

# Chapter 12

## Body electrical systems

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### Degrees of difficulty

<b>Easy</b> , suitable for novice with little experience 	<b>Fairly easy</b> , suitable for beginner with some experience 	<b>Fairly difficult</b> , suitable for competent DIY mechanic 	<b>Difficult</b> , suitable for experienced DIY mechanic 	<b>Very difficult</b> , suitable for expert DIY or professional 
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### Specifications

#### System

Type . . . . . 12 volt, negative earth

#### Fuses - pre August 1989

Fuse	Component	Rating (amps)
1	Radiator fan . . . . .	30
2	Brake light . . . . .	10
3	Cigarette lighter, radio, clock, interior light, central locking, boot light (Jetta) . . . . .	15
4	Emergency light system . . . . .	15
5	Fuel pump . . . . .	15
6	Foglights (main current) . . . . .	15
7	Tail and sidelights, left . . . . .	10
8	Tail and sidelights, right . . . . .	10
9	High beam right, high beam warning lamp . . . . .	10
10	High beam, left . . . . .	10
11	Windscreen wipers and washer, headlight washer . . . . .	15
12	Rear wiper and washer, seat heater control, electric mirror control . . . . .	15
13	Rear window heating, mirror heating . . . . .	15
14	Blower, glovebox light . . . . .	20
15	Reversing lights, shift pattern illumination (automatic transmission) . . . . .	10
16	Horn . . . . .	15
17	Carburettor . . . . .	10
18	Horn (dual tone), coolant level warning lamp . . . . .	15
19	Turn signals, stop-start system, brake warning lamp . . . . .	10
20	Number plate light, foglights (switch current) . . . . .	10
21	Low beam, left, headlight range control, left . . . . .	10
22	Low beam right, headlight range control, right . . . . .	10

### Fuses - pre August 1989 (continued)

Additional fuses (In separate holders above fusebox)	Rating (amps)
Rear foglight .....	10
Electric windows .....	30
Air conditioner .....	30

### Fuses - from August 1989

Fuse	Component	Rating (amps)
1	Low beam, left .....	10
2	Low beam, right .....	10
3	Instrument and number plate lights .....	10
4	Glovebox light .....	15
5	Windscreen wash/wipe system .....	15
6	Fresh air blower .....	20
7	Side/tail lights, right .....	10
8	Side/tail lights, left .....	10
9	Heated rear window .....	20
10	Foglights .....	10
11	High beam, left .....	10
12	High beam, right .....	10
13	Horn .....	10
14	Reversing lights, heated washer jets .....	10
15	Electromagnetic cut-off, fuel pump run-on .....	10
16	Dash panel insert .....	15
17	Emergency light system .....	10
18	Fuel pump Lambda probe heating .....	20
19	Radiator fan, A/C relay .....	30
20	Brake stoplights .....	30
21	Interior light, digital clock .....	15
22	Radio system/cigarette lighter .....	10

### Relays

Type ..... See wiring diagrams at the end of this Chapter

### Bulbs

	Wattage
Headlamps .....	60/55
Sidelights .....	4
Tail lights .....	5
Stop-lights .....	21
Direction indicators .....	21
Foglight (rear) .....	21
Reversing light .....	21
Instrument lights .....	1.2

## 1 General information and precautions

### General information

The electrical system is of a 12-volt negative earth type and comprises a battery, an alternator with integral voltage regulator, a starter motor and related electrical accessories, components and wiring.

Further details of the various systems are given in the relevant Sections of this Chapter. While some repair procedures are given, the usual course of action is to renew the component concerned. The owner whose interest extends beyond mere component renewal should obtain a copy of the "Automobile Electrical & Electronic Systems Manual" which is available from the publishers of this Manual.

### Precautions

It is necessary to take extra care when working on the electrical system to avoid damage to semi-conductor devices (diodes and transistors) and to avoid the risk of personal injury. In addition to the precautions given in *Safety first!* at the beginning of this Manual, observe the following when working on the system:

- a) Always remove rings, watches, etc. before working on the electrical system. Even with the battery disconnected, capacitive discharge could occur if a component's live terminal is earthed through a metal object. This could cause a shock or nasty burn.
- b) Always disconnect the battery negative lead before working on the electrical system.
- c) Before disconnecting any wiring or removing components, always ensure that the ignition is switched off.

- d) Disconnect the battery leads before using a mains charger.
- e) Do not reverse the battery connections. Components such as the alternator or any other having semi-conductor circuitry could be irreparably damaged.
- f) If the engine is being started using jump leads and a slave battery, connect the batteries positive to positive and negative to negative. This also applies when connecting a battery charger.
- g) Never disconnect the battery terminals or alternator multi-plug connector when the engine is running.
- h) Do not allow the engine to turn the alternator when the alternator is not connected.
- i) Never test for alternator output by "flashing" the output lead to earth.
- j) The battery leads and alternator multi-plug must be disconnected before carrying out any electric welding on the vehicle.

- k) *Never use an ohmmeter of the type incorporating a hand cranked generator for circuit or continuity testing.*
- l) *When carrying out welding operations on the vehicle using electric welding equipment, disconnect the battery and alternator.*
- m) *When fitting electrical accessories it is important that they are connected correctly, otherwise serious damage may result to the components concerned. Items such as radios, tape recorders, electronic ignition systems, electronic tachometers, automatic dipping etc, should all be checked for correct polarity.*

## 2 Electrical fault-finding - general information

1 A typical electrical circuit consists of an electrical component, any switches, relays, motors, fuses, fusible links or circuit breakers related to that component and the wiring and connectors that link the component to both the battery and the chassis. To help you pinpoint an electrical circuit problem, wiring diagrams are included at the end of this Chapter.

2 Before tackling any troublesome electrical circuit, first study the appropriate wiring diagram to get a complete understanding of what components are included in that individual circuit. Trouble spots, for instance, can be narrowed down by noting if other components related to the circuit are operating properly. If several components or circuits fail at one time, the problem is probably in a shared fuse or earth connection, as more than one circuit can be routed through the same connections.

3 Electrical problems usually stem from simple causes, such as loose or corroded connections, a faulty earth, a blown fuse, a melted fusible link or a faulty relay. Visually inspect the condition of all fuses, wires and connections in a problem circuit before testing the components. Use the diagrams to note which terminal connections will need to be checked in order to pinpoint the trouble spot.

4 The basic tools needed for electrical fault-finding include a circuit tester or voltmeter (a 12-volt bulb with a set of test leads can also be used), a continuity tester, a battery and set of test leads, and a jumper wire, preferably with a circuit breaker incorporated, which can be used to bypass electrical components. Before attempting to locate a problem with test instruments, use the wiring diagram to decide where to make the connections.

### Voltage checks

5 Voltage checks should be performed if a circuit is not functioning properly. Connect one lead of a circuit tester to either the negative battery terminal or a known good earth. Connect the other lead to a connector in the circuit being tested, preferably nearest

to the battery or fuse. If the tester bulb lights, voltage is present, this means that the part of the circuit between the connector and the battery is problem-free. Continue checking the rest of the circuit in the same fashion. When you reach a point at which no voltage is present the problem lies between that point and the last test point with voltage. Most problems can be traced to a loose connection. Bear in mind that some circuits are live only when the ignition switch is switched to a particular position.

### Finding a short circuit

6 One method of finding a short circuit is to remove the fuse and connect a test lamp or voltmeter to the fuse terminals with all the relevant electrical components switched off. There should be no voltage present in the circuit. Move the wiring from side to side while watching the test lamp. If the bulb lights there is a short to earth somewhere in that area, probably where the insulation has rubbed through. The same test can be performed on each component in the circuit, even a switch.

### Earth check

7 To check whether a component is properly earthed, disconnect the battery and connect one lead of a self-powered test lamp (sometimes known as a continuity tester) to a known good earth point. Connect the other lead to the wire or earth connection being tested. If the lamp lights, the earth is sound; if not, it must be rectified.

8 The battery negative terminal is connected to earth (the metal of the vehicle body) and most systems are wired so that they only receive a positive feed, the current returning via the metal of the vehicle's body. This means that the component mounting and the body form part of that circuit and loose or corroded mountings, therefore, can cause a range of electrical faults. Note that these may range from total failure of a circuit to a puzzling partial fault. In particular, lamps may shine dimly (especially when another circuit sharing the same earth point is in operation), motors (eg. wiper motors or the radiator cooling fan motor) may run slowly and the operation of one circuit may have an apparently unrelated effect on another. Note that a poor earth may not cause the circuit's fuse to blow; in fact it may reduce the load on the fuse.

9 If an earth connection is thought to be faulty, dismantle the connection and clean back to bare metal both the bodyshell and the wire terminal or the component's earth connection mating surface. Be careful to remove all traces of dirt and corrosion, then use a knife to trim away any paint, so that a clean metal-to-metal joint is made. On reassembly, tighten the joint fasteners securely; if a wire terminal is being refitted, use serrated washers between the terminal and the bodyshell to ensure a clean and secure connection. When the connection is remade, prevent the onset of corrosion in the

future by applying a coat of petroleum jelly or silicone-based grease or by spraying on (at regular intervals) a proprietary ignition sealer or a water dispersant lubricant.

### Continuity check

10 A continuity check is necessary to determine if there are any breaks in a circuit. With the circuit switched off (ie no power in the circuit), a self-powered test lamp (sometimes known as a continuity tester) can be used to check the circuit. Connect the test leads to both ends of the circuit (or to the positive end and a good earth); if the test lamp lights, the circuit is passing current properly. If the lamp does not light, there is a break somewhere in the circuit.

11 The same procedure can be used to test a switch, by connecting the continuity tester to the switch terminals. With the switch in the relevant position, the test lamp should light.

### Finding an open circuit

12 When checking for possible open circuits, it is often difficult to locate them by sight because oxidation or terminal misalignment are hidden by the connectors; merely moving a connector on a sensor or in the wiring harness may correct the fault. Remember this if an open circuit is indicated when fault-finding in a circuit. Intermittent problems may also be caused by oxidised or loose connections.

### General

13 Electrical fault-finding is simple if you keep in mind that all electrical circuits are basically electricity flowing from the battery, through the wires, switches, relays, fuses and fusible links to each electrical component (light bulb, motor, etc.) and to earth, from where it is passed back to the battery. Any electrical problem is an interruption in the flow of electricity from the battery.

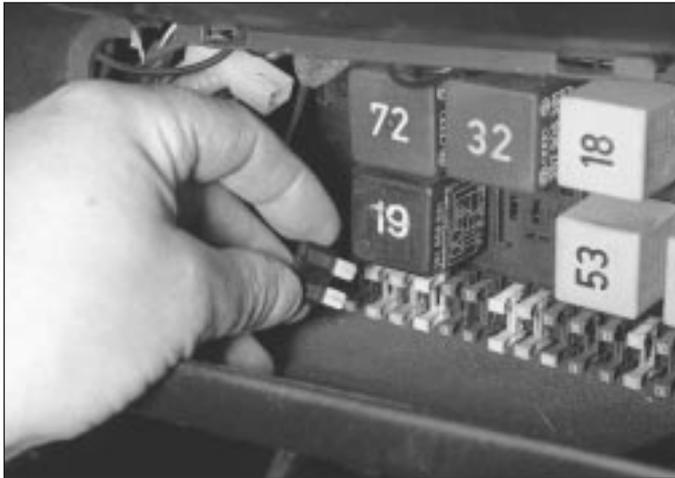
## 3 Fuses and relays - location and renewal



1 The fuses and relays are located under the fascia panel on the right-hand side (see illustration).



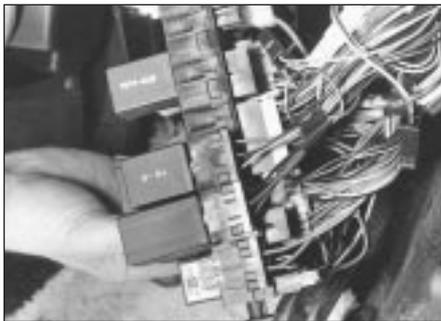
3.1 Removing fuse/relay unit cover



3.2 Removing a fuse



3.3 Removing a relay



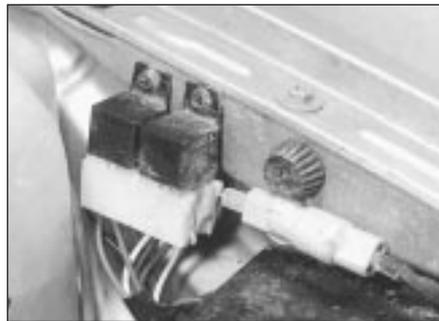
3.5 Fuse/relay unit removal, showing rear connections

2 The fuses are numbered consecutively for identification. Always renew a fuse with one of identical rating and never renew it more than once without finding out the source of the problem (see illustration).

3 All relays are of the plug-in type and are numbered for identification, though not consecutively (see illustration).

4 Relays cannot be repaired and if at all suspect, should be removed and taken to an auto-electrician for testing.

5 The fuse/relay unit holder complete can be removed by twisting the securing knob on the lower right-hand side and removing the knob.



3.6 Typical relay installation in engine compartment

Twist the slotted retainer on the left-hand side and withdraw the fuse/relay box. The various connectors on the rear face of the unit are then accessible for detachment as required (see illustration).

6 In addition to those fuses and relays located at the main fuse/relay unit, some models will have in-line fuses and relays fitted to some circuits, these being shown in the wiring diagrams at the end of this Chapter (see illustration).

#### 4 Headlamp bulbs and headlamps - removal and refitting



1 To remove a headlamp bulb, first open the bonnet and pull the connector from the rear of the headlamp (see illustration).

2 Prise off the rubber cap.

3 Squeeze the bulb retaining spring clips together and release the clip from the bulb (see illustration).

4 Withdraw the bulb but do not touch its glass with your fingers if it is to be re-used (see illustration).

5 To remove the headlamp unit, first remove the radiator grille.

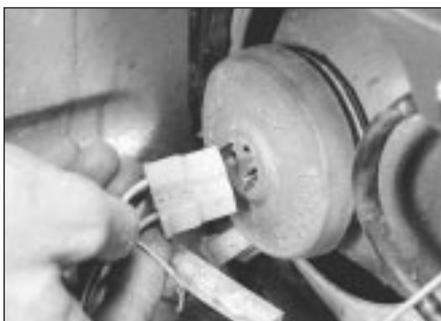
6 With the headlamp bulb removed, release the screws securing the carrier plate to the front panel and withdraw the unit.

7 Refitting is a reversal of removal. Check and, if necessary, adjust headlamp beam alignment.

#### 5 Headlamps - alignment



Refer to Chapter 1, Section 27



4.1 Detaching headlamp bulb connector



4.3 Squeeze bulb retaining clips . . .



4.4 . . . and withdraw headlamp bulb

## 6 Headlamp range control - removal and refitting



1 Where fitted, this system is designed to provide the driver with in-car headlamp adjustment to counteract the effects of heavy loading at the rear. The system operates on dipped headlamps only and the light units are raised or lowered by means of an electrically-operated motor mounted at the rear of each unit. For safety reasons an integral height adjustment limit control is fitted.

2 The range control switch can be removed in the manner described for facia switches.

3 To remove a range control motor from the rear of a headlamp unit first disconnect the battery earth lead.

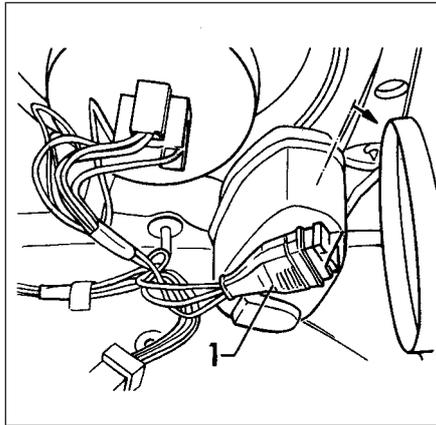
4 Pull free the plug connector from the rear of the motor unit.

5 On round headlamp units, detach the motor from the frame by twisting it to the right (clockwise) (see illustration).

6 On rectangular headlamp units, the adjuster motor on the right-hand side is disconnected by turning it to the left, whilst on the left-hand unit it must be turned to the right.

7 Undo the headlamp adjustment screw from the front (see illustration) then pull the motor from the frame to the rear for removal.

8 Refit in the reverse order of removal. Check the range control operation on completion.



6.5 Range control motor and terminal multi-connector (1) - round headlamp

Detach motor by rotating clockwise (arrowed)

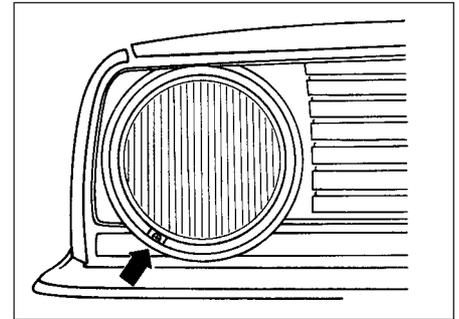
## 7 Front foglight bulb and unit - removal and refitting



1 To remove the bulb, pull back the rubber cover from the rear of the lamp unit, compress the bulb retaining spring clip and release it.

2 The bulb can now be withdrawn whilst taking care not to handle its glass with the fingers (see illustration).

3 The foglight unit can be removed in a similar manner to that described for the headlamps.



6.7 Remove headlamp adjuster screw (arrowed)

4 Refit in the reverse order of removal and check lamp operation on completion. If necessary, adjust beam alignment by means of the adjustment screws (see illustration).

5 Foglight alignment should be carried out by a VW dealer with the proper beam setting equipment. In an emergency, follow the procedure given for the headlamps.

## 8 Lamp bulbs - renewal



**Note:** Lamp bulbs should always be renewed with ones of similar type and rating, as specified

### Sidelights

1 Open the bonnet and pull the connector from the sidelight bulbholder located beneath the headlamp bulb.

2 Turn the bulbholder anti-clockwise and remove it from the reflector (see illustration).

3 Depress and twist the bulb to remove it.

### Front indicator lights

4 Remove the cross-head screws and withdraw the lens (see illustration).

5 Depress and twist the bulb to remove it (see illustration).

6 If necessary, the lamp unit can be withdrawn from the bumper and the wiring disconnected (see illustration).

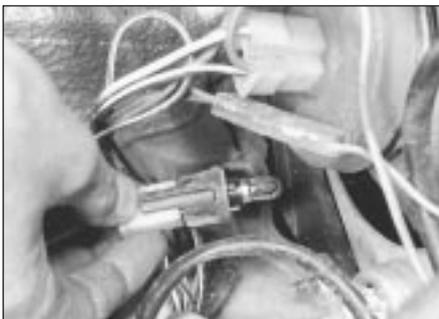
7 When refitting the lens, ensure that the gasket is correctly located.



7.2 Bulb and holder removal from foglight



7.4 Foglight beam alignment adjuster screws (arrowed)



8.2 Sidelight bulb and holder removal



8.4 Front indicator lens removal



8.5 Front indicator lamp bulb



8.6 Front indicator lamp unit removal

### Rear lights

8 Open the tailgate or bootlid, as applicable. Compress the bulb carrier securing tabs to release the bulb carrier and withdraw it for bulb inspection/renewal (see illustration).

9 Depress and twist the relevant bulb to remove it.

### Number plate light

10 Remove the cross-head screws and withdraw the lens and cover (see illustration).

11 Depress and twist the bulb to remove it.

12 When refitting the lens and cover, ensure that the lug is correctly located.

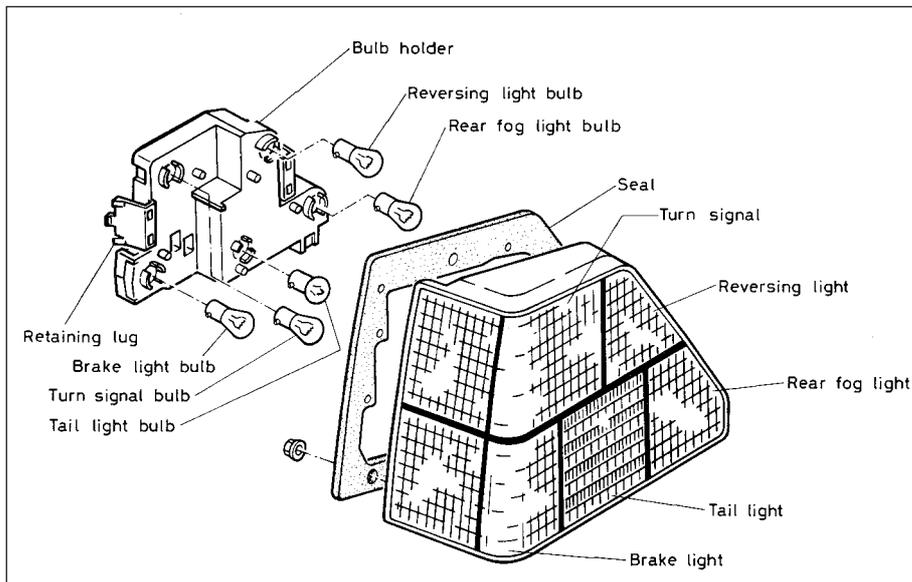
### Interior light

13 Using a screwdriver, depress the spring clip then withdraw the light from the roof (see illustrations).

14 Release the festoon type bulb from the spring terminals.



8.10 Number plate lens removal



8.8 Rear combination light unit components

15 When fitting the new bulb, ensure that the terminals are tensioned sufficiently to retain the bulb. The switch end of the light should be inserted into the roof first.

### Luggage compartment light and glovebox light

16 Prise free and withdraw the lens. The bulb is retained in the lens and can be pulled free for renewal (see illustration).

17 If renewing the lens, detach the wiring spade connectors from the lens.



8.13a Interior light removal - 1.3 litre

### Instrument panel light

18 Remove the instrument panel.

19 Twist the bulbholder through 90° to withdraw it (see illustration) then pull out the bulb.

### Facia switch lights

20 Remove the relevant facia switch.

21 Remove the bulb from the switch or connector as applicable.

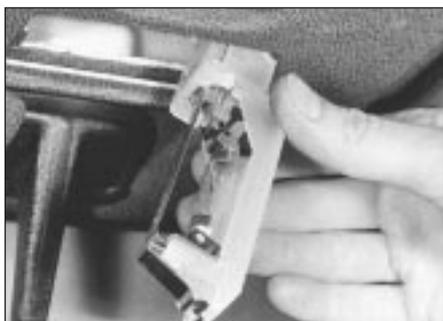
## 9 Direction indicators and hazard flasher system - operation and testing



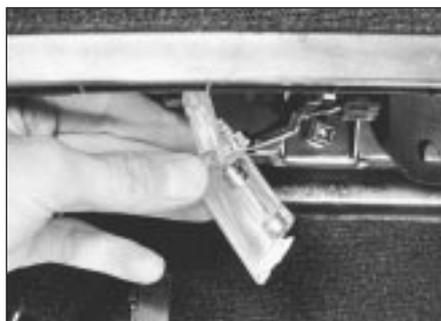
1 The direction indicators are controlled by the left-hand column switch.

2 A switch on the facia board operates all four flashers simultaneously. Although the direction indicators will not work when the ignition is switched off, the emergency switch overrides this and the flasher signals continue to operate.

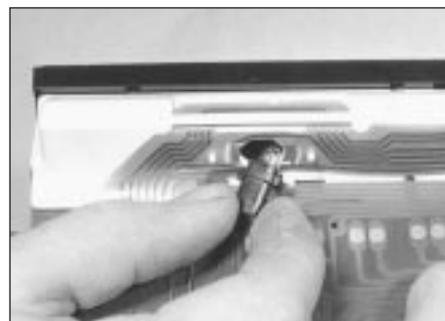
3 All circuits are routed through the relay on the console and its fuse.



8.13b Interior light removal - 1.8 litre



8.16 Luggage compartment lamp lens removal



8.19 Instrument panel light bulb and holder removal

4 If the indicators do not function correctly, a series of tests may be done to find which part of the circuit is at fault.

5 The most common fault is in the flasher lamps, defective bulbs and dirty or corroded contacts or mountings. Check these first, then test the emergency switch. Remove it from the circuit and check its operation.

6 If the switch is in good order, refit it and again turn on the emergency lights. If nothing happens, then the relay is not functioning properly and it should be renewed.

7 If the lights function on emergency but not on operation of the column switch, then the wiring and column switch are suspect.

### 10 Warning lamp cluster - removal and refitting



1 Disconnect the battery earth lead.  
2 Remove the facia control switches then, reaching through the vacant switch apertures in the facia, compress the retainers and push out the warning lamp cluster unit (see illustration).

3 Disconnect the multi-plug for full cluster removal.

4 Withdraw the warning light bulbholder from the cluster and pull free the bulb for inspection and, if necessary, renewal (see illustration).

5 Where two or more warning lamp bulbs are contained in a single mounting plate, the plate unit complete must be renewed as it is not possible to renew a single bulb in this instance.

6 Refit in the reverse order of removal. On completion, check the operation of the switches and warning light bulb(s).

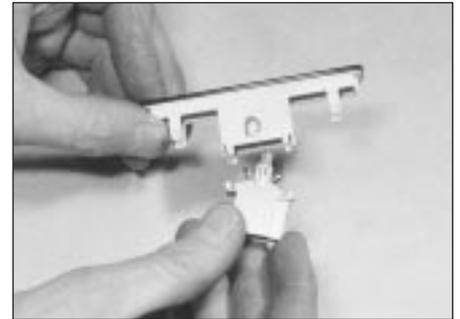
### 11 Ignition switch/steering column lock - removal and refitting



This procedure is described in Chapter 10 for removal and refitting of the steering lock.



10.2 Warning lamp cluster removal



10.4 Warning lamp cluster bulbholder removal

### 12 Combination switches - removal and refitting



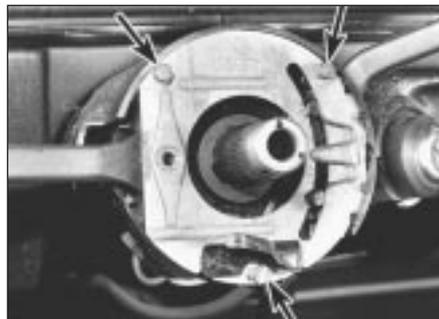
1 Remove the steering wheel.  
2 Disconnect the battery negative lead.  
3 Remove the screws and withdraw the steering column lower shroud.

4 Remove the three screws securing the combination switch (see illustration).

5 Disconnect the multi-plugs (see illustration).

6 Rotate the indicator switch clockwise and withdraw it, noting location of the plastic retaining arms (see illustration).

7 Withdraw the wiper control switch from the column. Full removal of the switch of GTI models will necessitate detaching the additional wire from its connector under the dash panel (see illustrations).



12.4 Combination switch retaining screws (arrowed)

8 Refitting is a reversal of the removal procedure. Check that the indicator switch is centralised before fitting the steering wheel otherwise the cancelling cams could be damaged.

9 Refit the steering wheel.

10 On completion, check the operation of the switches.

### 13 Facia switches - removal and refitting



1 Disconnect the battery earth lead.

2 To remove a rocker type switch such as the lighting switch, press the switch to the ON position then insert a suitable screwdriver blade into the notch at the base of the switch, and prise the switch free from the facia (see illustration).



12.5 Combination switch multi-plug connections



12.6 Removing indicator switch . . .



12.7a . . . and wiper control switch



12.7b Additional under dash wiring connection and insulator - GTI



13.2 Facia switch removal

3 On other switch types such as the heated rear seat switch, simply lever the switch free from the bottom edge (see illustration).

4 With the switch withdrawn, detach the wiring connector. Where applicable, warning light bulb holders can be withdrawn from the switch and the bulb removed.

5 Refitting is a reversal of the removal procedure. Check the switch for satisfactory operation on completion.

#### 14 Courtesy and luggage compartment light switches - removal and refitting



1 Disconnect the battery negative lead.  
2 Open the door, boot lid or tailgate (as applicable) and unscrew the cross-head screw from the switch (see illustration).

3 Withdraw the switch and disconnect the wiring. Tie a loose knot in the wire to prevent it from dropping into the door pillar (see illustration).

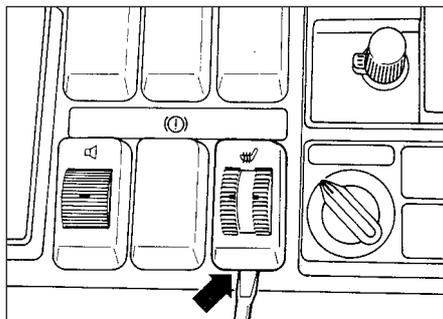
4 Check the switch seal for condition and renew it, if necessary.

5 Refitting is a reversal of removal.

#### 15 Oil pressure warning switches - testing



1 Some models are equipped with an optical and acoustic oil pressure warning system. This system incorporates two oil pressure switches, a 0.3 bar switch with brown insulation on the



13.3 Prise free switch from bottom edge

cylinder head and a 1.8 bar switch with white insulation on the oil filter head.

2 On starting the engine, as soon as the oil pressure rises above 0.3 bar, the oil pressure warning light will go out. At engine speeds above 2000 rpm, the high pressure switch comes into operation and should the oil pressure drop below 1.8 bar, the oil warning light will come on and the buzzer will sound.

3 Testing each switch should be done by substitution. Little can be done by way of maintenance and your VW dealer should be consulted if the system malfunctions.

#### 16 Instrument panel cluster - removal and refitting



1 Disconnect the battery earth lead.  
2 Remove the facia panel.  
3 Remove the instrument panel retaining screws (one each side at the top) (see illustration).

4 Prise the panel away, tilting from the top edge. Reach behind the panel and disconnect the speedometer cable (see illustration) and, where applicable, the vacuum hose from the vacuum sender. Detach the wiring multi-connectors from the rear lower edge then lift the instrument panel out whilst taking care not to damage the printed circuit on its rear face.

5 The individual circuits of the printed circuit foil can be checked for continuity using an ohmmeter. For circuit identification, refer to the appropriate wiring diagram.



14.2 Tailgate actuated luggage compartment light switch

6 Refitting is a reversal of the removal sequence. Ensure that all connections are securely made and check instruments for satisfactory operation on completion.

#### 17 Instrument panel - dismantling, testing and reassembly



##### Dismantling

1 Remove the instrument panel cluster.  
2 Remove the relevant instrument (see illustrations) whilst taking particular care not to damage the printed circuit foil.

##### Gearchange/consumption indicator

3 If renewing the gearchange/consumption indicator, avoid touching the back of the gauge. Removal necessitates detaching the printed circuit and the vacuum sender unit then undoing the three securing screws (see illustration). Renew the diode (LED) or consumption indicator unit, as necessary.

##### Clock - normal type

4 When renewing the normal type clock (which incorporates the fuel gauge), it is important to ensure that the correct printed circuit connections are made when refitting (see illustration).

##### Clock - digital type

5 The digital type clock is secured by two retaining screws. When removing the clock, take care not to allow the adjuster pins for the hours and minutes to fall out.



14.3 Door courtesy light switch removal



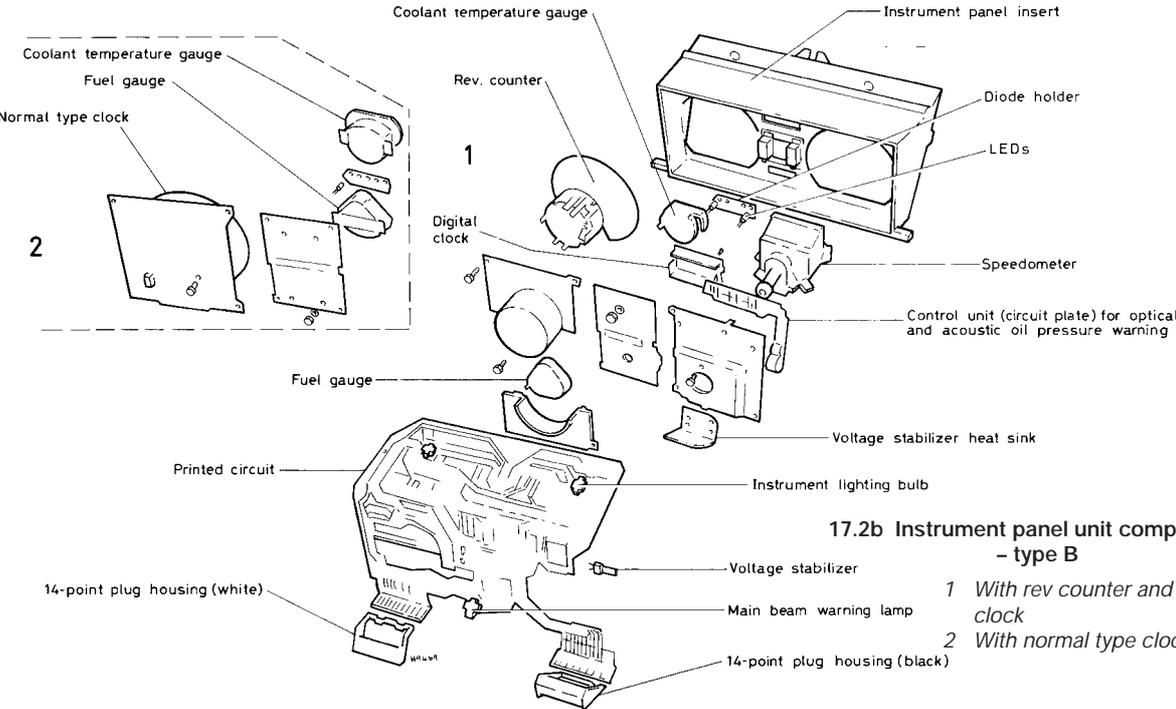
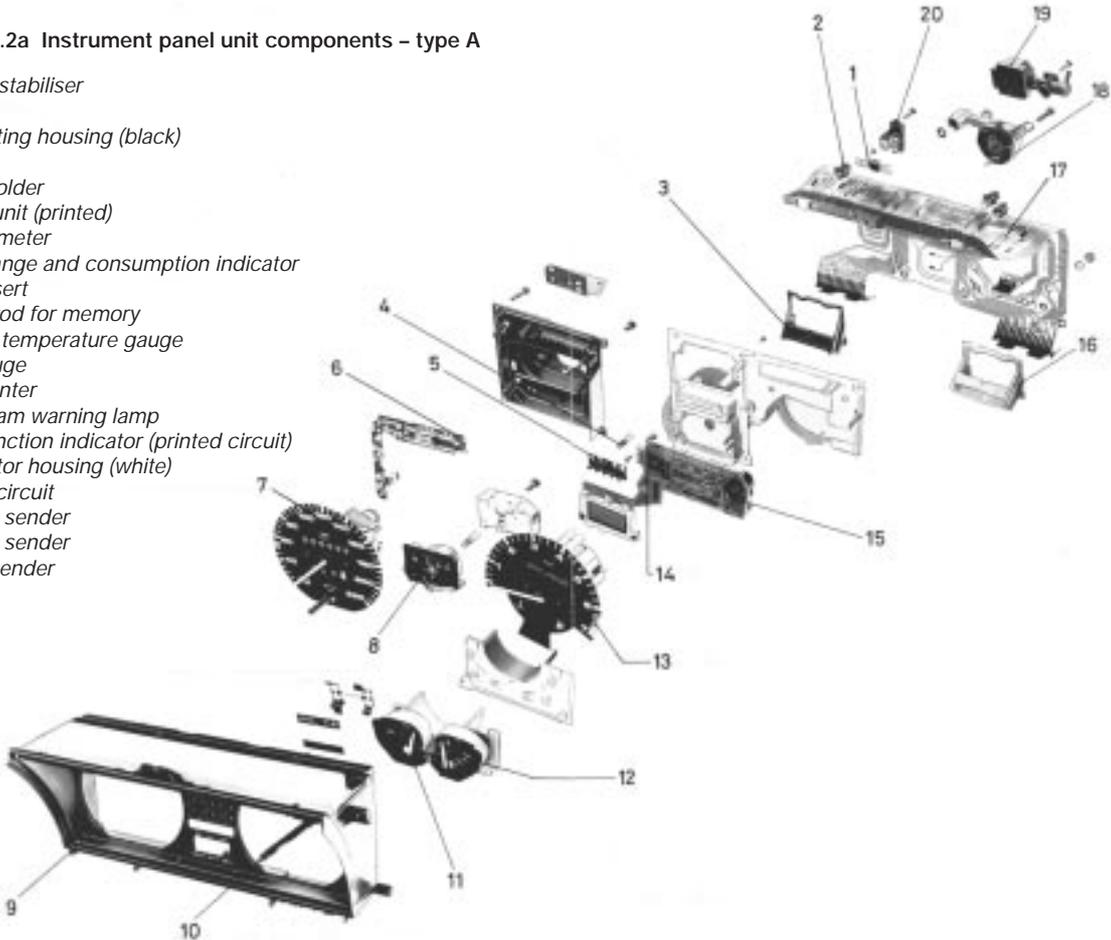
16.3 Instrument panel screw removal



16.4 Disconnect speedometer cable

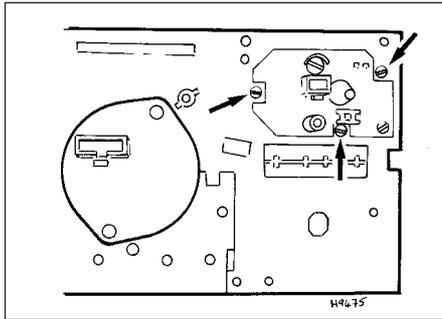
**17.2a Instrument panel unit components - type A**

- 1 Voltage stabiliser
- 2 Bulb
- 3 Connecting housing (black)
- 4 LED's
- 5 Diode holder
- 6 Switch unit (printed)
- 7 Speedometer
- 8 Gearchange and consumption indicator
- 9 Dash insert
- 10 Switch rod for memory
- 11 Coolant temperature gauge
- 12 Fuel gauge
- 13 Rev counter
- 14 High beam warning lamp
- 15 Multi-function indicator (printed circuit)
- 16 Connector housing (white)
- 17 Printed circuit
- 18 Vacuum sender
- 19 Vacuum sender
- 20 Speed sender

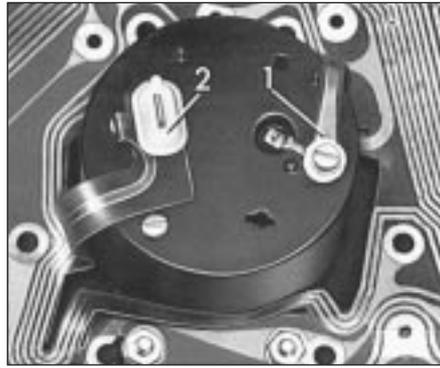


**17.2b Instrument panel unit components - type B**

- 1 With rev counter and digital clock
- 2 With normal type clock

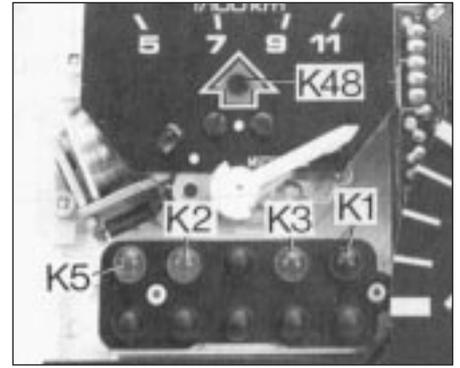


17.3 Gearchange and fuel indicator unit retaining screws (arrowed)



17.4 Normal type clock connections

- 1 Earth connection
- 2 Plus (+) live connection



17.6 LED connections in warning lamp housing

- K1 Main beam (blue)
- K2 Alternator (red)
- K3 Oil pressure (red)
- K5 Indicators (green)
- K48 Gearchange indicator (yellow)

**LED indicators**

6 The warning lamp LED indicators in the lamp housing are positioned as shown (see illustration). When renewing the LEDs, each diode can be pulled free from the retainer plate. Note that one of the connector prongs is wider. This is the negative connection and it is important that it is correctly refitted. If necessary, the diode holder unit can be removed by carefully levering it free from the warning lamp housing .

**Printed circuit foil**

7 If renewing the printed circuit foil, it should be noted that a common type may be supplied for all models. If fitting a new printed circuit foil to the dash insert on models with a normal type clock, it may be necessary to cut off the connector pins used for the digital clock and vice versa for models with the digital clock. Check this with your supplier.

**Plug housing**

8 To remove the plug housing from the

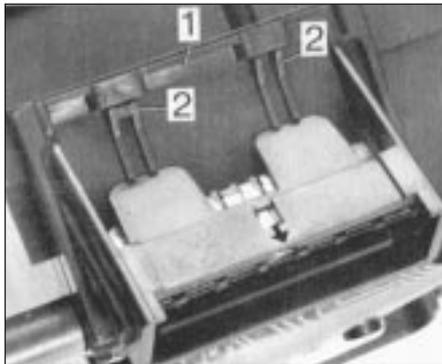
instrument panel insert, use a screwdriver to press the plastic rib on the housing over the engagement lugs and pull the housing with printed circuit in the direction of the arrow (see illustration). The plug housing can be removed from the printed circuit by pressing free the engagement lugs and pulling the housing away from the printed circuit in the direction of the arrow shown (see illustration).

**Tachometer/VDO multi-function indicator**

9 If removing the tachometer, first remove the gearshift and fuel consumption indicator then undo the two retaining screws (see illustration) and remove the tachometer, together with the multi-function indicator (printed circuit). The VDO type multi-function indicator can then be removed by undoing the retaining screws, pressing the retaining lugs from the printed circuit and withdrawing the indicator unit (see illustration).

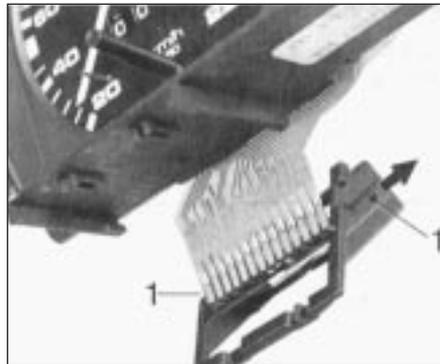
**Motometer multi-function indicator**

10 The Motometer type multi-function indicator is removed in a similar manner to that given for the VDO type indicator (see illustration).



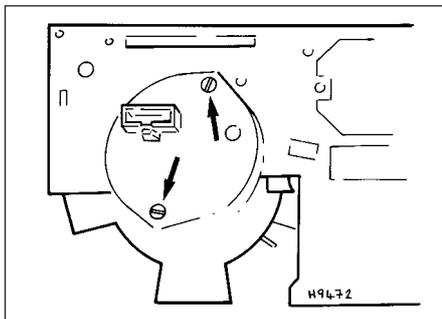
17.8a Plug housing detachment from instrument panel insert

- 1 Plastic rib
- 2 Engagement lugs
- Pull housing in direction of arrow

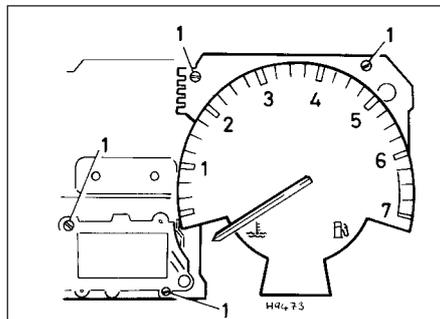


17.8b Plug housing removal from printed circuit

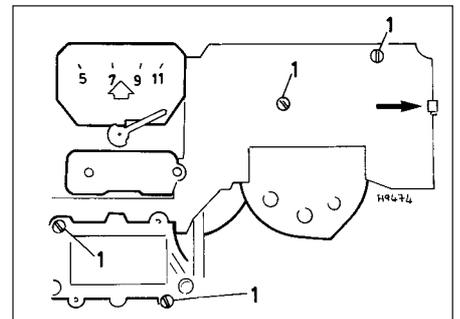
- 1 Engagement lugs
- Pull housing in direction of arrow



17.9a Tachometer retaining screws (arrowed)



17.9b Multi-function indicator (VDO type) and retaining screws (1)



17.10 Multi-function indicator (Motometer type) and retaining screws (1)

## Component testing

### Voltage stabiliser

**11** To test the voltage stabiliser, connect a voltmeter between the terminals shown (see illustration) with a 12 volt supply to the remaining terminal. A constant voltage of 10 volts must be registered. If the voltage is above 10.5 volts or below 9.5 volts renew the voltage stabiliser.

### Fuel gauge

**12** The accuracy of the fuel gauge can be checked by draining the fuel tank and then adding exactly 5 litres of fuel. After leaving the ignition switched on for at least two minutes the fuel gauge needle should be level with the upper edge of the red reserve zone. If not, either the fuel gauge or tank unit is faulty.

### Printed circuits

**13** The individual circuits of the printed circuit foil can be checked for continuity using an ohmmeter and referring to the appropriate wiring diagram.

### Reassembly

**14** Reassembly of the instrument panel is a reversal of the dismantling procedure.

## 18 Facia trim panel - removal and refitting



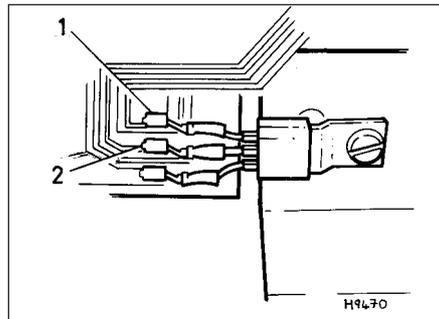
- 1** Disconnect the battery earth lead.
- 2** To improve accessibility, remove the steering wheel.



**18.6a** Facia trim panel retaining screw through fader control aperture



**18.6b** Remove instrument panel retaining screws at top



**17.11** Voltage stabiliser test terminals

Connect a voltmeter between 1 and 2

- 3** Remove the radio.
- 4** Pull free the heater/fresh air control lever knobs, then release the control panel retaining clips around the outer edge and pull out the panel. Detach the wiring multi-connectors.
- 5** Remove the lower switches from the facia panel and where applicable, remove the blank pads by prising them free.
- 6** Unscrew the facia trim panel retaining screws from the following locations:
  - a) Light switch aperture
  - b) Top inner edge of radio aperture
  - c) Fader control (or blank) aperture (see illustration)
  - d) Heater control panel aperture
  - e) Top of the instrument panel (see illustration)
  - f) Top left side of panel
- 7** Partially withdraw the panel and detach any remaining switch lead multi-connectors. Remove the facia panel (see illustration).
- 8** Refit in the reverse order of removal, ensuring that all wiring connections are securely made.
- 9** On completion, check for correct operation of the various switches and controls.

## 19 Multi-function indicator - operation and testing



Some models are equipped with a multi-function indicator consisting of an electronic processor and digital display unit.



**18.7** Facia trim panel removal

With the ignition switched on, the following information can be accessed by repeatedly pressing the MFA recall button on the end of the windscreen wiper control stalk.

- Current time
- Driving time
- Distance driven
- Average speed
- Average fuel consumption
- Engine oil temperature
- Ambient temperature

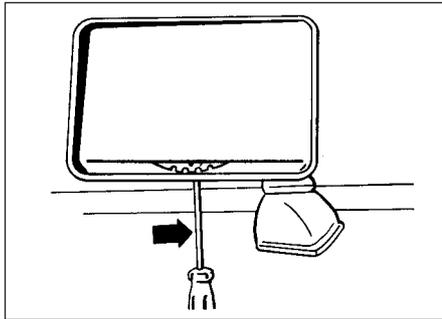
Should a fault occur in the system, the associated wiring should be checked for security and damage, particularly where it connects to the various sensors. Further checks should be made by a VW dealer using the special test instruments necessary.

## 20 Gearchange and consumption gauge - operation

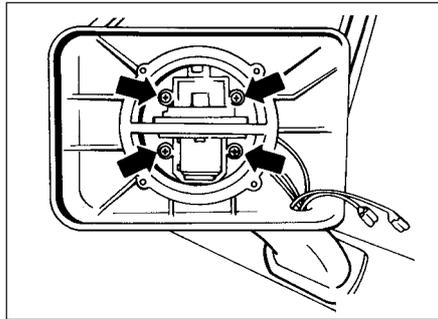
- 1** When fitted, the gearchange and consumption gauge is fitted in the instrument panel in place of the coolant temperature gauge.
- 2** The gearchange indicator lights up in all gears except top gear when better economy without loss of power can be obtained by changing up to a higher gear. The indicator does not operate during acceleration or deceleration, or on carburettor engines when the engine is cold.
- 3** The gearchange indicator light goes out when a higher gear is engaged.
- 4** On automatic transmission models, the gearchange indicator is non-operational since all forward gears are automatically changed in accordance with engine speed/output and vehicle speed.
- 5** The fuel consumption indicator operates only in top gear (D in automatic transmission models) and indicates the actual fuel consumption in mpg.
- 6** The gearchange and consumption gauge is operated by a switch on the gearbox and a sender in the vacuum line to the distributor (see illustration).



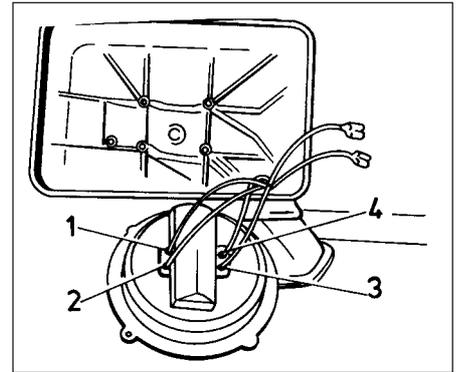
**20.6** Fuel consumption gauge sender unit



23.2 Turn retainer anti-clockwise for electrically-operated door mirror removal

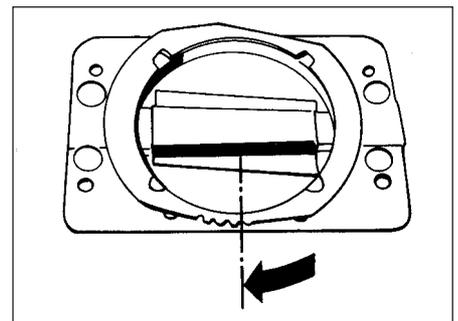


23.4 Mirror motor retaining screws (arrowed)



23.7 Door mirror wiring identification

- |         |         |
|---------|---------|
| 1 Blue  | 3 White |
| 2 Brown | 4 Black |



23.8 Rotate retainer clockwise before fitting glass

### 21 Cigarette lighter - removal and refitting



- 1 Disconnect the battery negative lead.
- 2 Remove the lower facia panel then reach up and disconnect the wiring from the cigarette lighter.
- 3 Remove the retaining ring and withdraw the cigarette lighter from the facia.
- 4 Refitting is a reversal of removal.

### 22 Speedometer cable - removal and refitting



- 1 Open the bonnet and then reach down and unscrew the speedometer cable nut from the transmission.
- 2 Withdraw the instrument panel far enough to disconnect the cable.
- 3 Remove the air cleaner.
- 4 Carefully unclip and detach the plastic cover from the top edge of the bulkhead. Pull the speedometer cable through the bulkhead and withdraw it from the engine compartment side.
- 5 Refitting is a reversal of removal. Ensure that the grommet is correctly fitted in the bulkhead and that there are no sharp bends in the cable. Do not grease the cable ends.

### 23 Electrically-operated door mirror motor - removal and refitting



- 1 Disconnect the battery earth lead.
- 2 Release the mirror glass by rotating the retainer anti-clockwise with a suitable screwdriver (see illustration).
- 3 Remove the mirror and disconnect the wiring.
- 4 Undo the four retaining screws and withdraw the mirror motor (see illustration). Detach the wiring from the motor.
- 5 Carefully lever free the door mirror adjuster switch from the trim panel and withdraw it so that the multi-connector plug can be detached.

6 Further removal of the wiring will necessitate door trim removal.

7 Refitting is a reversal of the removal procedure. Note that the mirror motor wires are colour-coded for correct reconnection (see illustration).

8 When refitting the mirror glass, rotate the retainer in a clockwise direction to its full extent then carefully insert the glass into its housing (see illustration).

### 24 Horn - removal and refitting



1 If a single horn is fitted it will be located behind the radiator grille. On models with two horns the additional high tone horn is located under the forward section of the front left-hand wheel arch (see illustrations).

2 To remove the horn, first disconnect the battery negative lead.

3 For access to the low tone horn, remove the radiator grille.

4 Unscrew the mounting bolt, disconnect the wires and withdraw the horn.

5 If the horn emits an unsatisfactory sound, it may be possible to adjust it by removing the sealant from the adjusting screw and turning it one way or the other.

6 Refitting is a reversal of removal. Check that the horn(s) operate in a satisfactory manner.



24.1a Single horn location behind front grille



24.1b High tone horn location - twin horn installation

### 25 Wiper blades - renewal



Refer to "Weekly Checks"

### 26 Wiper arms - removal and refitting



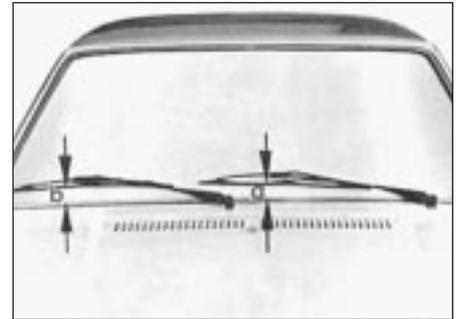
- 1 Ensure that the wiper arms are in their parked position then remove the wiper blade.
- 2 Lift the hinged cover and unscrew the nut (see illustration).



26.2 Undo wiper arm nut . . .



26.3 . . . and withdraw arm from spindle



26.5 Windscreen wiper blade setting positions

$a = 55.0 \text{ mm}$

$b = 59.0 \text{ mm}$

3 Ease the wiper arm from the spindle, taking care not to damage the paintwork (see illustration).

4 Refitting is a reversal of removal.

5 In the parked position, the end of the wiper arm (ie. middle of the blade), should be positioned as shown (see illustration).

6 On the rear window, the dimension should be measured at the points shown (see illustration).

3 Unscrew the nut and remove the crank from the motor spindle.

4 Disconnect the wiring multi-plug (see illustration).

5 Unscrew the bolts and withdraw the wiper motor from the frame.

6 Refitting is a reversal of removal. When fitting the crank to the spindle (motor in parked position), ensure that the marks are aligned (see illustration).

**27 Windscreen wiper motor - removal and refitting**



1 Open the bonnet and disconnect the battery negative lead.

2 Pull the weatherstrip from the front of the plenum chamber and remove the plastic cover.



27.4 Windscreen wiper motor showing multi-plug connection and retaining bolts

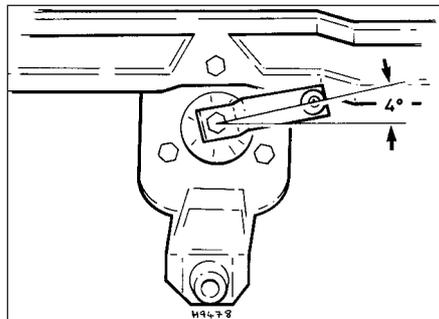
**28 Rear window wiper motor - removal and refitting**



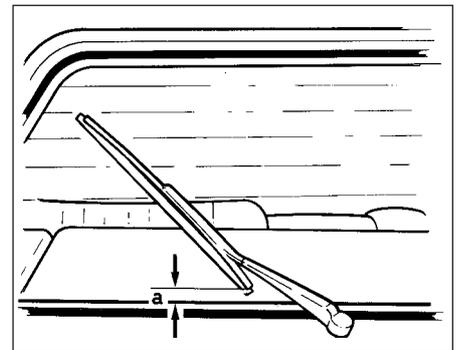
1 Disconnect the battery negative lead.

2 Open the tailgate and prise off the inner trim panel.

3 Remove the wiper arm and unscrew the outer nut. Remove the spacers.



27.6 Windscreen wiper motor bellcrank angle (motor at rest)



26.6 Rear window wiper adjustment position

$a = 15.0 \text{ mm}$

4 Undo the bearing retaining bolts and the motor mounting bolts. Withdraw the motor and disconnect the wiring plug (see illustrations).

5 If detaching the crank and connecting rod from the wiper motor pivot, mark a corresponding alignment position across the crank arm and pivot end face. Undo the nut to detach the crank arm.

6 The wiper motor is secured to the mounting by three bolts.

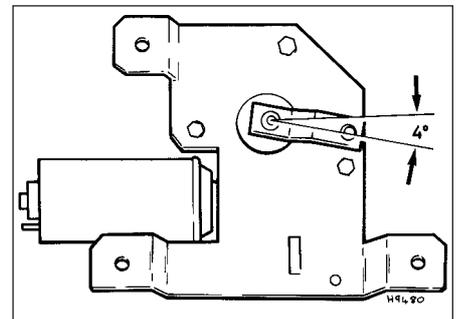
7 Refitting is a reversal of the removal procedure. Correctly align the crank arm when refitting so that the wiper arm will park correctly (see illustration).



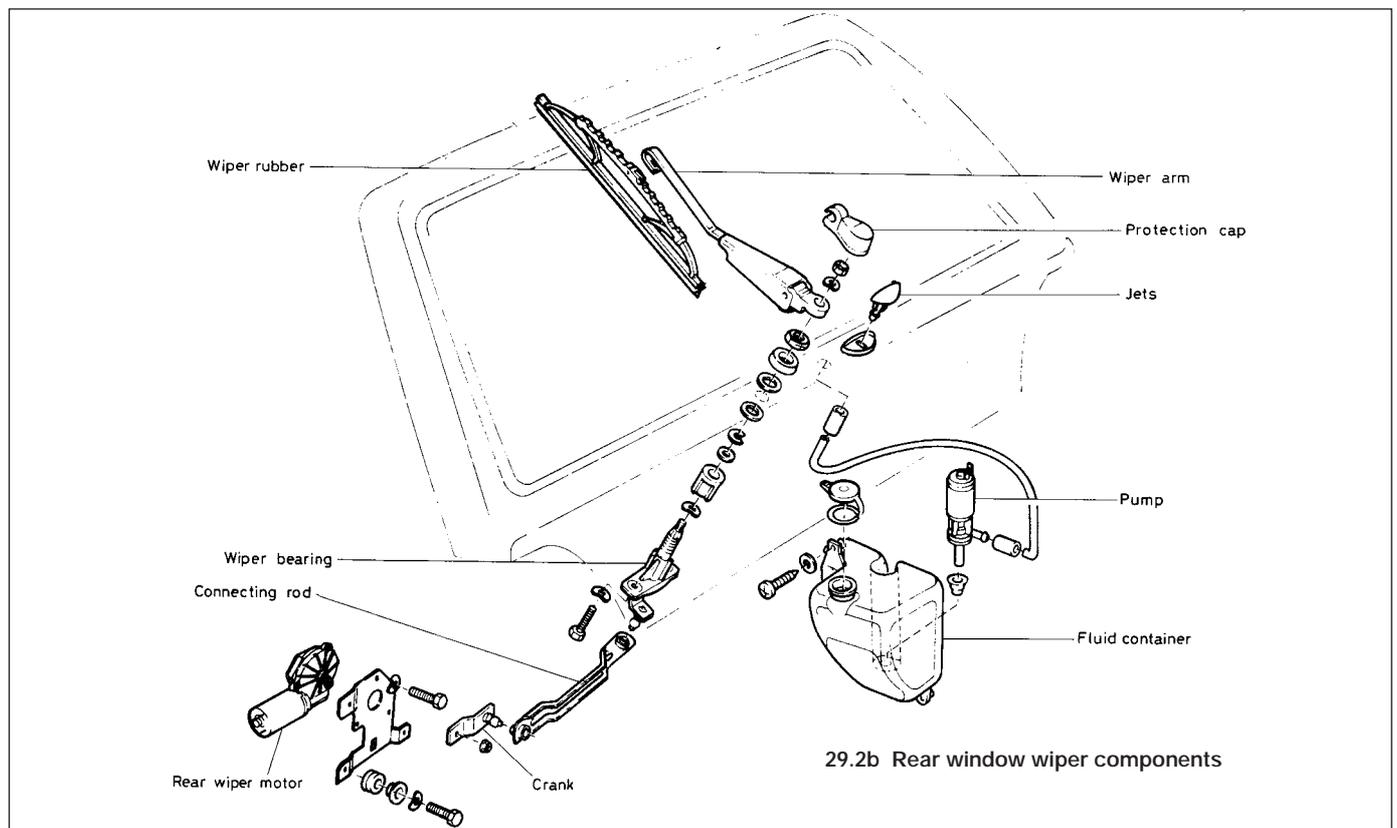
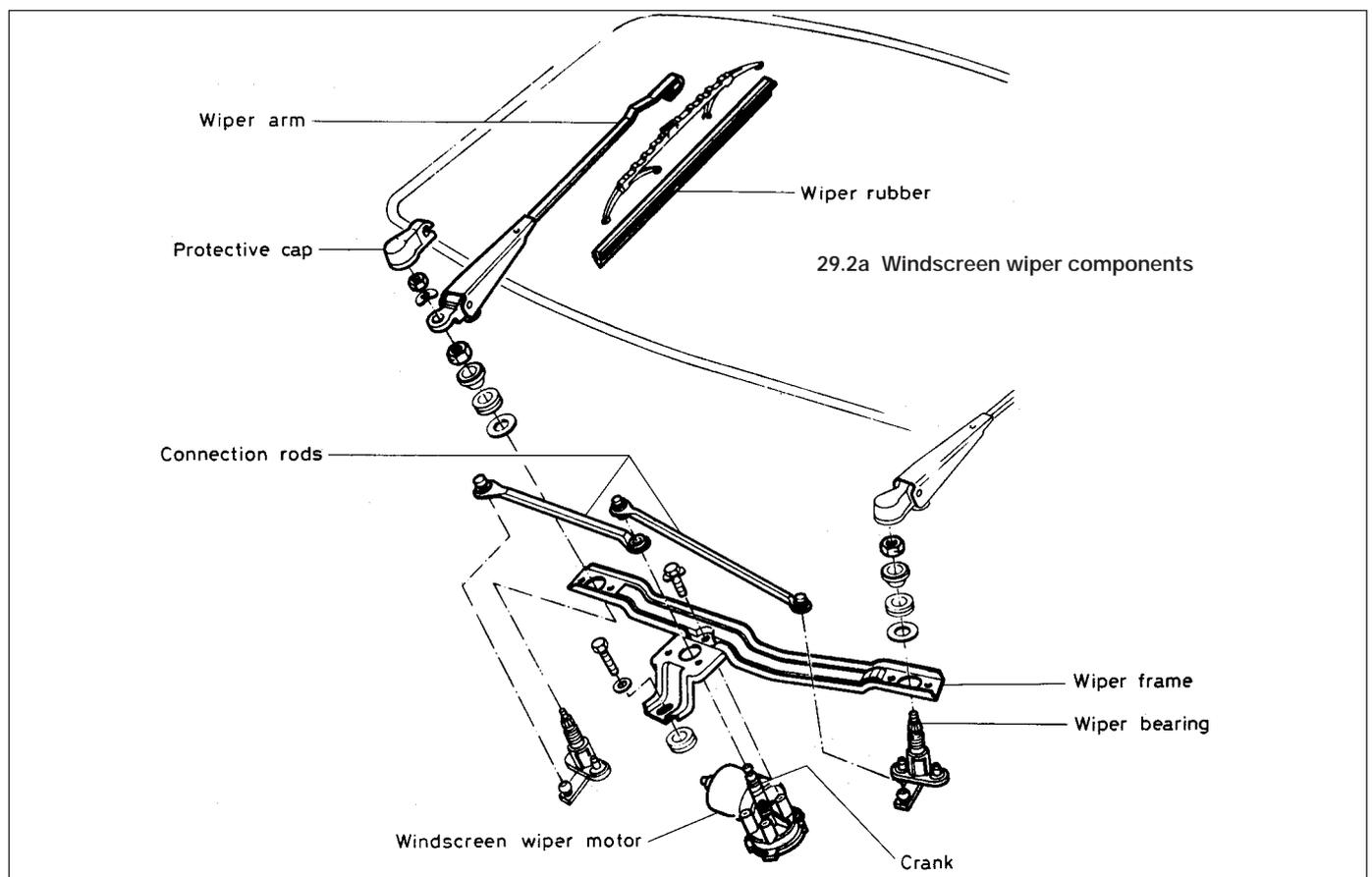
28.4a Rear wiper bearing mounting and connecting rod



28.4b Rear wiper motor mounting in tailgate



28.7 Rear wiper motor bellcrank angle





30.1 Windscreen washer pump and wire connector



30.2 Rear window washer reservoir unit location

**29 Windscreen wiper linkage - removal and refitting**



- 1 Disconnect the battery negative lead.
- 2 Remove the wiper arms, then unscrew the bearing nuts and remove the spacers (see illustrations).
- 3 Pull the weatherstrips from the front of the plenum chamber and remove the plastic cover.
- 4 Disconnect the wiring multi-plug.
- 5 Unscrew the frame mounting bolt, then withdraw the assembly from the bulkhead.
- 6 Prise the pullrods from the motor crank and bearing levers.
- 7 Unbolt the wiper motor from the frame.
- 8 Refitting is a reversal of removal. Lubricate the bearing units and pullrod joints with molybdenum disulphide grease.

**30 Windscreen and headlamp washer system - pump renewal**



**Pre 1986**

- 1 The windscreen washer fluid reservoir is located on the left-hand side of the engine

compartment. The pump is fitted to the side of the reservoir (see illustration).

- 2 The rear window washer reservoir is located on the right-hand side rear corner of the luggage compartment. The pump is attached to the side of the reservoir (see illustration).

- 3 In either case, remove the pump by disconnecting its electrical connection and pulling the pump upwards out of the reservoir orifice. Be prepared for loss of water from the reservoir.

- 4 To fit the pump, locate a new seal in the reservoir orifice and push the pump into it so that it is firmly home. Reconnect the electrical connection.

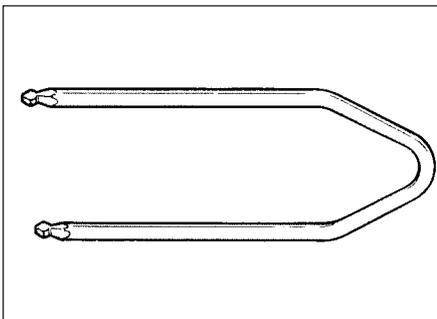
**From 1986**

- 5 From early 1986, the washer system is modified and now has a single reservoir and pump located in the engine compartment, with a plastic tube to the rear window incorporated in the rear wiring loom. The wiper motor switch incorporates two sets of contacts which energise the pump with opposite polarities, causing rotation of the pump vane in two alternative directions. Using in-line non-return valves, water is directed either to the windscreen or rear window according to which direction the pump is rotating.

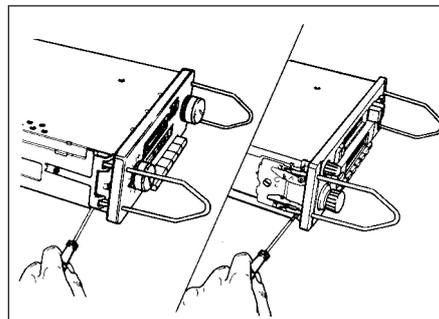
**31 Radio/cassette player - removal and refitting**



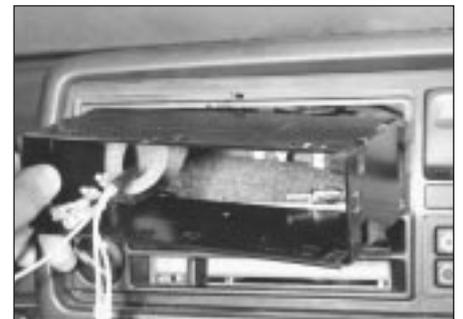
- 1 Disconnect the battery earth lead.
- 2 To withdraw the radio/cassette unit from its aperture, you will need to fabricate a pair of U-shaped extractors from wire rod of suitable gauge to insert into the withdrawal slots on each side of the unit (see illustration).
- 3 Insert the withdrawal tools then, pushing each outwards simultaneously, pull them evenly to withdraw the radio/cassette unit. It is important that an equal pressure is applied to each tool as the unit is withdrawn.
- 4 Once withdrawn from its aperture, disconnect the aerial cable, the power lead, the aerial feed, the speaker plugs, the earth lead and the light and memory feed (where applicable).
- 5 Push the retaining clips inwards to remove the removal tool from each side (see illustration).
- 6 The radio/cassette container box is secured by locking tabs. To remove the container box, bend back the tabs and withdraw the box (see illustration).
- 7 Refit in the reverse order of removal. The withdrawal tools do not have to be used, simply push the unit into its aperture until the securing clips engage in their slots.



31.2 Radio/cassette extractor tool



31.5 Releasing radio extractor tool



31.6 Radio/cassette container removal



32.3 Facia-mounted loudspeaker retaining screws (arrowed)



32.5 Luggage compartment loudspeaker retaining nuts (arrowed)

### 32 Loudspeakers - removal and refitting



1 Disconnect the battery earth lead.

#### ***Facia-mounted speakers***

2 Carefully prise free the small square plastic cap covering the screw head in the speaker grille then undo and remove the screw. Lift the speaker grille clear.

3 Undo the two screws securing the speaker unit and lift the speaker out far enough to enable the leads to be disconnected (**see illustration**).

4 Refit in the reverse order of removal.

#### ***Luggage compartment speakers***

5 Undo the retaining nuts from underneath, withdraw the loudspeaker unit and detach the wiring connector (**see illustration**).

6 Refit in reverse order of removal.

### 33 Wiring diagrams - general information

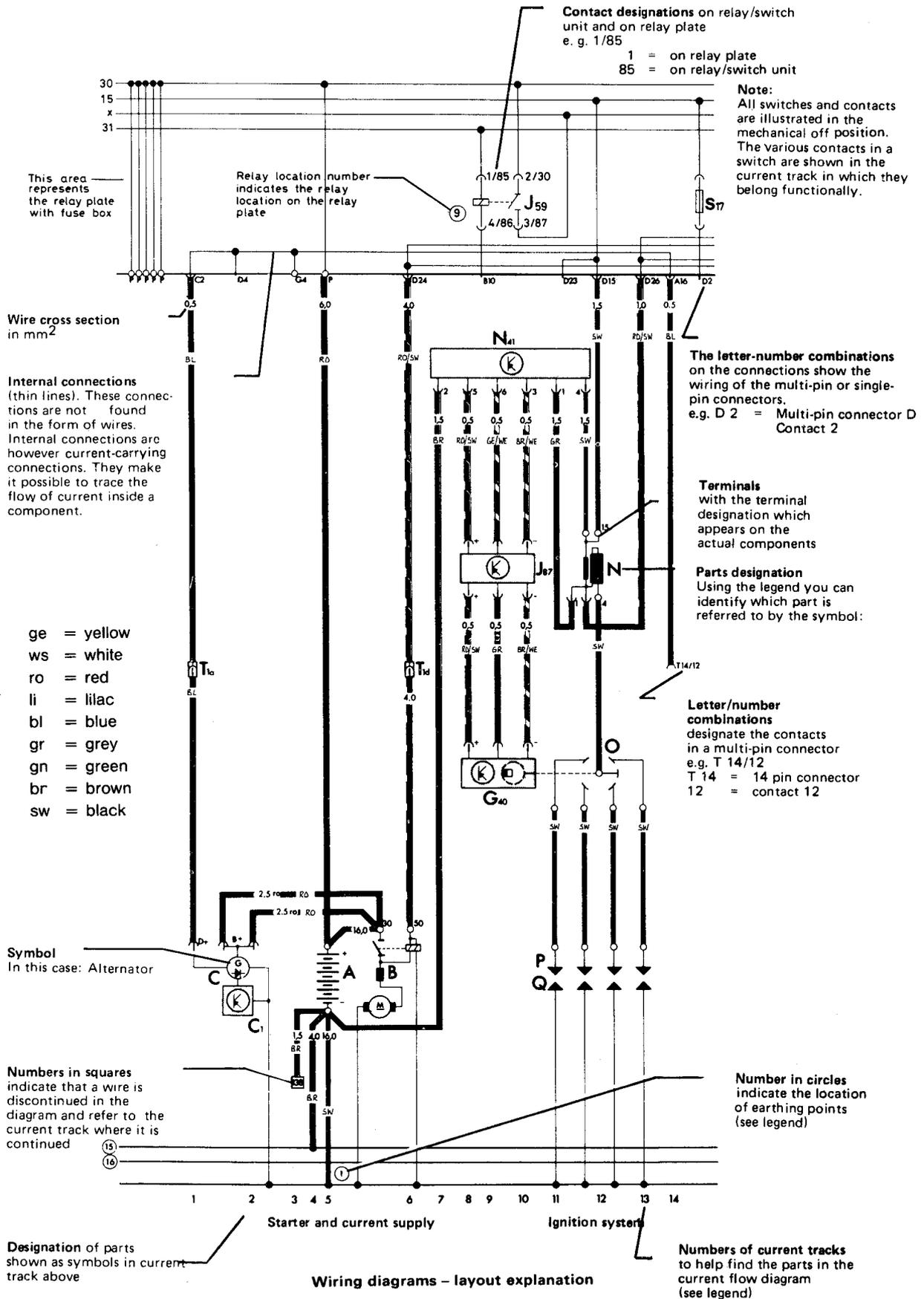
Each wiring diagram covers a particular system of the appropriate vehicle, as indicated in its caption. Carefully read the Key to each diagram before commencing work.

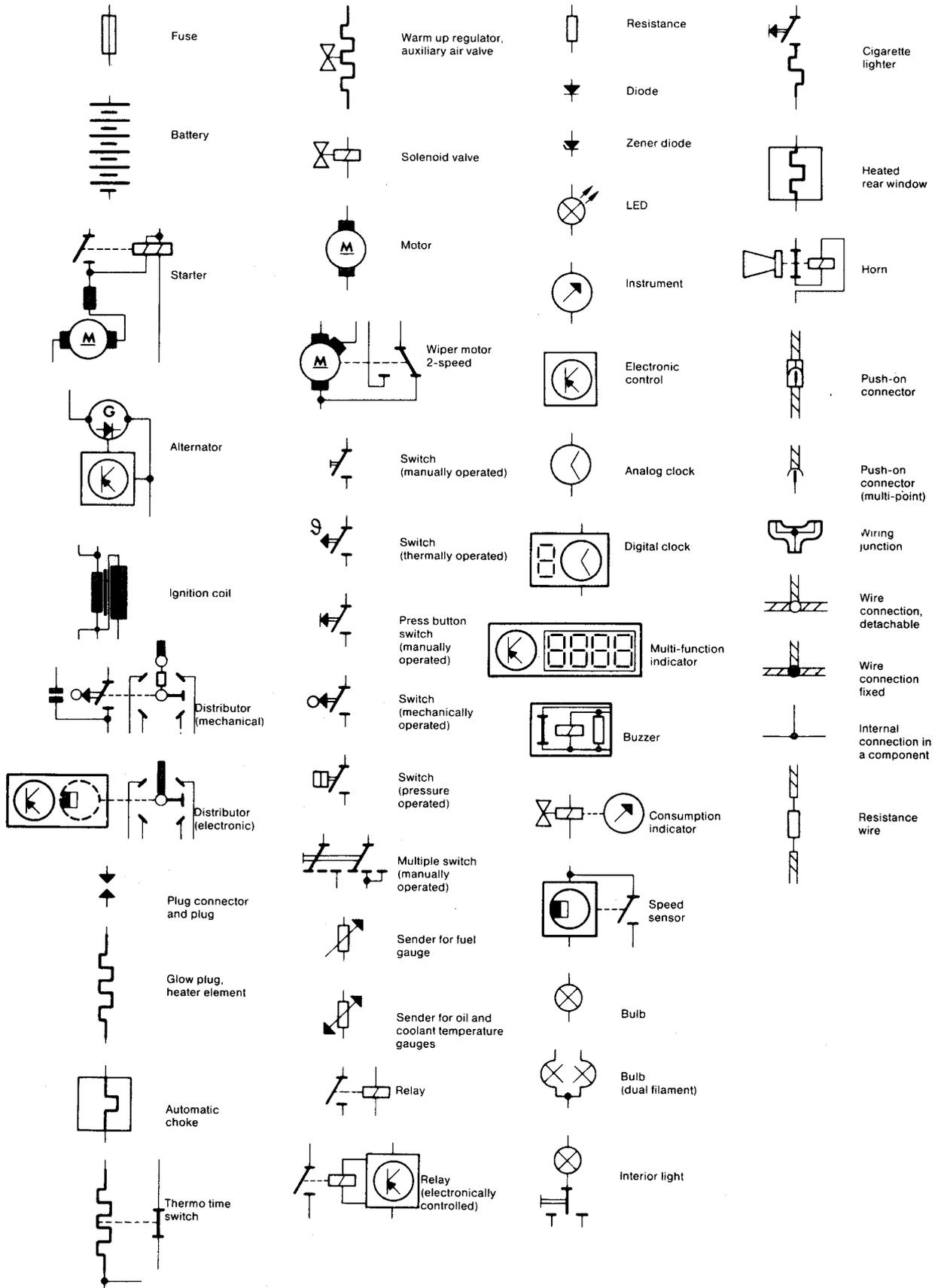
## Key for all wiring diagrams

No	Description	No	Description	No	Description
A	Battery	G17	Feeler for outside temperature	L8	Clock light bulb
B	Starter	G18	Temperature sensor	L9	Lighting switch bulb
C	Alternator	G19	Potentiometer for airflow meter	L10	Dash insert bulb
C1	Voltage regulator	G23	Electric fuel pump II	L16	Fresh air control bulb
D	Ignition switch	G32	Low coolant level indicator sender unit	L19	Gear selector bulb
E1	Lighting switch	G39	Lambda probe with heater	L20	Rear foglight bulb
E2	Indicator switch	G40	Hall sender	L22	Foglight bulb
E3	Hazard warning light switch	G42	Intake air temperature sender	L23	Foglight bulb, right
E4	Headlight dip and flasher switch	G51	Consumption indicator	L28	Cigarette lighter bulb
E9	Fresh air blower switch	G54	Speed sensor for multi-function indicator	L39	Heated rear window switch bulb
E15	Heated rear window switch	G55	Vacuum sensor for multi-function indicator	L40	Foglight switch bulb
E17	Starter/inhibitor and reversing light switch	G61	Knock sensor	L52	Connection for fader control unit
E19	Parking light switch	G62	Coolant temperature sender unit	L53	Electric window switch light
E20	Instrument/dash insert lighting control	G114	Switch unit for oil pressure warning	L54	Headlight beam adjuster bulb
E22	Intermittent wiper switch	H	Horn control	L66	Cassette storage illumination
E23	Foglight and rear foglight switch	H1	Dual tone horn	M1	Parking light bulb, left
E39	Electric window switch	J2	Indicators flasher relay	M2	Tail light bulb, right
E40	Electric window switch, left	J4	Dual tone horn relay	M3	Parking light bulb, right
E41	Electric window switch, right	J5	Foglight relay	M4	Tail light bulb, left
E43	Mirror adjustment switch	J6	Voltage stabiliser	M5	Indicator bulb, front left
E48	Mirror adjustment changeover switch	J17	Fuel pump relay	M6	Indicator bulb, rear left
E52	Electric window switch, rear left, in door	J20	Emergency lamp – trailer towing	M7	Indicator bulb, rear right
E53	Electric window switch, rear left, in console	J26	Radiator fan relay	M8	Indicator bulb, rear right
E54	Electric window switch, rear right, in door	J30	Rear wash/wipe relay	M9	Brake light bulb, left
E55	Electric window switch, rear right, in console	J31	Intermittent wash/wipe relay	M10	Brake light bulb, right
E86	Call-up button for multi-function indicator	J39	Headlamp wash system relay	M16	Reversing light bulb, left
E102	Headlight beam adjuster	J51	Electric window relay	M17	Reversing light bulb, right
E109	Memory switch for multi-function indicator	J59	Relief valve (for X contact)	M18	Side indicator bulb, left
F	Brake light switch	J81	Intake preheating relay	M19	Side indicator bulb, right
F1	Oil pressure switch (1.8 bar)	J86	Electronic ignition control unit	N	Ignition coil
F2	Door contact switch, front left	J88	Electronic ignition control unit (in plenum chamber, LH side)	N1	Automatic choke
F3	Door contact switch, front right	J98	Gearchange indicator switch unit	N3	Bypass cut-off valve
F4	Reversing light switch	J114	Oil pressure monitor switch unit	N6	Resistance wire
F5	Boot light	J119	Multi-function indicator	N9	Warm-up valve
F9	Handbrake warning switch	J120	Switch unit for low coolant indicator	N10	Temperature sensor (NTC resistance)
F10	Thermo-switch for radiator fan	J130	Switch unit for overrun cut-off valve	N17	Cold start valve
F18	Radiator fan thermal switch	J134	Diode	N21	Auxiliary air valve
F22	Oil pressure switch (0.3 bar)	J138	Control unit for radiator fan run-on	N23	Series resistance for fresh air blower
F25	Throttle valve switch	J143	Switch unit for speed increase	N30	Fuel injector, cylinder No 1
F26	Thermo-switch for choke	J147	Digijet control unit	N31	Fuel injector, cylinder No 2
F34	Brake fluid level warning contact	J159	Control unit for idle speed stabiliser and overrun cut-off	N32	Fuel injector, cylinder No 3
F35	Thermo-switch for intake preheating	J167	Digijet relay and idle speed stabilization unit	N33	Fuel injector, cylinder No 4
F59	Central locking system switch	J169	Control unit for Digifant	N35	Mirror adjustment solenoid (driver's side)
F60	Idle switch	J176	Digifant current supply and idle speed stabilization	N39	Radiator fan series resistance
F62	Gearchange indicator vacuum switch	K	Dash insert	N41	TCI control unit
F66	Low level coolant switch	K1	High beam warning lamp	N42	Mirror adjustment solenoid, passenger's
F68	Switch for gearchange and consumption indicator	K2	Alternator warning lamp	N51	Heater element for manifold preheating
F69	Central locking switch (driver's door)	K3	Oil pressure warning lamp	N52	Heater element for carburettor throttle passage
F80	Thermo-switch for N52	K5	Indicators warning lamp	N60	Solenoid valve for consumption indicator
F81	Full-throttle switch	K6	Warning lamp for hazard lights	N62	Idling speed – acceleration valve
F87	Thermo-switch for radiator from run-on	K7	Dual circuit and handbrake warning lamp	N65	Overrun cut-off valve
F89	Switch for accelerator enrichment	K10	Heated rear window warning lamp	N68	Idling – overrun cut-off valve
F93	Vacuum timeswitch	K13	Rear foglight warning lamp	N69	Thermotime valve for overrun cut-off
G	Fuel gauge sender	K17	Foglight warning lamp	N71	Control valve for idling stabilisation
G1	Fuel gauge	K18	Trailer operation warning lamp	N98	Series resistance, headlamp dim-dip system (front right of engine compartment)
G2	Coolant temperature sender	K28	Coolant temperature warning lamp (too hot, red)	N113	Heater resistance for washer jets
G3	Coolant temperature gauge	K48	Gearchange indicator warning lamp	O	Distributor
G5	Rev counter	L1	Twin filament headlight bulb, left	P	Spark plug connector
G6	Fuel pump	L2	Twin filament headlight bulb, right	Q	Spark plug
G8	Oil temperature sender			R	Connection for radio
				R9	Loudspeaker, front left
				R10	Loudspeaker, front right

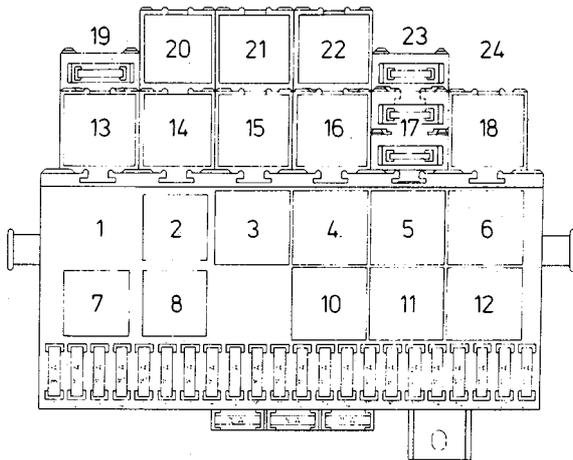
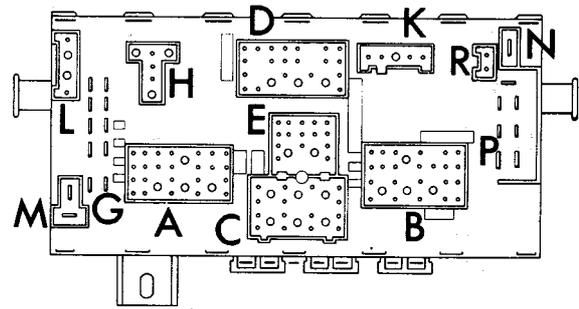
## Key for all wiring diagrams (continued)

No	Description	No	Description	No	Description
S24	Overheating fuse	T2y	2-pin connector, front of engine compartment	W3	Boot light
S27	Separate fuse for rear foglight	T2z	2-pin connector, behind left A-pillar trim	W6	Glovebox light
S37	Fuse for electric windows	T3	3-pin connector, on throttle valve housing or behind relay plate	W15	Delayed interior light
T	Connector, behind relay plate	T3a	3-pin connector, behind relay plate (in plenum chamber on Digijet system)	X	Number plate light
T1	Single connector, various locations	T3b	3-pin connector, behind door trim (in rear of engine compartment on Digifant system)	Y2	Digital clock
T1a	Single connector, various locations	T3c	3-pin connector, behind door trim	Z1	Heated rear window
T1b	Single connector, left of engine compartment or behind relay plate	T3d	3-pin connector, behind door trim	Z4	Heated mirror, driver's
T1c	Single connector, various locations	T3e	3-pin connector, behind door trim	Z5	Heated mirror, passenger's
T1d	Single connector, various locations	T3f	3-pin connector, behind right B-pillar trim	Z20	Heater resistance, LH washer jet
T1e	Single connector, right of engine compartment or behind relay plate	T3g	3-pin connector, behind left B-pillar trim (near starter on Digifant system)	Z21	Heater resistance, RH washer jet
T1f	Single connector, near carburettor or coil	T3h	3-pin connector, behind relay plate	<b>Earth connections</b>	
T1g	Single connector, various locations	T4	4-pin connector, behind dash (in plenum chamber on Digijet system)	No	Description
T1h	Single connector, behind relay plate	T4a	4-pin connector, behind steering column trim (near inlet manifold on Digijet system)	1	Battery earth strap
T1i	Single connector, behind relay plate	T4c	4-pin connector, behind steering column trim	10	Near relay plate
T1k	Single connector, behind relay plate or on radiator cowl	T5	5-pin connector on left of bulkhead	12	On cylinder head cover or distributor
T11	Single connector, behind relay plate	T5b	5-pin connector, behind steering column switch trim	14	Near steering column or in tailgate
T1m	Single connector, behind dash	T5c	5-pin connector, behind steering column switch trim	15	In front loom or on cylinder head
T1n	Single connector, behind relay plate or near carburettor	T5e	5-pin connector, on series resistance N23	16	In instrument loom
T1p	Single connector, on radiator cowl	T6	6-pin connector, behind relay plate	17	In instrument loom
T1q	Single connector behind relay plate	T6a	6-pin connector, rear left-hand tail lamp	17	On intake manifold (1989 on)
Tr	Single connector – luggage boot	T6b	6-pin connector, rear right-hand tail lamp	18	On cylinder block
T1s	Single connector behind relay plate	T7	7-pin connector, on dash insert or behind steering column trim	19	In boot on right
T1v	Single connector behind steering wheel switch trim	T7a	7-pin connector, on dash insert	20	On front seat crossmember, in tailgate or in instrument loom
T1x	Single connector, near coil	T7b	7-pin connector, on dash insert	21	In electric window loom
T1y	Single connector, near carburettor or behind relay	T7c	7-pin connector, on dash insert	22	In electric window loom
T2	2-pin connector, various locations	T8	8-pin connector, on gearbox or behind dash	23	In electric window loom
T2a	2-pin connector, various locations	T16	16-pin connector, on multi-function indicator	30	In front loom or next to relay plate
T2b	2-pin connector, various locations	T28	28-pin connector, on instrument panel	42	Next to steering column
T2c	2-pin connector, left of boot or behind dash	T32	32-pin connector, behind fascia panel	44	Base of LH A-pillar
T2d	2-pin connector, left of boot or behind dash (near inlet manifold on Digifant system)	U	Socket	46	Next to relay plate
T2e	2-pin connector, left of engine compartment	U1	Cigarette lighter	50	In boot on left
T2f	2-pin connector, various locations	V	Windscreen wiper motor	51	In boot on right
T2g	2-pin connector, right of engine compartment	V2	Fresh air blower	54	On rear cross panel
T2h	2-pin connector, left of engine compartment	V5	Windscreen washer pump	63	Bulbholder, left-hand tail lamp
T2i	2-pin connector, behind door trim	V7	Radiator fan	64	Bulbholder, right-hand tail lamp
T2k	2-pin connector, various locations	V11	Headlight washer pump	80	In instrument loom
T21	2-pin connector, behind dash or front of engine compartment	V12	Wiper motor	81	In instrument loom
T2m	2-pin connector, behind dash	V13	Washer pump motor	82	In front loom
T2n	2-pin connector, behind dash	V14	Window motor, left	84	Engine block wiring loom
T20	2-pin connector, right of engine compartment	V15	Window motor, right	85	In engine compartment wiring loom
T2p	2-pin connector, various locations	V17	Mirror adjustment motor, driver's	89	In electric window loom
T2q	2-pin connector, right of engine compartment	V25	Mirror adjustment motor, passenger's	94	In Digifant wiring loom
T2r	2-pin connector, behind door trim	V26	Window motor, rear left	107	In exterior mirror wiring loom
T2s	2-pin connector, behind door trim	V27	Window motor, rear right	108	In front loom
T2t	2-pin connector, behind door trim	V37	Central locking motor	116	In Digijet wiring loom
T2u	2-pin connector, left of boot	V48	Headlight motor, left	119	In headlamp wiring loom
T2v	2-pin connector, behind right A-pillar trim or in engine compartment	V49	Headlight motor, right	120	In headlamp wiring loom
T2w	2-pin connector, behind dash	W	Interior light, front	A11	In instrument loom
T2x	2-pin connector, front of engine compartment or behind dash			C3	Positive (+) connector (30) in headlamp wiring loom
				C10	Positive connector (30) in headlamp wiring loom
				E1	Positive (+) connector in Digijet wiring loom
				G3	Positive (+) connector in cable sleeve – injector
				G4	Connector in cable sleeve – injector
				Q1	In electric window loom
				Q9	In window lift wiring loom
				X1	Positive connector (15) in carburettor wiring loom





Symbols used on the wiring diagrams

**Relay locations****Connections****Wiring relays and connections – all models****Relays (typical)**

1	Vacant
2	Intake manifold preheating relay (carburettor models) or fuel pump relay (injection models)
3	Seat belt warning system relay
4	Gearshift indicator control unit
5	Air conditioner relay
6	Dual tone horn relay
7	Relay for foglights and rear foglight
8	Relief relay for X contact
10	Intermittent wash/wipe relay
11	Rear window wiper relay
12	Turn signal flasher or trailer towing warning relay
13	Seat belt warning system (interlock) or rear window, driving lights and oil pressure warning relay
14	Window lift or seat belt warning system relay
15	Headlight washer relay
16	Control unit for idling speed increase
17	Fuse for rear foglight
18	Control unit for coolant shortage indicator
19	Thermo fuse for window lifters
20	Switch unit for heated driver's seat
21	Switch unit for heated passenger's seat
22	Switch unit for overrun cut-off
23	Vacant
24	Vacant

Relays are symbolised as a number in a black box

*Not all relays are fitted to all models*

**Connections**

A	Multi-pin connector (blue) for dash panel loom
B	Multi-pin connector (red) for dash panel loom
C	Multi-pin connector (yellow) for engine compartment loom left
D	Multi-pin connector (white) for engine compartment loom right
E	Multi-pin connector (black) for rear wiring loom
G	Single connector
H	Multi-pin connector (brown) for air conditioner or wiring loom
K	Multi-pin connector (transparent) for seat belt warning system loom
L	Multi-pin connector (black) for lighting switch terminal 56 and dip and flasher switch terminal 56b (carburettor models) or multi-pin connector (grey) for dual tone horn (injection models)
M	Multi-pin connector (black) for lighting switch terminal 56 and dip and flasher switch terminal 56b (injection models)
N	Single connector for separate fuse (manifold heater element)
P	Single connector (terminal 30)
R	Not in use

**Fuse colours**

Blue	5A
Green	30A
Red	10A
Yellow	20A

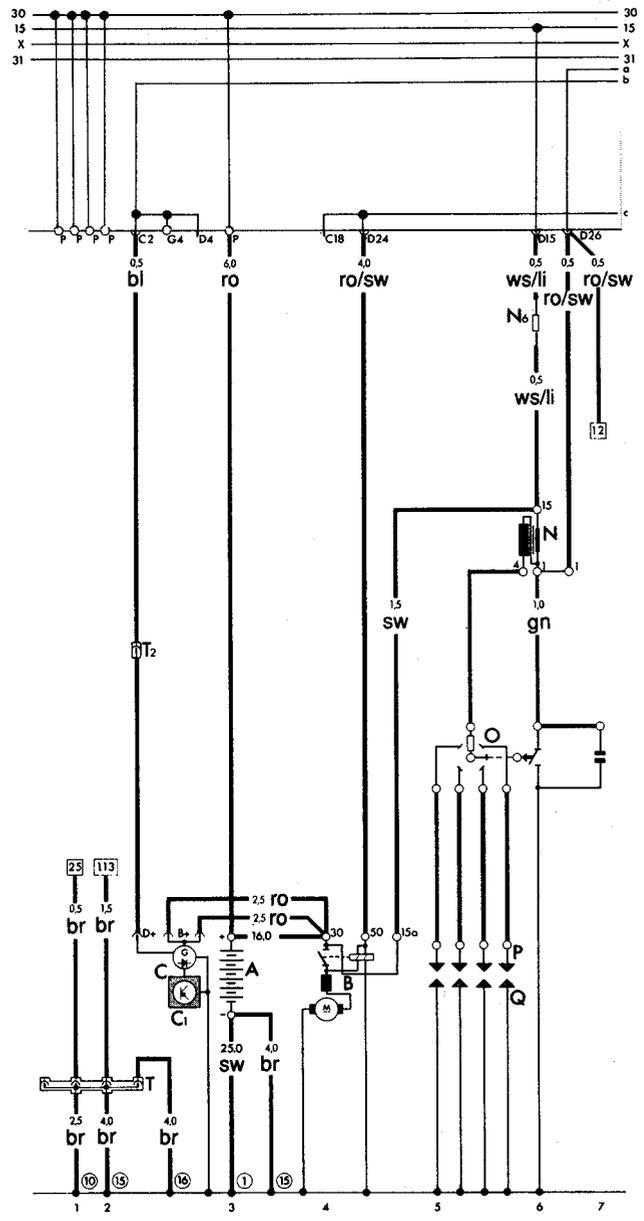


Diagram 1 Starter, alternator, battery and ignition system - 1.05, 1.3 and 1.6 models, pre July 1987

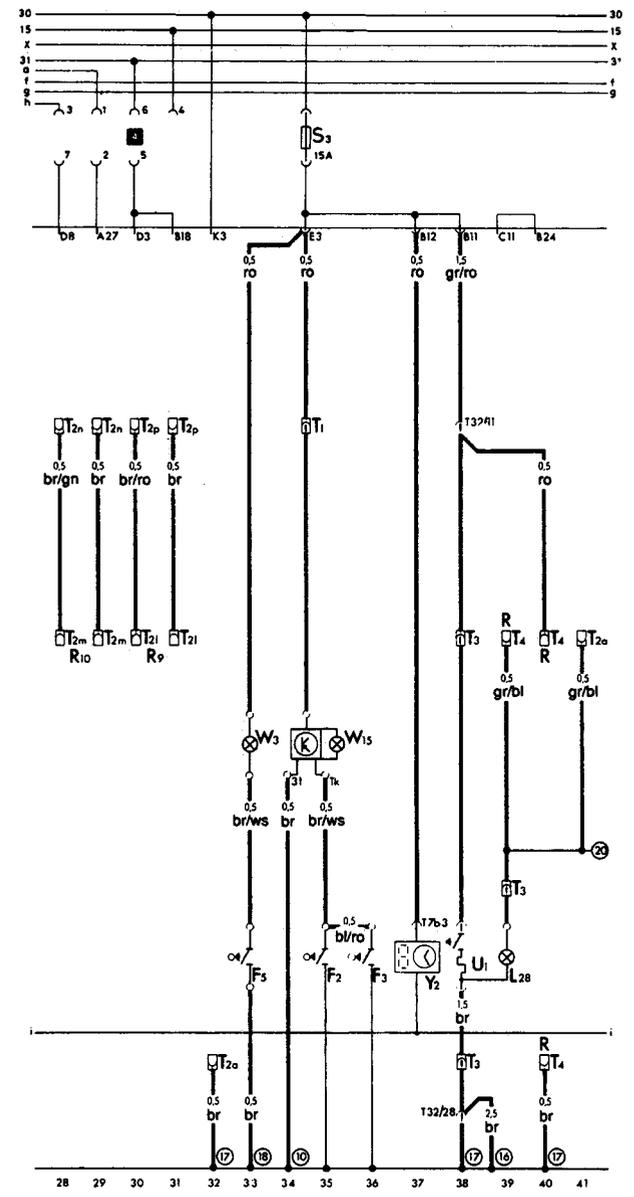


Diagram 2 Interior light, boot light, radio and cigarette lighter - 1.05, 1.3 and 1.6 models, pre July 1987

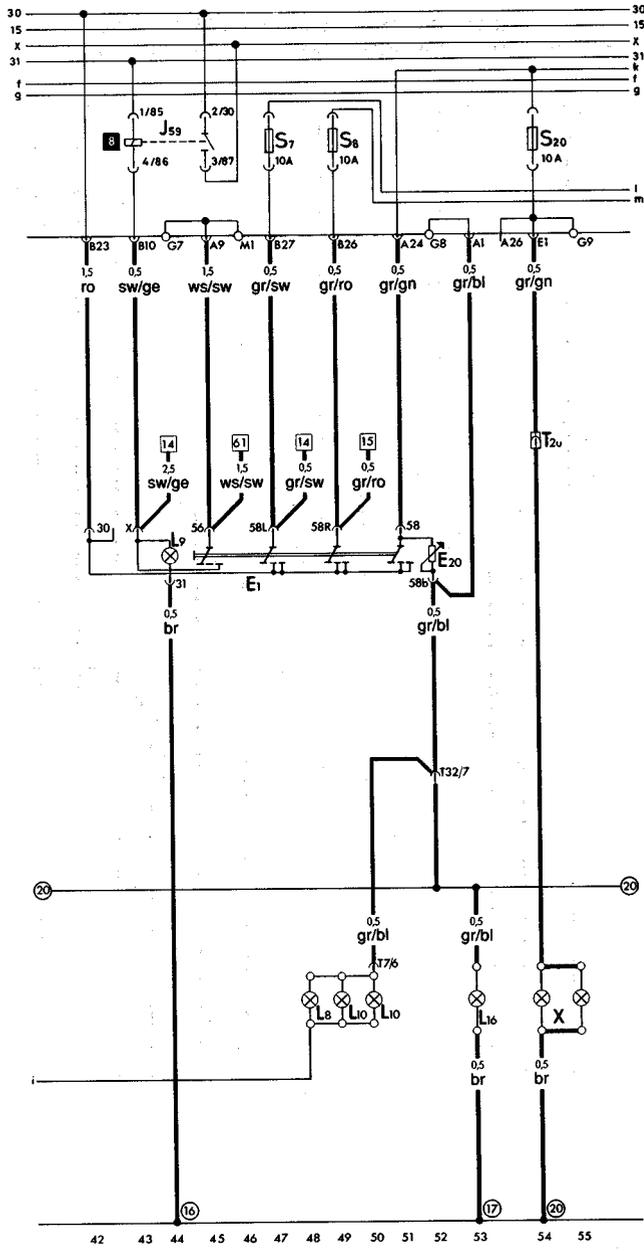


Diagram 3 Lighting switch, instrument and dash insert lights - 1.05, 1.3 and 1.5 models, pre July 1987

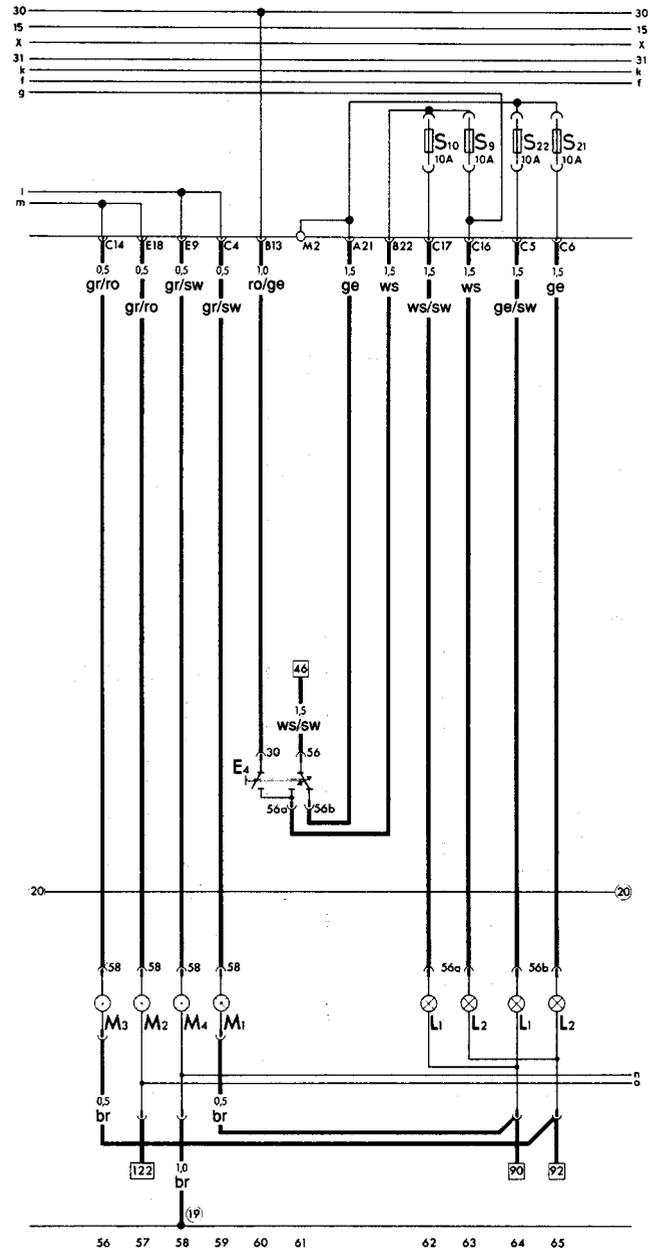


Diagram 4 Headlights, tail lights and dip/flasher headlight switch - 1.05, 1.3 and 1.6 models, pre July 1987



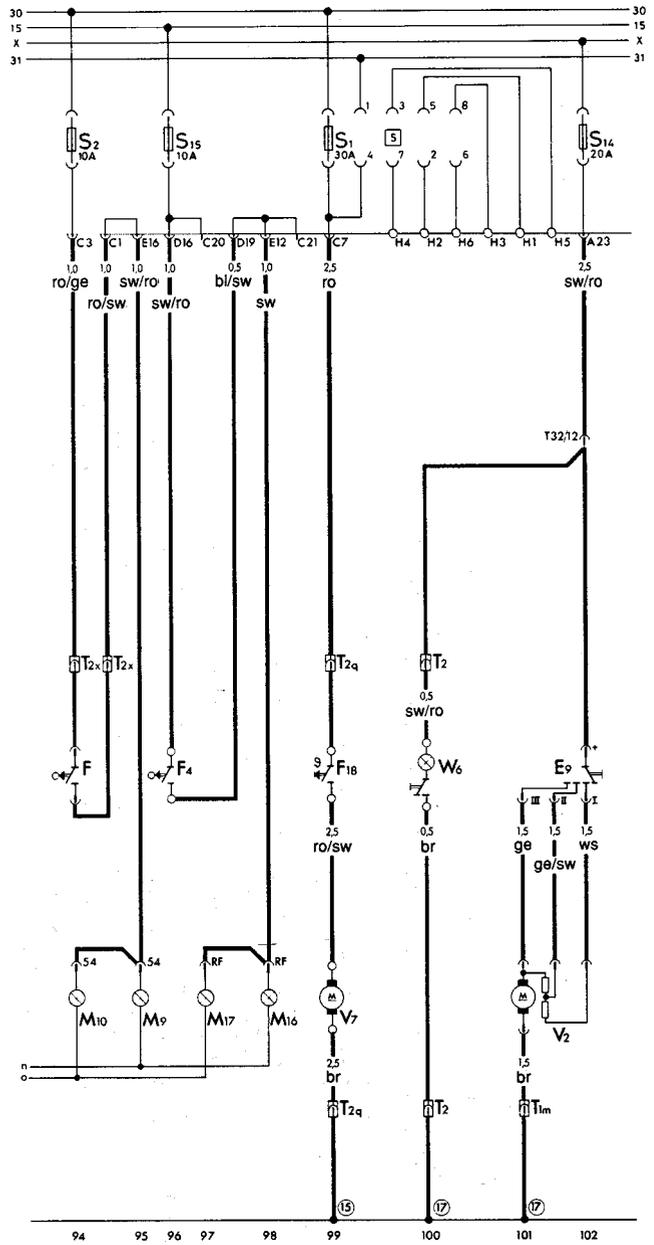


Diagram 7 Brake lights, fresh air blower, reversing lights and radiator fan - 1.05, 1.3 and 1.6 models, pre July 1987

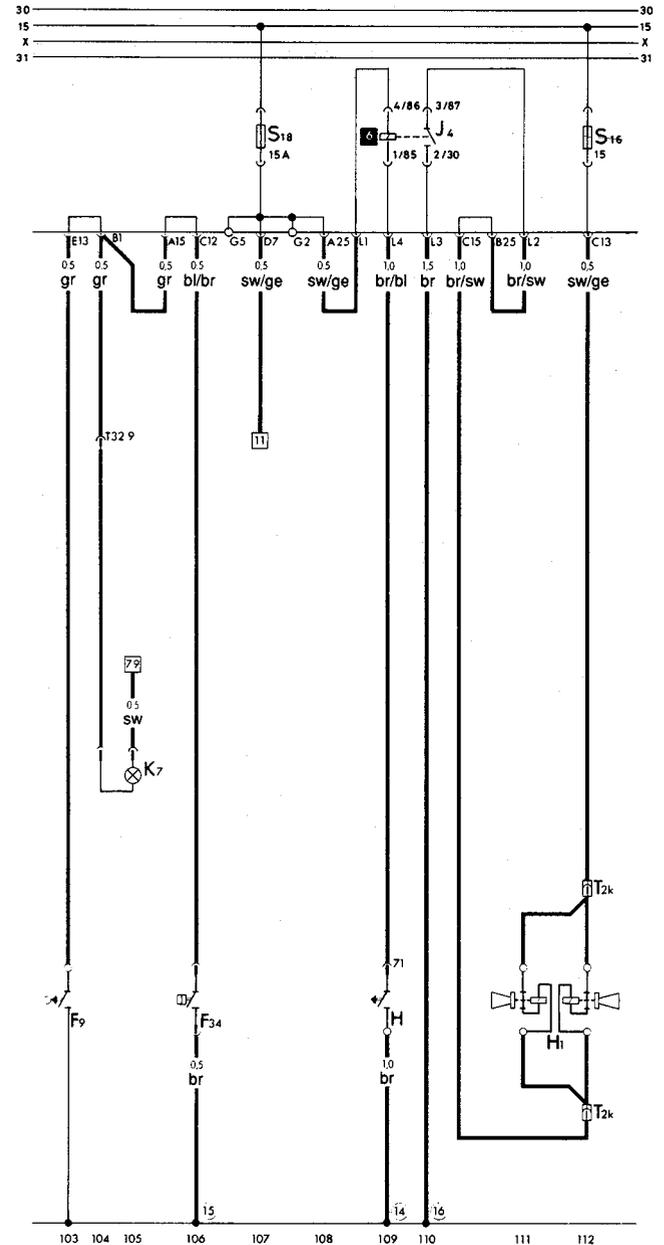


Diagram 8 Dual tone horn, handbrake and brake fluid level warning - 1.05, 1.3 and 1.6 models, pre July 1987

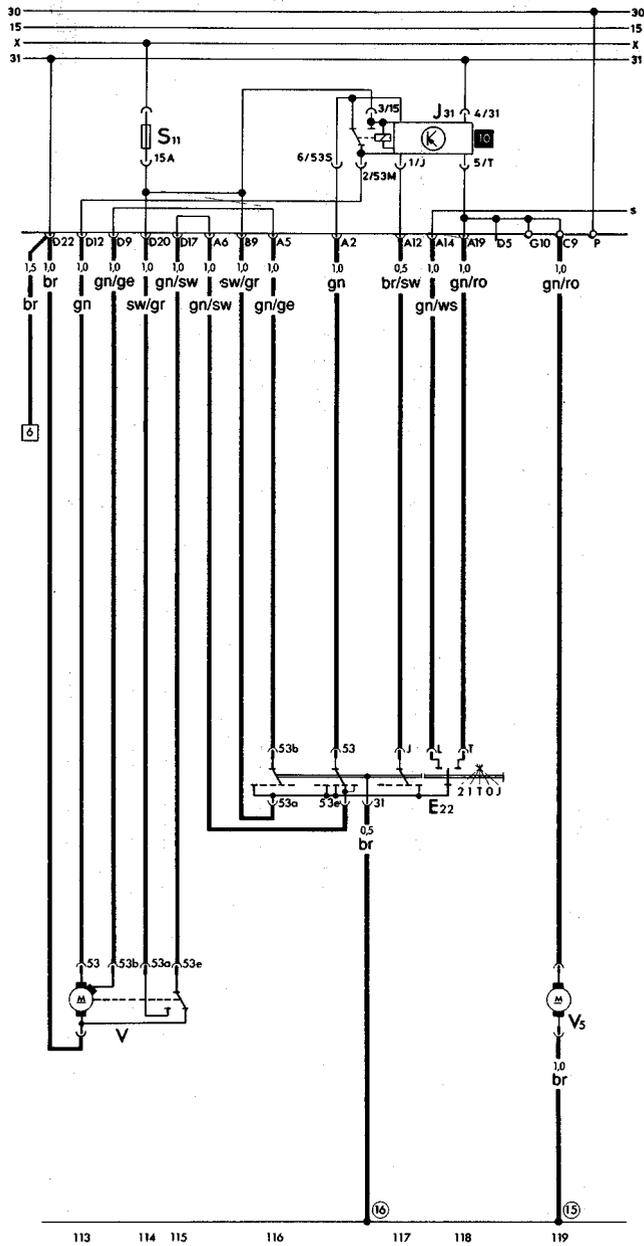


Diagram 9 Windscreen wiper and washer -  
1.05, 1.3 and 1.6 models. Golf, pre December 1985.  
Jetta pre July 1987

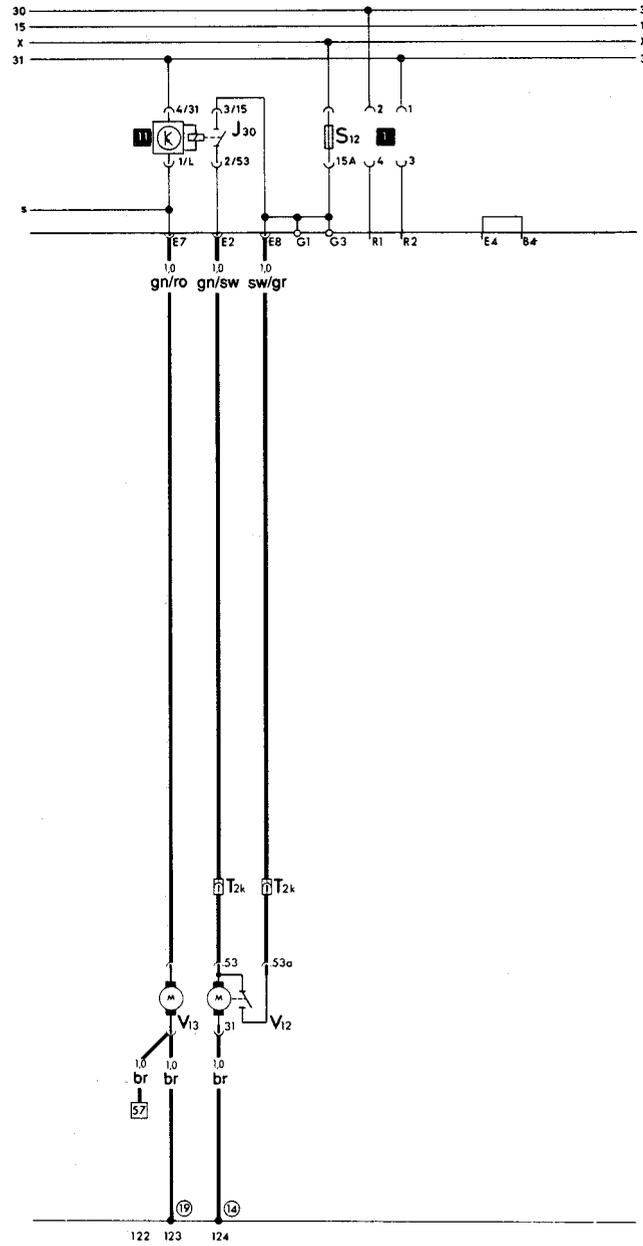


Diagram 10 Rear wiper and washer -  
1.05, 1.3 and 1.6 models, pre December 1985

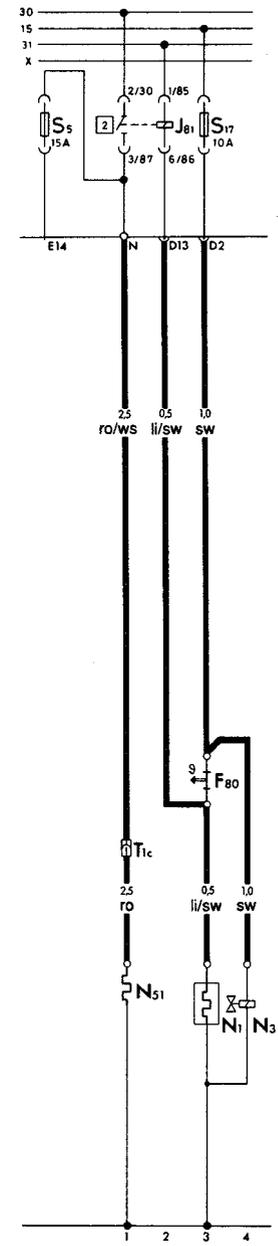


Diagram 11 Intake manifold  
preheater and automatic choke -  
1.3 models, pre July 1986

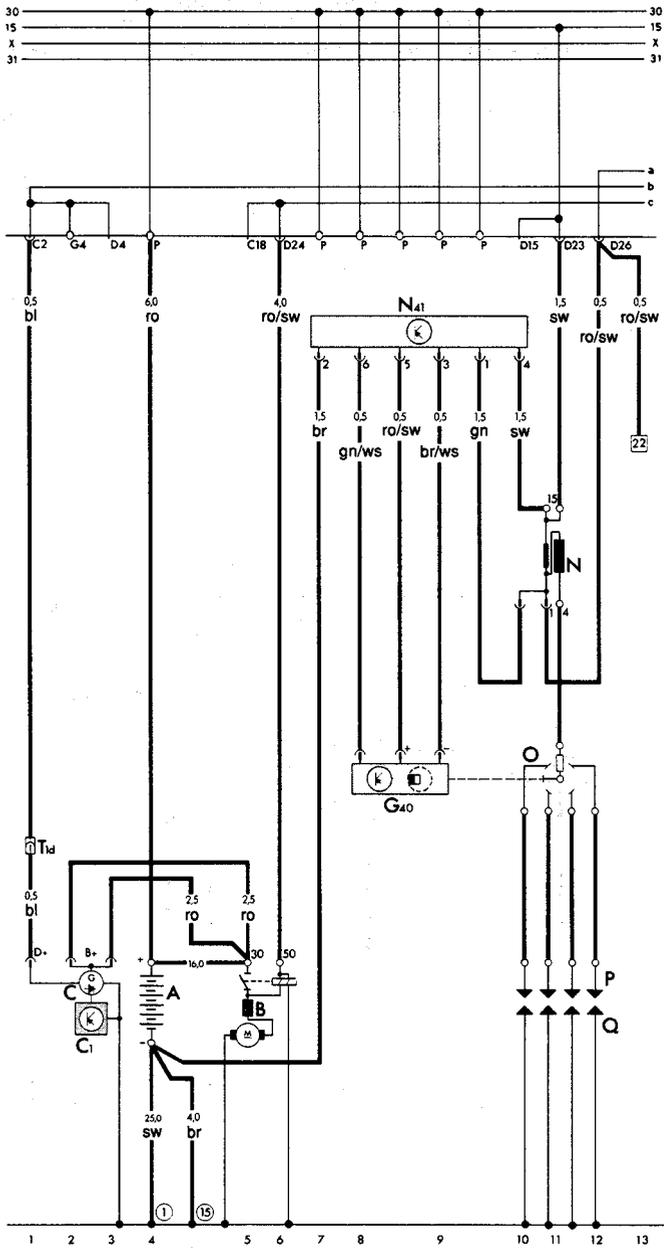


Diagram 12 Starter, alternator, battery and ignition system - 1.8 models with carburettor

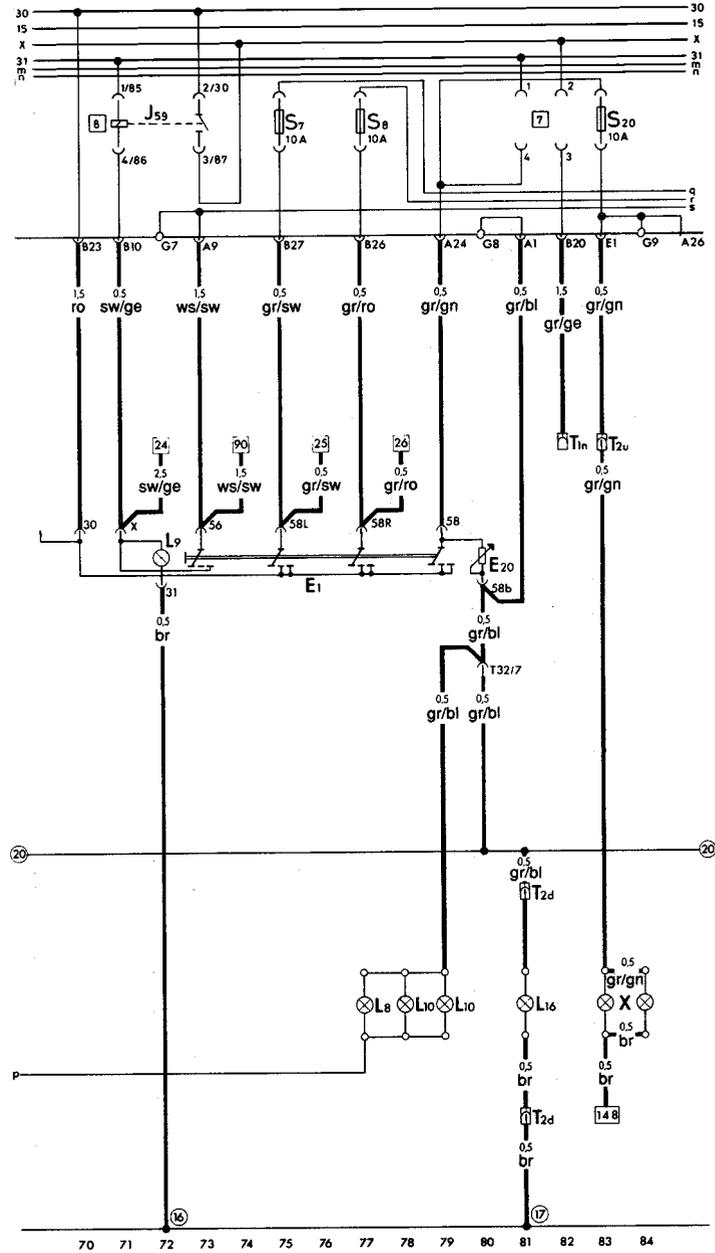


Diagram 13 Lighting switch, instrument and dash lights - 1.8 models, pre July 1987

1081 VW Golf & Jetta

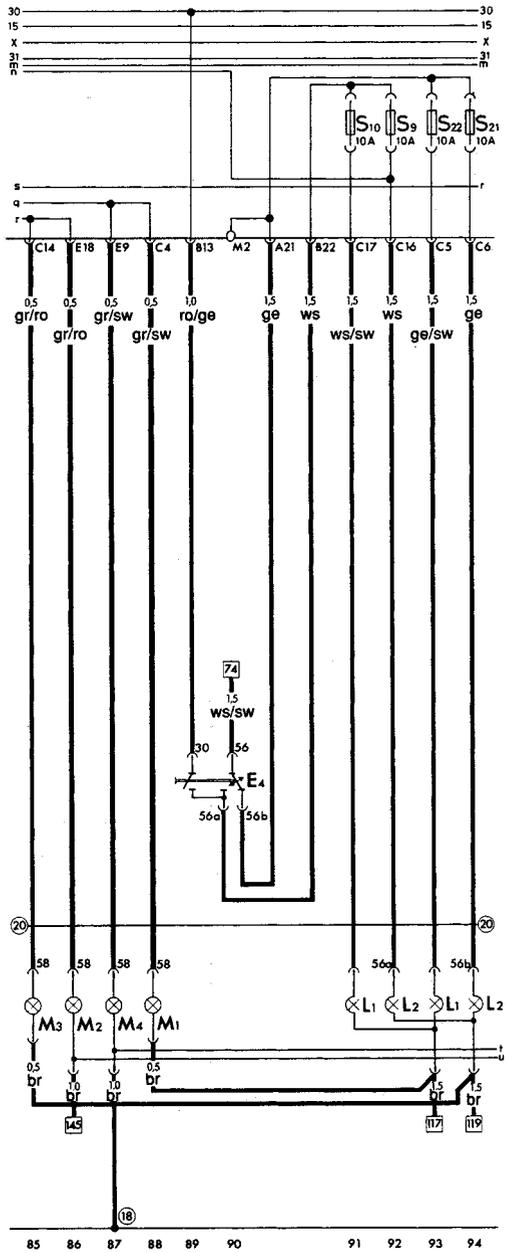


Diagram 14 Headlights, tail lights and dip flasher switch - 1.8 models, pre July 1987

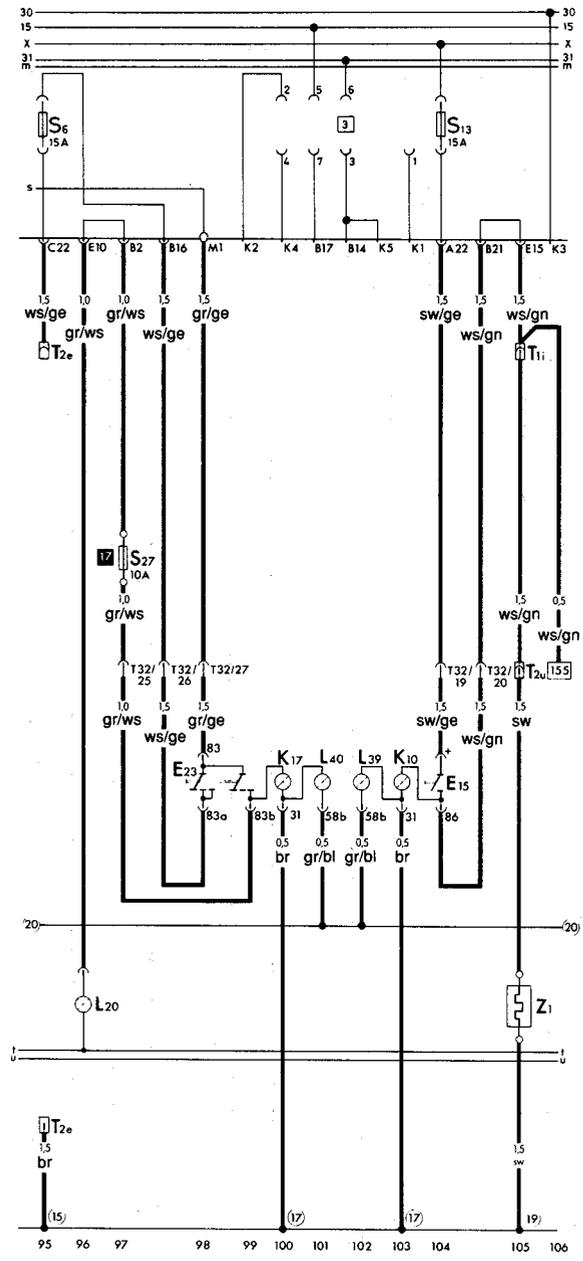


Diagram 15 Rear foglight and heated rear window - 1.8 models, pre July 1987



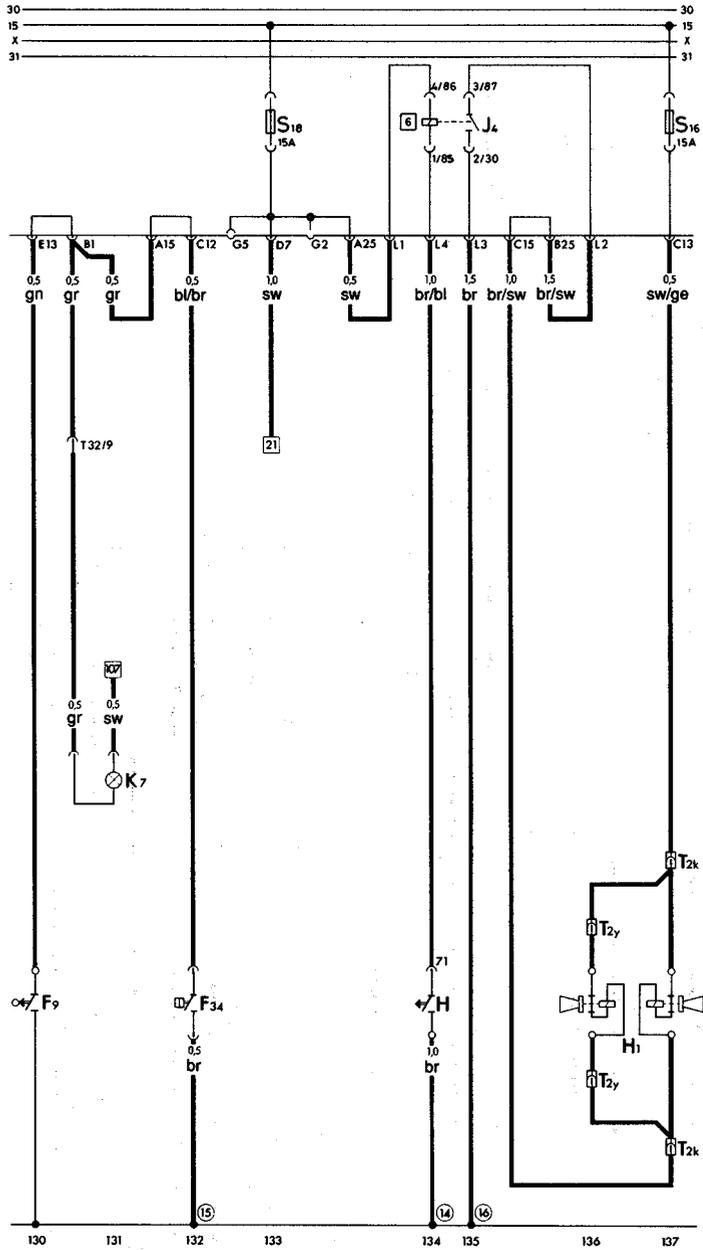


Diagram 18 Dual tone horn, handbrake and brake fluid warning - 1.8 models, pre July 1987

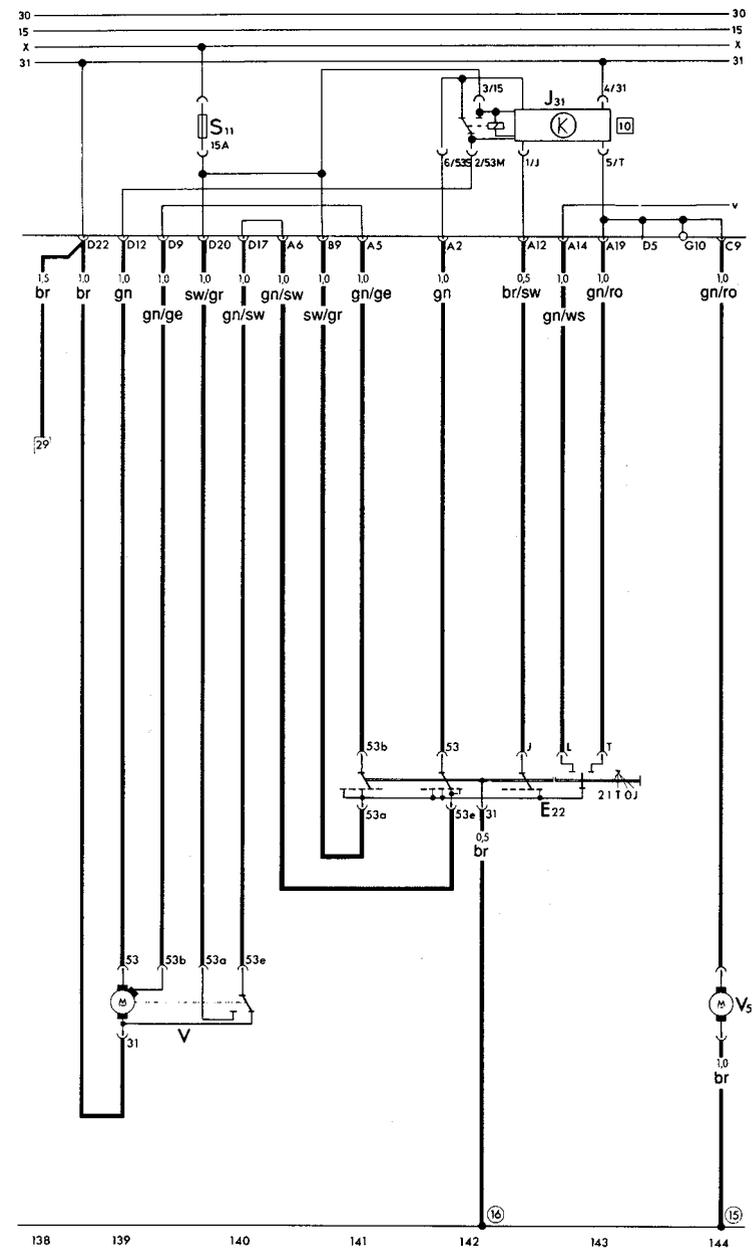


Diagram 19 Windscreen wiper and washer - 1.8 models, pre July 1987

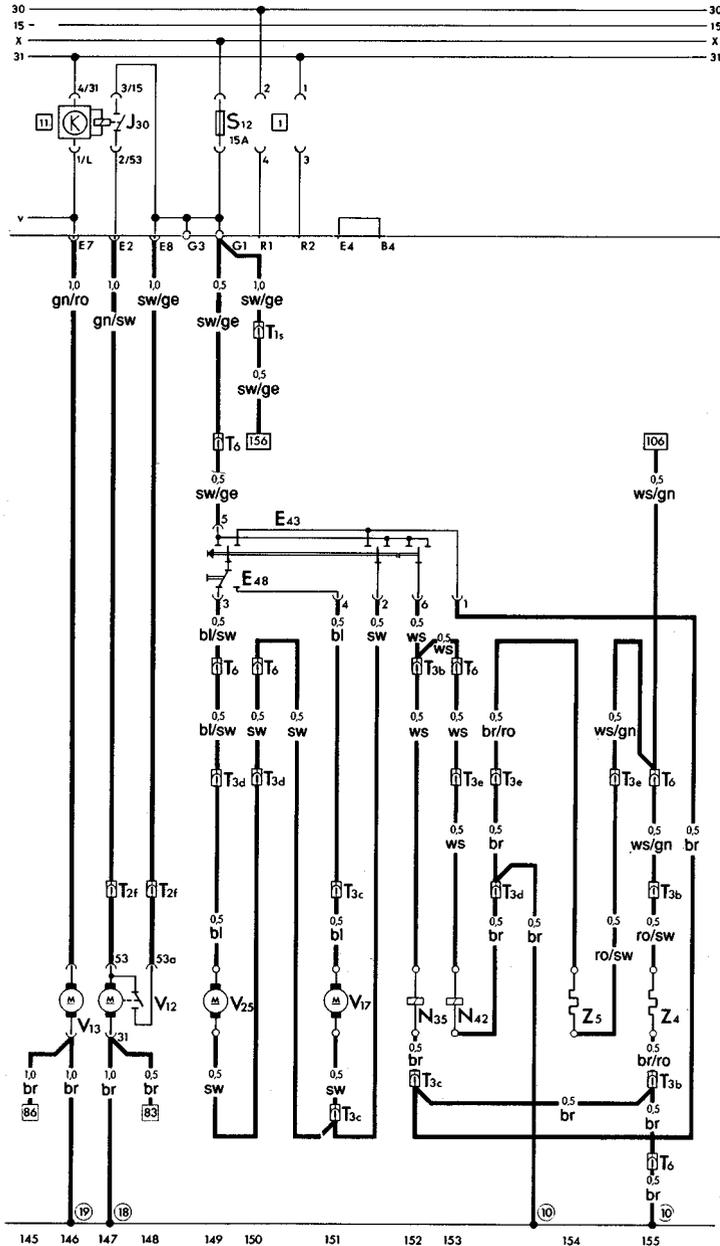


Diagram 20 Electrically-controlled heated outside mirror and rear wiper and washer - 1.8 models, pre December 1985

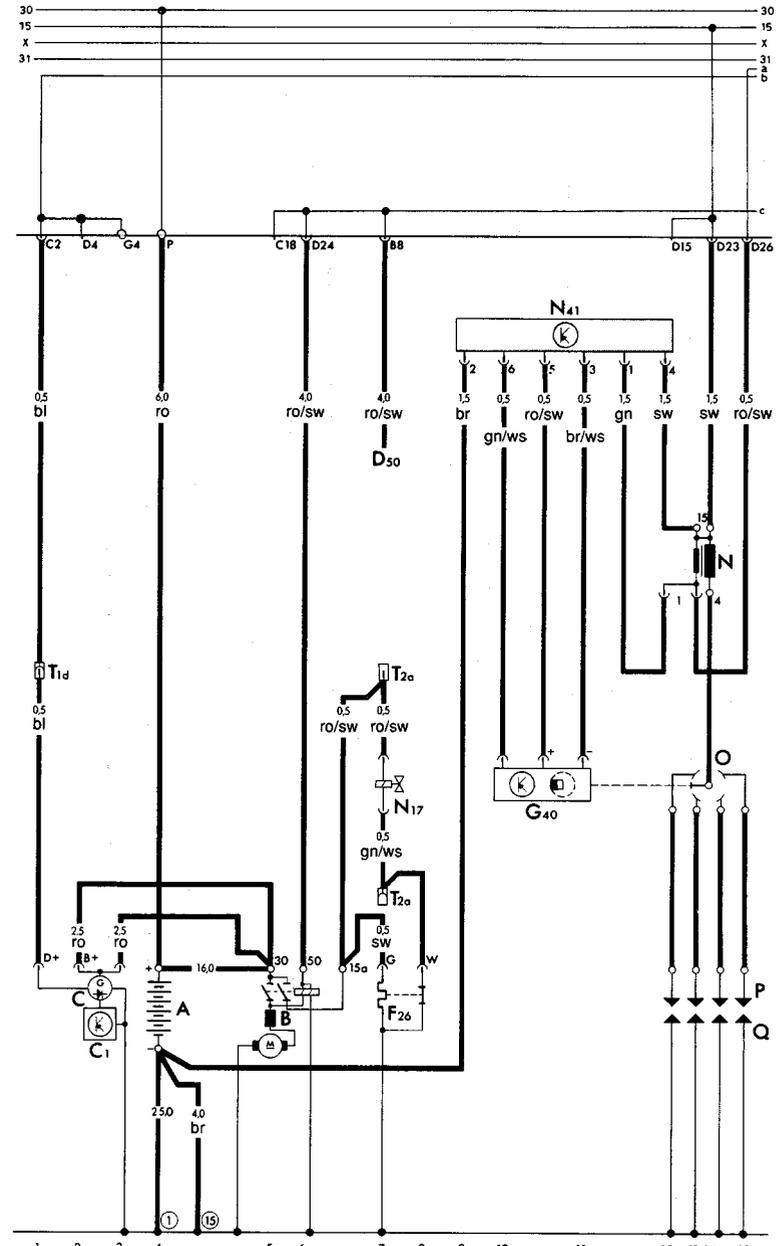


Diagram 21 Electric windows - 1.8 models with carburettor, pre July 1987

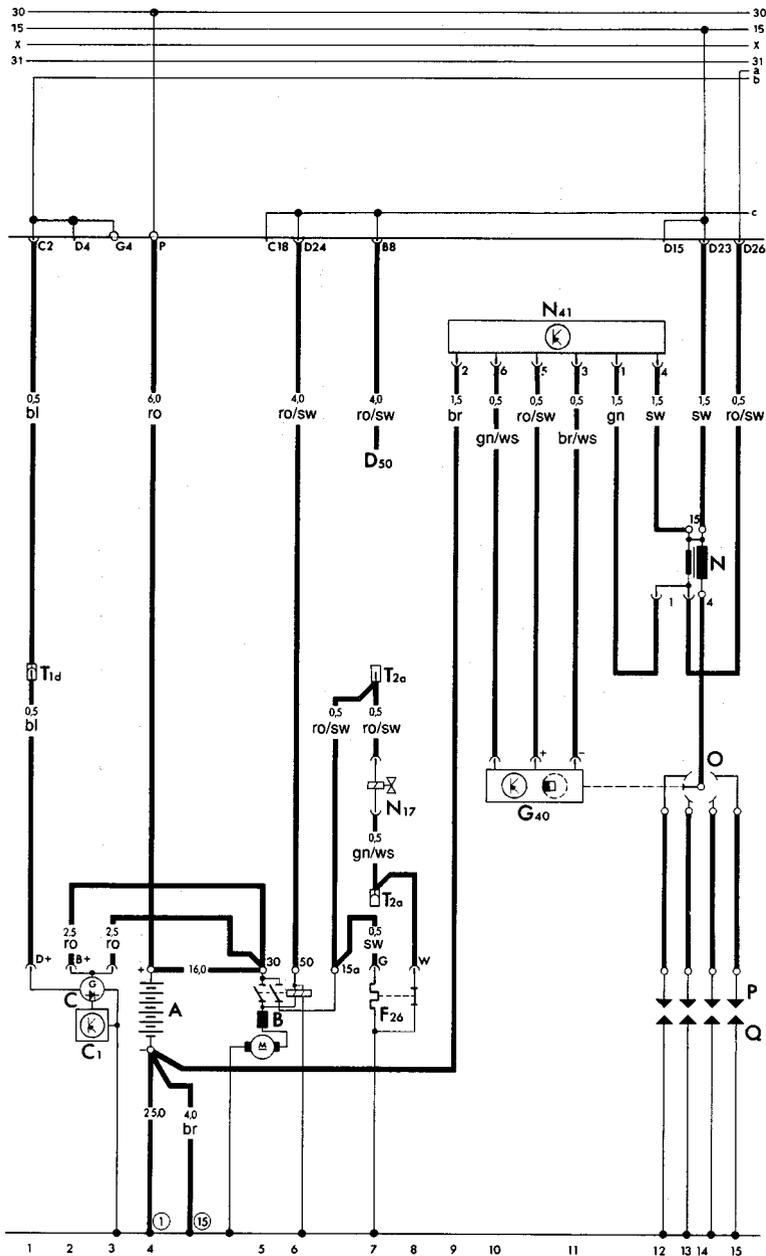


Diagram 22 Starter, alternator, battery and ignition system - 1.8 models with fuel injection, pre July 1984

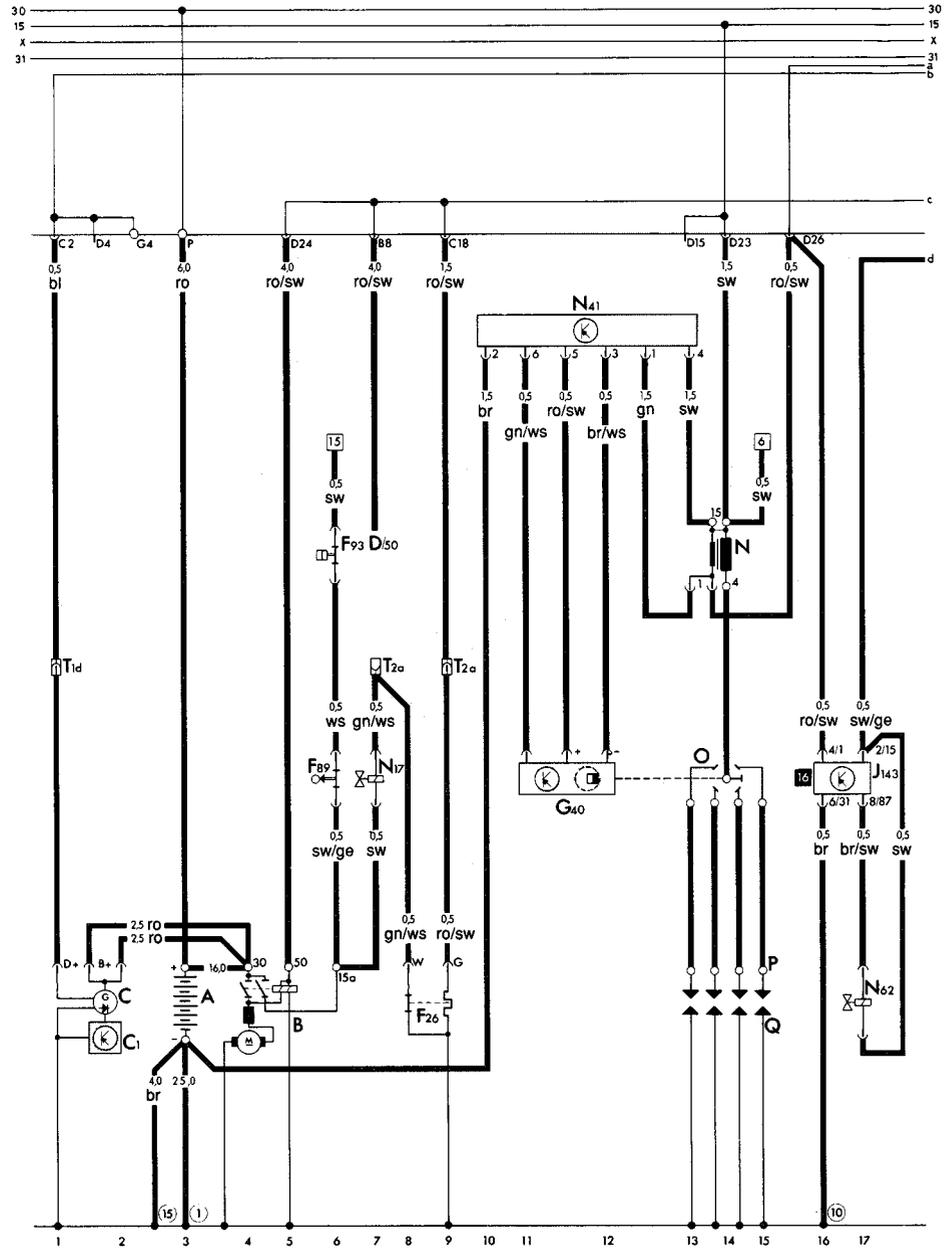


Diagram 23 Starter, alternator, battery, ignition system and increased idling speed - 1.8 models with fuel injection, from August 1984 to July 1987



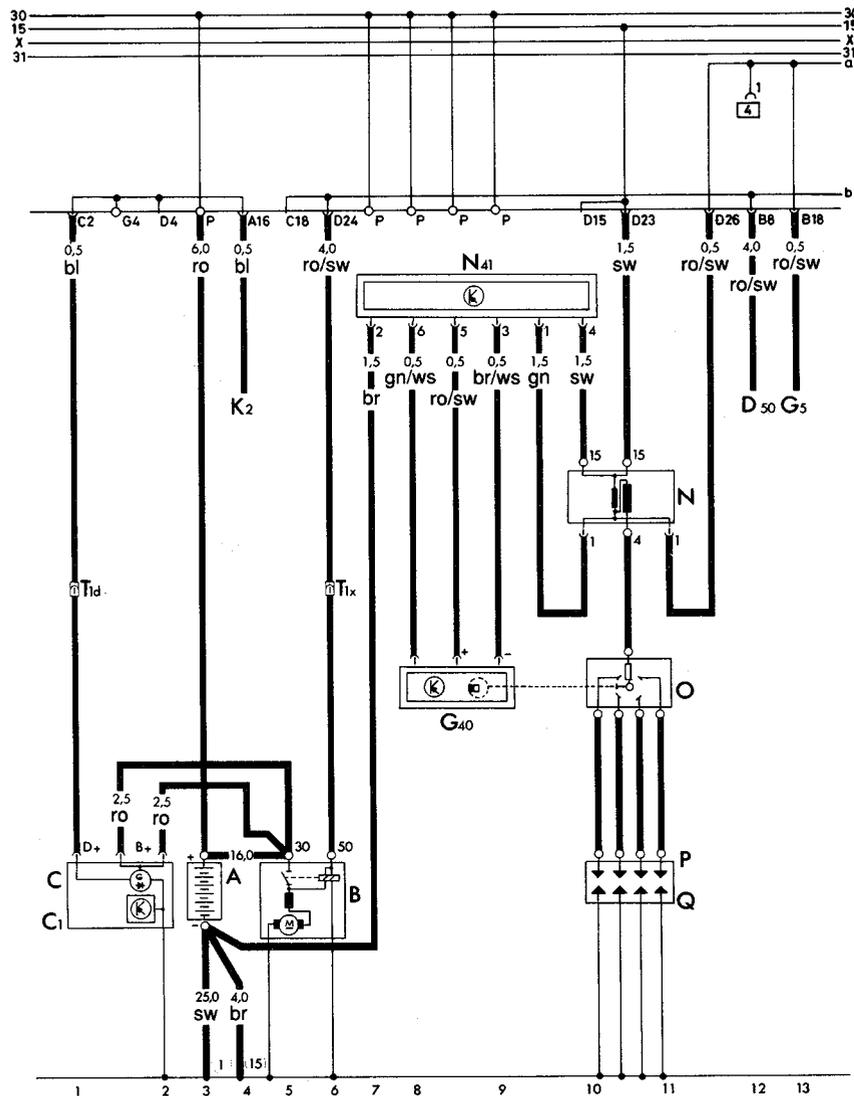


Diagram 27 Starter, alternator, battery and ignition system - 1.3 models, from August 1985

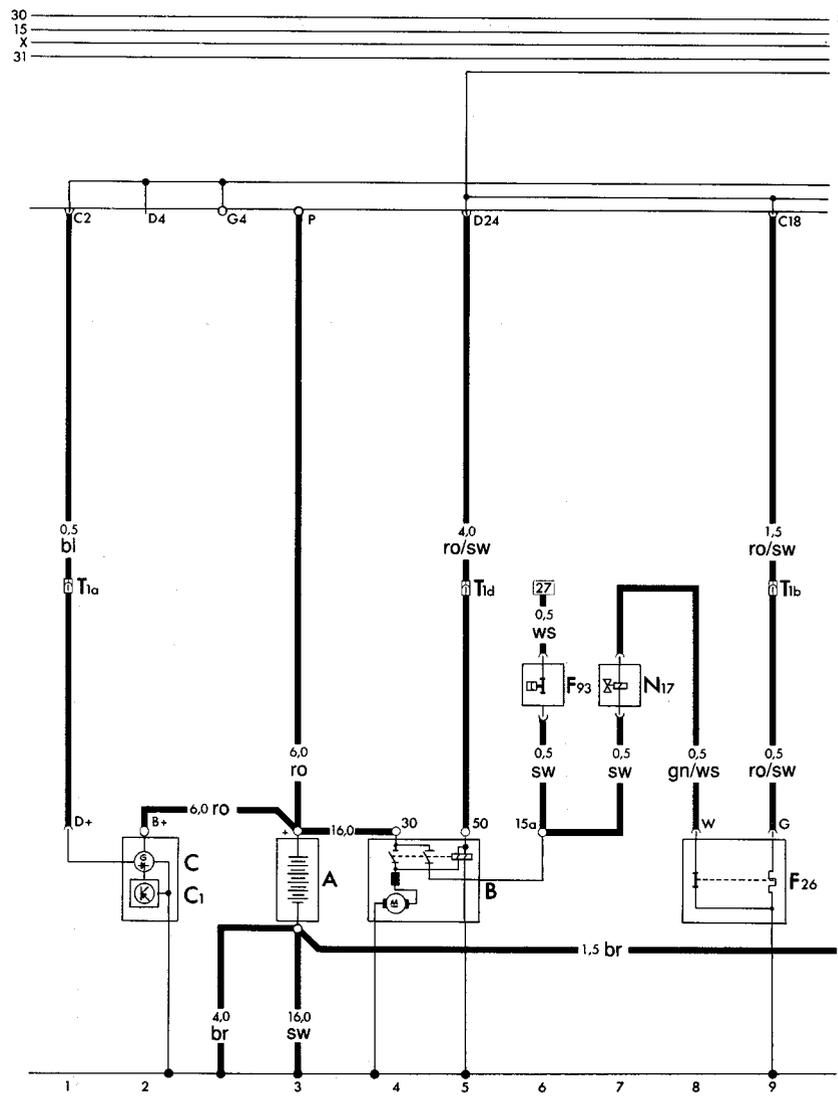


Diagram 28 Starter, alternator and battery - 1.8 16v models

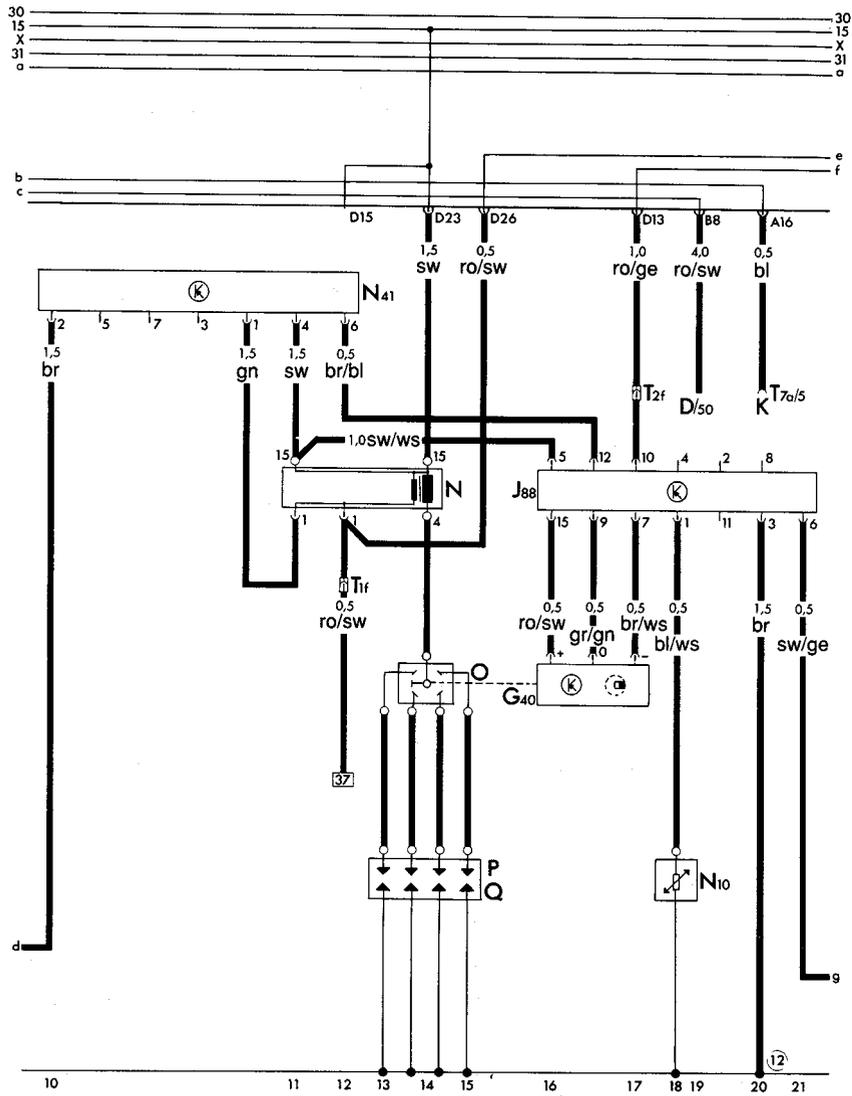


Diagram 29 Ignition system -  
1.8 16v models

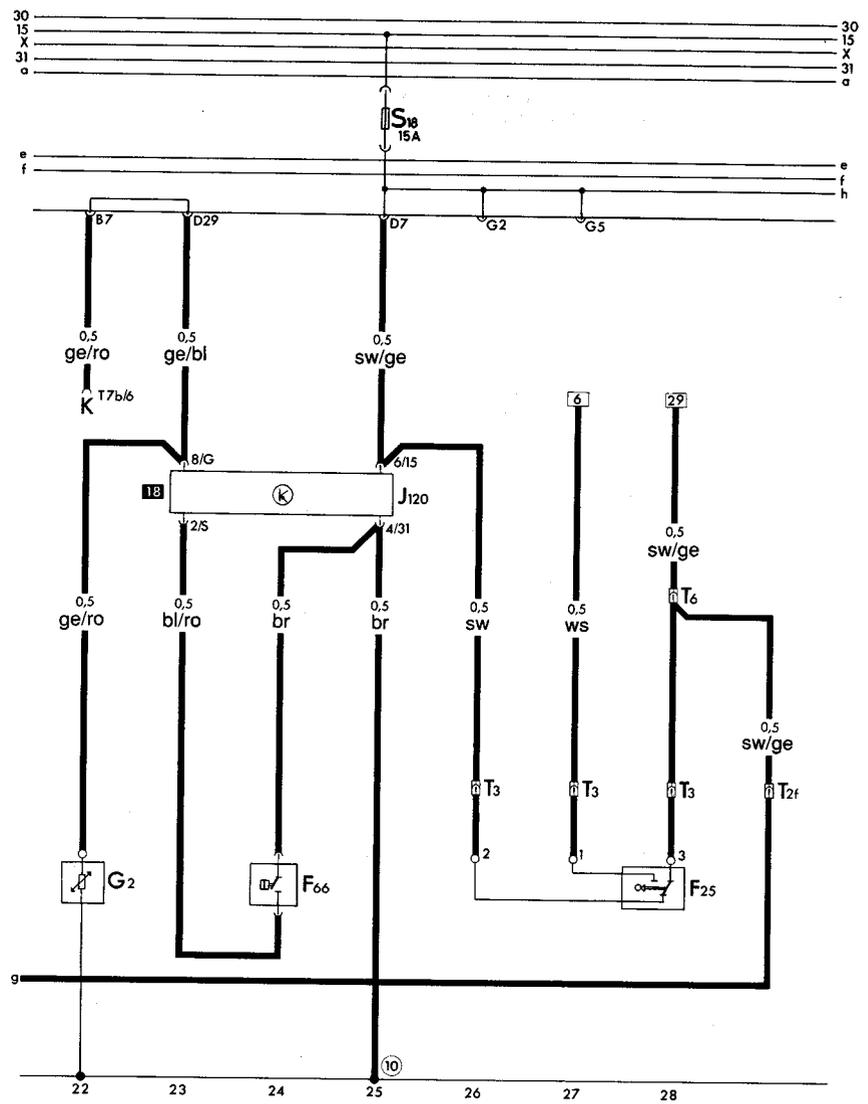


Diagram 30 Low coolant level warning -  
1.8 16v models



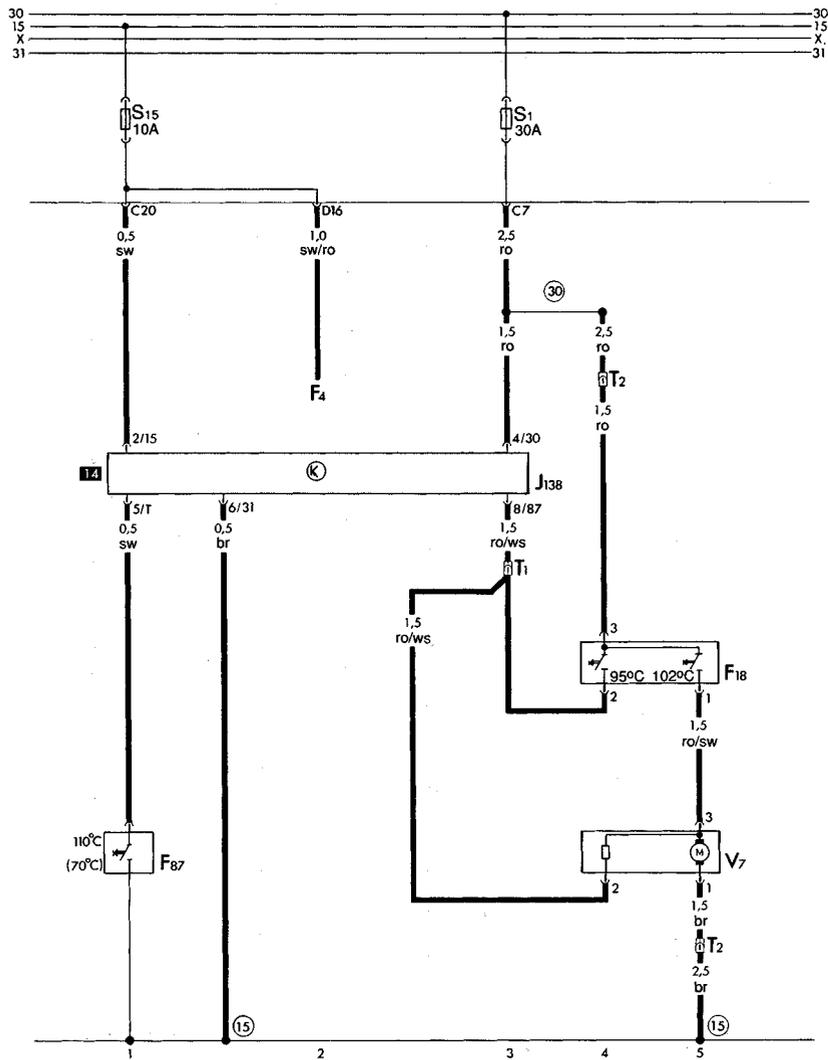


Diagram 33 Radiator fan run-on - 1.6 and 1.8 models from March 1986 to July 1987

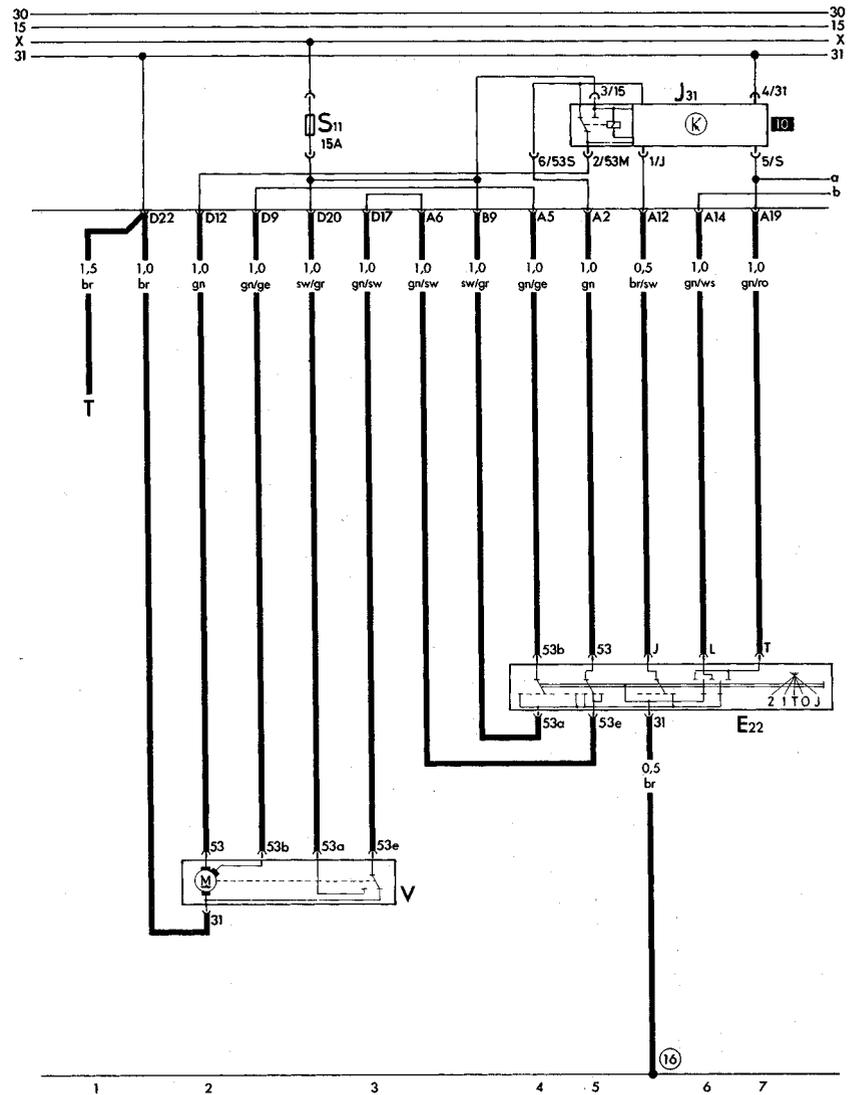


Diagram 34 Windscreen wiper - all Golf models from January 1986 to July 1987

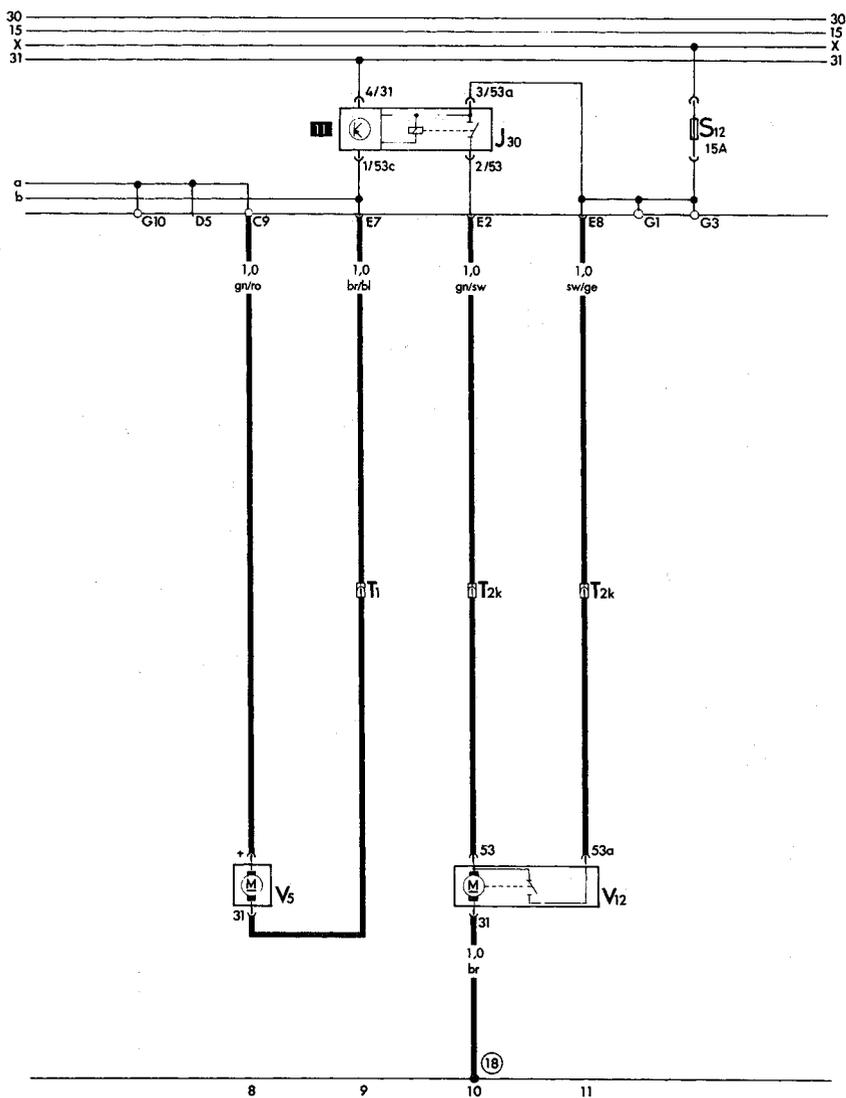


Diagram 35 Windscreen washer, rear wiper and washer - all Golf models from January 1986 to July 1987

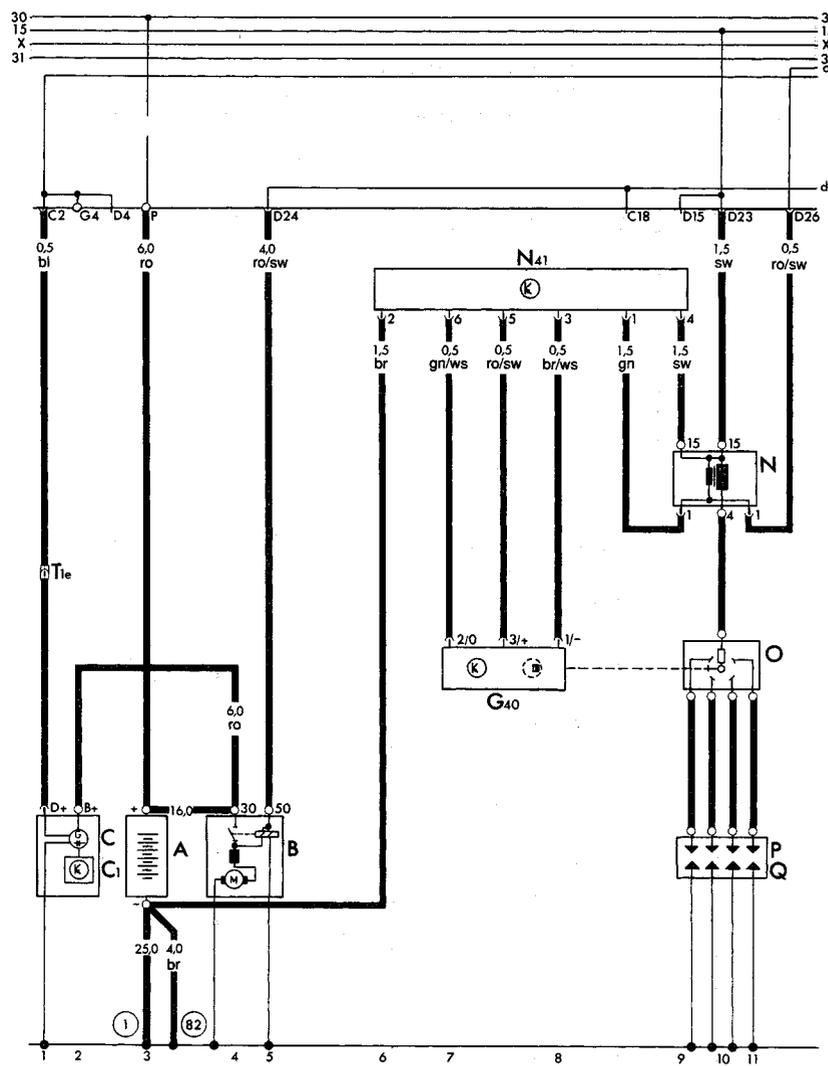


Diagram 36 Starter, alternator, battery and ignition system - 1.6 models, from August 1987



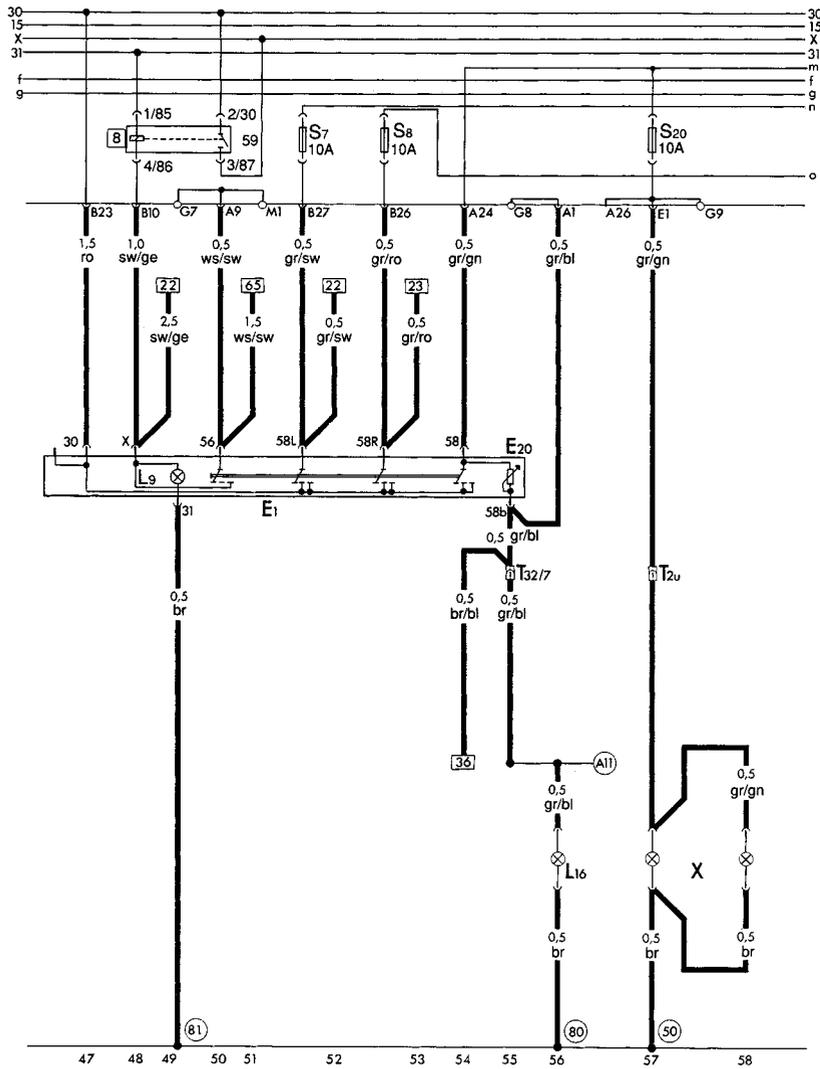


Diagram 39 Light switch and number plate lights - all models, from August 1987

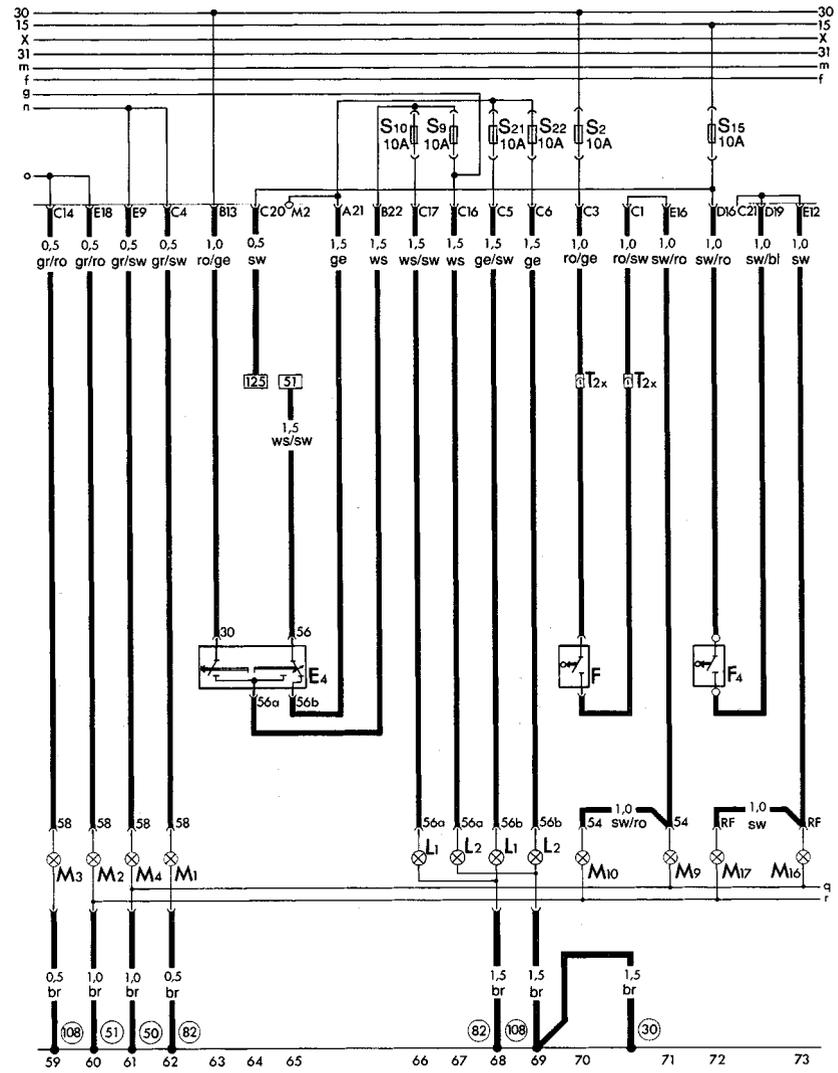


Diagram 40 Headlights, tail lights, dip/flasher headlight switch, brake light switch and reversing light switch - all models, from August 1987

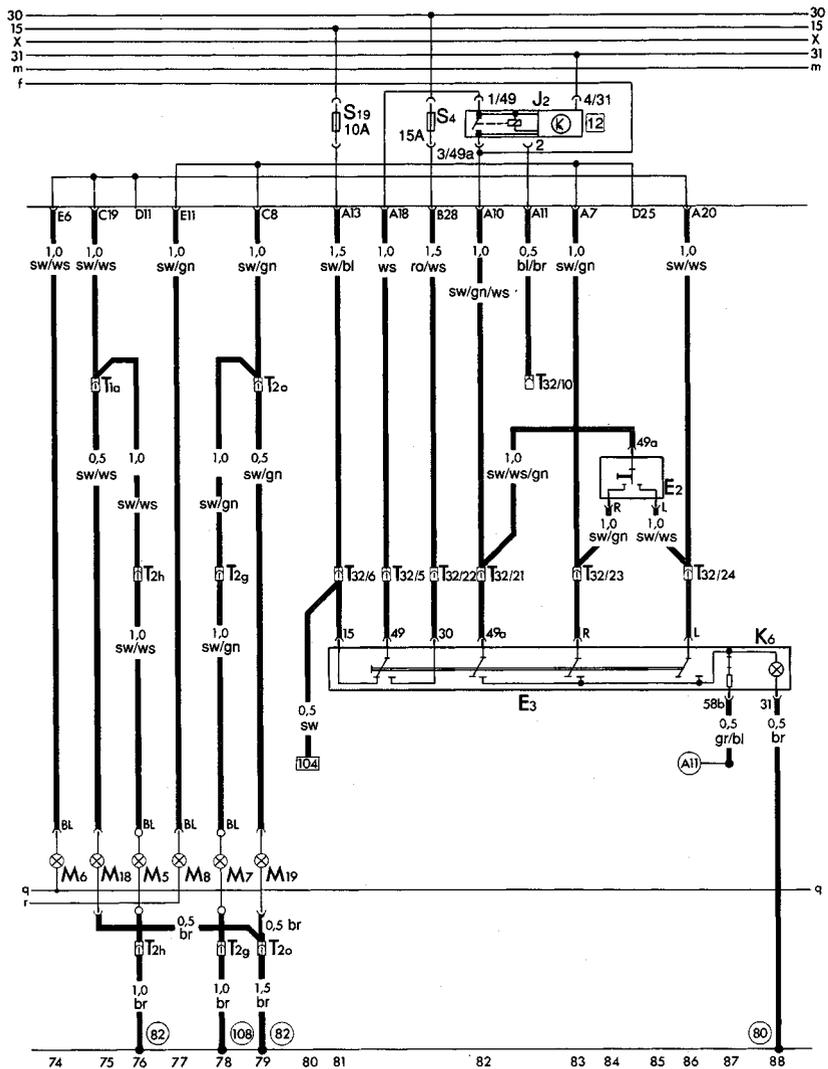


Diagram 41 Indicators and hazard warning lights - all models, from August 1987

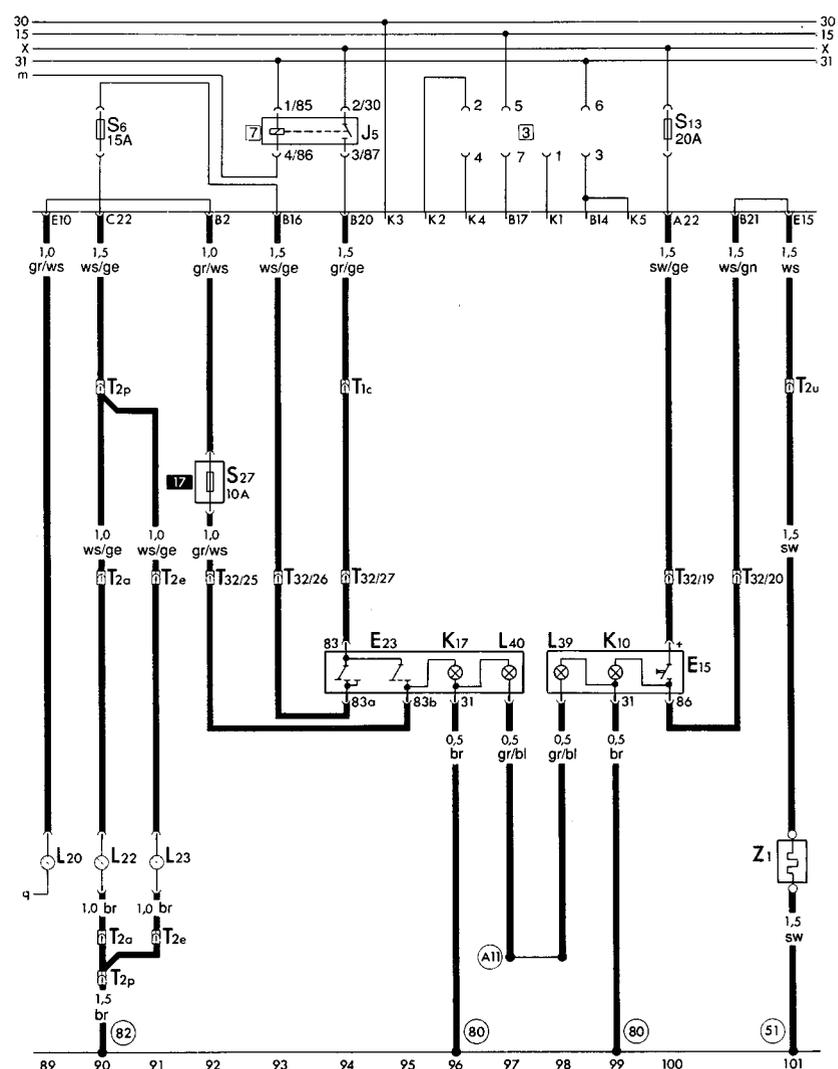


Diagram 42 Foglights, rear foglights and heated rear window - all models, from August 1987

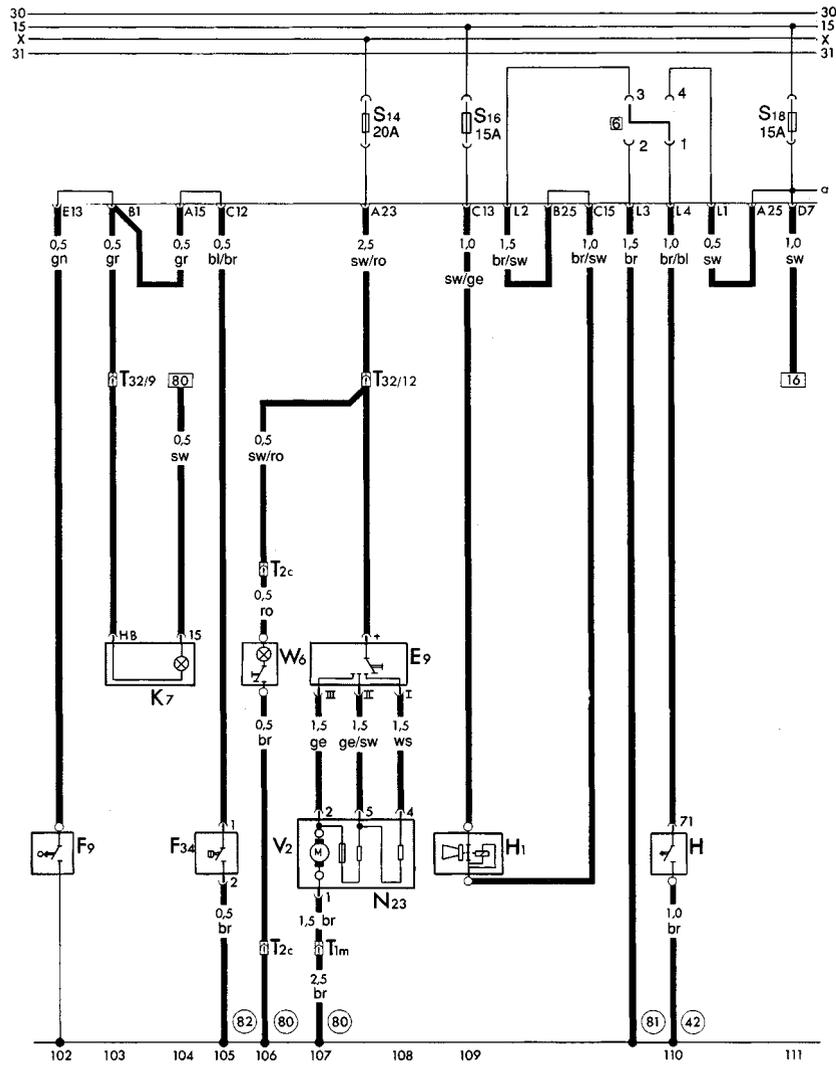


Diagram 43 Handbrake and brake fluid level warning, fresh air blower, glovebox light and horn - all models, from August 1987

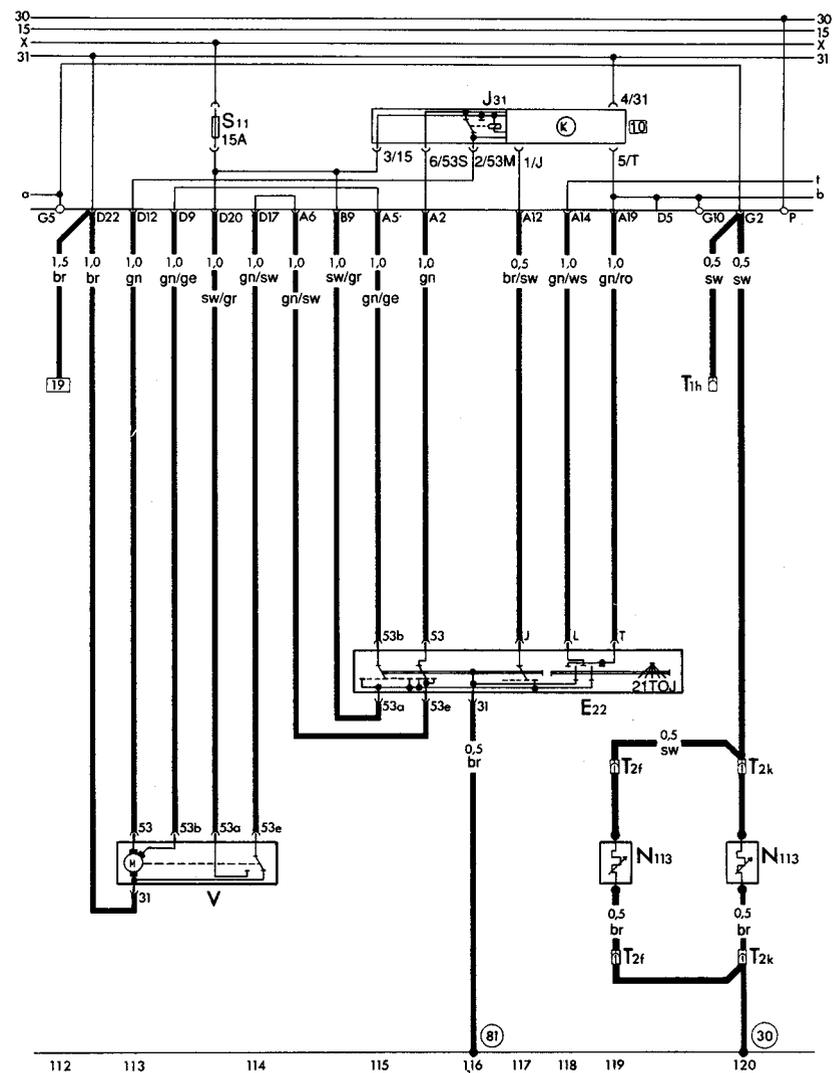


Diagram 44 Windscreen wiper and washers (with heated jets) - all models, from August 1987

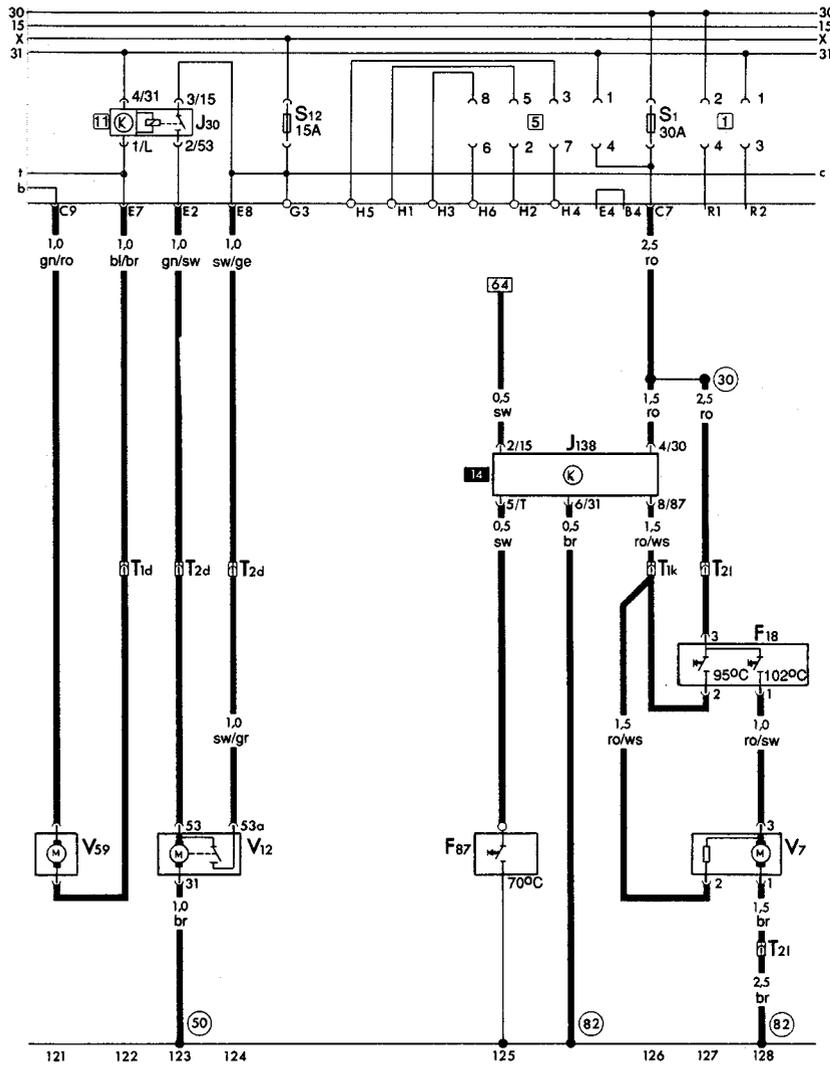


Diagram 45 Rear window wiper and radiator fan run-on - 1.6 and 1.8 carburettor models, from August 1987

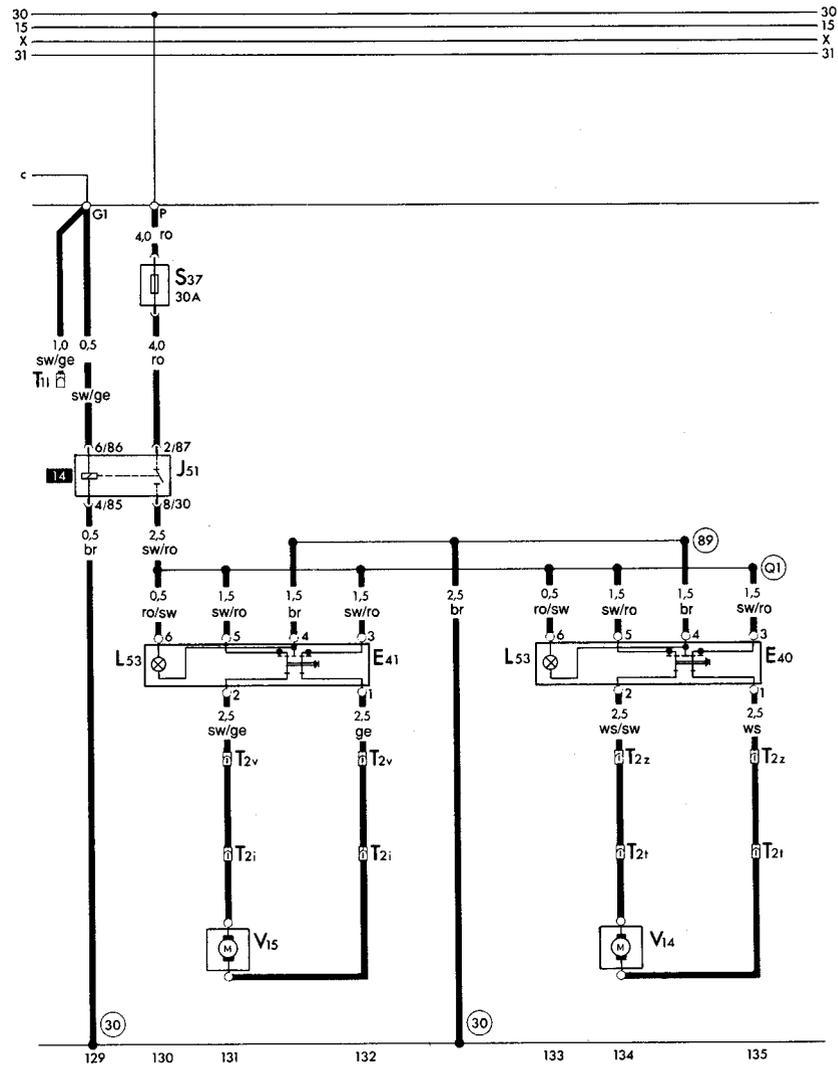


Diagram 46 Electric windows - 1.6 models, from August 1987

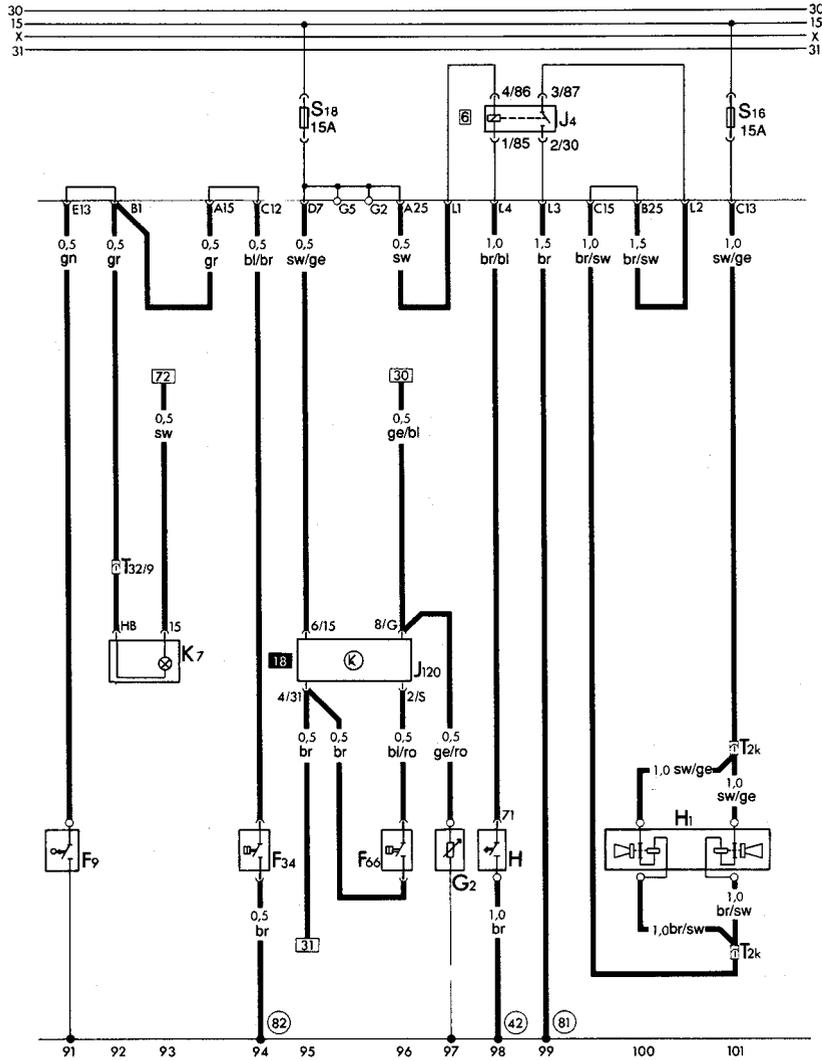


Diagram 47 Handbrake, brake fluid warning, low coolant level indicator and dual tone horn - all models from 1987

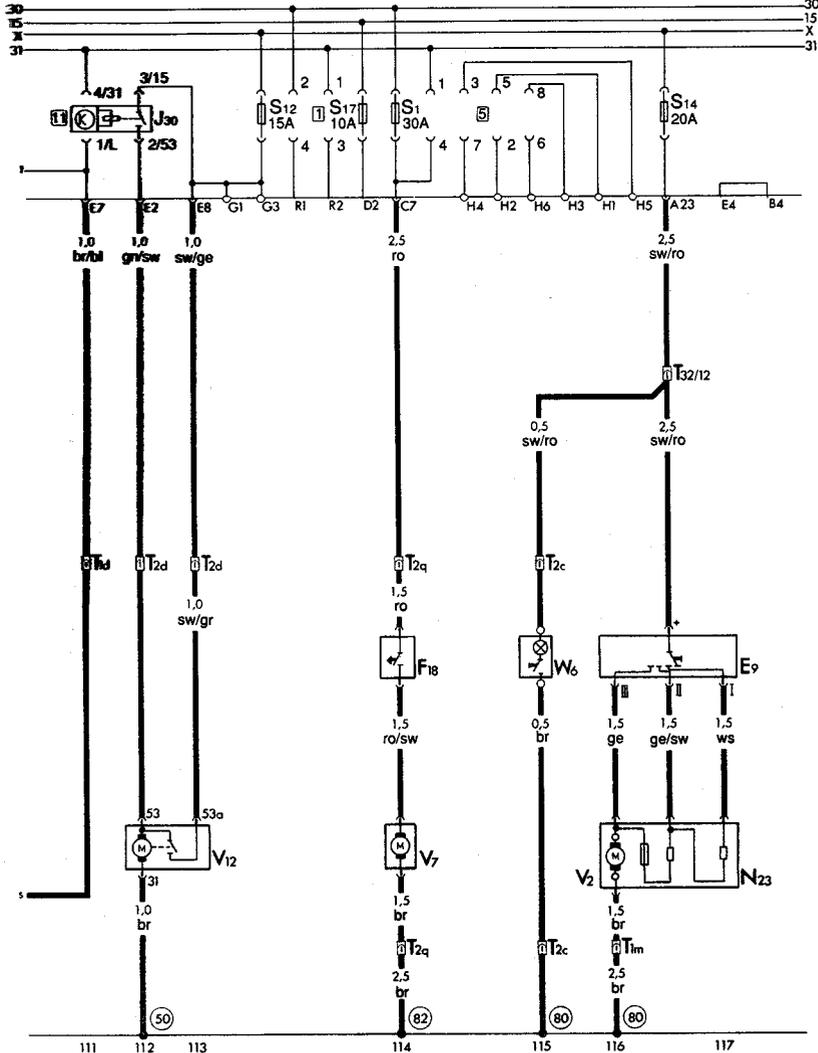


Diagram 48 Rear window wiper and radiator fan - 1.05, 1.3 and 1.8 fuel injection models, from August 1987

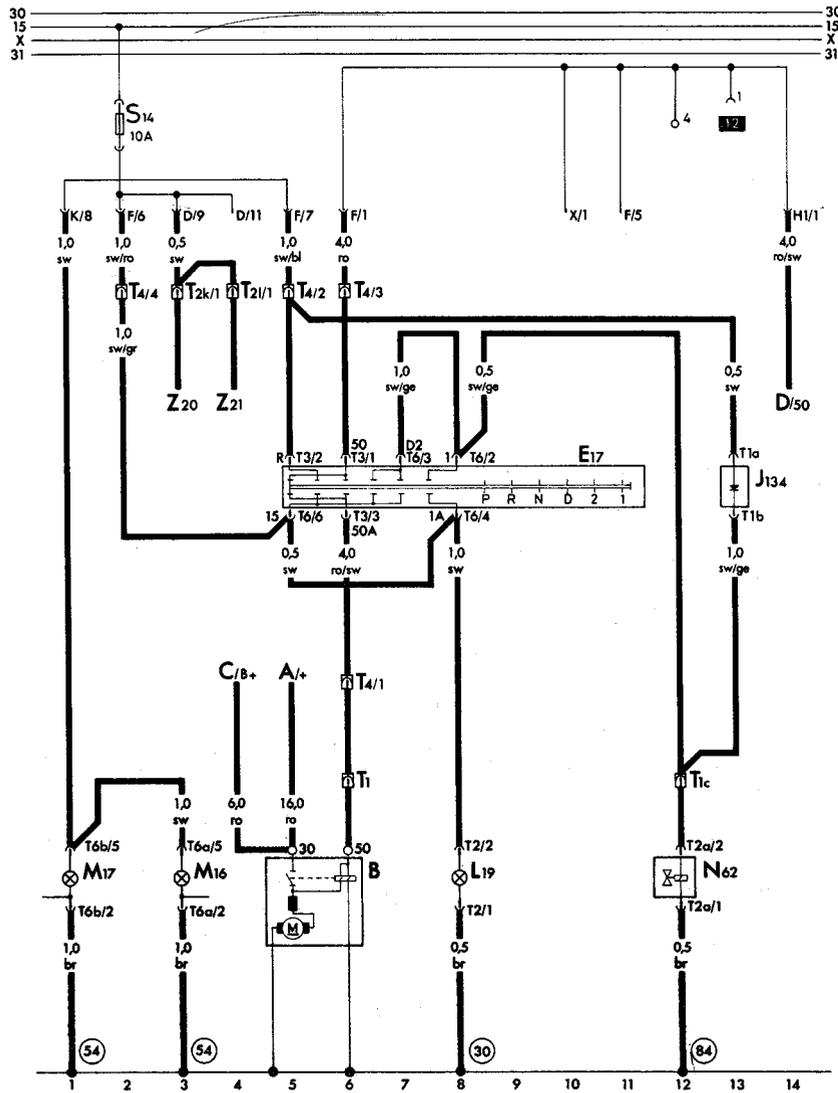


Diagram 49 Automatic transmission - 1.6 models, from January 1989

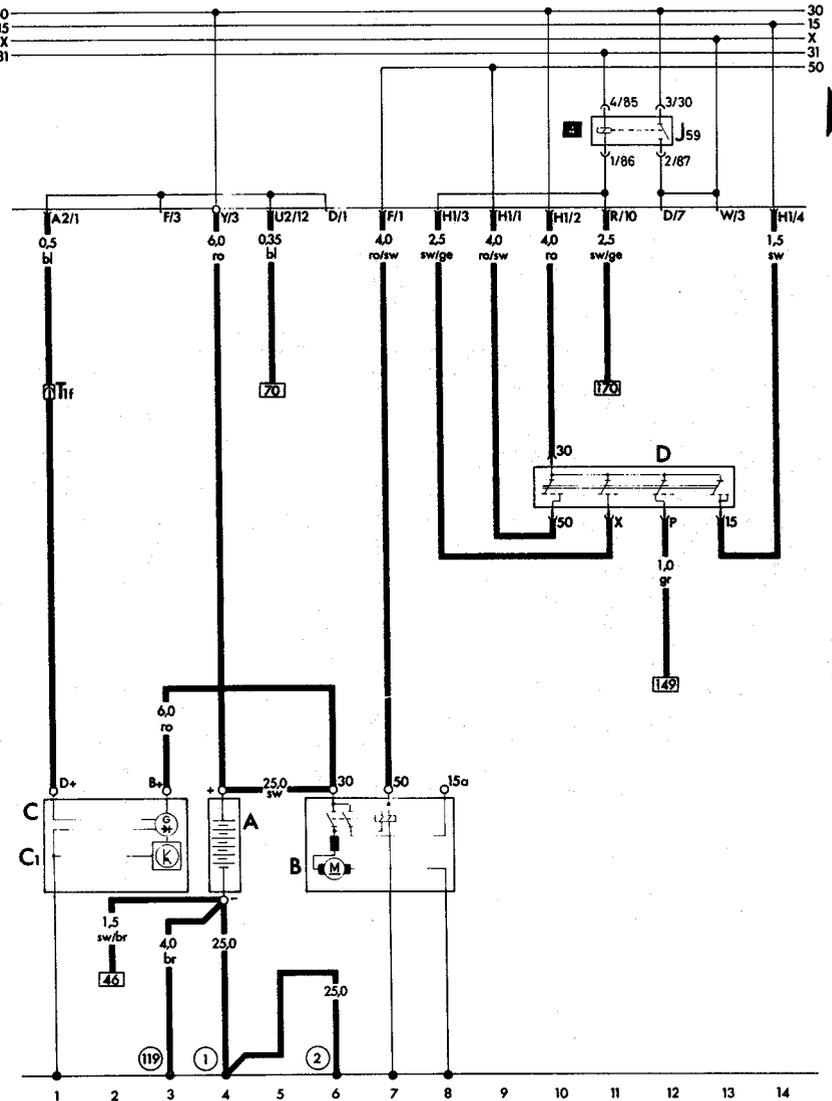


Diagram 50 Alternator, battery, starter motor and ignition switch - 1.6 and 1.8 carburettor models, from January 1989

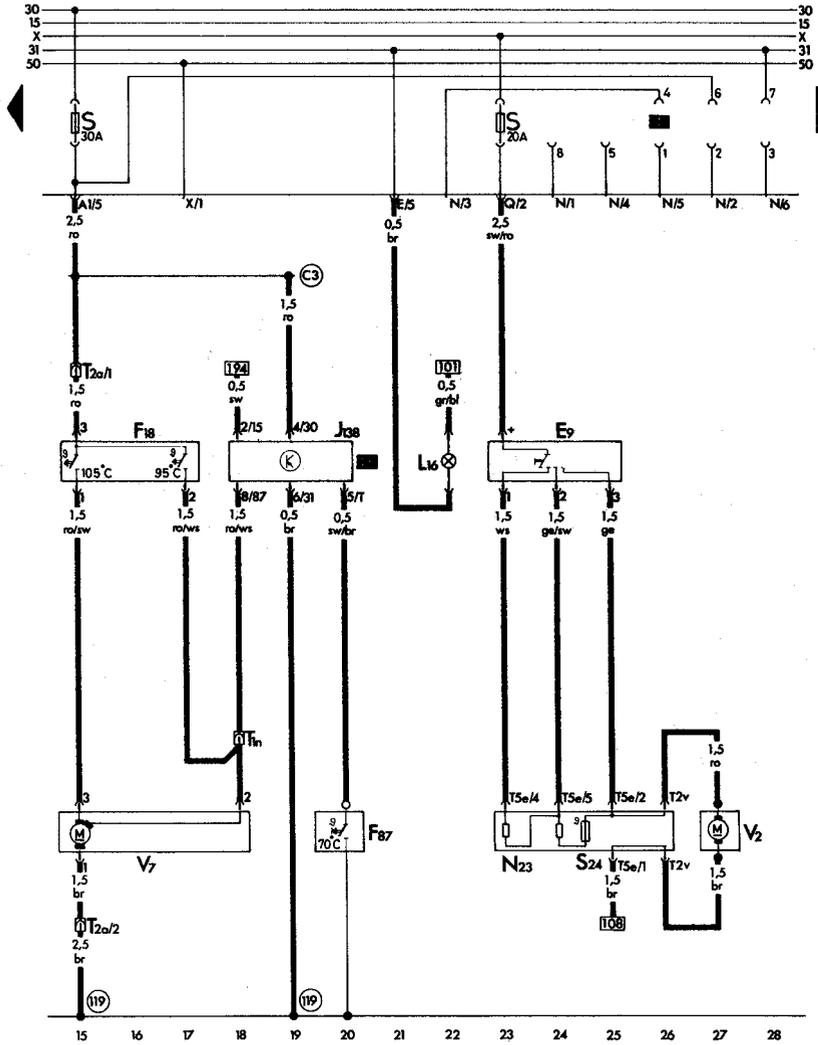


Diagram 51 Radiator fan and fresh air blower - 1.6 and 1.8 carburettor models, from January 1989

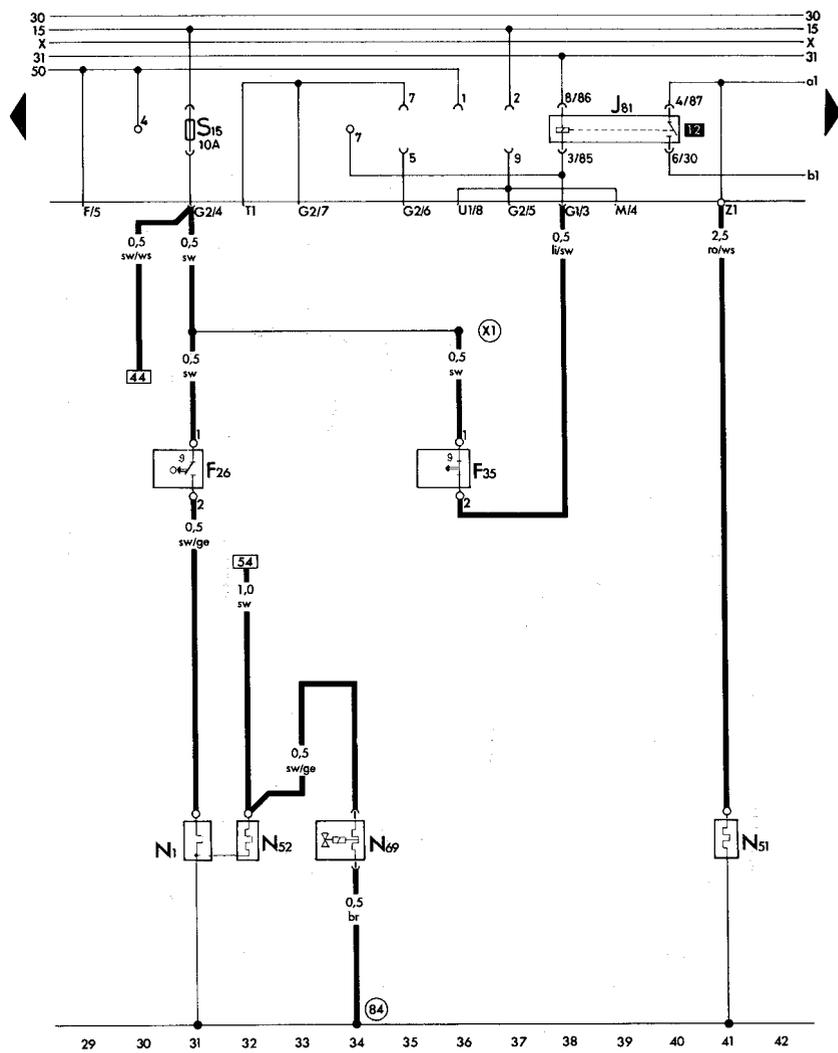


Diagram 52 Automatic choke and inlet manifold preheating - 1.6 and 1.8 carburettor models, from January 1989

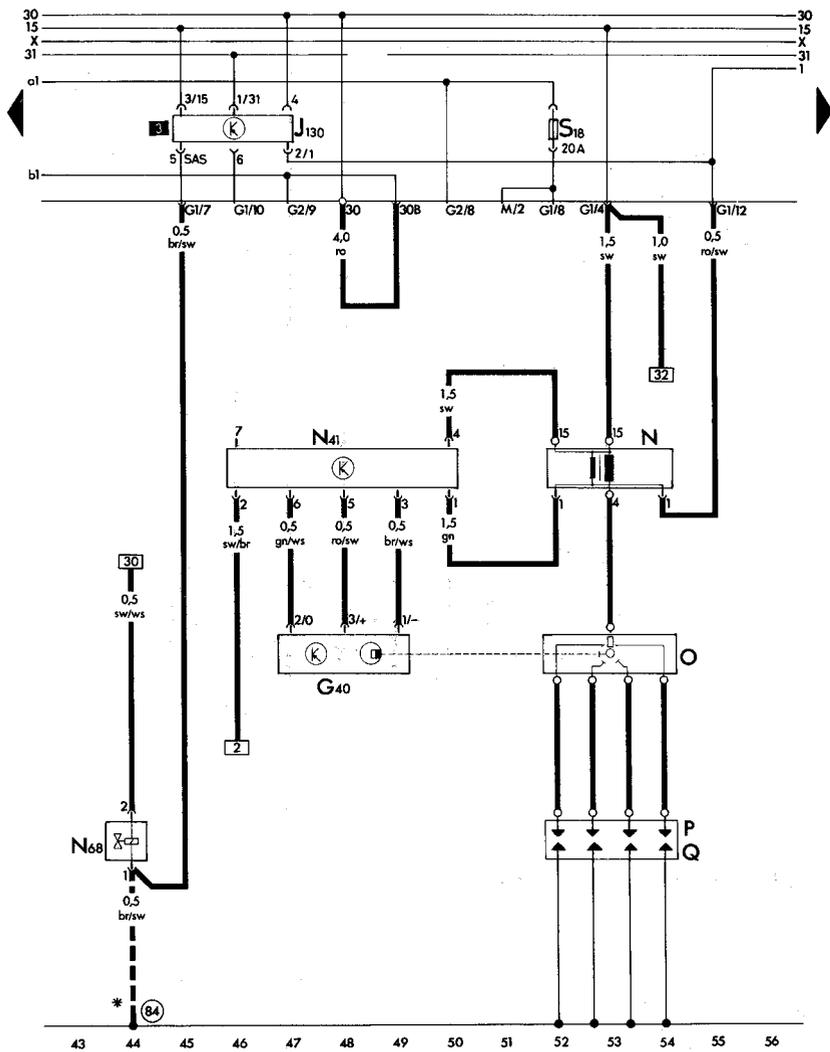


Diagram 53 Ignition system and overrun cut-off - 1.6 and 1.8 carburettor models, from January 1989

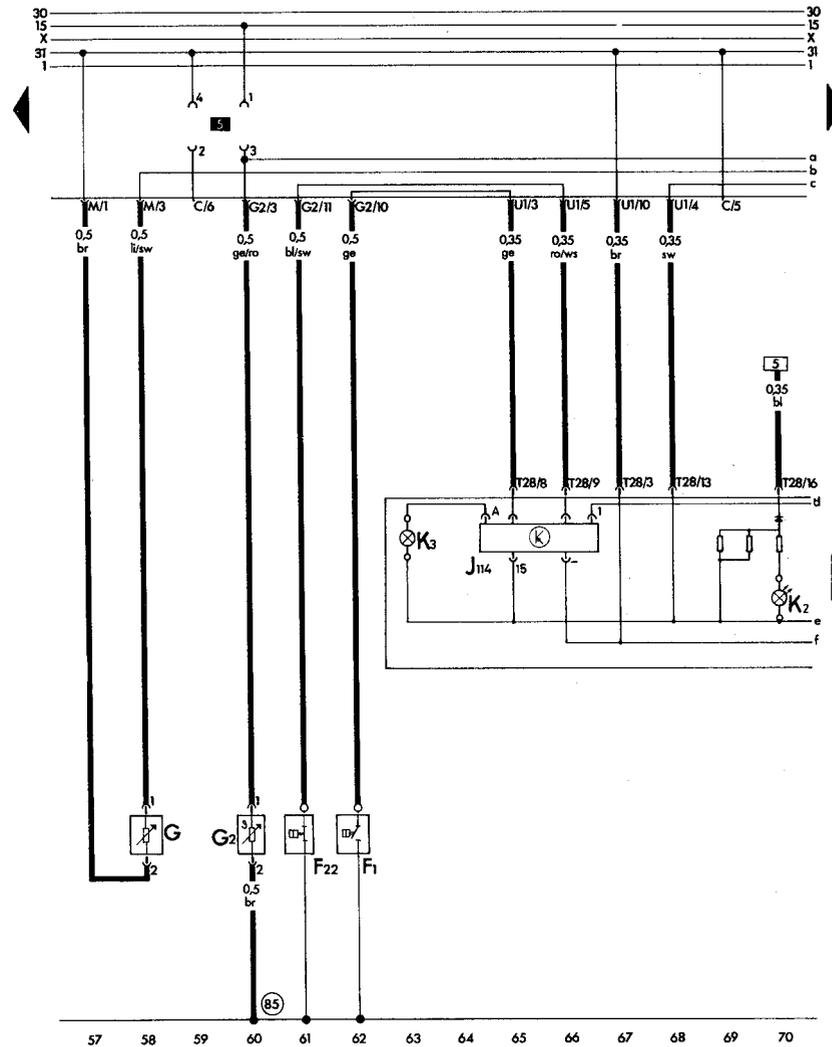


Diagram 54 Instrument panel and oil pressure warning system - 1.6 and 1.8 carburettor models, from January 1989

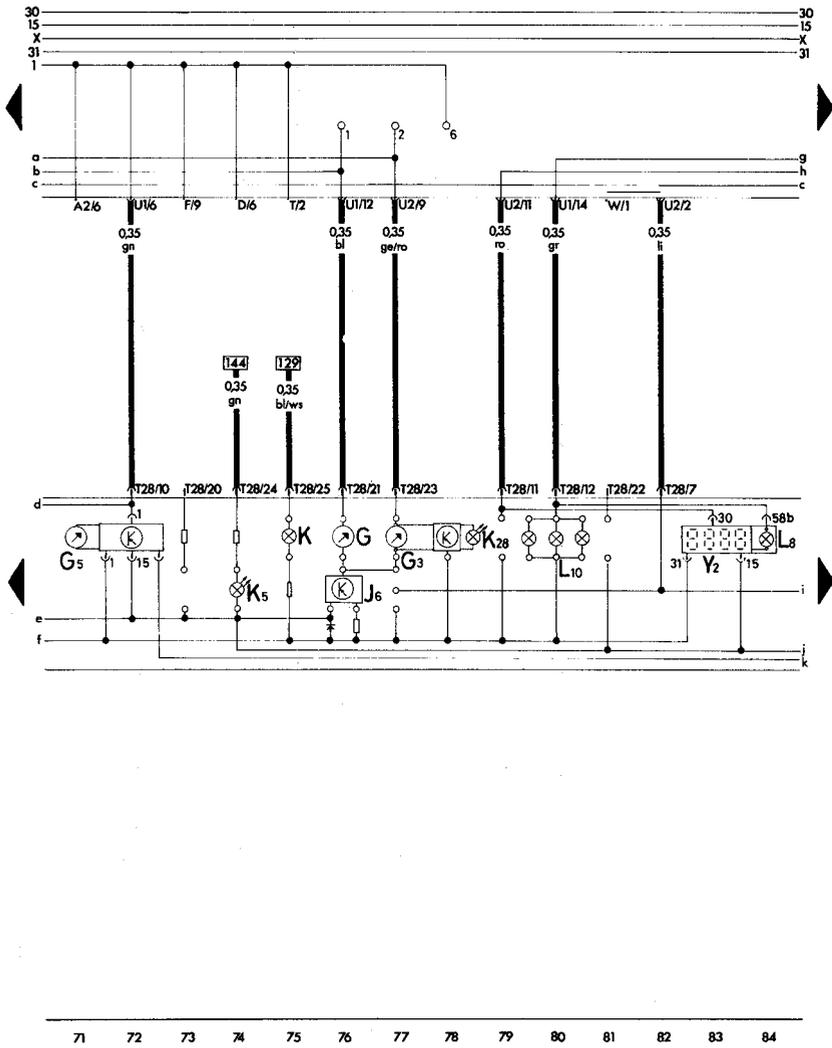


Diagram 55 Instrument panel (tachometer clock, fuel and temperature gauges) - 1.6 and 1.8 carburettor models, from January 1989

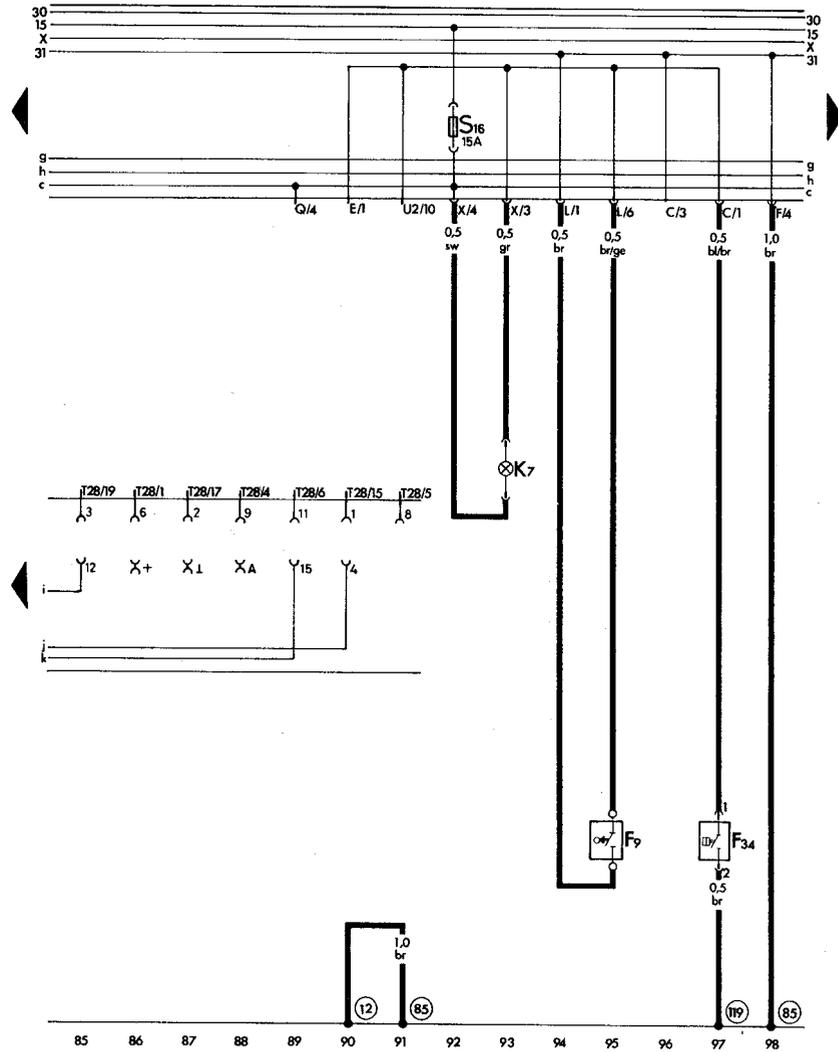


Diagram 56 Handbrake 'on' and brake fluid level warning - 1.6 and 1.8 carburettor models, from January 1989

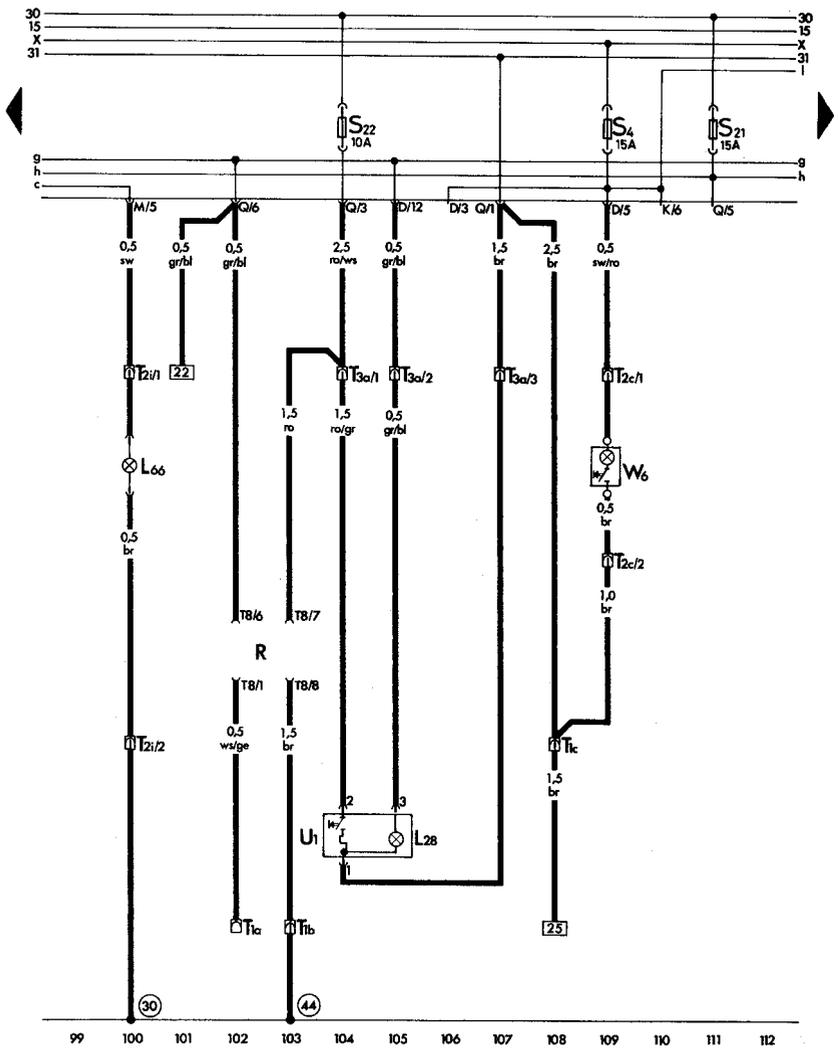


Diagram 57 Glovebox light, cigarette lighter, radio connection and cassette storage light - 1.6 and 1.8 carburettor models, from January 1989

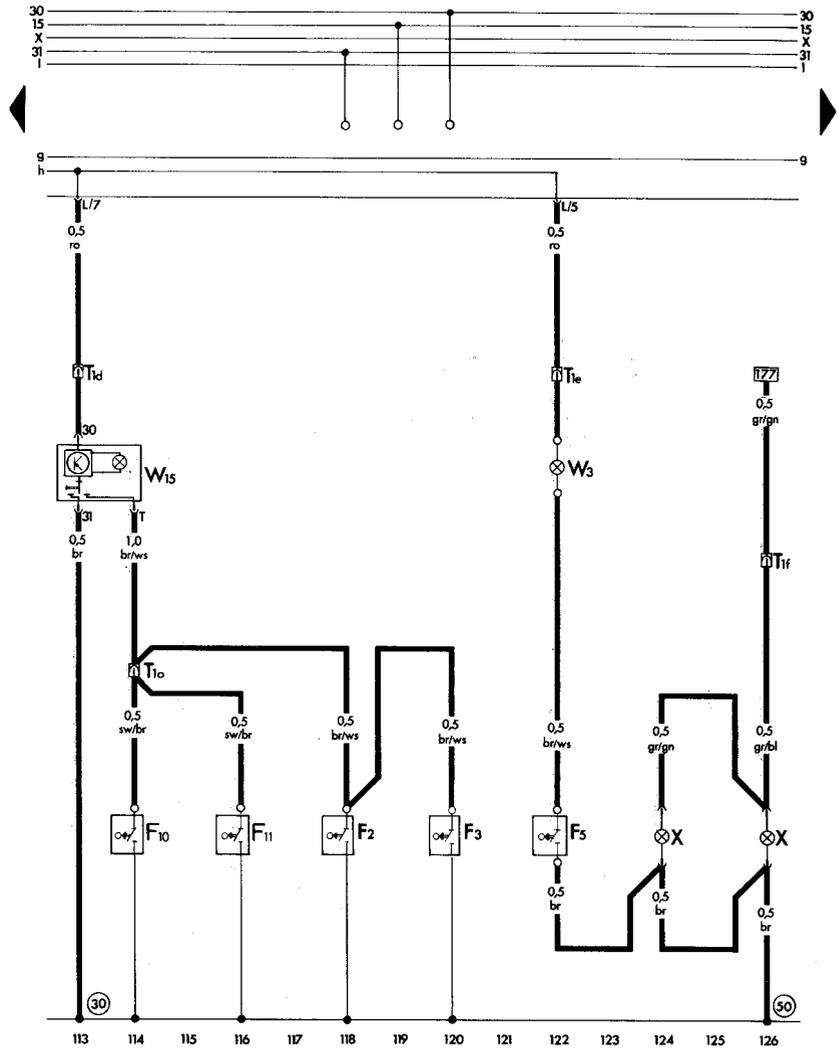


Diagram 58 Interior light, boot light and number plate light - 1.6 and 1.8 carburettor models, from January 1989

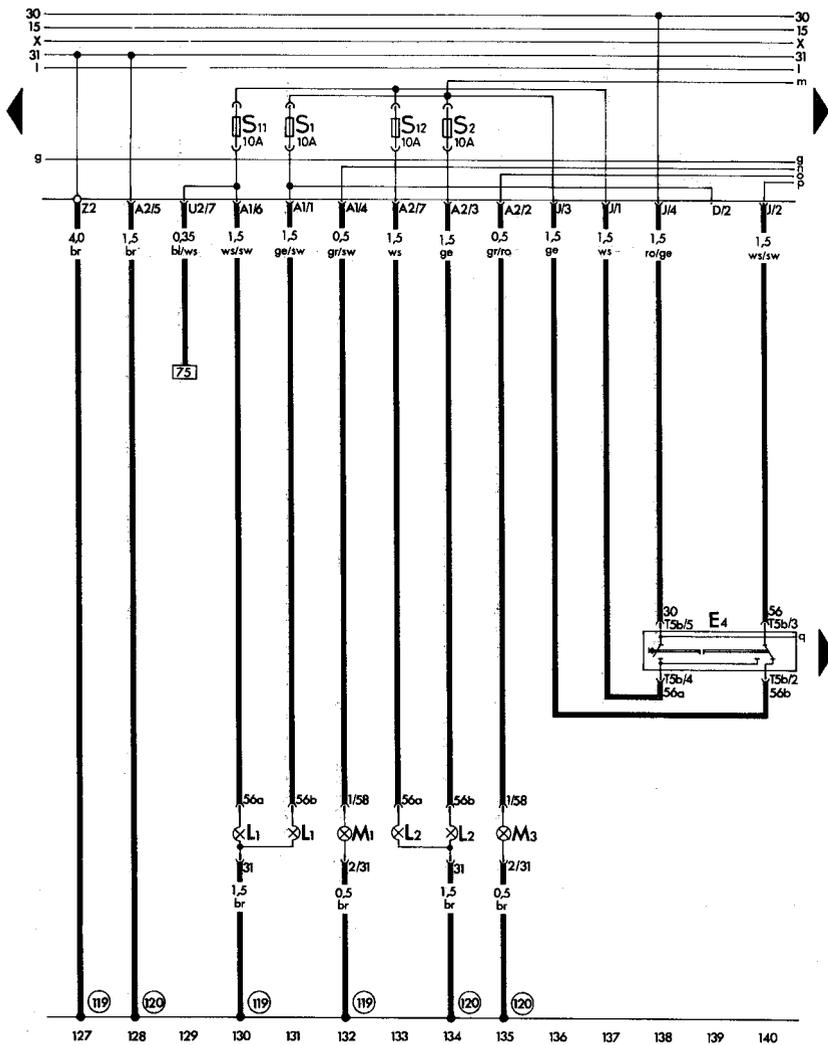


Diagram 59 Headlights, sidelights and headlight dip/flash switch - 1.6 and 1.8 carburettor models, from January 1989

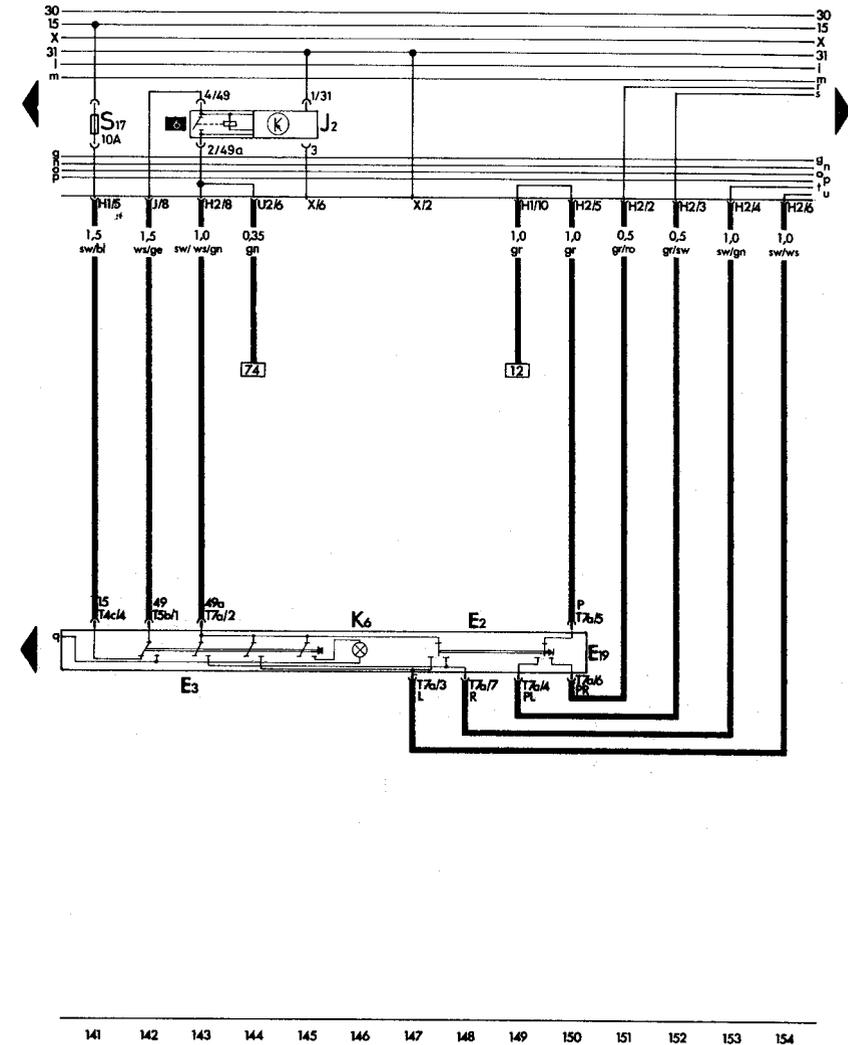


Diagram 60 Direction indicators, hazard warning lights and parking light switch - 1.6 and 1.8 carburettor models, from January 1989

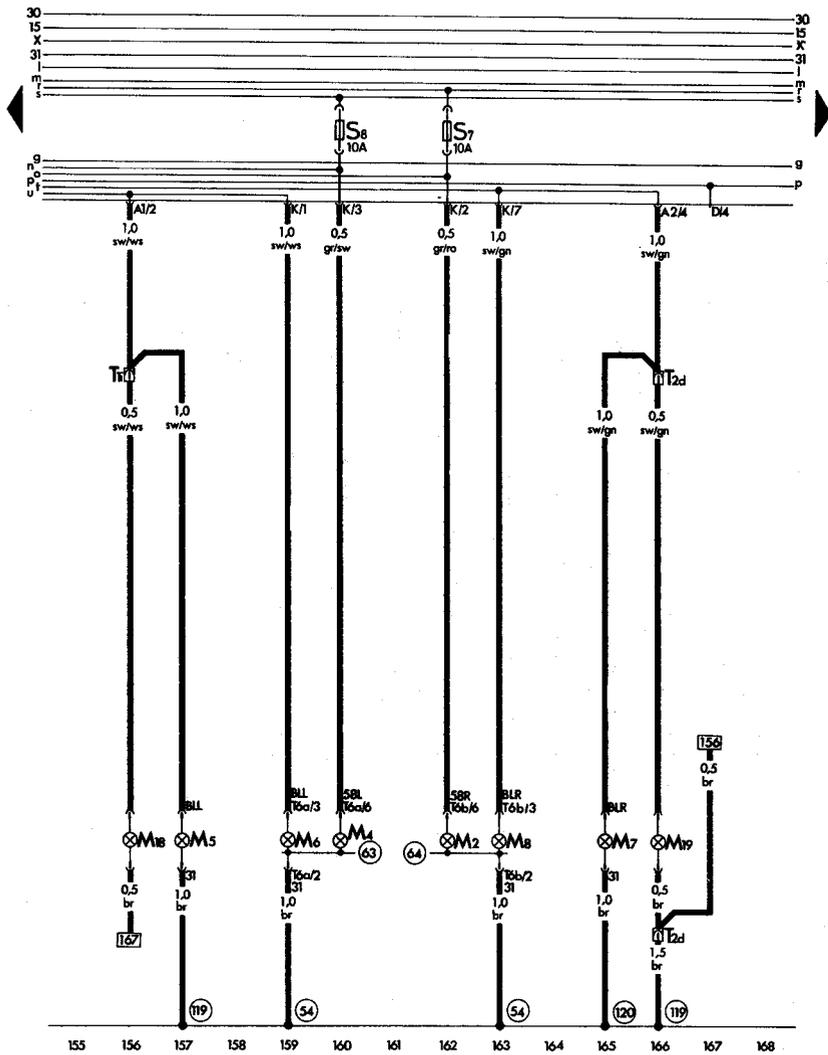


Diagram 61 Direction indicators and tail lights - 1.6 and 1.8 carburettor models, from January 1989

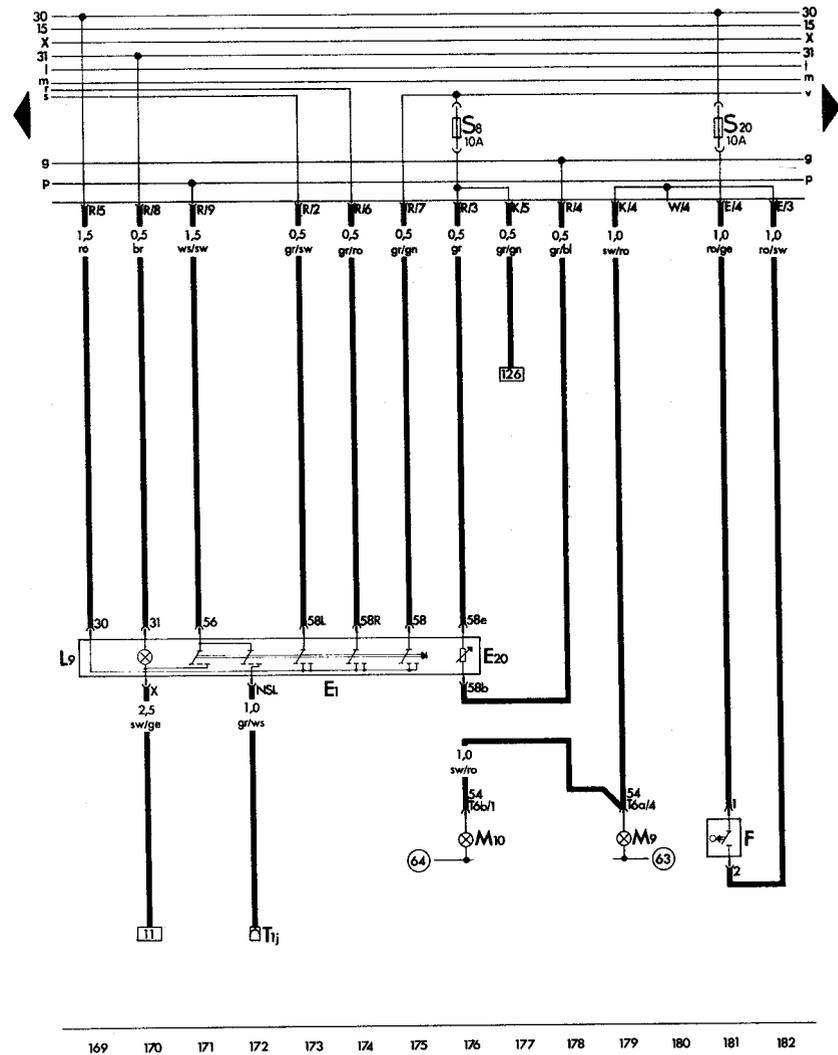


Diagram 62 Lighting switch and brake lights - 1.6 and 1.8 carburettor models, from January 1989

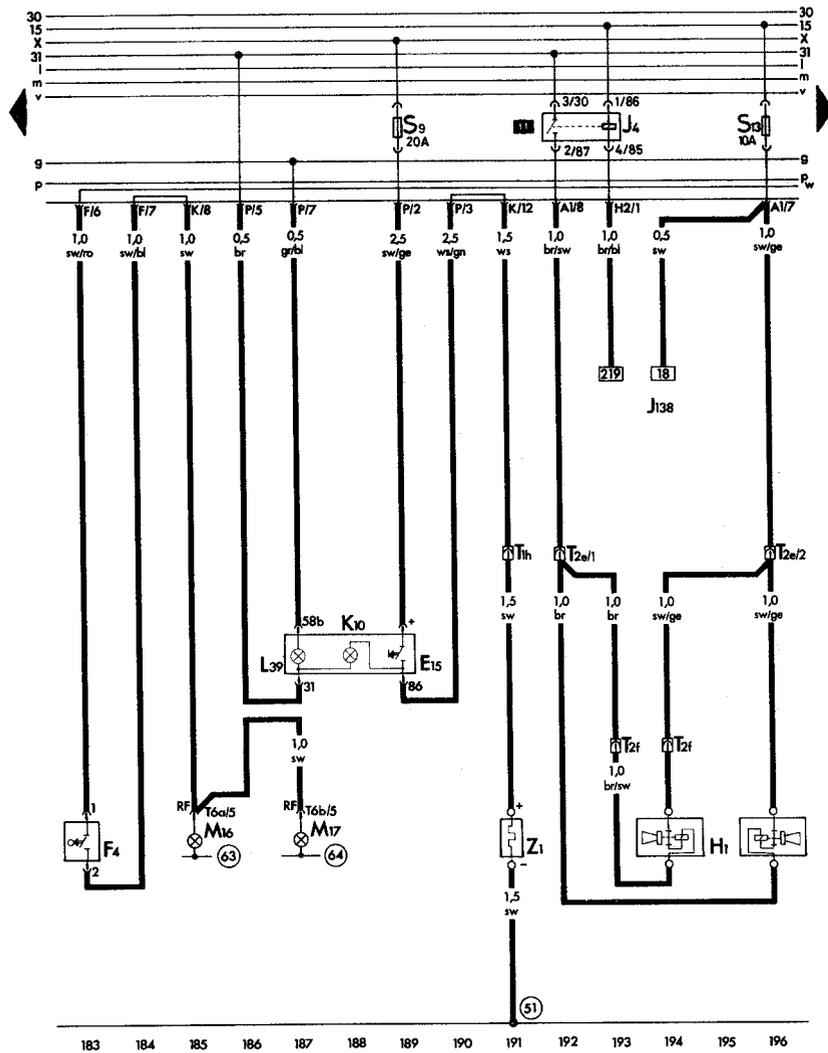


Diagram 63 Reversing lights, heated rear window and dual tone horn - 1.6 and 1.8 carburettor models, from January 1989

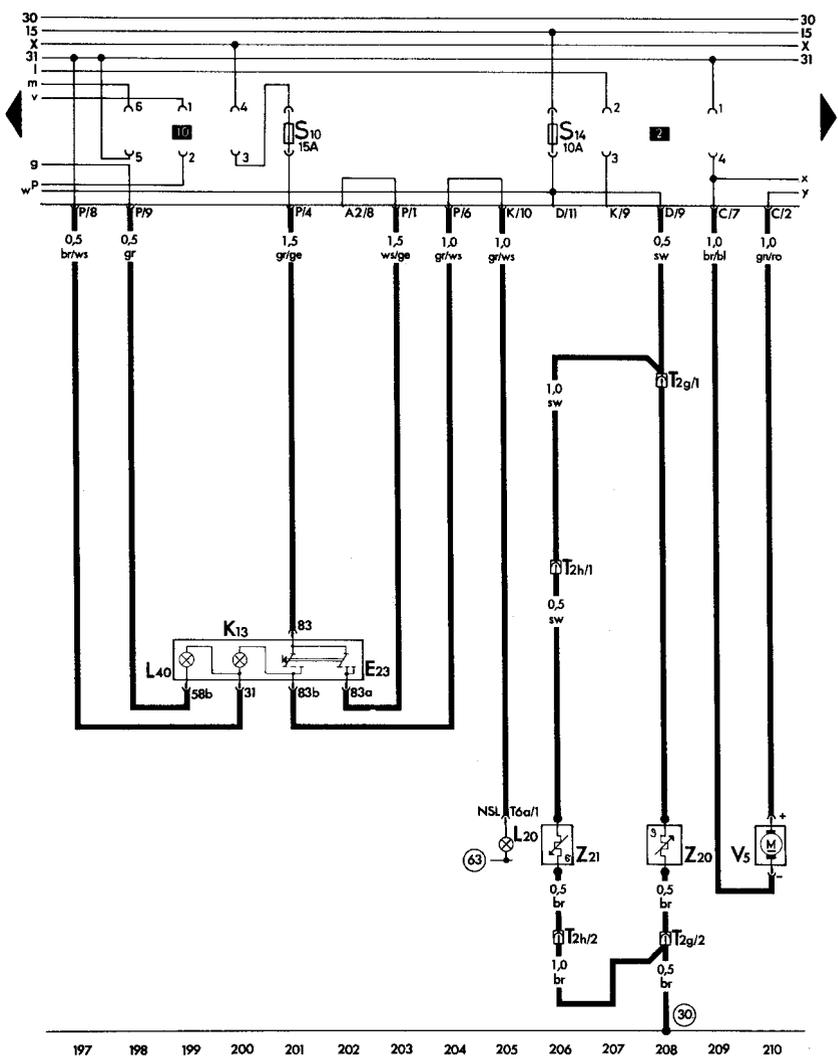


Diagram 64 Rear foglight and heated windscreens washer jets - 1.6 and 1.8 carburettor models, from January 1989

1081 VW Golf & Jetta



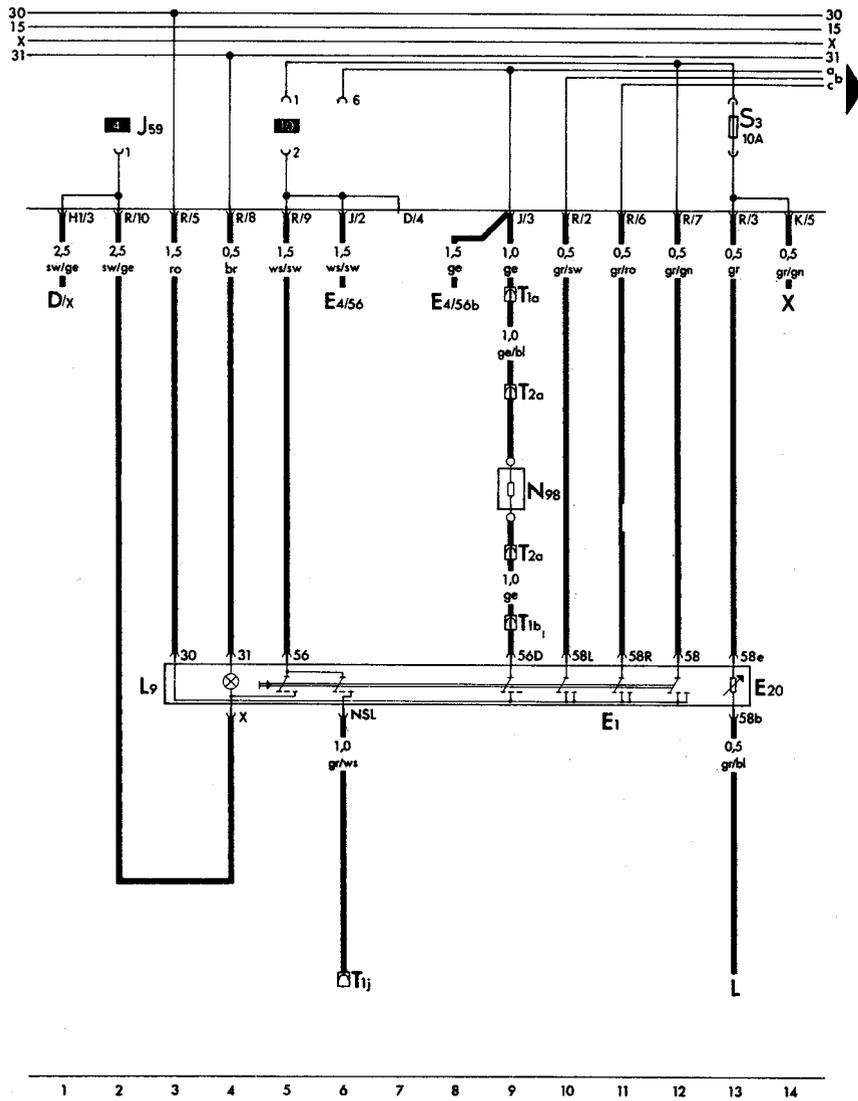


Diagram 67 Dim-dip lights (lighting switch and series resistance) - all models from January 1989

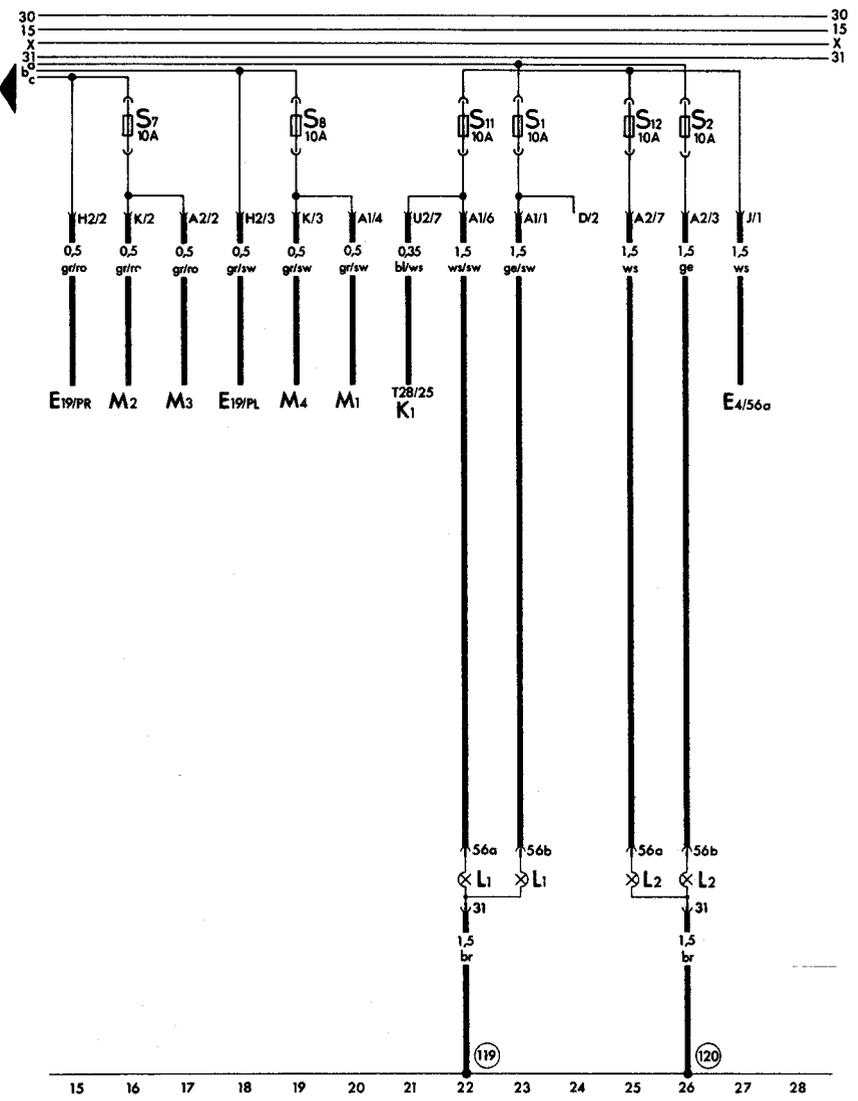


Diagram 68 Dim-dip lights (headlight bulbs) - all models from January 1989

1081 VW Golf & Jetta

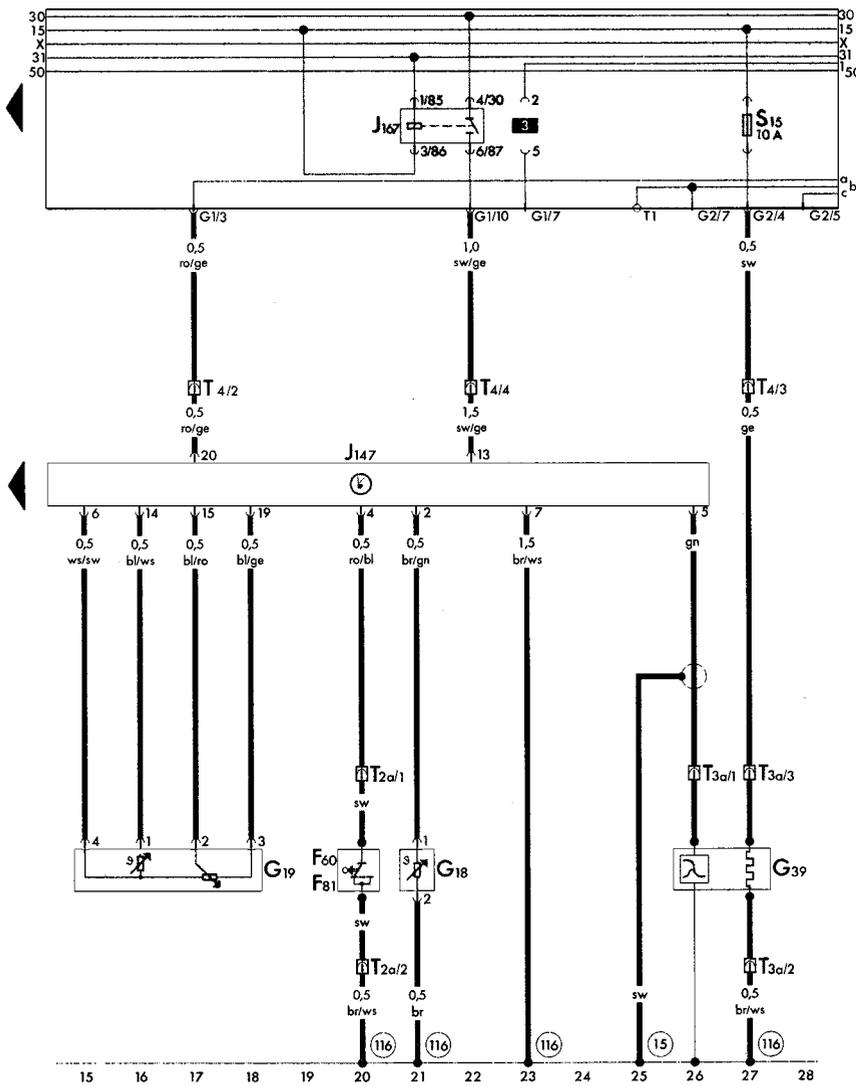


Diagram 69 Digijet control unit and sensors - 1.3 (code NZ) models

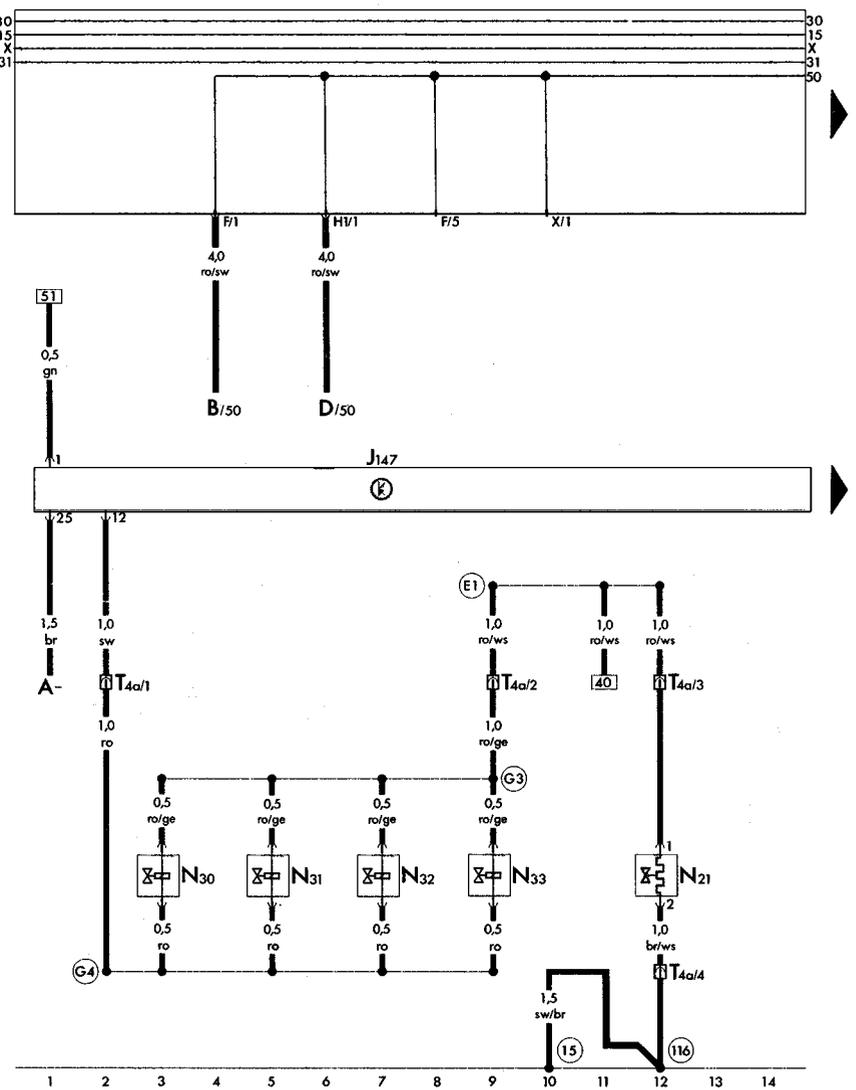


Diagram 70 Digijet control unit and injectors - 1.3 (code NZ) models

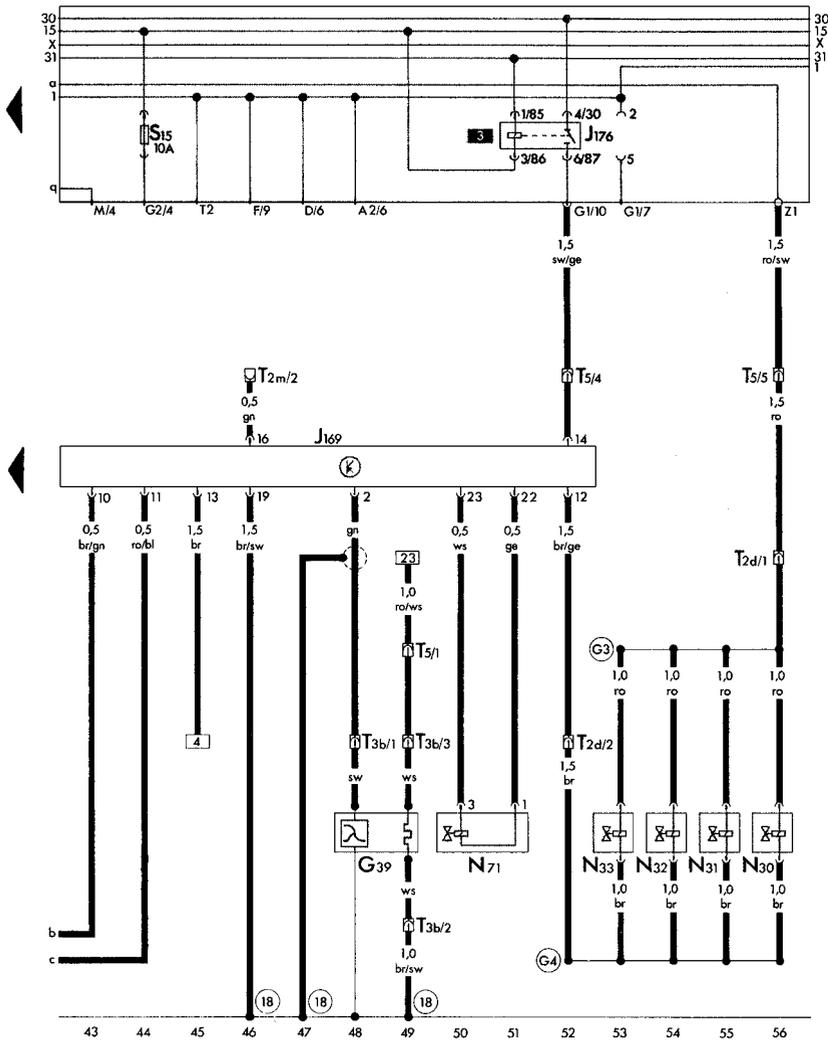


Diagram 71 Digifant fuel system - later 1.8 models

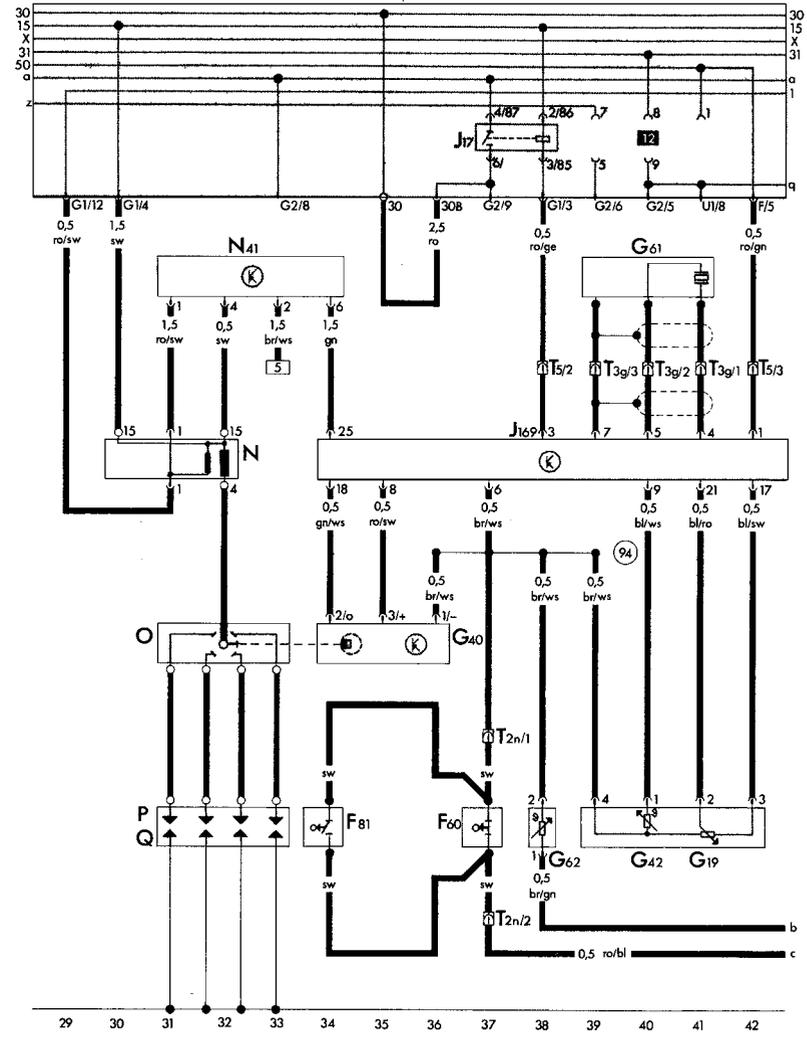


Diagram 72 Digifant ignition system - later 1.8 models