

MAINTENANCE

Maintenance operations type " A, B or C " are different depending on vehicle mileage.

MAINTENANCE SCHEDULE

– All uses

D4R/D5		A		B		A		B		A		C
Km x 1000	5	10	15	20	25	30	35	40	45	50	55	60

Example :

– Vehicle mileage : **40 000 km.**

Implement all **B** type operations

- For all operations **0** : see pages (F3/F4)
- For all operations **A** : see pages (F5)
- For all operations **B** : see pages (F6/F7)
- For all operations **C** : see pages (F8 → F11)
- Certain operations require **specific servicing frequencies** : see pages(F12/F13)
- If annual mileage is low, change oil in all major units every year.
- When total vehicle mileage exceeds the values shown in the table, add table value to existing mileage.

example : 80 000 = 60 000 + 20 000 km

1 hour's operation = 50 km

F3 servicing

SERVICE 0

**WARRANTY INSPECTION after 5 000 km in TOUGH CONDITIONS
after 10 000 km in INTER-CITY AND LONG DISTANCE CONDITIONS**

Depending on your vehicle's equipment

SERVICE BAY OPERATIONS

Drain and refill

Engine

Gearbox

Transfer box

Rear drive axle(s)

Front drive axle

Wheel hubs

Carry out the following

Renew engine oil filter cartridge(s)

Drain fuel prefilter

Grease all points (prop shafts in particular) (see page E1)

Lubricate all points without grease nipples: door hinges, window winders, locks, striker plates, cab lock, etc...

Check

All levels

Wheel nut tightness

Tyre and spare wheel inflation pressures

WORKSHOP OPERATIONS

Carry out the following

Renew power steering reservoir filter element

Check

Anti-freeze concentration in cooling system

Power steering system for operation and leaks

Condition of braking circuits for leaks and operation of gauges and warning lights

Load sensing valve for operation and adjustment

Visually check brake lining wear

F4 servicing

SERVICE 0

TECHNICAL INSPECTION after 6 MONTHS

WORKSHOP OPERATIONS

Check

Circuits for leaks (braking, auxiliary equipment, steering, cooling)
Main attachments (cross-members, fifth wheel, prop shafts, springs,...)
Hydraulic and fuel circuits, electrical wiring and attachments
Bodywork attachment
Major units for leaks

ENGINE

Check

For leaks in air inlet circuit (position of hoses, tightness of clamps,...)
Condition and tension of drive belts

CLUTCH

Check

Free travel of clutch servo or clutch pedal

BRAKES

Check

Visually check brake lining wear

ELECTRICS

Check

Battery voltage (engine running at 1500 rpm : 28.5 ± 0.3 volts)
Operation of warning lights

F5 servicing

SERVICE A

Depending on your vehicle's equipment

SERVICE BAY OPERATIONS

Drain and refill

Engine

Carry out the following

Renew engine oil filter cartridge(s) (see page E1)

Renew fuel filter element(s)

Grease all points (prop shafts in particular) (see page E1)

Lubricate all points without grease nipples: door hinges, window winders, locks, striker plates, cab lock, etc...

WORKSHOP OPERATIONS

CLUTCH

Check

Clutch fork clearance

F6 servicing

SERVICE B

Depending on your vehicle's equipment

SERVICE BAY OPERATIONS

Drain and refill

Engine

Carry out the following

Renew engine oil filter cartridge(s) (see page E1)

Renew fuel filter element(s)

Grease all points (prop shafts in particular) (see page E1)

Lubricate all points without grease nipples: door hinges, window winders, locks, striker plates, cab lock, etc...

Clean

Fuel prefilter(s) sediment bowl and filter element

Check

All levels

Wheel nut tightness

WORKSHOP OPERATIONS

ENGINE

COOLING SYSTEM

Check

Condition and tension of drive belts

Air intake, water and fuel pipes for leaks and security, condition of hoses

Operation of air filter clogging indicator

CLUTCH

GEARBOX

TRANSFER BOX

POWER TAKE-OFF

Clean

Breathers

Check

Gearbox for leaks

Transfer box for leaks

Power take-off for leaks

Clutch fork clearance

F7 servicing

SERVICE B

WORKSHOP OPERATIONS (continued)

FRONT DRIVE AXLE

REAR DRIVE AXLE

Check

Rear axle(s) for leaks

Clean

Breathers

BRAKES

Check

Condition of brake linings and adjustment

Condition of brake discs and pads

Condition of braking circuits for leaks and operation of gauges and warning lights

BODYWORK

CHASSIS – SUBFRAME

Check

Brake, steering, fuel pipes and hoses for security and freedom from chafing

F8 servicing

SERVICE C

Depending on your vehicle's equipment

SERVICE BAY OPERATIONS

Drain and refill

- Engine
- Gearbox
- Transfer box
- Front drive axle
- Rear drive axle(s)
- Wheel hubs

Carry out the following

- Renew engine oil filter cartridge(s) (see page E1)
- Renew fuel filter element(s)
- Renew dry air filter element(s)
- Grease all points (prop shafts in particular) (see page E1)
- Lubricate all points without grease nipples: door hinges, window winders, locks, striker plates, cab lock, etc...

Clean

- Dry air filter bowl
- Fuel prefilter(s) sediment bowl and filter element
- Battery terminals and lugs

Check

- All levels
- Wheel nut tightness

F9 servicing

SERVICE C

WORKSHOP OPERATIONS

ENGINE COOLING SYSTEM FUEL SUPPLY

Check

Valve clearances

Condition and tension of drive belts

Air intake, water and fuel pipes for leaks and security, condition of hoses

Condition of water pump bearings

CLUTCH GEARBOX TRANSFER BOX POWER TAKE-OFF

Clean

Breathers

Check

Clutch fork clearance

Gearbox for leaks

Transfer box for leaks

Power take-off for leaks

STEERING

Check

Power steering system for operation and leaks

Play in mechanical steering components, security of steering components, adjustment of steering lock stops

FRONT AXLE

Carry out the following

Renew hub cap grease (without altering adjustment)

Check

Front axle swivel pins assembly and anti-roll bar bushes for excessive wear

Wheel alignment (inspect swivel pin play)

F10 servicing

SERVICE C

WORKSHOP OPERATIONS (continued)

FRONT DRIVE AXLE

Check

Wheel alignment (inspect swivel pin play)

FRONT DRIVE AXLE

REAR DRIVE AXLE

Check

Rear axle(s) for leaks

Clean

Breathers

FRONT SUSPENSION

REAR SUSPENSION

PROP SHAFTS

Check

Condition of spring hangers, condition of leaf springs, tightness of "U" bolts and clamps, anti-roll bar bushing clearance

Condition of shock absorbers

Security of prop shaft universal joint nuts and bolts

Universal joints for excessive wear (for off-road use)

BRAKES

Check

Condition of brake linings and adjustment

Condition of brake discs and pads

Condition of braking circuits for leaks and operation of gauges and warning lights

Correct operation of brake components and circuits (on vehicle)

Load sensing valve for operation and adjustment

Braking efficiency

F11 servicing

SERVICE C

WORKSHOP OPERATIONS (continued)

BODYWORK

CHASSIS – SUBFRAME

Check

Condition and security of engine, transmission and radiator rubber sandwich mountings
Brake, steering, fuel pipes and hoses for security and freedom from chafing

ELECTRICS

Check

Setting of headlights

F12 servicing

SPECIAL OPERATIONS

Depending on your vehicle's equipment

Every year

At the beginning of winter

Drain and refill

Fuel tank (drain water)

Check

General condition of chassis

Dry air filter bowl

Anti-freeze concentration in cooling system

Operation of cooling system pressure-vacuum cap

Heater unit(s) for leaks and operation

At the beginning of summer

Drain and refill

Hydraulic brake system

Carry out the following

Renew power steering reservoir filter element

Renew dry air filter element(s)

Clean

Radiator(s) by blowing low pressure compressed air (or hot water) from the engine side of the radiator (**Carry out this operation at the beginning of spring or summer**)

Every two years

Drain and refill

Cooling system

Clean

Cooling system (descale if necessary)

Every 90 000 km or two years

Carry out the following

Replace the timing belt

Check

Condition of timing belt tensioning roller bearings, and replace if necessary

F13 servicing

SPECIAL OPERATIONS

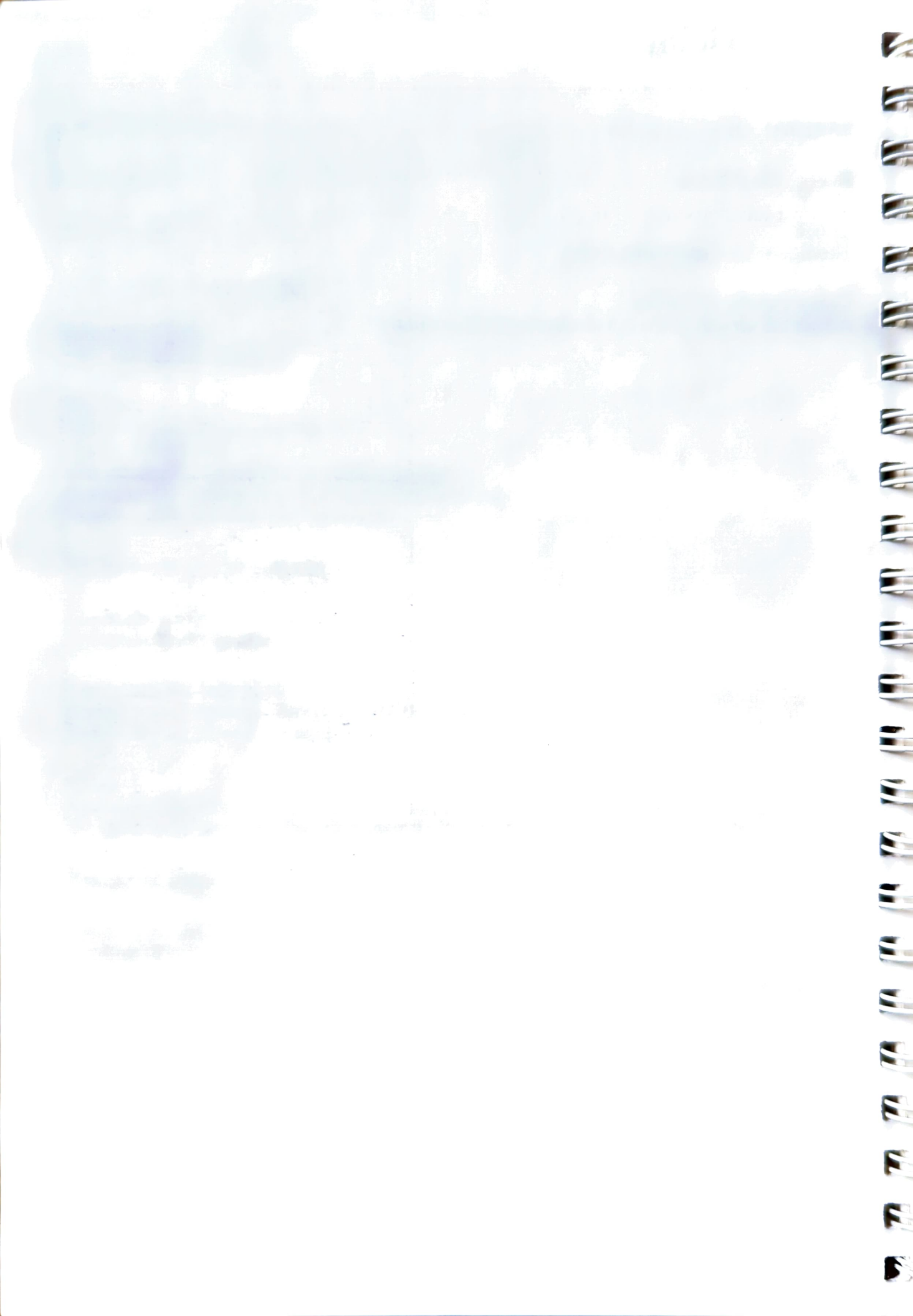
Every 120 000 km

Check

Maximum no-load engine speed

Carry out the following

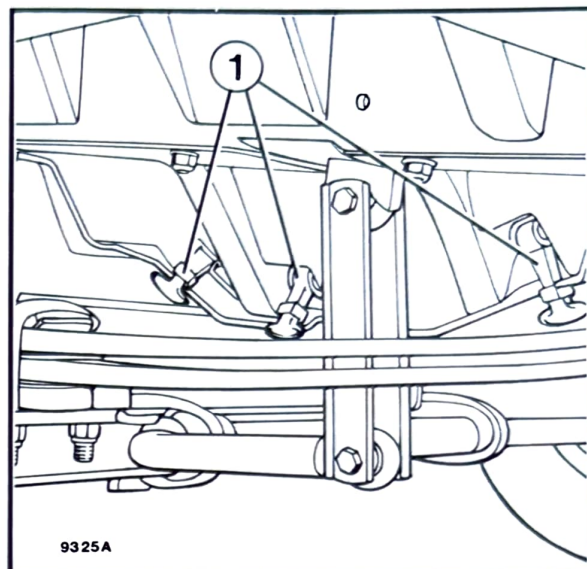
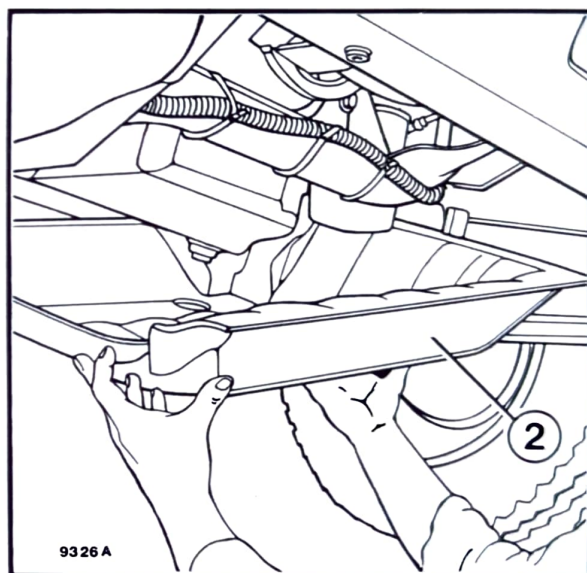
Adjust the air gap of the fan electromagnetic coupling



F15 servicing

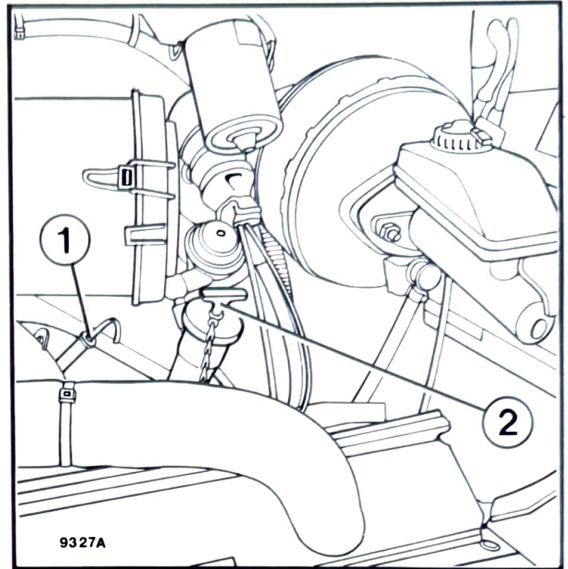
ENGINE

To access the engine oil collector, unclip clamps (1).
Remove soundproofing panel (2).



F16 servicing

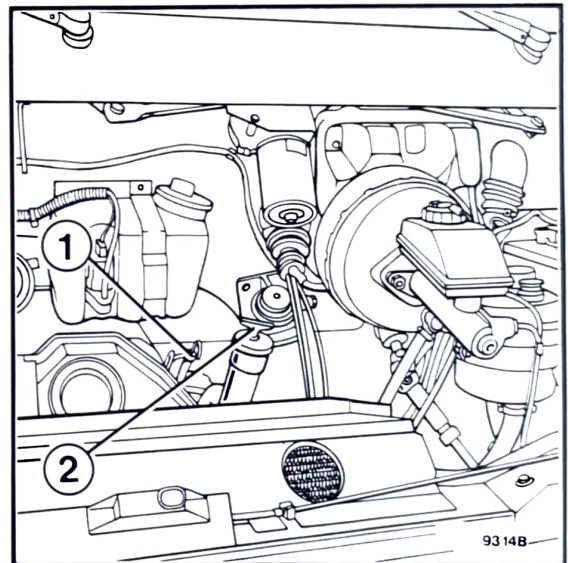
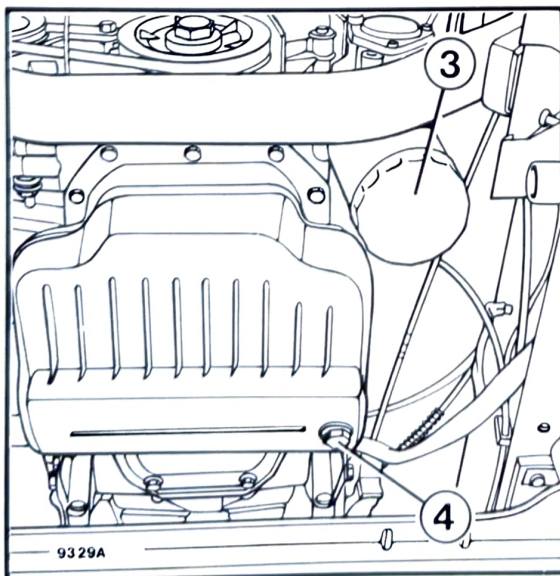
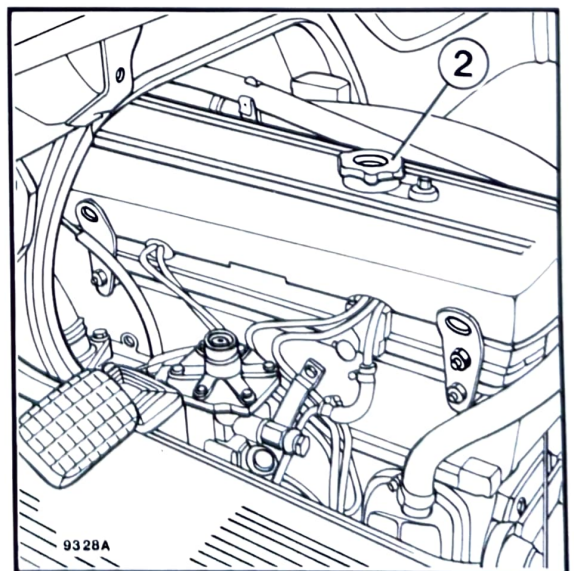
Check the oil level with dipstick (1).
Filler plug (2).



Drain plug (4).

OIL FILTERS

Oil filter with throw-away cartridge(s) (3)
To replace, unscrew the cartridge(s). When fitting:
Fill the filter with oil.
Lightly oil the seal.
Tighten by hand.
Run the engine and test for leaks.
Retighten if necessary.



F17 servicing

AIR FILTERS

Depending on your vehicle's equipment

Dry element air filter

Loosen clamp (1), withdraw strap (2) and remove air filter assembly (3). Remove nut (5) and bowl (6). Clean the bowl with a damp cloth.

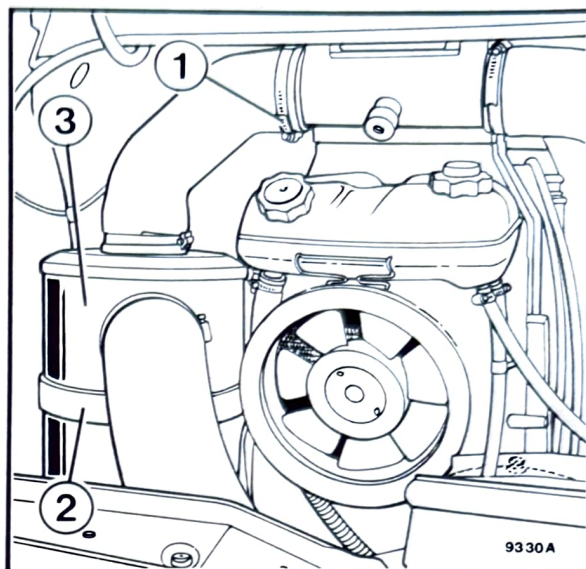
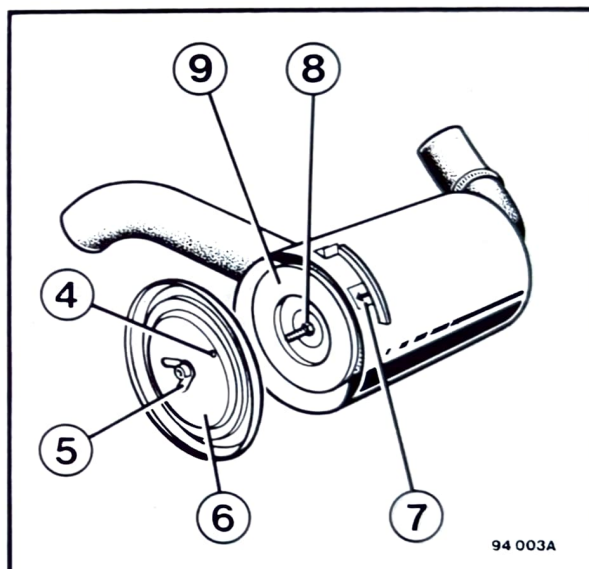
Check that the hole (4) is not clogged.

Remove nut (8) and take out cartridge (9).

Fit a new filter element and tighten nut (8) by hand. Check the condition of the seals before installing bowl (6).

Position bowl port (4) opposite the air inlet port (7) and tighten nut (5).

Fit the air filter assembly (3), the strap (2), and tighten clamp (1).

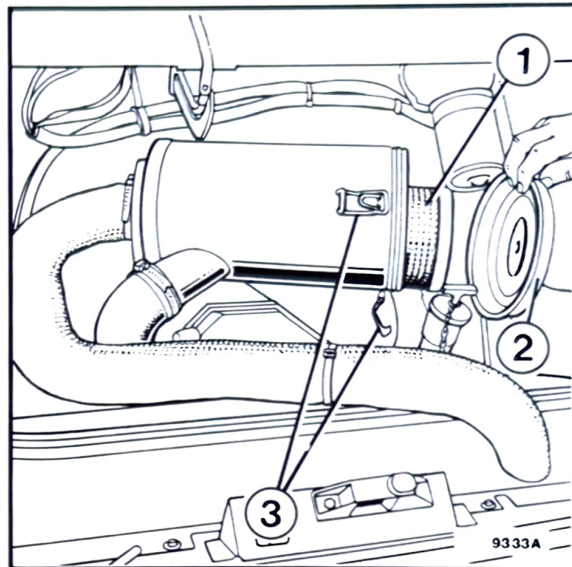


F18 servicing

Depending on your vehicle's equipment

Dry element air filter

At the specified intervals, remove the cover (2) (fastened by clips (3)) and replace the filter element(1).



Depending on your vehicle's equipment

Dry element air filter (twin filter)

Unscrew nut (3) and remove cover (5).

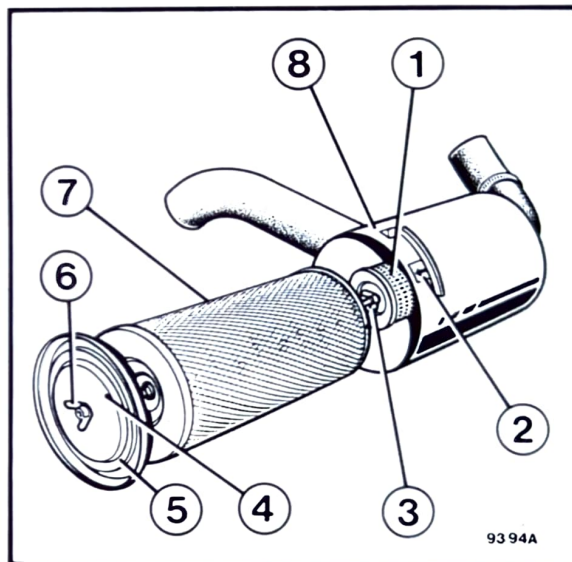
Replace primary filter element (7).

IMPORTANT

To prevent damage to the element, do not knock it during cleaning. Do not remove safety element (1), but check that the securing nut is tightened correctly.

Replace safety element (1) every 2 primary element changes.

When replacing one or both filter elements, carefully clean the interior of sediment bowl (8) and in particular element fastening clip. Check the seal bearing surfaces. Upon assembly, make sure that the elements are properly in position. Hole (4) in cover (5) must be opposite arrow (2). Tighten the nuts (3-6) correctly.



F19 servicing

Clogging indicator (1)

Regularly check the clogging indicator. If the indicator is in the :

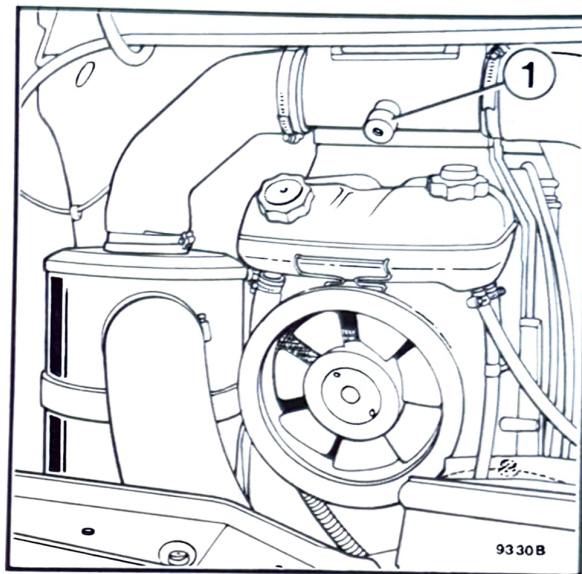
Transparent zone

The filter element is not clogged. This indication is valid only if the element is not torn or punctured, and if sealing of the air inlet is intact (filter, ducting, hoses).

Red zone

The filter element is clogged. After replacing the element, reset the indicator by pressing on the diaphragm.

Every 40,000 km, check operation of the clogging indicator by blanking off the filter inlet (with the engine running at 1,500 rev/min.). Then reset the indicator.



COOLING SYSTEM

Protecting the system throughout the year

This vehicle is supplied with HUILES RENAULT DIESEL "TOPCOOLING C" which is in conformity with RENAULT V.I. specifications. Besides its antifreeze properties, this fluid ensures protection of the cooling system (anticorrosion, scale inhibition, etc...). It gives frost protection in temperatures down to -25°C .

For temperatures below this, it is essential to replace part of the cooling fluid with undiluted OCCIGEL-C.

. + 5 % of OCCIGEL-C for circuit protection down to -33°C .

. + 10 % of OCCIGEL-C for circuit protection down to -40°C .

NOTE

Coolant can remain in the cooling circuit for 2 years or 180,000 kilometres.

In all countries, whatever the climate or the season, only use "TOPCOOLING C" coolant.

CAUTION

Never mix the recommended coolant with other anti-freezes or coolants. It is strictly forbidden to use additives.

Radiator(s) : external cleaning

Once a year, preferably at the beginning of spring or summer, or if the water temperature "DANGER" warning light comes on, clean the radiator tube bank by blowing compressed air or a high pressure hot water/detergent mixture through the radiator core from the engine side.

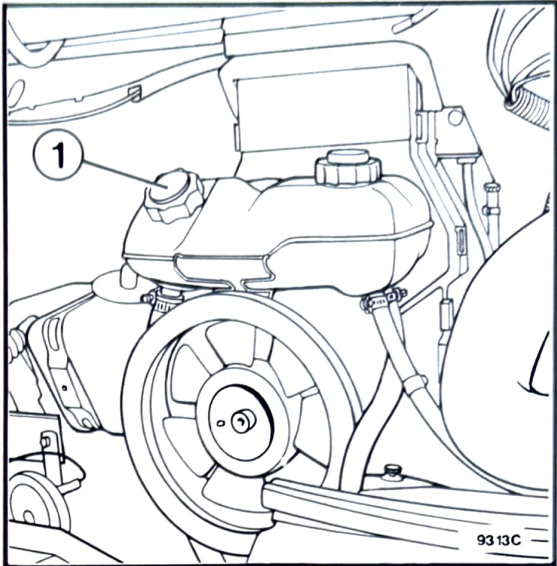
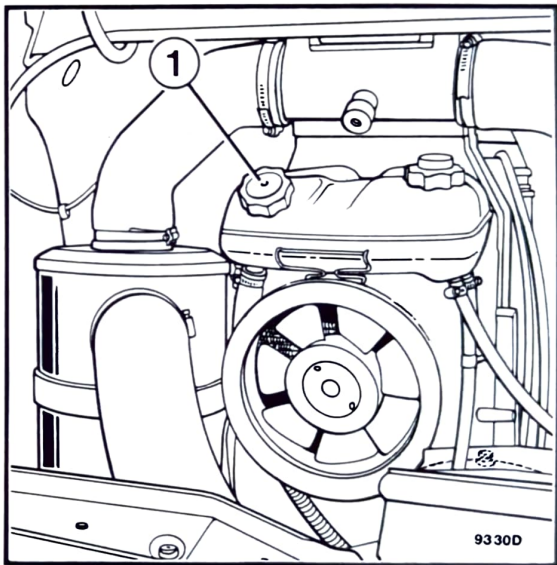
IMPORTANT

Never use greasy products such as kerosene, paraffin, diesel fuel, etc.

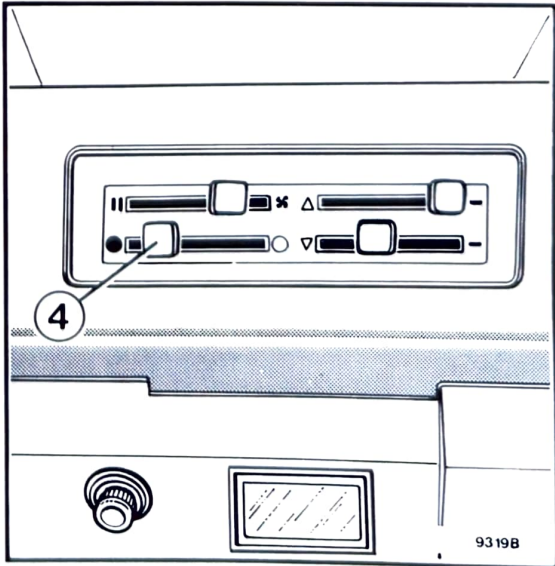
F20 servicing

Draining the system

Remove the filler cap (1).

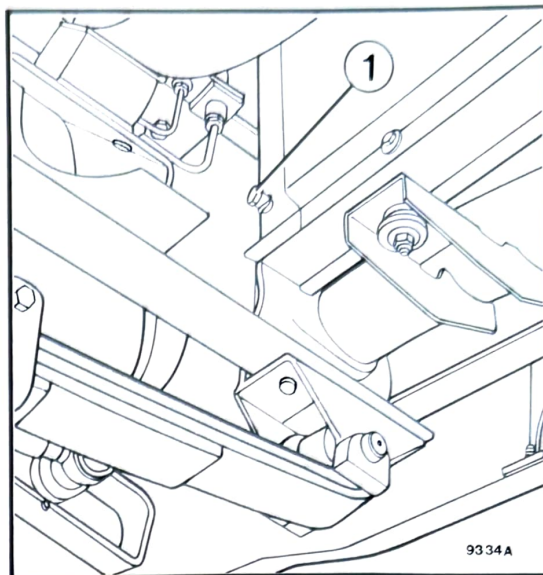


Open the unit heater water valve (4).



F21 servicing

Remove the radiator drain plug (1).



Filling the system

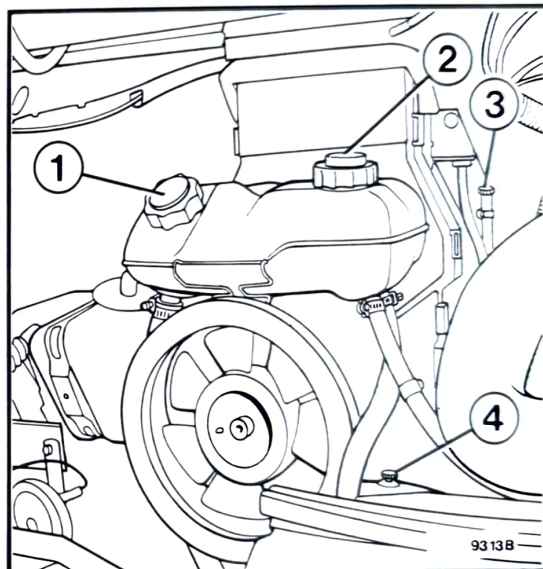
Check that the drain plug has been correctly tightened.

Open bleed screws (3 - 4). Initially fill through filler (1). Pour the cooling fluid slowly so as to enable all the air to escape from the system. Close bleed screw (4) when the mixture begins to flow through it. Close bleed screw (3) when the mixture begins to flow through it.

Start up the engine. Make sure once again that the system is properly de-aerated by checking at bleed screw (3). Top up the level if necessary. Refit filler cap (1).

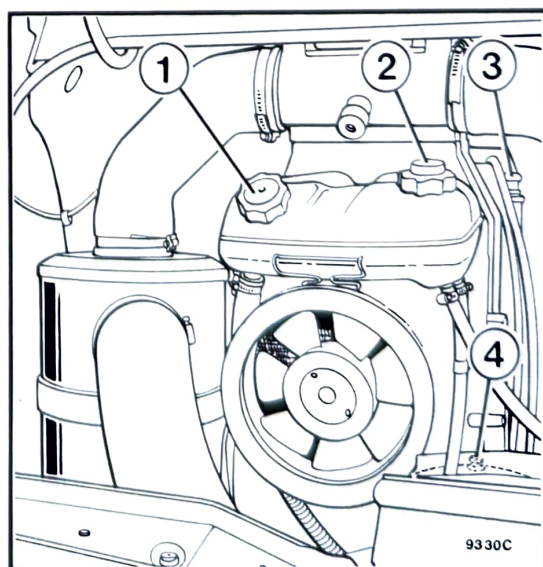
NOTE

The level of the mixture must be flush with the lower edge of the filler port.



IMPORTANT

If, for some reason, it is necessary to check the coolant level when the engine is hot, first of all carefully release the pressure-vacuum cap (2) by 1/4 of a turn to decompress the system. Once the pressure is released, retighten the pressure-vacuum cap. Then remove the filler cap and top up if necessary.



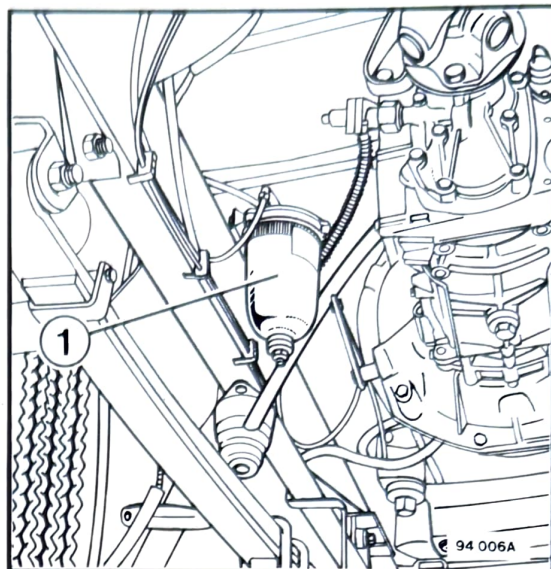
FUEL SYSTEM

Fuel tank

At the indicated intervals it is recommended that any impurities which may have been deposited in the tank are cleaned out. This is achieved by removing the drain plug in the bottom of the tank, allowing the contaminated fuel to drain off, and then replacing the plug.

Fuel prefilter

Location of filter (1).



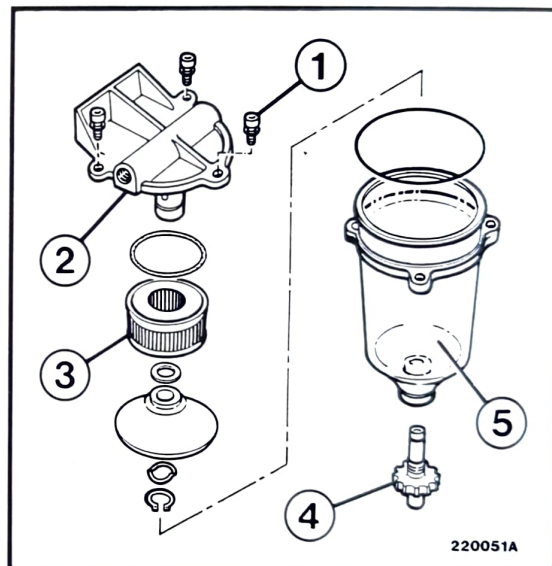
Draining the sediment bowl

Remove bleed screw (4).

Cleaning

After draining the bowl (5), remove it by withdrawing bolt (1). Clean the element (3) and blow it through with compressed air. Replace the element if necessary. Only use diesel fuel to clean out bowl (5).

On reassembly, check the condition and correct positioning of seals. Tighten bolt (1) on filter head (2) moderately.



Fuel filter

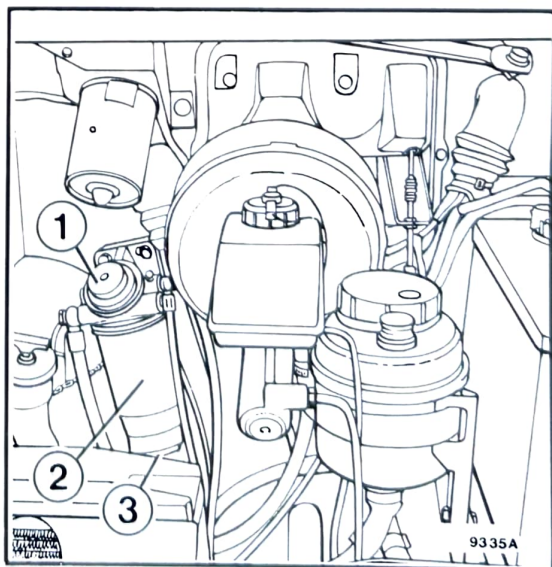
For your own safety, use original filters only.

Draining the sediment bowl

Unscrew bleed screw (3) by a few turns. Actuate the priming pump (1), until all water has been expelled. Tighten bleed screw (3).

Replacement of filter cartridge. Remove filter cartridge (2) using a strap wrench. On the new cartridge, see that the inner seal and plastic guide are positioned correctly.

Screw up the cartridge by hand and finish off by tightening by 1/4 of a turn using a strap wrench.



F23 servicing

Bleeding the circuit

Bleeding of air from a fuel circuit is required after :

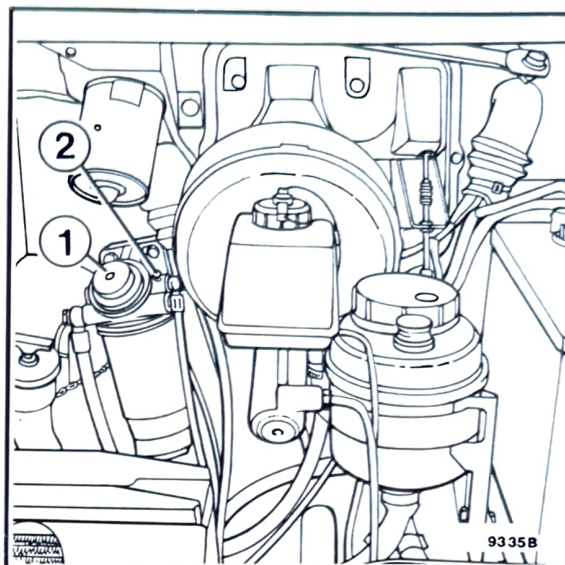
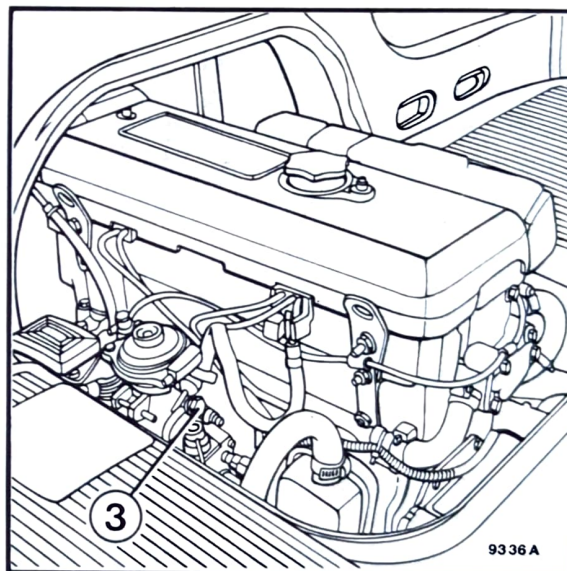
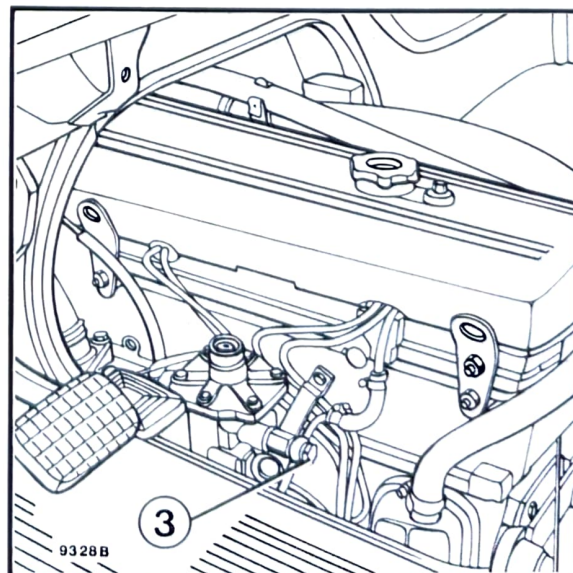
- prolonged engine shut-down.
- complete draining of fuel tank.
- cleaning or replacement of filter(s).
- dismantling of a pipe union or leak at a union.

Bleeding the fuel filter

Unscrew the purge plug (2). Actuate the push rod of feeding pump (1) until the fuel running out is free of air bubbles. Retighten the plug (2) whilst continuing to activate the lever. -

Bleeding the injection pump

Loosen union (3). Operate the priming pump (1) and when fuel flows without any air bubbles, retighten union (3).



Protecting diesel fuel against freezing

Different makes of diesel fuel are commercially available. The quality of the diesel fuel differs according to the period of use (winter or summer). The filterability limit temperature (FLT) varies according to the type of diesel fuel used. At a temperature close to the filterability threshold, paraffin crystals begin to form in diesel fuel and these block the fuel lines and filters.

So as to improve the properties of the diesel fuel when cold, it is possible to incorporate an additive : paraffin or kerosene, or the special product sold by our network Spare Parts warehouses.

The use of products lowering the viscosity of the diesel fuel is strictly forbidden outside the winter period.

Use of "SUMMER" diesel fuel (FLT - 8° C)

Percentages recommended in relation to temperature :

- For protection down to - 10° C : add 10 % paraffin or kerosene plus 0.2 % additive.
- For protection down to - 15° C : add 15 % paraffin or kerosene plus 0.2 % additive.
- For protection down to - 20° C : add 30 % paraffin or kerosene plus 0.2 % additive.

Use of "WINTER" diesel fuel (FLT - 15° C)

Percentages recommended in relation to temperature :

- For protection down to - 20° C : add 10 % paraffin or kerosene plus 0.1 % additive.
- For protection down to - 25° C : add 10 % paraffin or kerosene plus 0.1 % additive.
- For protection down to - 30° C : add 20 % paraffin or kerosene plus 0.2 % additive.

Use of "SEVERE COLD" diesel fuel (FLT - 18° C or lower)

Percentages recommended in relation to temperature :

- For protection down to - 30° C : add 10 % paraffin or kerosene plus 0.1 % additive.
- For protection down to - 35° C : add 20 % paraffin or kerosene plus 0.2 % additive.

NOTE

- a) For maximum efficiency, the additives should be mixed with the fuel at a temperature above 0°C.
- b) In France, do not exceed 30 % paraffin or kerosene (Customs regulations).
- c) In other countries, always limit paraffin or kerosene addition to 50 % maximum (check national regulations).
- d) However, we recommend that at all times the percentage be kept to the minimum necessary and that paraffin be used in preference to petrol.
- e) On the other hand, the use of the RENAULT V.I. additive is not subject to any legal restriction.

F25 servicing

Fuel preheater

This equipment serves to lower the filterability limit threshold temperature of the diesel fuel. The filterability limit temperature is different according to the type of diesel fuel used.

WARNING

If your vehicle is equipped with a fuel preheater, the incorporation of additives (paraffin or kerosene) is strictly forbidden.

Fuel-injection pump

This is a high precision unit which must only be removed and adjusted by a specialist, dealer or approved agent.

The injection pump is lubricated by the fuel circuit. There is therefore no oil tank and no level to be checked. The pump consequently requires no maintenance.

Injectors

Opening pressure : 240 → 248 bars

If you replace an injector nozzle or holder assembly, it is essential that you use one of the same type.

Tightening torque for injector-holders : 34 N.m.

Injector pipes

If an injector pipe has to be changed, replace it with a genuine spare part only. On refitting, tighten correctly, but do not overtighten.

CYLINDER HEAD(S)

Valve clearances

(Engine cold)

Inlet : 0,50 mm

Exhaust : 0,50 mm

TURBOCHARGER

If the turbocharger has been replaced

Before installing the turbocharger assembly, prime the lubrication system by pouring fresh oil through the oil feed in the central housing, and turn the rotor by hand to ensure that the journals and thrust bearing are lubricated.

Turbocharger problems

Indications of incorrect turbocharger operation are lack of engine power, strange noise or the presence of oil in the inlet manifold.

Should this occur, consult the nearest dealer or service point. On no account must any internal work be carried out on the turbocharger.

F26 servicing

DRIVE BELT TENSIONS

Procedure

- Adjust the tension.
- Run the engine at idling speed for about 1 minute.
- Check the tension and adjust, if necessary

Type	Number of drive belts	Shape	Drive belt	
			New	Run-in
AV10	1	Notched	2.2	2.7

These values are given for a 2 bar pressure with Mobil TEPRO M 12 tool.

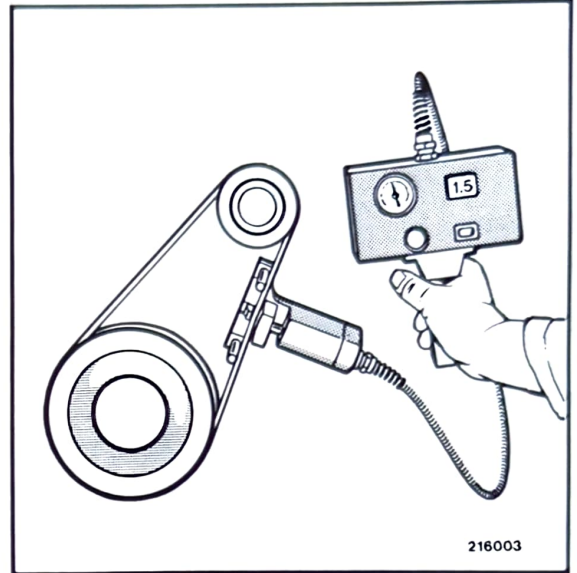
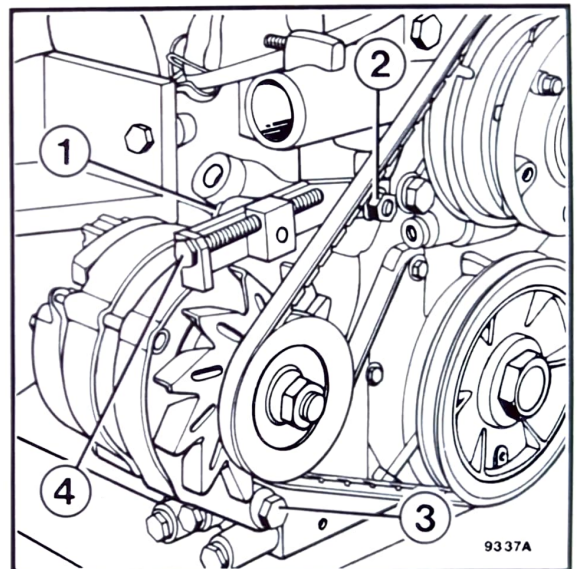
NOTE

During servicing operations, avoid splashing oil, coolant or even paint from touching drive belts.

Alternator

Water pump

Loosen the nuts and bolts (1-2-3). Turn bolt (4) to adjust the tension. Retighten the nuts and bolts (1-2-3).



Timing

IMPORTANT

It is essential to replace the timing belt :

- *when it is greasy or damaged*
- *after 30,000 km, at the time of operations requiring its removal*
- *every 90,000 km or 2 years maximum.*

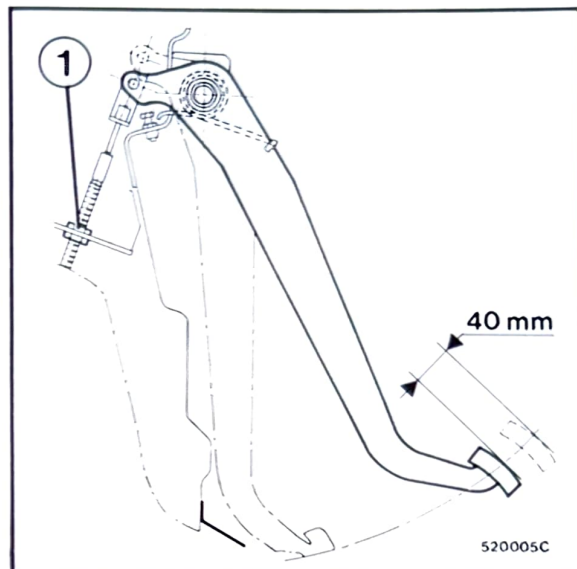
When replacing the belt, check the condition of the tensioning roller bearings.

Call upon your dealer or an approved agent.

CLUTCH

Adjustment of clutch control

Screw up or unscrew the nuts (1) in order to position the clutch pedal 40 mm in front of the thrust bearing. Check this dimension by raising the pedal.



PROPELLER SHAFTS

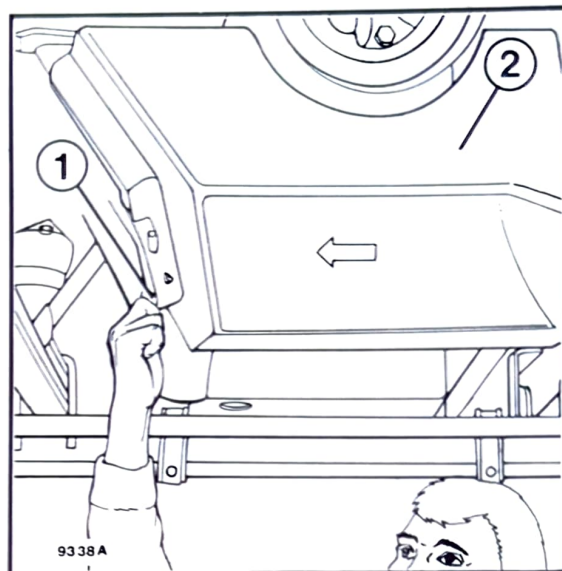
When greasing the universal joints, check that clean grease emerges from each needle roller bearing cup seal. If grease does not escape from any particular bearing cup, release its seal by pressing the corresponding jaw or by turning the prop shaft. When greasing the sliding sleeve, ensure that clean grease comes out of the relief valve.

NOTE

When washing down, limit the jet pressure to 80 bars and do not dwell on bearing cup seals and joints. Greasing is necessary after high pressure jet washing.

GEARBOX

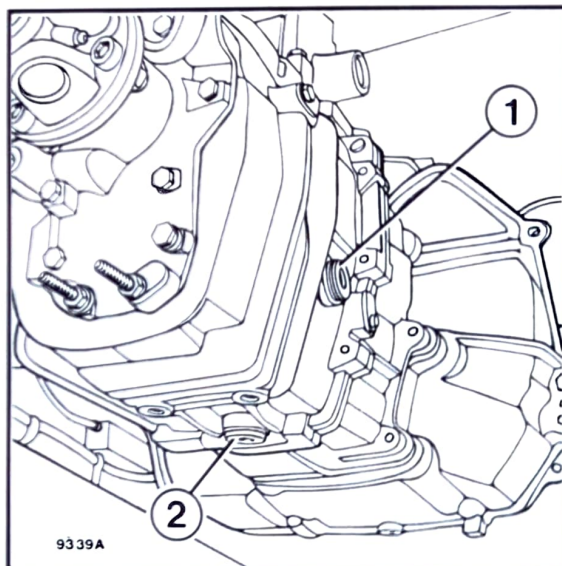
Depending on your vehicle's equipment
To gain access to the gearbox filler and drain ports, unhook clips (1).
Remove soundproofing box section (2).



GEARBOX ZF S 5.18

Filler and level plug (1).

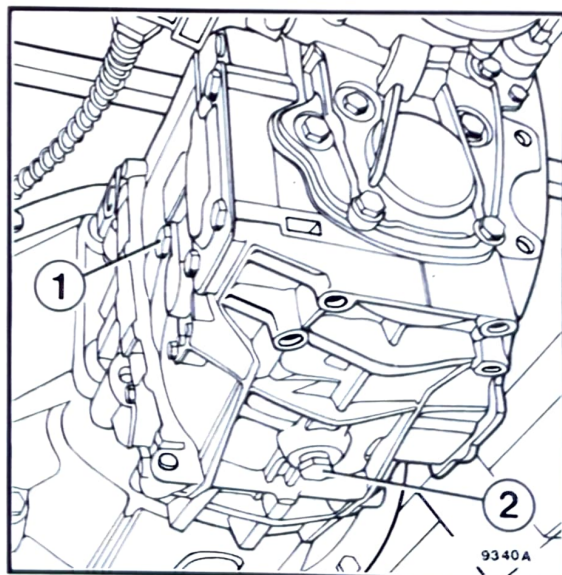
Drain plug (2).



GEARBOX ZF S 5.24

Filler and level plug (1).

Drain plug (2).

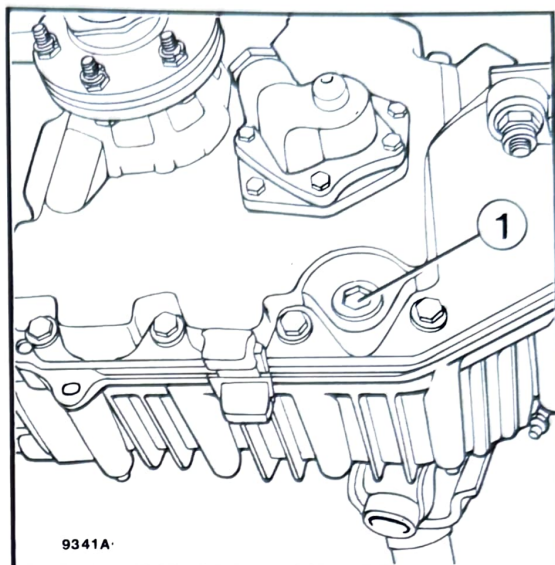


F29 servicing

Depending on your vehicle's equipment

TRANSFER BOX

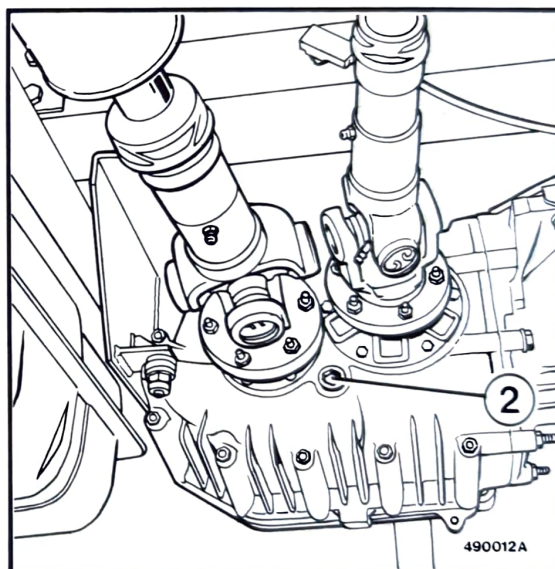
Drain plug (1).



Filler and level plug (2).

Breather

Wash the breather in diesel fuel and dry it with compressed air before refitting.



FRONT AXLE

Wheel alignment : $A = B - (0 \rightarrow 2 \text{ mm})$

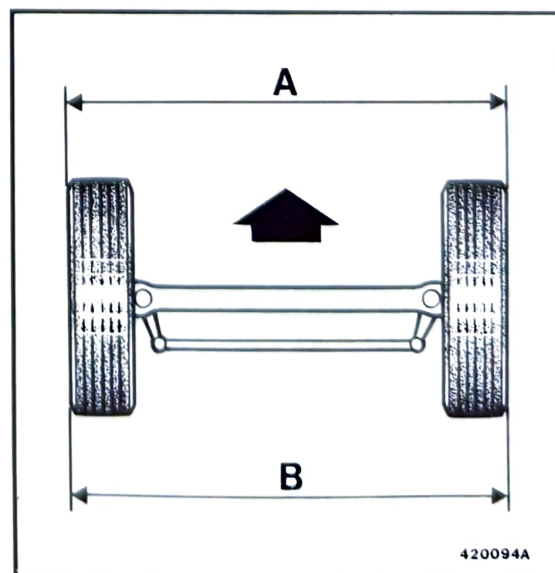
Castor angle :

Mechanical steering : $2^{\circ}40' \pm 20'$

Power steering : $6^{\circ}10' \pm 20'$

NOTE

To avoid any risk of damage to the steering system, it is essential that the stub axle lock stops are adjusted after any changes to the stub axle assy (i.e. change of steering arms, track rod arms, etc..). Consult your dealer or service agent.



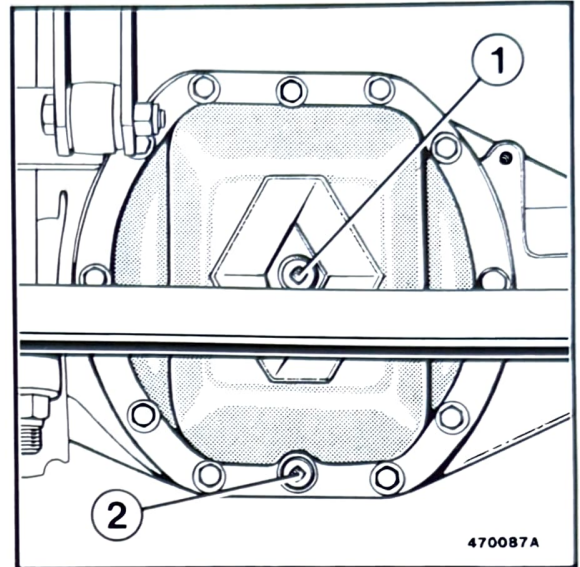
F30 servicing

Depending on your vehicle's equipment
FRONT DRIVE AXLE

Pan

Filler and level plug (1).

Drain plug (2).

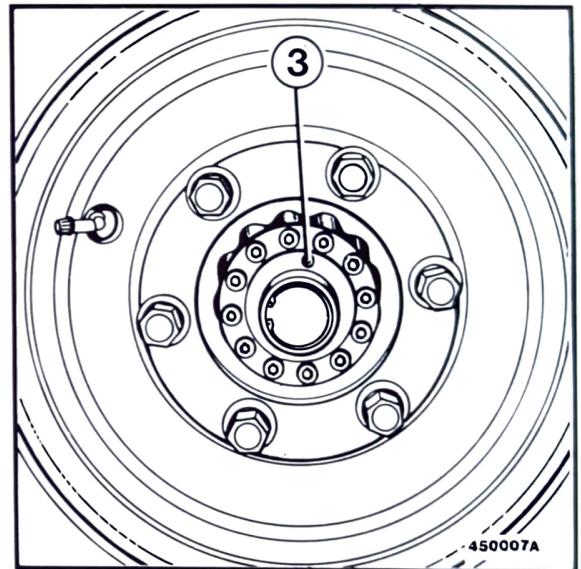


Wheel hubs

Drainage : Remove plugs (3) in the downwards position.

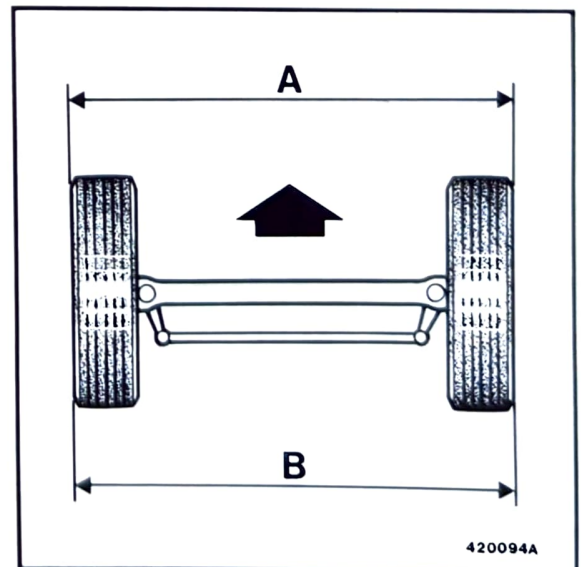
Filling : With plug (3) located at the top, pour 0,15 litre of oil into each wheel hub. Refit the plug.

Level : Remove plugs (3) in the horizontal position., the oil should be at the same level as the hole.



Wheel alignment : $A = B + (0 \rightarrow 2 \text{ mm})$

Castor angle : 3°



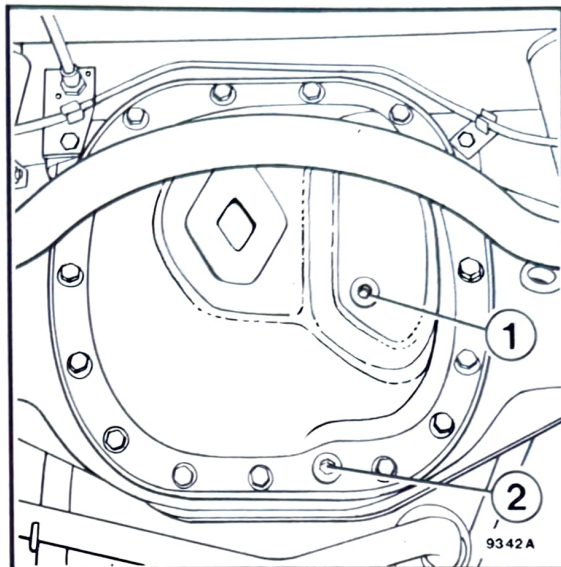
F31 servicing

Depending on your vehicle's equipment

REAR DRIVE AXLE 669

Filler and level plug (1).

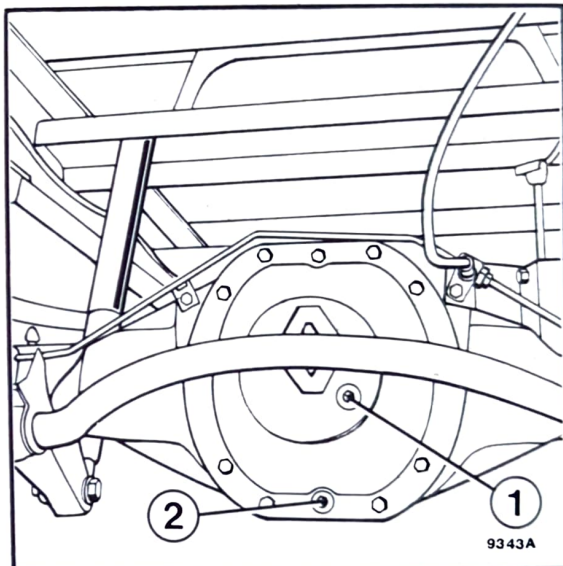
Drain plug (2).



REAR DRIVE AXLE 569

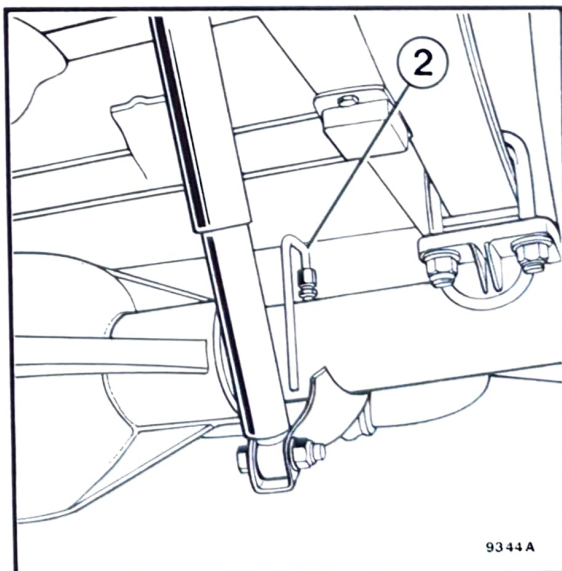
Filler and level plug (1).

Drain plug (2).



Breather

Remove tube (2) and blow through with compressed air before refitting.



F32 servicing

FRONT SUSPENSION

REAR SUSPENSION

Suspension components

Shock absorbers do not require any special maintenance. However, at the recommended intervals, remove them and make sure they are checked by a specialist.

Whenever the vehicle receives a major overhaul, strip the springs, clean the faces of the leaves in contact with one another and grease them before reassembling (except for parabolic leaf springs). Lack of maintenance is often the cause of leaf spring fracture.

U-bolt tightening torques

Front : 170 N.m

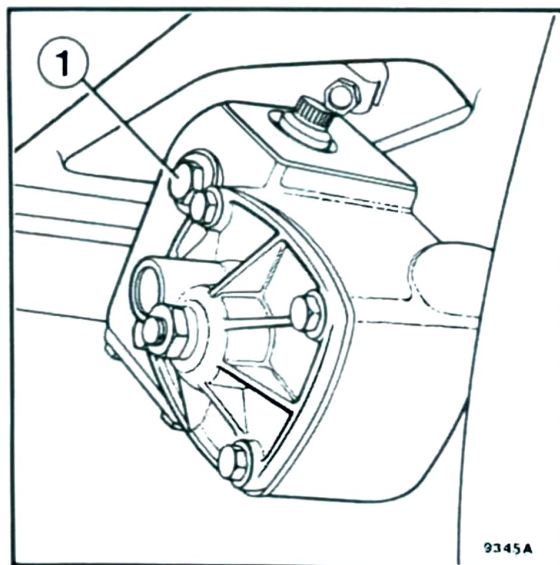
Rear : 260 N.m

STEERING

Depending on your vehicle's equipment
Steering box GEMMER

Filler and level plug (1).

Check the clearance between worm and roller. It must be zero at the steering wheel in the mid-position with the roadwheels in the straight ahead position. If play is detected in this position, get the steering adjusted by your dealer or an approved agent.



F33 servicing

Depending on your vehicle's equipment

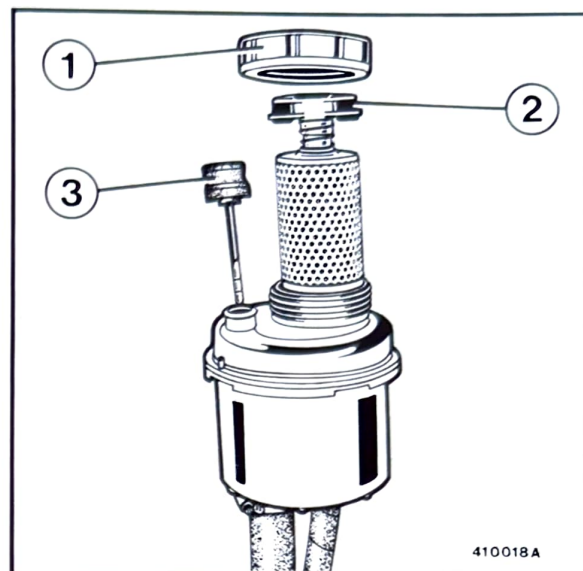
Steering box BENDIX

Hydraulic power assisted

Replacement of filter element

Remove filler cap (1). Press handle (2) and turn by 1/4 of a turn. Withdraw the filter element assembly. Fit a new filter element, press and turn handle (2) so as to engage it under the catches on the reservoir.

Check the oil level (3).



Filling the system and bleeding

Raise the front of the vehicle.

Fill the reservoir with fluid via filler (1). When the reservoir level stabilizes, operate the starter a few times to turn the pump, top up accordingly. When the level is stabilized once again, run the engine at idling speed.

Turn the steering wheel fairly quickly from one lock to the other several times so as to bleed air from the system.

Watch the fluid level during this operation, top up if necessary. Repeat this until the fluid level remains constant.

Stop the engine and top up the level. Lower the roadwheels onto the ground.

NOTE

A hydraulic circuit can only operate if it is perfectly clean. The utmost care must therefore be taken to ensure that no dirt enters the system when performing the above operations.

F34 servicing

BRAKING SYSTEM

Brake fluid reservoir

At the recommended interval, check the fluid level. The fluid must be up to the height of the "MAX" mark (1).

Check that the dashboard warning light comes on when the float needle is pushed down.

Use recommended brake fluid only.

CAUTION

The braking system has been homologated for National type approval and therefore no modification must be made to the brake circuit or its components. Users are advised that they are fully responsible for ensuring that when any additional pneumatic equipment is connected to the vehicle, all the regulations in force are complied with.

Bleeding of hydraulic circuits

A pressure bleeder must be used for bleeding hydraulic circuits. Get an approved agent to perform this operation.

Adjustment of brake linings (B 80 - B120 - B110 4x2)

The brakes are adjusted by an automatic slack take-up system.

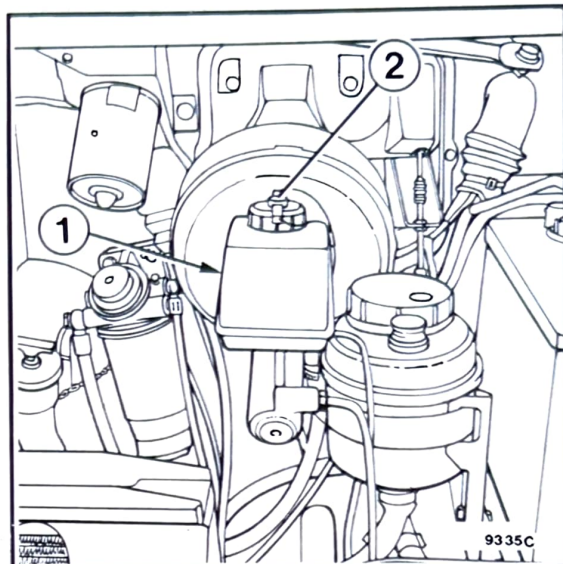
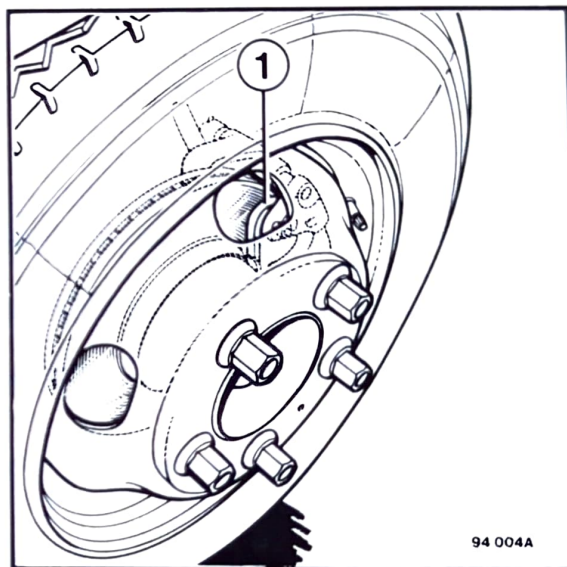
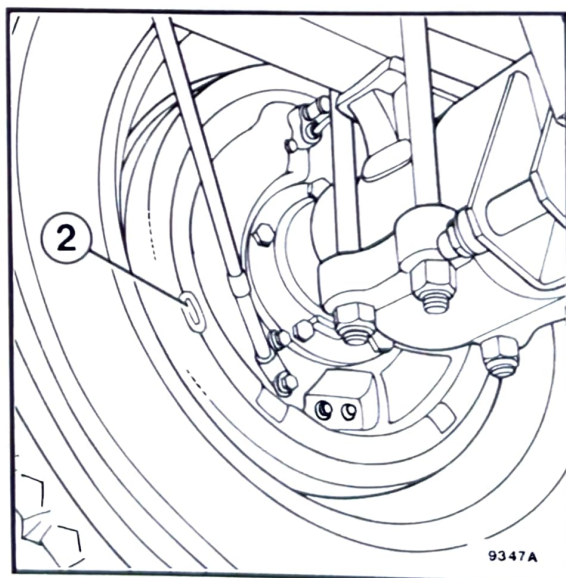
At the front, disc brakes with automatic adjustment.

At the scheduled intervals, check the degree of wear of the linings. Notch (1) must be visible - if not, replace the pads. To check the linings, the roadwheels have to be removed.

At the rear, check the brake lining wear through inspection apertures (2).

NOTE

If one brake lining is replaced, all the linings on the same axle must be replaced.



F35 servicing

Adjustment of brake linings (B 110 4x4)

The brakes are adjusted by an automatic slack take-up system.

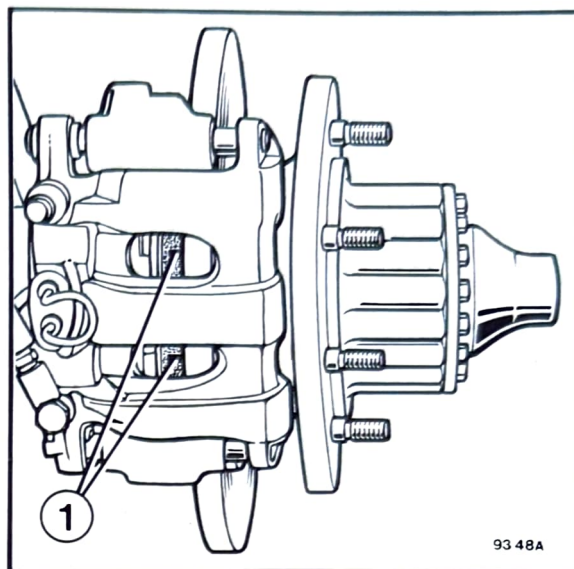
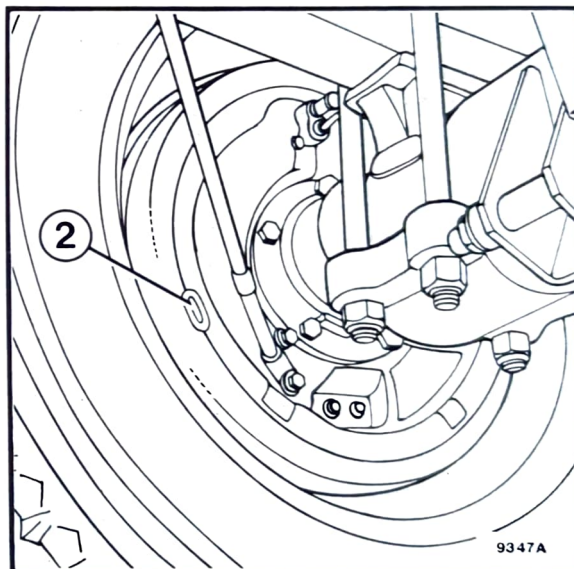
At the front, disc brakes with automatic adjustment.

At the scheduled intervals, check the degree of wear of the linings. Notch (1) must be visible – if not, replace the pads. To check the linings, the roadwheels have to be removed.

At the rear, check the brake lining wear through inspection apertures (2).

NOTE

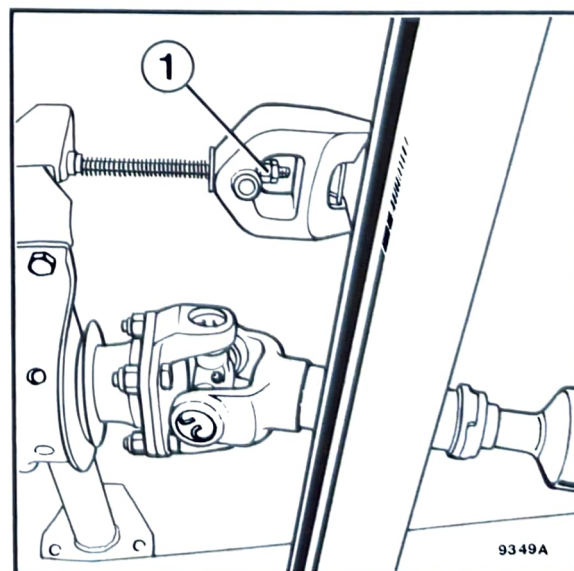
If one brake lining is replaced, all the linings on the same axle must be replaced.



Parking brake

The parking brake must begin to take action on reaching the 3th notch.

Adjustment must be carried out with the nuts (1).



BODYWORK

Washing :

To prolong bodywork life and maintain the sparkle of the paintwork, we recommend that your vehicle be washed regularly. We advise against the use of brushes, especially during the first month of use of the vehicle. Do not use a high temperature steam spray.

Neutral washing products are commercially available which do not dull the paintwork.

For grease spot removal, use cleaning fluid (and not automobile petrol).

If the aluminium components are very dirty, clean them with water to which has been added a small amount of a non-alkaline washing product, and rinse with clean water.

Cleaning the interior :

Spray or wipe a cleaning product on with a rag (soapy water, alcohol).

Never use petroleum-based products nor trichlorethylene.

Lightly smear the door and window seals and runners with talc.

Cleaning the fascia panel :

Only use soapy water (and no other product whatsoever).

Cleaning the seats :

Plastic parts : Use soapy water or an alcohol-based product.

Fabric parts : Clean with a degreasing product (spirits of turpentine, stain remover, etc...).

Cab protection

During assembly our cabs receive a special anti-corrosion treatment. An injection process is used which penetrates all the box sections of the cab. To extend the life of this initial protection, we strongly recommend that this treatment should be repeated annually. All you have to do is to contact your dealer who has the necessary equipment and material to carry it out.

Washing the vehicle

To limit any risk of damage, do not apply too much water to :

- electronic and electrical junction boxes.
- window runner seals,
- hinge pins,
- air inlets to heater, engine intake and air filter,
- pneumatic units,
- noise baffles and screens,

WARNING

Limit jet pressure to a maximum of 80 bars.

G1 electrical equipment

ELECTRICITY

Before working on the electrical system, turn off the master switch. When disconnecting the batteries, always remove the negative terminal first.

Batteries

Measure the voltage across the terminals. This should be slightly higher than the rated voltage. A lower voltage indicates that the batteries need recharging. To check the exact condition of the battery, use a battery tester. Recharge the batteries at 1/10th of their capacity for 10 hours. Resistance to freezing depends on state of charge.

The available capacity of a fully charged battery varies with temperature as follows :

100 % at 27°C

66 % at 0°C

41 % at - 20°C

Before using a charger, disconnect the batteries.

If starting with an auxiliary battery, make sure to connect the (+) terminal of the auxiliary battery to the (+) terminal of the vehicle battery and the (-) terminal of the auxiliary battery to the (-) terminal of the vehicle battery.

ALTERNATOR

The voltage regulator may be integral with the alternator, or external to it. Never leave the alternator switched on when the vehicle is stopped (ignition key, master switch). Never break the circuit while the engine is running. Avoid making any connection errors. Never run an engine with batteries disconnected or removed.

CHARGE INDICATOR

This function is performed either by a charge warning light or a voltmeter.

Charge warning light : The charge warning light should remain out when the engine is running. If the light remains on, there is a fault in the charging system.

Problems with electrical equipment on tractor vehicles are very often caused by defects in the trailer electrical system. Before connecting to a trailer, carefully check that its electrical system is in order, to avoid blowing of fuses, and pay particular attention to the earth connection.

IMPORTANT

Overloading the electrical system by adding bulbs or supplementary or more powerful equipment than that for which the system was designed may cause extremely serious damage to all the equipment installed and may produce abnormal discharging of the batteries. Such action will invalidate the manufacturer's warranty.

G2 electrical equipment

Starting the vehicle using an external power source

If the engine will not start due to discharged batteries, it is possible to use an external power source (power charger or battery cart).

Procedure :

- Switch off the ignition.
- Connect up the charger or the battery cart, while respecting polarities.
- Switch on the ignition.
- Actuate the starter.
- Run the engine at a speed of 1 300 rpm for about 5 minutes.
- Switch on the dipped beam headlights before lowering the engine speed to idling.
- Let the engine run at idling speed for 1 minute.
- Disconnect the charger or the battery cart, starting with the negative terminal.
- Switch off the headlights.

BULBS

If a bulb has to be changed, always replace it with a bulb of the same wattage and type.

Table of bulbs :

Application	Watts
Instrument panel lighting	1.2W
Dashboard warning lights	1.2W
Number plate light	4W
Front side / parking lights	4W
Rear side / parking lights	21/5W
Stop lights	21/5W
Main beam headlights	60/55W
Dipped beam headlights	60/55W
Fog light(s)	21W
Front flashing lights	21W
Reversing light(s)	21W
Rear flashing lights	21W
Side flashing lights	3W
Marker lights	5W
Cab overhead light	7W

G3 electrical equipment

Quartz-Halogen bulbs

CAUTION

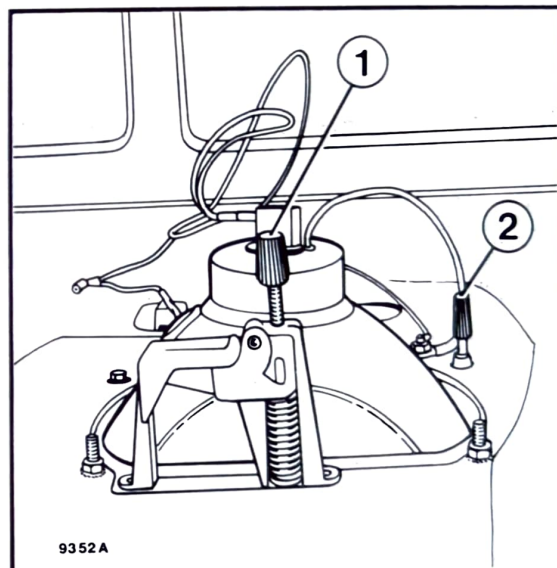
To fit these bulbs, preferably hold them by their metal end-piece.

If you have to take hold of the glass part, use a rag or clean paper. The least trace of a finger-mark or grease risks making the bulb ineffective when lighting up. If you are not sure whether the bulb is clean before fitting, clean it with alcohol. Before removing a bulb, if it has been previously lit, wait for it to cool down for a few minutes to avoid the risk of being seriously burned.

ADJUSTMENT OF HEADLIGHTS

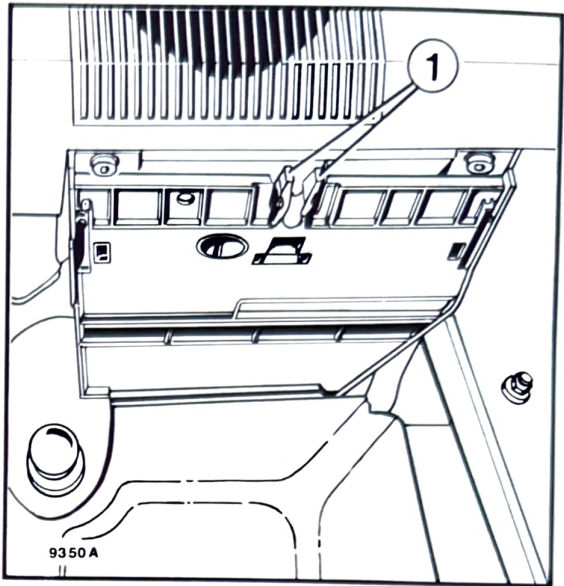
Headlight beam adjustment

- Vertical (1)
- Horizontal (2)



FUSES

Press the clips (1) and tilt the fuse-holder.



AVAILABLE POWER SUPPLY

Circuits protected by fuses are available for your vehicle's ancillary equipment in each connector.
Any other hook-up to the electrical circuit is prohibited.

- 1 - Available power supply (battery)
- 2 - Available power supply (lighting)
- 3 - Available power supply (after ignition key)
- 4 - Earth

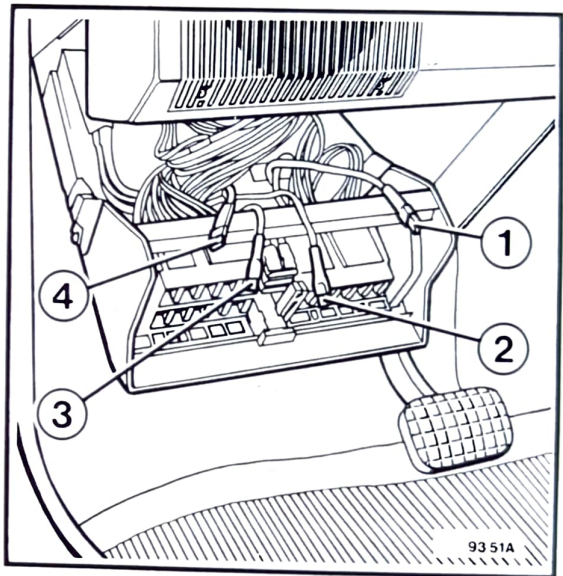


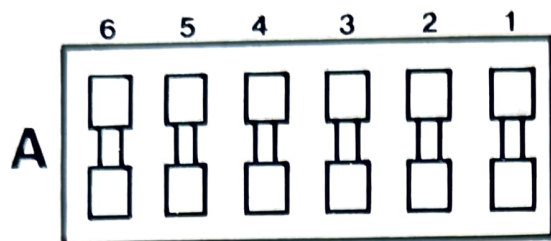
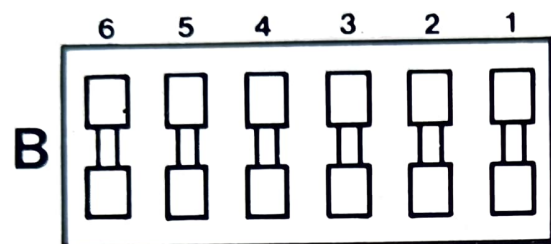
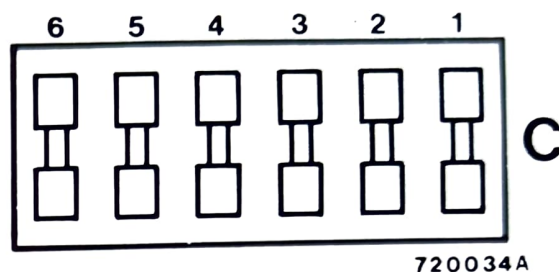
TABLE OF FUSES

Always replace a fuse by another fuse with the same rating.

BLACK connector A

Application	Item	Amps
Fuel preheater	1	10
Available power supply (after ignition key)	3	15
Flasher unit	2	7.5
Hazard lights control	2	7.5
Reversing light(s)	3	7.5
Stop lights	3	7.5
Dashboard warning lights and instruments power supply	4	7.5
Lights forgotten warning light	4	7.5
Unit heaters	5	15
Windscreen wiper motor	6	10
Windscreen washer pump	6	10

G5 electrical equipment

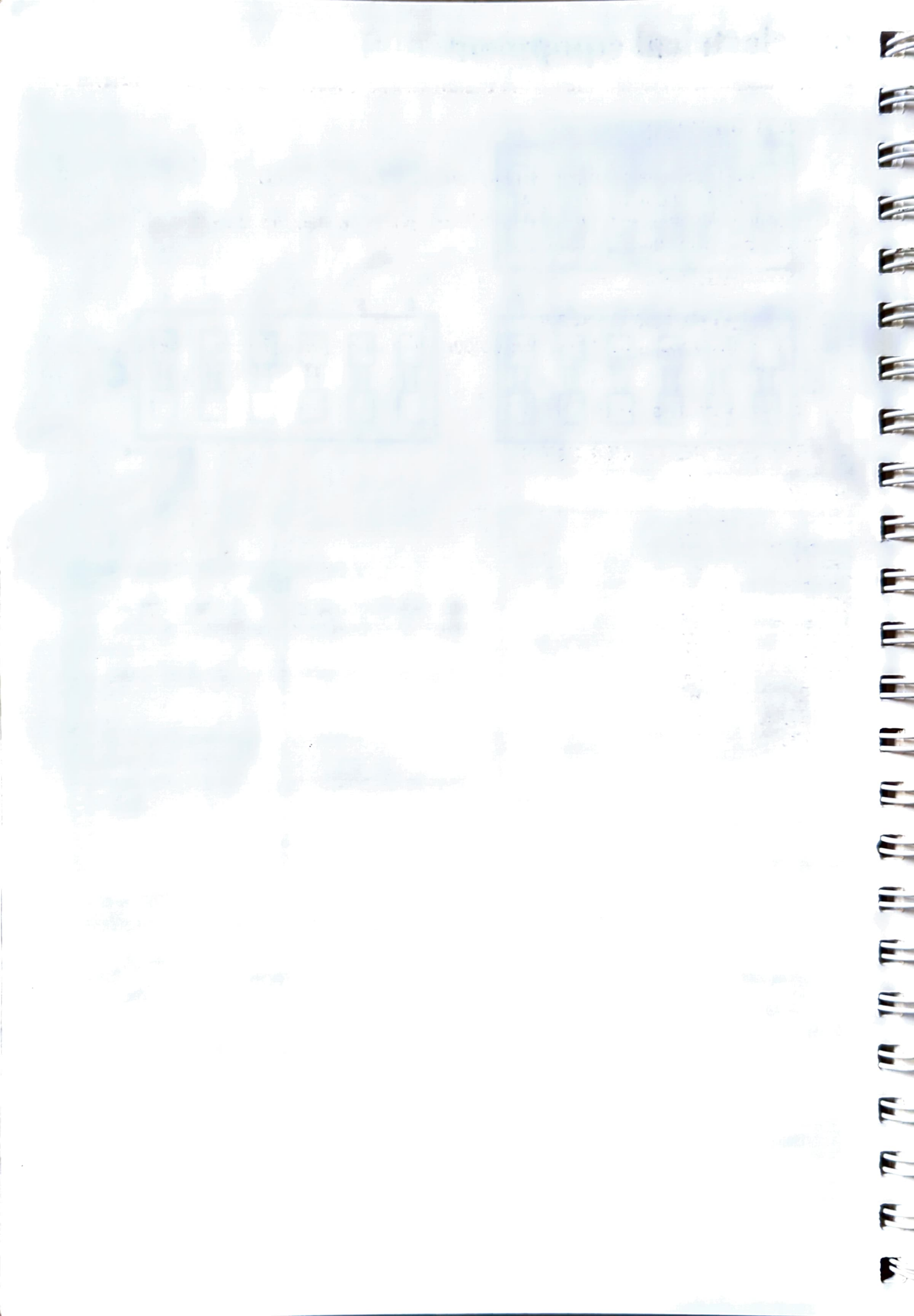


BROWN connector B

Application	Item	Amps
LH main beam headlight	1	7.5
Main beam headlights warning light	1	7.5
RH main beam headlight	2	7.5
LH dipped beam headlight	3	7.5
Fog light(s)	3	7.5
RH dipped beam headlight	4	7.5
Dipped headlamps warning light	4	7.5
LH side/parking lights	5	7.5
Lighting fuse (available for customer)	5	7.5
RH side/parking lights	6	7.5
Instrument panel lighting	6	7.5
Side/parking lights warning light	6	7.5

GREY connector C

Application	Item	Amps
Available	1	7.5
Radio	2	7.5
Cigar lighter	3	15
Available power supply (battery)	1	10
Tachograph	4	7.5
Cab overhead light	5	10
Windscreen wiper speed controller	6	10



G7 electrical equipment

KEY TO DIAGRAMS

The wiring diagram consists of several plates numbered in the bottom right-hand corner. Each plate is divided horizontally into zones.

A wire connecting appliances located in different plates includes a connection address.

Example : B2 = see zone B, plate 2.

KEY TO DIAGRAMS

IDENTIFICATION OF CABLES :

Each wire is identified by its abbreviated colour. This marking could be completed with a colored ferrule.

For instance :

BC = Brown wire with Crystal ferrure.

ABBREVIATIONS OF COLOURS

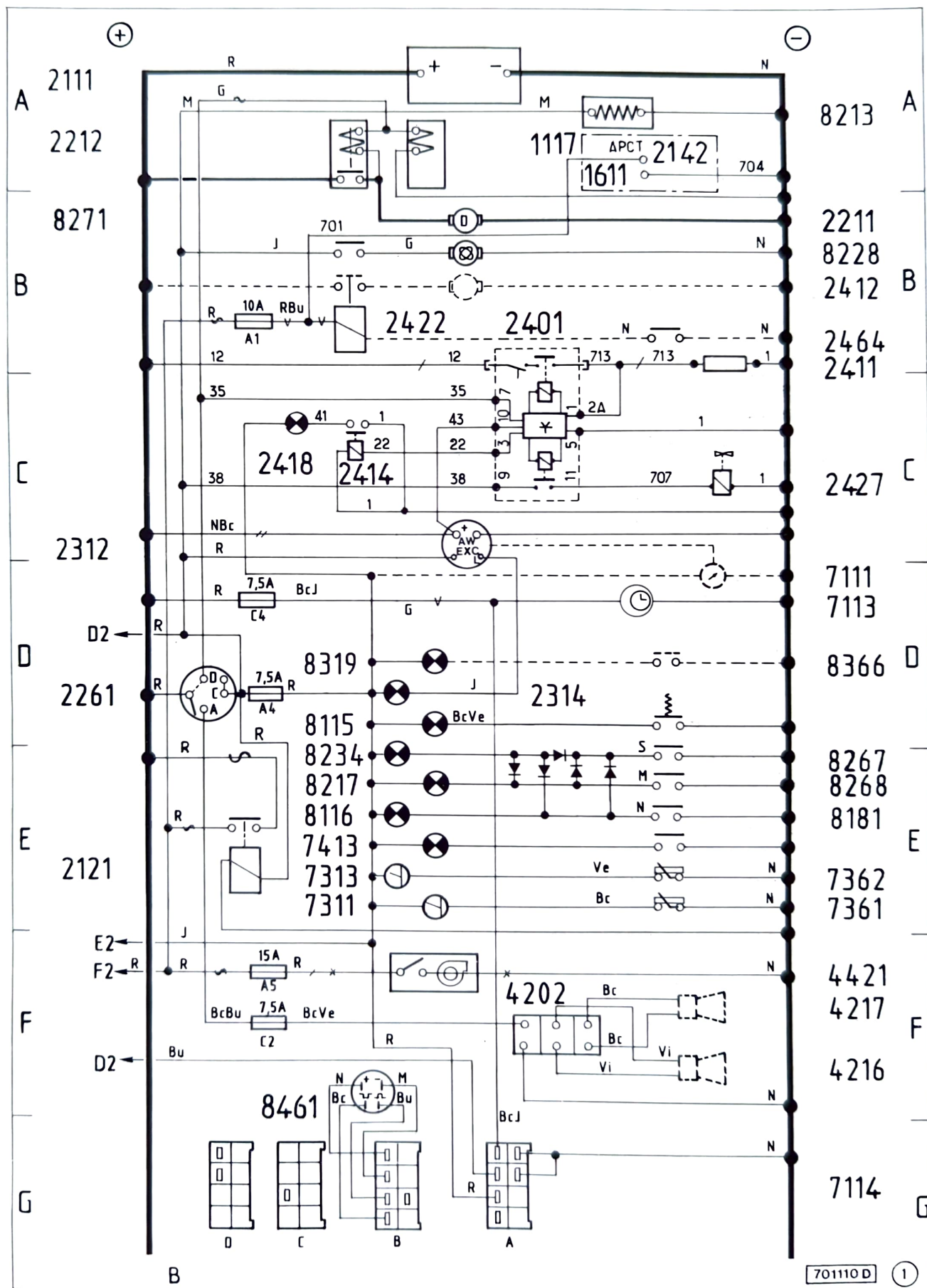
BLACK	=	N
BROWN	=	M
RED	=	R
ORANGE	=	Or
YELLOW	=	J
GREEN	=	Ve
BLUE	=	Bu
PURPLE	=	Vi
GREY	=	G
WHITE	=	Bc
BEIGE	=	Bj
CRYSTAL	=	C
SALMON	=	S

KEY TO DIAGRAM

PLATE 1

- 1117 - Ancillaries board
- 1611 - Ground connection
- 2111 - Battery (set of batteries)
- 2121 - Power after ignition relay
- 2142 - Available power supply (after ignition key)
- 2211 - Starter
- 2212 - Starting relay
- 2261 - Steering lock and starting control
- 2312 - Alternator with integral regulator
- 2314 - Battery charge warning light
- 2401 - Preheating timer
- 2411 - Preheating resistors
- 2412 - Fuel preheater
- 2414 - Preheating relay
- 2418 - Preheating warning light
- 2422 - Fuel preheater relay
- 2427 - Pre-heating circuit solenoid valve
- 2464 - Fuel preheater thermal switch
- 4202 - Radio
- 4216 - RH loudspeaker(s)
- 4217 - LH loudspeaker(s)
- 4421 - Unit heaters
- 7111 - Rev. counter
- 7113 - Tachograph
- 7114 - Electronic tachograph
- 7311 - Oil pressure gauge
- 7313 - Water temperature gauge
- 7361 - Oil pressure transmitter
- 7362 - Water temperature transmitter
- 7413 - Fuel level warning light
- 8115 - Parking brake warning light
- 8116 - Brake fluid minimum level light
- 8181 - Brake fluid minimum level switch
- 8213 - Engine shut-off solenoid valve
- 8217 - Water temperature warning light
- 8228 - Declutching fan
- 8234 - Engine oil pressure and danger warning lamp
- 8267 - Oil pressure warning light pressure switch
- 8268 - Water temperature warning light thermal switch
- 8271 - Declutching fan thermal switch(es)
- 8319 - Power take-off warning light
- 8366 - Power take-off switch
- 8461 - Vehicle speed sensor

G9 electrical equipment



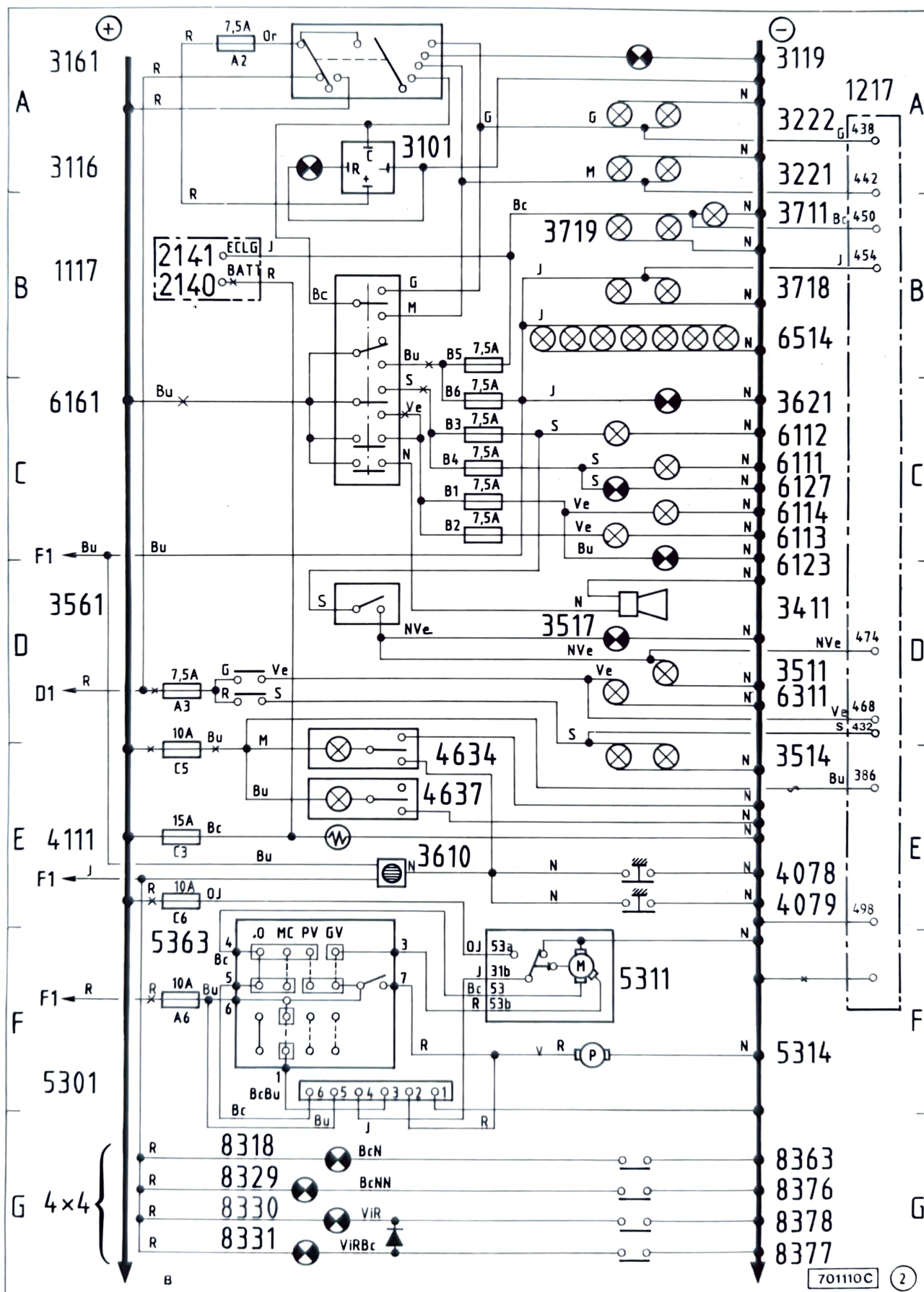
G10 electrical equipment

KEY TO DIAGRAM

PLATE 2

- 1117 - Ancillaries board
- 1217 - Rear junction box
- 2140 - Available power supply (battery)
- 2141 - Available power supply (lighting)
- 3101 - Flasher unit
- 3116 - Flashing direction indicator lights repeater light
- 3119 - Hazard lights warning light
- 3161 - Hazard lights control
- 3221 - RH flashers
- 3222 - LH flashers
- 3411 - Horn
- 3511 - Fog light(s)
- 3514 - Stop lights
- 3517 - Fog light(s) warning light
- 3561 - Fog light(s) control
- 3610 - Lights forgotten warning light
- 3621 - Side/parking lights warning light
- 3711 - Number plate light
- 3718 - RH rear lights
- 3719 - LH rear lights
- 4078 - LH door switch
- 4079 - RH door switch
- 4111 - Cigar lighter
- 4634 - Cab overhead light
- 4637 - Rear overhead light
- 5301 - Windscreen wiper speed controller
- 5311 - Windscreen wiper motor
- 5314 - Windscreen washer pump
- 5363 - Windscreen wash/wipe control
- 6111 - RH dipped beam headlight
- 6112 - LH dipped beam headlight
- 6113 - RH main beam headlight
- 6114 - LH main beam headlight
- 6123 - Main beam headlights warning light
- 6127 - Dipped beam headlights
- 6161 - Lighting, direction indicators and horn switch
- 6311 - Reversing light(s)
- 6514 - Instrument panel lighting
- 8318 - Inter-wheel diff. lock warning light
- 8329 - Front axle differential lock warning light
- 8330 - Transfer box differential lock warning light
- 8331 - Transfer box low gear warning light relay
- 8363 - Rear drive axle inter-wheel differential lock switch
- 8376 - Front axle differential lock switch
- 8377 - Transfer box low speed switch
- 8378 - Front drive axle dog clutch engagement switch

G11 electrical equipment



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