output shaft. The speedometer contains a permanent magnet mounting disc and an aluminium rotor drum. The rotor drum is situated at one end of the instrument's pointer shaft. This shaft is also linked to a balance spring. This spring brakes movement of the rotor drum and turns the pointer to zero at the same time when the vehicle stops.

The tripmeter is driven directly from the speedometer cable by a number of small gears. The reductions of these gears are selected that the wire can rotate 617.5 revs in order for the meter to register one km. The speedometer also has a counter which indicates distances driven up to 999 kilometers. The digit extreme right indicates metres in hundreds.

The tripmeter is re-set to zero by turning the small knob.

The part of the speedometer which indicates the speed functions magnetically. When the vehicle starts moving, the drive line rotates and this causes the permanent magnet to rotate. The rotating magnet generates a rotating magnetic field, which causes eddy currents to form in the rotor drum. The magnet's lines of force flow over the mounting disc of the instrument. The rotating effect which the magnetic field and the induced eddy currents have on the rotor drum is dependent on speed (increased vehicle speed causes the speedometer to register higher speed) and on the counteracting force of the balance spring.

The construction of the speedometer is shown in Fig. 38-2.

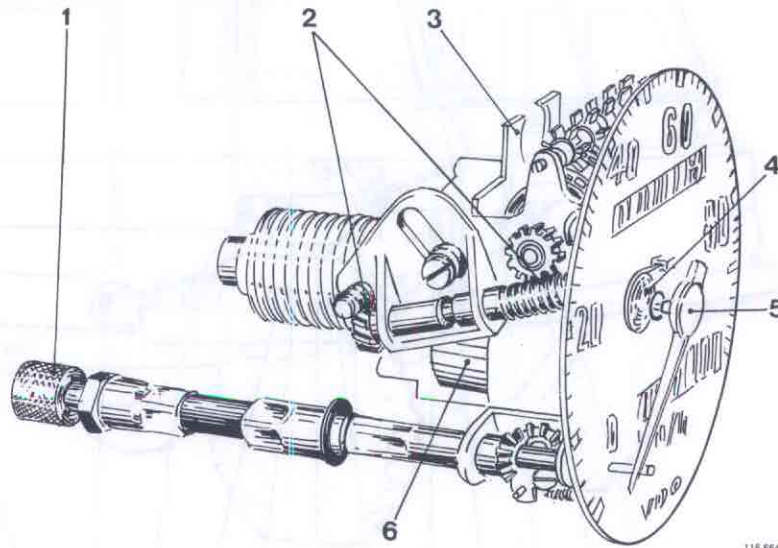


Fig. 38-2. Speedometer layout

- | | | | |
|---|---------------------------|---|----------------------------------|
| 1 | Re-set knob for tripmeter | 4 | Balance spring |
| 2 | Worm | 5 | Speedometer pointer |
| 3 | Mounting disc | 6 | Rotor drum with permanent magnet |