

## 1. TOOLS AND EQUIPMENT

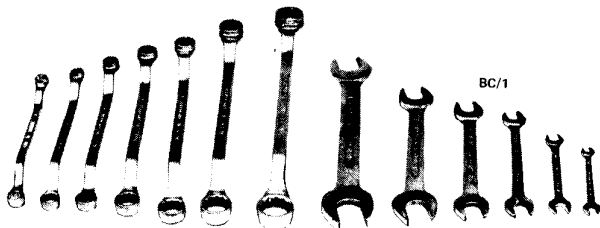
When servicing the modern motor vehicle, special tools are sometimes essential for overhaul and adjustment procedures on certain components. These special tools can be expensive and often require specialised knowledge to operate them, in which case it is more practical to take the vehicle or component to your authorised dealer for repair. Where possible the use of special tools is avoided in this manual and basic or substitute tools, which are described in the text, are used instead. Should it not be practical to carry out an operation without special equipment, then the reader is advised of this at the commencement of the operation.

To successfully carry out any form of mechanical repair work, adequate hand tools are essential. Do not be tempted to make do with old spanners, screwdrivers etc, that do not correctly fit the hardware on the vehicle, nor use new spanners of the wrong system such as A.F. on metric nuts and bolts. Besides damaging the hardware and/or 'rounding' the bolt heads and nuts, many a knuckle has been skinned by using inferior or incorrect tools.

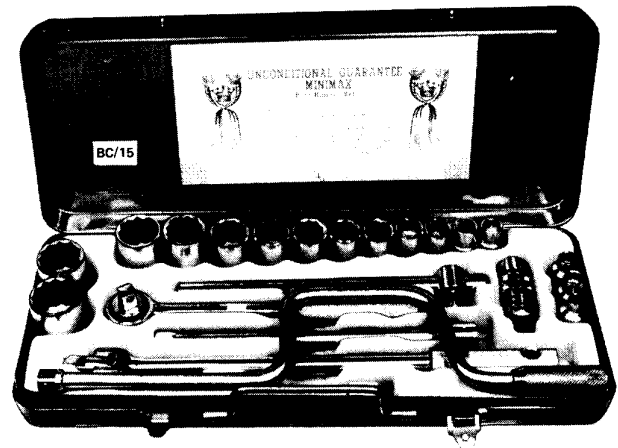
The following list of basic tools, miscellaneous equipment and stores are suggested as being the initial requirements to enable the maintenance and repair work described in this manual to be carried out.

### BASIC TOOL KIT

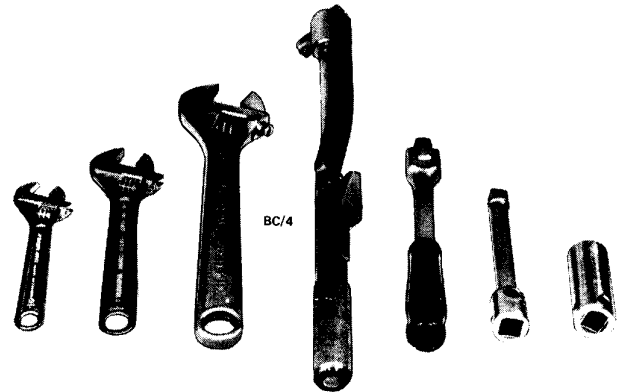
- 1 Set of open ended spanners.
- 1 Set of ring spanners.
- 1 Set of socket spanners.
- 1 Set of adjustable spanners.
- 1 Spark plug spanner.
- 1 Torque wrench.
- Assorted bladed screwdrivers.
- Assorted Philips screwdrivers.
- 1 Pair of ordinary pliers.
- 1 Pair of multigrip pliers.
- 1 Pair of vice grip pliers.
- 1 Pair of long nose pliers.
- 2 Pairs of circlip pliers.
- 1 Engineers hammer.
- 1 Set of pin punches.
- 1 Set of feeler gauges.
- 1 Set of magneto spanners.
- 1 Points file.



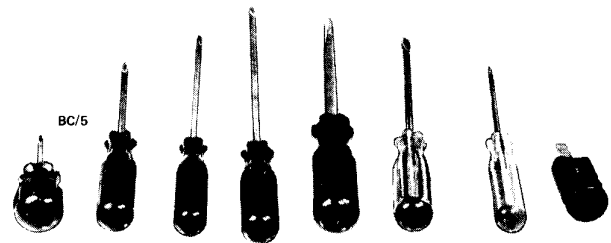
Ring and open ended spanners.



Socket spanner set.



Adjustable spanners, torque wrench and spark plug socket spanner with socket extension and swivel bar.



Assorted Philips and bladed screwdrivers.

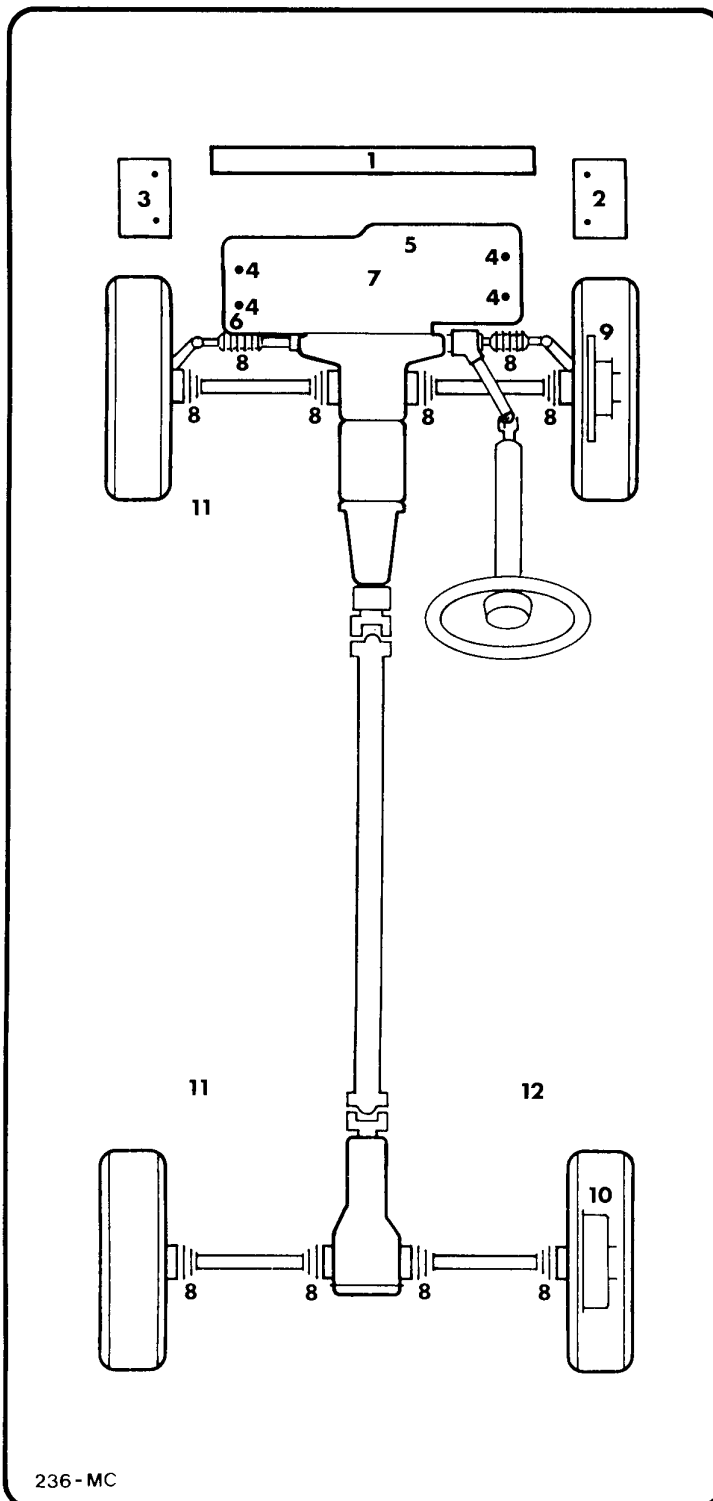


Vice grip pliers, ordinary pliers, long nose pliers, circlip pliers (expanding type), circlip pliers (contracting type) and multigrip pliers.

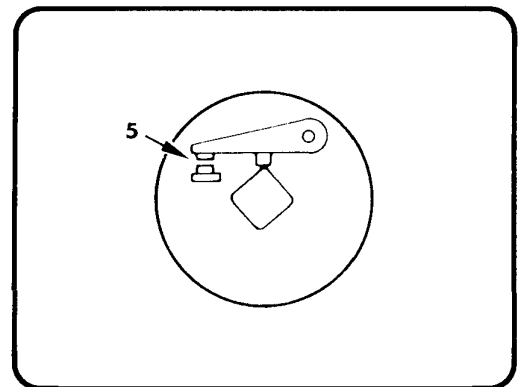
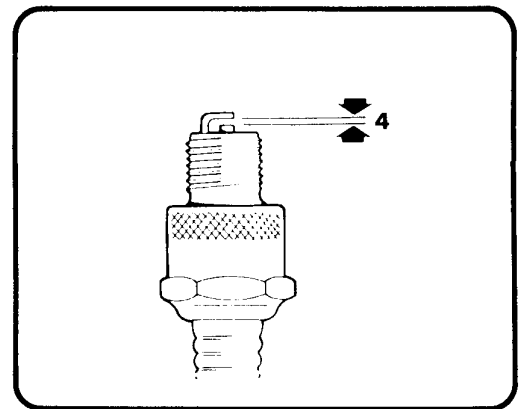
## 2. SERVICE SCHEDULE

JOB	daily or 1,000 km	THOUSAND KILOMETRES												
		10	20	25	30	40	50	60	70	75	80	90	100	
<b>ENGINE</b>  (1) Check the oil level on the dipstick each time the fuel tank is topped up or every 1,000 km. Top up as necessary with the correct grade of engine oil. (2) Drain and refill the engine sump and renew the oil filter every 10,000 km or six months. <i>NOTE: When driving under severe or dusty conditions it is recommended that the engine oil and filter are changed more frequently.</i> (3) Check and if necessary adjust the valve clearance on OHV engines every 20,000 km or 12 months. (4) Check and if necessary adjust the camshaft drive belt tension on OHC engines every 25,000 km or 12 months. (5) Renew the camshaft drive belts on OHC engines every 100,000 km or 48 months.	•	•	•		•	•	•	•	•		•	•	•	
			•			•		•			•		•	
				•			•			•			•	
													•	
<b>COOLING SYSTEM</b>  (1) Check the coolant level in the radiator or coolant reservoir daily or every 1,000 km. <i>NOTE: If the engine is at normal operating temperature use care when removing the radiator cap to avoid scalding.</i> (2) Drain, flush and refill the cooling system every: (a) 40,000 km or 24 months on 1979–1984 and Utility models. (b) 50,000 km or 24 months on 1985–1987 models. (3) Check the radiator hoses, heater hoses and drive belts every 20,000 km or 12 months.	•													
							•				•			
								•					•	
			•			•		•			•		•	
<b>FUEL SYSTEM</b>  (1) Inspect the air cleaner element and the PCV filter, if applicable, every: (a) 20,000 km or 12 months on 1979–1984 and Utility models. (b) 25,000 km or 12 months on 1985–1987 models. (2) Renew the air cleaner element and the PCV filter, if applicable, every: (a) 40,000 km or 24 months on 1979–1984 and Utility models.			•			•		•			•		•	
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## 4. MAINTENANCE CHART



236-MC



## MAINTENANCE KEY

- |   |   |
|---|---|
| 1. Radiator   | 7. Carburettor and air cleaner assembly         |
| 2. Battery 1979-1984 and Utility models                         | 8. C.V. joint and steering boot checking points |
| 3. Battery 1985-1987 models                                     | 9. Front brakes and hub bearings                |
| 4. Spark plugs and plug gap measuring point                     | 10. Rear brakes and hub bearings                |
| 5. Distributor contact breaker gap 1979-1984 and Utility models | 11. Fuel filter 1979-1984 and Utility models    |
| 6. Distributor 1985-1987 models                                 | 12. Fuel filter 1985-1987 models                |

## SPECIFICATIONS

Refer to the tyre placard on the vehicle for tyre pressures and tyre sizes. Refer to local regulations regarding maximum wheel width and offset if fitting non standard wheels.

Wheel nut tightening torque . . . . . 98 Nm

### 1. HOW TO CHANGE A ROAD WHEEL

- (1) Ensure that the vehicle is on level, firm ground and clear from any passing traffic.
- (2) If necessary switch on the hazard flashers.
- (3) Place the transmission in the P (Park) position on automatic transaxle models or reverse gear on manual transaxle models.
- (4) Firmly apply the handbrake.
- (5) Open the bonnet and remove the T bolt retaining the spare wheel to the carrier.

*NOTE: If the vehicle has been in use prior to changing the wheel, the spare wheel may be quite hot, therefore use care when removing the T bolt and the spare wheel.*



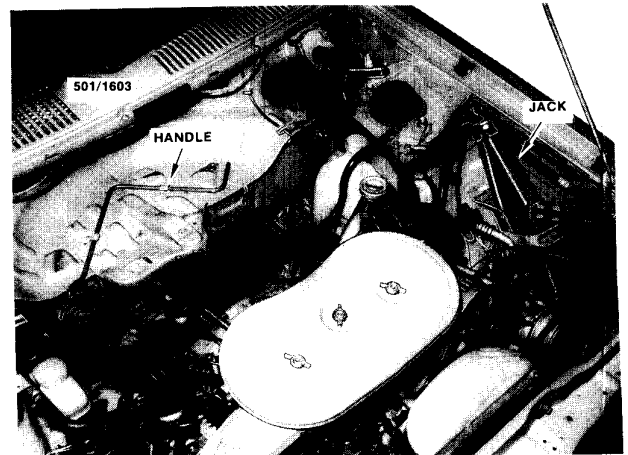
The spare wheel is located in the engine compartment. Take care when removing the T bolt and the spare wheel as they may be quite hot if the vehicle has been in use.

- (6) Lift the spare wheel from the carrier and out of the engine compartment.

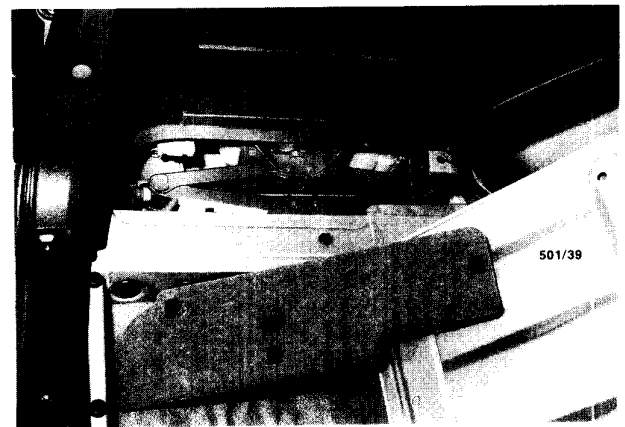
- (7) On 1979–1984 and Utility models, remove the jack and jack handle from their mounting brackets in the engine compartment. Remove the wheel spanner from the tool kit in the luggage compartment.

On 1985–1987 models, remove the jack, jack handle and wheel spanner from their positions in the luggage compartment.

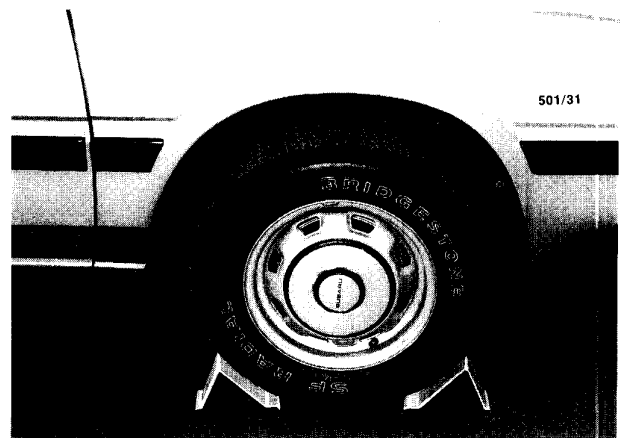
- (8) Where fitted, remove the hub cap by engaging a screwdriver with one of the slots at the outer edge of the hub cap and prising it from the wheel.



View showing the location of the jack and jack handle, 1983 model shown.



View of the jack and handle storage location, 1985–1987 Station Wagon.



Chock the front and rear of the wheel diagonally opposite the wheel being changed.

(1) Connect a suitable tachometer, timing light and where applicable a dwell meter to the engine according to the meter manufacturers instructions. Start the engine and bring it to normal operating temperature.

(2) Adjust the engine idle speed to Specifications. Disconnect and plug the distributor vacuum line.

(3) Where applicable check the dwell angle (see Specifications). Adjust by increasing the contact breaker point gap to decrease dwell or decreasing the point gap to increase dwell. The engine will have to be stopped and the distributor cap and rotor arm removed to carry out this operation.

(4) After setting the dwell angle at idle speed increase the engine speed to 1500 rpm. Slowly lower the engine rpm back to the idle rpm and at the same time observe the dwell meter. Dwell angle variation should not exceed two degrees.

Excessive variation in dwell angle indicates worn components within the distributor in which case the distributor should be removed for overhaul (see Electrical System section).

(5) Remove the timing access plug from the flywheel housing and with the engine running at the specified idle speed and the distributor vacuum line disconnected, aim the timing light beam to the graduated marks on the timing scale.

(6) Correct timing is achieved when the mark on the flywheel is adjacent to the specified timing mark on the timing scale.

(7) Adjust the timing position by loosening the distributor retaining nut and by turning the distributor slowly in the required direction.

(8) After the correct timing position has been determined make sure the distributor to engine retaining nut is firmly tightened.

(9) Reconnect the vacuum advance line to the distributor and adjust the engine idle speed to Specifications. (See to Adjust Idle Speed and Mixture).

(10) Switch off the engine, remove the test instruments and reconnect all disconnected wiring.

#### TO ADJUST IDLE SPEED AND MIXTURE

*NOTE: Before finally adjusting the idle speed and mixture setting ensure that the following conditions are met:*

*The air cleaner element is clean and installed.*

*The ignition timing is correctly set.  
The fuel float level is correct and the choke is fully open.*

(1) Connect a suitable tachometer to the engine following the manufacturers instructions.

(2) Start and run the engine until it reaches normal operating temperature.

(3) Adjust the throttle stop screw as required to obtain the specified idle speed. See Specifications.

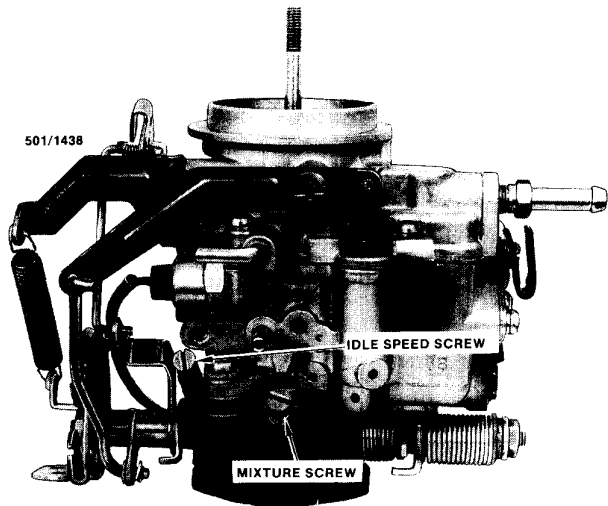
(4) On 1979-1984 and Utility models, if the engine does not idle smoothly at the specified rpm, the idle mixture may be adjusted temporarily as follows:

(a) Adjust the throttle stop screw to give an idle speed of approximately 800 rpm.

(b) Turn the idle mixture screw in clockwise until the engine slows and begins to falter, then turn the mixture screw slowly anti-clockwise until the engine runs smoothly again, but does not lose speed or hunt.

(c) Readjust the throttle stop screw to obtain the correct idle speed. See Specifications.

*NOTE: The above mentioned procedure to adjust the idle mixture is only a temporary measure. Final mixture adjustment must be made using a gas analyser.*



Side view of 1983 carburettor showing idle speed screw and mixture screw.

The 1985–1987 Sedan and Station Wagon models with four wheel drive and equipped with air conditioning, have an additional engine driven fan mounted on the front of the air conditioning compressor drive pulley. Drive to the cooling fan is via a viscous coupling.

The cooling system is pressurised in order to raise the boiling point of the coolant within the system and so increase the efficiency of the engine.

On 1985–1987 Sedan and Station Wagon models, the radiator tanks are manufactured in a resin material to reduce weight. A drain tap is installed to the bottom of the right hand radiator tank, drain plugs are installed in the cylinder heads and the engine block to facilitate coolant drainage. On automatic transaxle models the left hand radiator tank also houses the transaxle oil cooler.

On 1985–1987 Sedan and Station Wagon models, the radiator overflow hose is connected to a reserve tank which is mounted on the left hand inner fender panel. The radiator cap has a seal between the top of the cap and the upper surface of the radiator filler neck to prevent coolant overflow at this point when the radiator cap pressure valve opens and to direct the overflowing coolant into the reserve tank.

When the engine is stopped and the temperature of the coolant falls, the radiator cap vacuum valve opens and allows the excess coolant in the reserve tank to be drawn back into the radiator, eliminating the need for frequent topping up of the coolant.

Temperature within the cooling system is controlled by a thermostat located in the inlet manifold water outlet elbow.

The function of the thermostat is to prevent the circulation of the coolant through the radiator until the engine has reached operating temperature. This restricted circulation allows the engine to warm up more quickly improving driveability and fuel economy.

The coolant is also circulated through the inlet manifold to preheat the fuel and air mixture as it flows through the manifold passages.

The water pump, driven by a 'V' belt from the crankshaft pulley, is of the centrifugal impeller type. The body of the water pump is made from an aluminium alloy to assist in engine weight reduction and contains a pre-lubricated double row ball bearing and a spring loaded seal assembly. A drain hole, located between the seal and the bearing, prevents bearing lubricant contamination if coolant leaks past the seal.

The electric cooling fan is mounted on the rear of the radiator and its operation is regulated by a thermostatic switch located in the right hand radiator tank.

Due to the aluminium alloy construction of the engine blocks and cylinder heads it is imperative that the cooling system is filled with soft, demineralised water and anti-corrosive, anti-freeze (Ethylene glycol) mixed to the proportion required to avoid freezing at

the lowest expected ambient operating temperature, whilst retaining satisfactory cooling characteristics.

When working on the cooling system, to avoid accidental scalding, exercise caution when releasing the radiator cap of an engine that is at normal operating temperature.

### 3. RADIATOR

#### TO CHECK COOLANT LEVEL

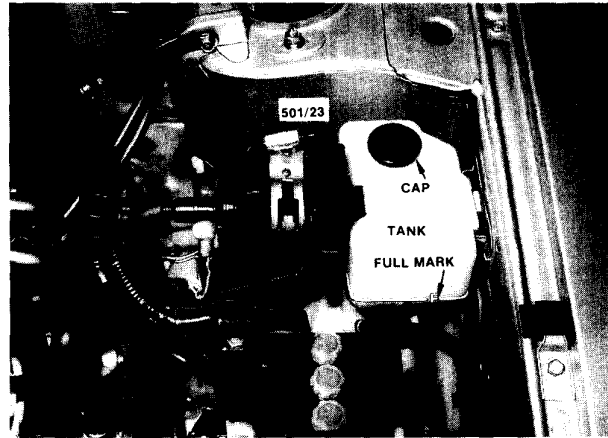
##### 1985–1987 Sedan and Station Wagon Models

(1) With the engine cool, check the level of the coolant in the reserve tank.

If the level in the reserve tank is towards the Low mark add coolant to bring the level to the Full mark.

If the reserve tank is empty remove the radiator cap and fill the radiator with coolant. Replace the radiator cap securely and fill the reserve tank to the Full mark.

(2) Run the engine and check the cooling system for leaks, rectify leaks as necessary.



Installed view of the coolant reserve tank.

##### 1979–1984 and Utility Models

(1) Allow the engine to cool until the radiator cap can be safely removed.

(2) Remove the radiator cap and check that the coolant is level with the plate which is visible through the radiator filler neck.

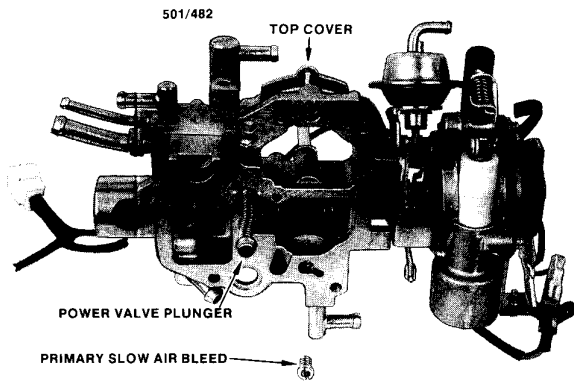
(3) If necessary, add coolant to restore the level to the plate.

(4) Run the engine and check the cooling system for leaks, rectify leaks as necessary.

#### TO DRAIN AND REFILL

(1) Position a suitable drain tin under the radiator drain tap, loosen the tap and drain the coolant into the drain tin. Remove the radiator cap to avoid surges from the drain tap.

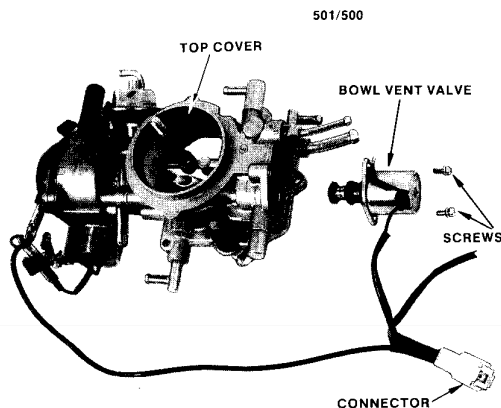
(2) Remove the drain plugs from the cylinder



Primary slow air bleed removed from OHC engine top cover, DCZ 328 551 carburettor shown.

- (2) Remove the float pivot pin, and withdraw the float and needle valve.
- (3) Remove the needle valve seat assembly using a screwdriver and clean out the filter with compressed air. Be careful not to lose the washer.
- (4) Remove the spring clip retaining the needle to the float and inspect the sealing surface of the needle and seat for any signs of wear, scoring or pitting. Renew the needle and seat as an assembly if necessary.
- (5) Check the float for signs of obvious damage. Renew the float, where necessary.
- (6) Using a suitable screwdriver remove the primary slow air bleed.
- (7) If applicable remove the bowl vent valve retaining screws and remove the bowl vent valve. Discard the 'O' rings.

*NOTE: The bowl vent valve can be tested using jumper leads by connecting the power wire of the valve to the positive terminal of a 12 volt battery and the negative wire of the valve to the negative terminal of the same battery. The plunger should move freely. Replace the bowl vent valve, if necessary.*



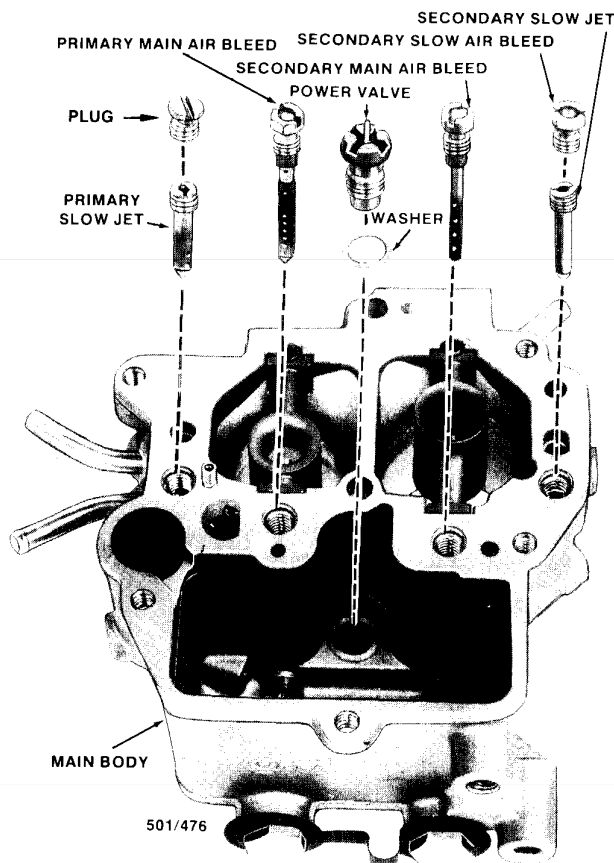
Bowl vent valve removed from OHC engine top cover, DCZ 328 551 carburettor shown.

- (8) Thoroughly clean the top cover in a suitable solvent.
- (9) Instal the needle valve seat using a new seat washer. Clip the needle valve and clip assembly onto the float.
- (10) Instal the float and needle valve assembly to the top cover and insert the float pivot pin. Check and if necessary adjust the float level as described later in this section.
- (11) Instal the accelerator pump plunger and the dust boot to the top cover.

*NOTE: Do not remove the power valve piston or the choke valve from the top cover. If they are excessively worn or damaged, the top cover assembly should be renewed. Any binding or sticking linkages should be freed to ensure correct operation.*

### TO SERVICE MAIN BODY

- (1) Using suitable screwdrivers, remove the primary and secondary main air bleeds from the main body.
- (2) Remove the plug and the primary slow jet from the installed position beside the primary barrel.



View of the jets removed from OHC engine main body, DCZ 328 551 carburettor shown.

## SPECIFICATIONS

### TWO WHEEL DRIVE FOUR SPEED TRANSAXLE

Drive shaft to pinion shaft clearance	0.2 mm
Drive pinion shim adjustment code location	End face
Drive pinion end float gauge initial setting	0.5 mm
Pinion shaft retaining pin depth in case	1.0 mm
Mainshaft bearing end float	0–0.05 mm
Synchro sleeve to gear face clearance:	
First	9.5 mm
Second	9.5 mm
Third —	
1979–1984 models	11.0 mm
1985–1987 models	9.5 mm
Fourth	9.5 mm
Reverse idler gear clearance	1.5–3.0 mm
Pinion gear to side gear backlash:	
1979–1980 models	0.05–0.15 mm
1981–1987 models	0.13–0.18 mm
Crownwheel to drive pinion backlash	0.10–0.18 mm
Shifter fork rod end separation clearances:	
1979–1980 models	0.3–1.6 mm
1981–1982 models —	
Between first/second and third/fourth	1.8–3.1 mm
Between third/fourth and reverse	0.3–1.6 mm
1983–1984 models	0.3–2.1 mm
1985–1987 models	0.3–1.6 mm

### TWO WHEEL DRIVE FIVE SPEED TRANSAXLE

Drive shaft to pinion shaft clearance	0.2 mm
Drive pinion shim adjustment code location	End face
Drive pinion end float gauge initial setting	0.5 mm
Pinion shaft retaining pin depth in case	1.0 mm
Mainshaft bearing end float	0–0.05 mm
Synchro sleeve to gear face clearance:	
First	9.5 mm
Second	9.5 mm
Third —	
1979–1984 models	11.0 mm
1985–1987 models	9.3 mm
Fourth —	
1979–1984 models	9.5 mm
1985–1987 models	9.3 mm
Fifth —	
1979–1984 models	10.5 mm
1985–1987 models	9.3 mm
Reverse idler gear clearance:	
Reverse position	1.5–3.0 mm
Neutral position at washer	0–0.5 mm
Pinion gear to side gear backlash:	
1979–1980 models	0.5–0.15 mm

1981–1987 models	0.13–0.18 mm
Crownwheel to drive pinion backlash	0.10–0.18 mm
Shifter fork rod end separation clearances:	
1979–1980 models	0.3–1.6 mm
1981–1983–1984 models —	
Between first/second and third/fourth	1.8–3.1 mm
Between third/fourth and fifth	0.3–1.6 mm
1982 models	0.3–2.1 mm
1985–1987 models —	
Between first/second and third/fourth	0.5–1.5 mm
Between third/fourth and fifth	0.6–1.4 mm

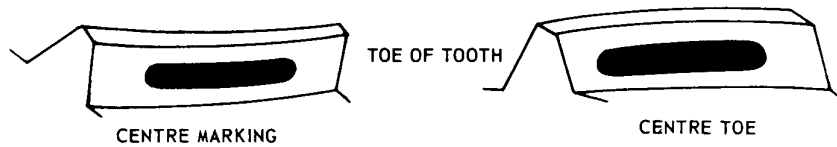
### FOUR WHEEL DRIVE FOUR SPEED TRANSAXLE

Drive shaft to pinion shaft clearance	0.2 mm
Drive pinion shim adjustment code location	End face
Drive pinion end float gauge initial setting	0.5 mm
Pinion shaft retaining pin depth in case	1.0 mm
Mainshaft rear bearing end float	0–0.05 mm
Synchro sleeve to gear face clearance:	
First	9.5 mm
Second	9.5 mm
Third	11.0 mm
Fourth	9.5 mm
Reverse idler gear clearance	1.5–3.0 mm
Pinion gear to side gear backlash:	
1979–1980 models	0.05–0.15 mm
1981–1987 models	0.13–0.18 mm
Crownwheel to drive pinion backlash	0.10–0.18 mm
Shifter fork rod end separation clearances:	
1979–1980 models	0.3–1.6 mm
1981–1984 models —	
Between first/second and third/fourth	1.8–3.1 mm
Between third/fourth and reverse	0.3–3.6 mm
1985–1987 models —	
Between first/second and third/fourth	0.5–1.5 mm
Between third/fourth and reverse	0.6–1.4 mm

### Dual Ratio Models

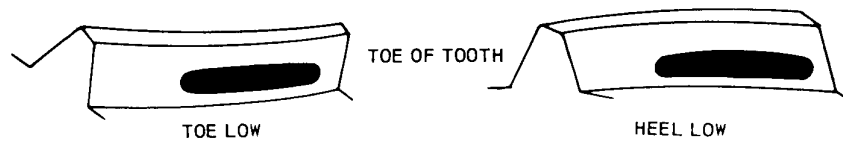
Mainshaft high/low synchro hub end float	0.60–0.10 mm
Input shaft front bearing end float	0–0.08 mm
Input shaft front bearing end float in retainer	0–0.08 mm
Transfer drive gear to case clearance	10 mm
Transfer shifter rod length from rear face of ball joint	
shoulder to end of rod	178 mm
Selector lever forward clearance	40 mm



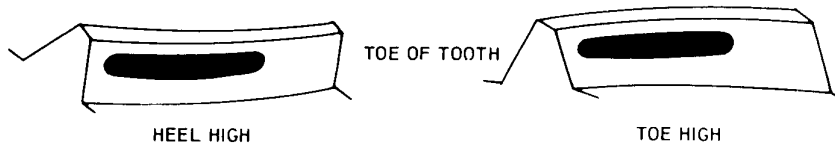
**DRIVE****OVERDRIVE**

Crownwheel Tooth Marking for Correctly Adjusted Crownwheel and Pinion. Marking will be slightly Closer to Toe of Tooth on Overdrive or Concave Side. Changes in Thickness of Pinion Positioning Shims will Affect Tooth Marking on Overdrive to Greater Extent than on Drive or Convex Side of Tooth. Changes in Backlash have a more Pronounced Effect on Drive Side Markings (All models.)

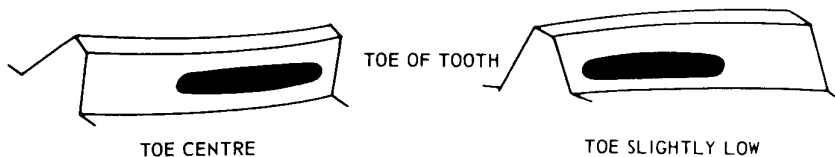
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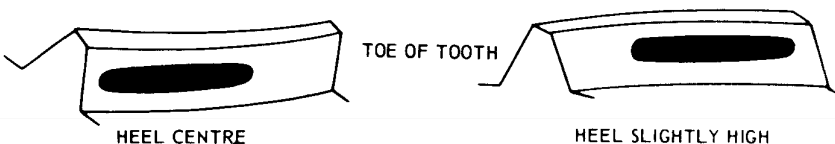
Low Profile Marking on Both Sides of Tooth. Rectify by Reducing Thickness of Pinion Positioning Shims and Reset Backlash (All models.)



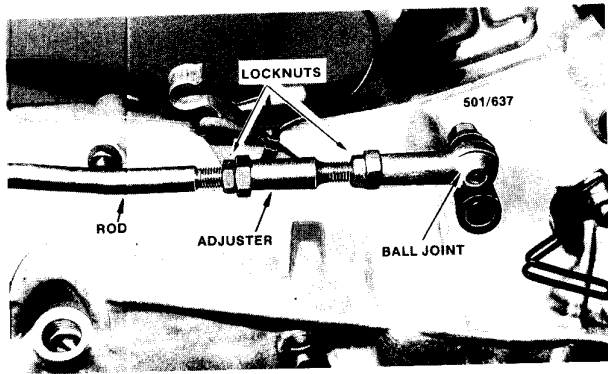
High Profile Marking on Both Sides of Crownwheel Tooth. Rectify by Increasing of Pinion Positioning Shims and Reset Backlash (All models.)



Toe Marking on Drive Side and Low Profile Marking on Overdrive Side of Crownwheel Tooth. To Rectify, Increase Backlash. It may be Necessary to Increase Thickness of Pinion Positioning Shims to Maintain Backlash within Specified Limits (All models.)



Heel Marking on Drive Side and High Profile Marking on Overdrive Side of Crownwheel Tooth. To Rectify, Reduce Backlash. It may be Necessary to Decrease Thickness of Pinion Positioning Shims to Maintain Backlash within Specified Limits (All models.)



View of high/low linkage and adjuster, 1986 model shown.

the transfer case in order to hold the transfer rod and linkage rigid.

(5) While securing the linkage front ball joint by hand loosen the front and rear locknuts.

*NOTE: The linkage rod adjuster rear locknut is left hand threaded.*

(6) While holding the front ball joint by hand turn the adjuster screw anti-clockwise until the front ball joint becomes tight.

(7) Turn the adjuster screw clockwise 90 degrees and while securing the ball joint tighten the adjuster screw rear and front locknut to Specifications.

(8) Remove the linkage adjusting locating pin tool from the transaxle.

(9) Check the operation of the four wheel drive selection for free and smooth movement.

(10) Instal the top cover and gasket to the transfer case and instal the retaining bolts and tighten to Specifications.

(11) Instal the transaxle to the vehicle as previously described.

## TO ADJUST FOUR WHEEL DRIVE SINGLE RATIO CABLE

### 1985-1987 Sedan and Station Wagon Models

With the electrical components operating correctly and the vacuum hoses serviceable and secure, the four wheel drive selection cable should be checked and adjusted as necessary. The design of the transaxle and the method of adjustment necessitates the removal of the transaxle from the vehicle.

(1) Remove the transaxle from the vehicle as previously described.

(2) Using a vacuum pump, apply a vacuum to the outer aperture on the vacuum servo-unit until the cable is fully extended forward as in the two wheel drive position and secure the cable.

(3) Loosen the cable adjusting turnbuckle locknuts and using the turnbuckle, shorten the cable until the turnbuckle becomes tight.

(4) Release the turnbuckle 180 degrees and secure by tightening the locknuts securely.

(5) Using the vacuum pump check the operation of the four wheel selection for free and smooth movement.

(6) Remove the vacuum pump and instal the transaxle to the vehicle as previously described.

## 5. AXLE SHAFTS

### Special Equipment Required:

To Remove — Axle shaft puller

To Instal — Axle shaft installing tool

### TO REMOVE AND DISMANTLE

It is possible to renew the axle shaft double offset joint and rubber boot with the axle shaft on the vehicle. This is achieved by removing the front exhaust pipe and disconnecting the control arm from the front crossmember and utilising the appropriate part of the following procedures for the removal and installation of the rubber boot and offset joint.

Special care should be taken that the correct diameter offset joint is installed. The installation of the incorrect component will result in damage to the assembly.

(1) Disconnect the negative battery terminal.

(2) Ensure the handbrake is fully applied.

(3) Remove the front wheel hub caps where fitted and remove the axle shaft retaining nut split pin.

(4) Loosen the road wheel nuts and axle shaft retaining nut.

(5) Raise the vehicle to a suitable working height and support it on chassis stands.

(6) Remove the road wheels and release the handbrake.

(7) Remove the caliper to swivel hub retaining bolts and remove the caliper. Secure the caliper away from the work area ensuring no strain is put on the flexible hose.

(8) Remove the axle shaft retaining nut, spacer, shaped washer and hub assembly from the axle shaft.

(9) Remove the suspension unit to steering knuckle retaining bolts and separate the suspension unit.

(10) Remove the steering tie rod end to steering knuckle retaining nut split pin and remove the retaining nut. Separate the tie rod end.

*NOTE: Disconnect the tie rod end ball joint stud by placing a suitable dolly or hammer against the side of the steering knuckle steering eye and striking the opposite side with a hammer.*

(11) Remove the steering knuckle control arm ball joint retaining bolt and expanding the ball joint retaining gap on the hub separate the ball joint. Do not expand the gap any further than 4 mm. This is specified as the ball joint retaining gap.

*be caused by internal damage and wear, in which case the differential assembly will have to be removed for overhaul.*

*Due to the design of the differential assembly it is recommended that it be referred to a suitable specialised workshop for repair.*

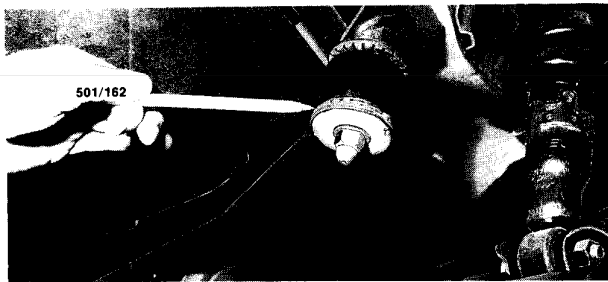
#### **REPEATED AXLE SHAFT OR DOUBLE OFFSET JOINT BREAKAGE**

- (1) Repeated overloading: Revise load capacity.
- (2) Abnormal clutch operation: Revise driving habits or check condition.

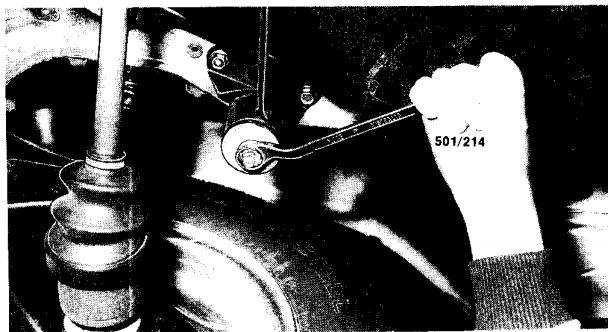
*NOTE: If the clutch is operating correctly and overloading is not the cause check the axle shafts for bend and misalignment.*

#### **NOISE DURING VEHICLE INITIAL MOVEMENT**

- (1) Differential rear crossmember mounting rubber bushes worn or damaged: Renew rubber bushes.
- (2) Differential front mounting rubber bushes worn or damaged: Renew rubber bushes.
- (3) Differential rear crossmember mounting retaining nuts loose: Check and tighten retaining nuts.
- (4) Damaged axle shaft inner double offset joint: Renew double offset joint.
- (5) Excessive differential drive pinion to crown-wheel backlash: Overhaul differential assembly.



**Check the differential rear mounting crossmember rubber bushes for wear and deterioration.**



**Check the differential rear mounting crossmember nuts for tightness.**

- (6) Propeller shaft(s) universal joints worn and damaged: Renew propeller shaft(s) or universal joint.

- (7) Propeller shafts centre bearing loose on chassis and shaft: Retighten the centre bearing and propeller flange retaining bolts and nuts.

- (8) Propeller shaft(s) flanges loose: Retighten the flange retaining bolts and nuts.

#### **PINION SHAFT WILL ROTATE BUT NOT DRIVE VEHICLE**

- (1) Broken axle shaft: Check and renew axle shaft.

- (2) Internal differential damage: Remove differential assembly rear cover, check and if necessary refer the problem to a suitable specialised workshop.

*NOTE: The axle shaft inner and outer offset joints are of different spline numbers and diameters and if installed incorrectly will cause damage to the components.*

#### **LOSS OF LUBRICANT**

- (1) Damaged or obstructed air breather: Clear or replace.

- (2) Leaking pinion oil seal: Renew oil seal and check flange contact surface.

- (3) Leaking differential drive shaft oil seal: Renew oil seal and check drive shaft running surface.

- (4) Leaking differential bearing retainer and rear cover gaskets: Renew gaskets and check mating contact surfaces.

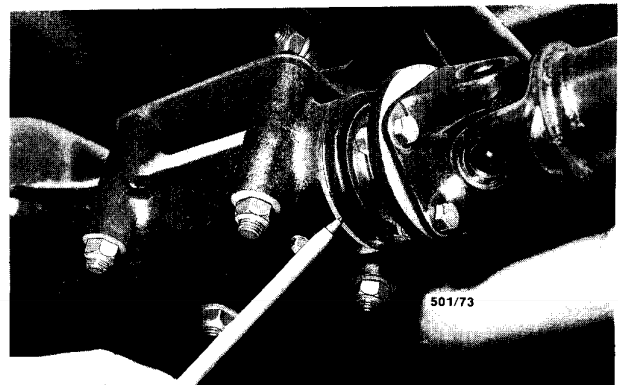
- (5) Loose oil filler or drain plug: Tighten plugs securely.

- (6) Incorrect oil seals installed: Renew oil seals.

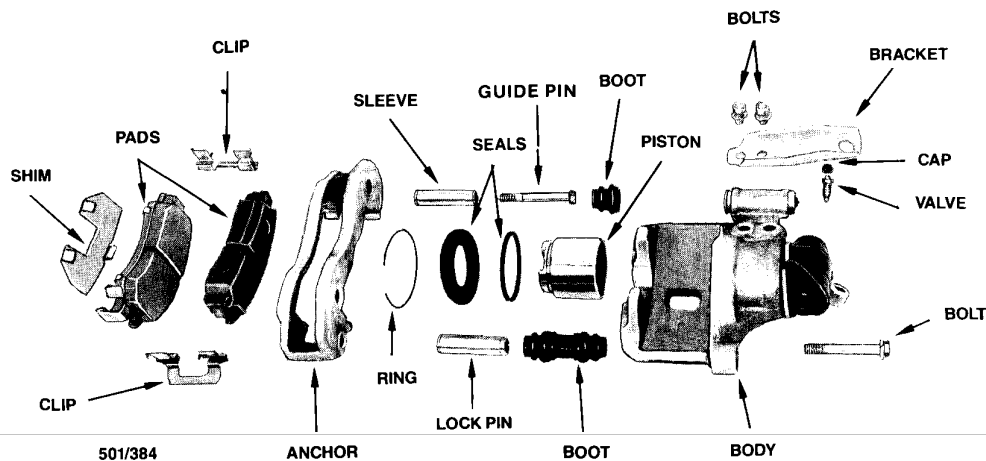
- (7) Incorrect or blocked axle shaft double offset joint outer race inner sealing plug: Check and clear or renew sealing plug.

- (8) Damaged axle shaft double offset joint rubber boot: Renew rubber boot.

- (9) Porous or cracked differential assembly case: Remove, check and if necessary refer the problem to a suitable specialised workshop.



**If the rear axle differential is losing oil, check the drive pinion oil seal as a likely leakage source.**



**Dismantled view of the front caliper, 1986 model shown.**

(13) Using the spring compressor or a suitable alternative, apply pressure to the spindle to relieve the tension between the spindle and the shaft of the handbrake lever.

(14) Remove the shaft and lever assembly from the caliper and remove the spring compressor. Remove the boot from the lever.

(15) Remove the return spring and the strut from the caliper.

(16) Remove the spindle assembly from the caliper.

(17) Note the position of the conical washers and remove the washers from the spindle.

(18) Carefully prise the seal from the groove on the spindle and discard the seal.

(19) Clean all parts except the brake pads in methylated spirits and examine them carefully for wear and corrosion, particularly the piston. Renew any corroded, worn or doubtful parts. Discard the piston and spindle seals.

A small degree of corrosion in the caliper bore may not necessitate the renewal of the caliper body as the sealing surface is on the piston.

(20) If the operation of the handbrake mechanism in the piston is in doubt, renew the piston.

Assembly is a reversal of the dismantling procedure with attention to the following points:

(1) Coat the new piston seal with clean brake fluid and instal the seal into the groove in the caliper bore. Ensure that the seal is not twisted and is correctly seated in the groove.

(2) Coat the bore of the caliper with clean brake fluid and instal the piston to the bore by hand aligning the grooves on the piston to ensure clearance for the peg on the rear of the inner brake pad when the caliper is installed to the anchor plate.

(3) Apply the RX2 grease supplied in the repair kit to the grooves in the caliper and the piston and instal the dust seal to the caliper and the piston. Ensure that the seal is not twisted and instal the retaining clip.

(4) Suitably cover the screw portion of the spindle to protect the seal, coat the seal groove with the silicone grease supplied in the repair kit and instal the 'O' ring seal to the spindle ensuring that it is not twisted and is correctly seated in the groove.

(5) Apply the RX2 grease supplied in the repair kit to the spindle at the location of the conical washers and instal the washers to the spindle as noted during dismantling. Alternate the mounting of the washers so that the outer circumferences of the washers are in contact with each other and the inner circumferences of the two end washers will contact with the spindle and caliper body respectively. liberally coat each washer with RX2 grease.

(6) Instal the spindle to the caliper, wind it into the piston in a clockwise direction.

(7) Liberally coat the head of the spindle and the handbrake lever bearings with RX2 grease.

(8) Place the return spring and strut in position on the caliper body and compress the spindle and conical washer assembly using the spring compressor.

(9) Instal the large handbrake lever boot to the lever, liberally coat the lever shaft with RX2 grease and instal the lever to the caliper. Align the return spring and strut in the groove in the lever shaft.

(10) Instal the snap ring to the handbrake lever shaft.

(11) Pack the area of the handbrake mechanism with RX2 grease, instal the boot to the caliper body and instal the retaining ring.

(12) Instal the small handbrake lever boot to the lever and instal the retaining ring.

(13) Instal the guide and lock pin boots to the positions noted during dismantling. coat the sleeves, where fitted, with the silicone grease supplied in the repair kit and instal the sleeves to the caliper.

(14) Instal the caliper to the anchor plate ensuring that the pads, springs and shims are located correctly and tighten the lock pin(s) to the following torque figures:

*NOTE: Reference should be made to local government regulations governing headlamp aim and the headlamps adjusted accordingly.*

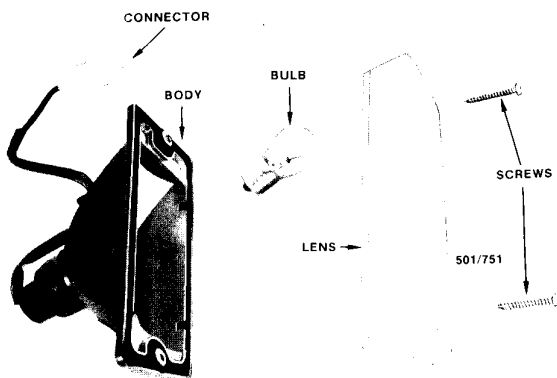
### FRONT TURN SIGNAL LAMP — BUMPER MOUNTED

#### To Renew Bulb

(1) Remove the screws retaining the lamp and lens assembly to the bumper and carefully prise the lens from the lamp body.

(2) Remove the bulb from the bulb holder by pressing it in slightly, rotating it anti-clockwise and withdrawing the bulb from the holder.

(3) Ensure that the bulb holder is free from corrosion and instal the new bulb. Instal the lens and tighten the retaining screws.



Dismantled view of the front bumper mounted turn signal lamp, 1986 model shown.

#### To Remove and Instal

(1) Remove the screws retaining the lamp and lens assembly to the bumper and withdraw the lamp sufficiently to disconnect the wiring connector.

(2) Disconnect the wiring connector by pulling on the connector not the wires and remove the lamp from the vehicle.

Installation is a reversal of the removal procedure.

### FRONT TURN SIGNAL REPEATER LAMP — FENDER MOUNTED

#### To Renew Bulb

(1) Remove the screws retaining the lamp and lens to the front fender and remove the lens.

(2) Remove the bulb by pulling it from the bulb holder.

(3) Ensure that the bulb holder is free from corrosion and instal the new bulb by pushing it into the bulb holder. Instal the lens and tighten the retaining screws.

#### To Remove and Instal

(1) Remove the screws retaining the repeater lamp to the front fender and withdraw the lamp sufficiently to allow the wiring to be disconnected.

(2) Disconnect the wiring by pulling on the connector not the wires and remove the lamp from the vehicle.

Installation is a reversal of the removal procedure.

### REAR COMBINATION LAMP

#### To Renew Bulb 1979–1984 Sedan and Coupe

(1) Where fitted, remove the luggage compartment trim panel.

(2) Remove the relevant bulb holder from the lamp by it turning anti-clockwise.

(3) Remove the bulb by pressing it in slightly and turning it anti-clockwise.

(4) Ensure that the bulb holder is free from corrosion and instal the new bulb.

(5) Instal the bulb holder to the lamp body and the trim panel to the vehicle body.



View showing the bulb holder and bulb removed from the rear combination lamp, 1983 Coupe shown.

#### To Renew Bulb 1985–1987 Sedan

(1) Where fitted, remove the luggage compartment trim panel.

(2) Remove the bulb holder from the rear of the lamp body.

(3) Remove the relevant bulb from the bulb holder by pushing it in slightly and turning it anti-clockwise.

(4) Ensure that the bulb holder is free from corrosion and instal the new bulb.

(5) Instal the bulb holder to the lamp body and the trim panel to the vehicle.

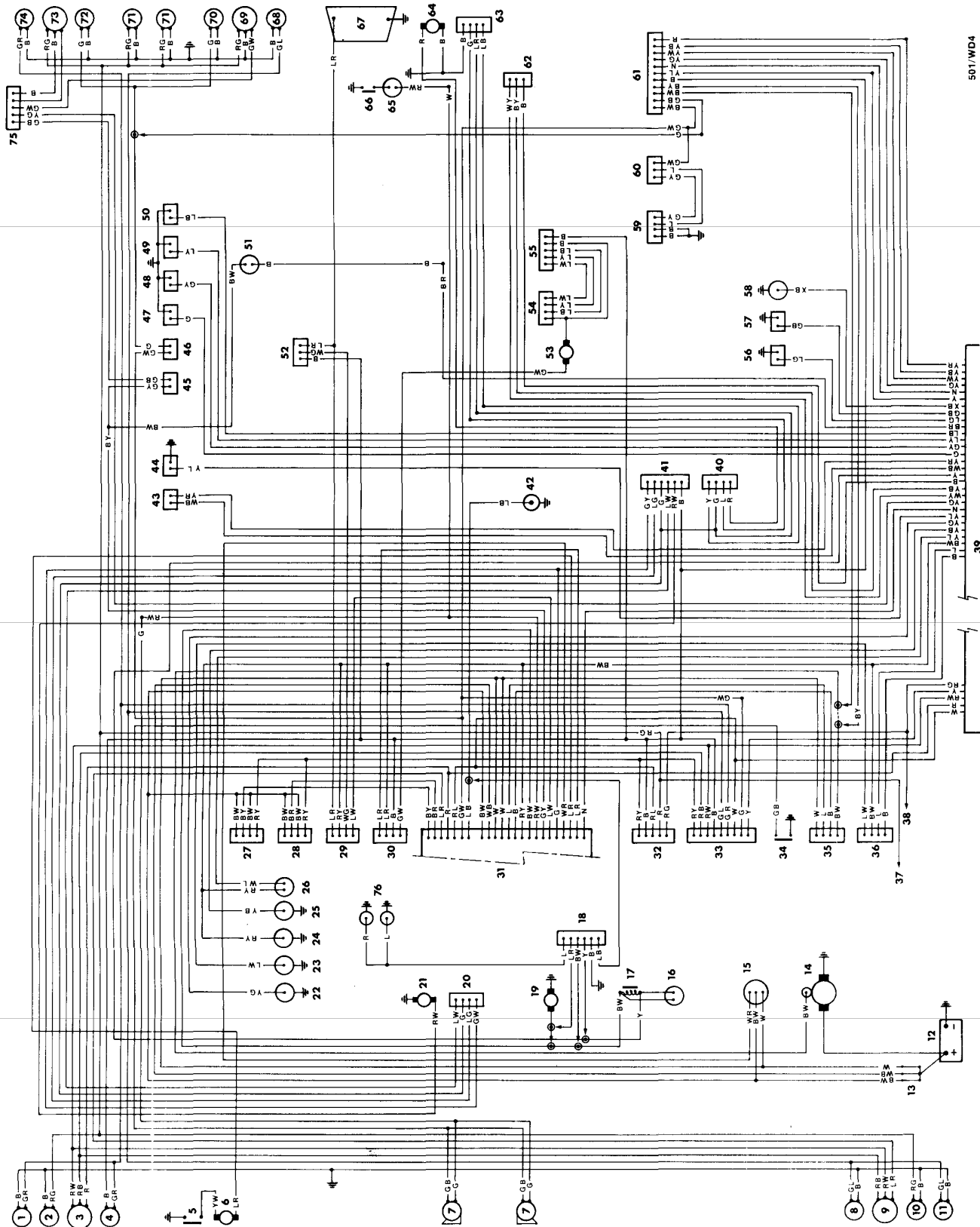
#### To Renew Bulb 1979–1984 Station Wagon

(1) Remove the screws retaining the combination lamp to the vehicle body and withdraw the lamp sufficiently to remove the bulb holders.

(2) Remove the relevant bulb holder from the lamp by turning it anti-clockwise.

(3) Remove the relevant bulb from the bulb holder by pressing it in slightly and turning it anti-clockwise.

(4) Ensure that the bulb holder is free from



Wiring diagram for 1985-1986 Sedan and Station Wagon models

501/WD4

## INTRODUCTION

To reduce the output level of carbon monoxide, hydrocarbons and oxides of nitrogen, which are the three primary automotive emissions and thus comply with the legislation on the maintenance of clean air, several different types of emission control systems are used in the Subaru range of vehicles.

The systems will be discussed under the headings (1) Positive Crankcase Ventilation (PCV) System, (2) Evaporative Control System, (3) Air Preheat System, (4) Exhaust Gas Recirculation (EGR) System, (5) Coasting by-pass system, (6) Air Injection System, (7) Catalytic Converter System.

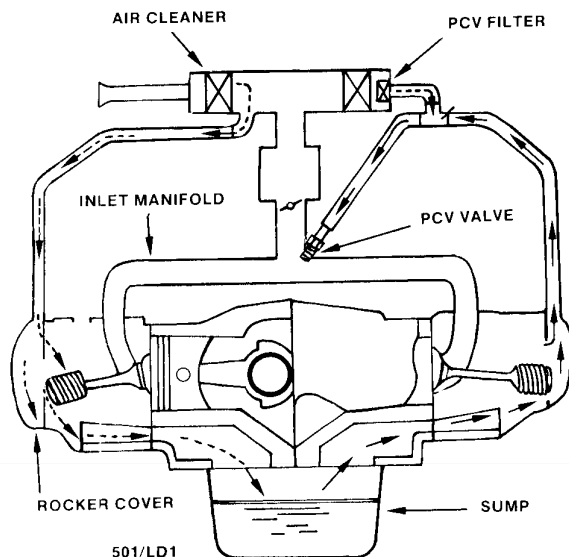
Each system is covered separately, as a combination of some or all of the systems may be applicable to a particular vehicle depending on the local emission control regulations.

### 1. POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM

#### DESCRIPTION

To reduce the emission of unburnt crankcase hydrocarbons to the atmosphere a closed type of positive crankcase ventilation system is used.

In a closed type system, the engine draws clean induction air from within the air cleaner assembly through a hose connected between it and one rocker cover. The air then passes through the engine and is fed into the combustion chambers via another hose and a regulating valve (PCV valve) mounted in the inlet manifold. There is a small connecting hose between the air cleaner and the PCV valve hose to prevent engine oil being sucked into the inlet manifold during hard cornering or off road conditions.



Schematic diagram of the positive crankcase ventilation system.

The system is most effective at moderate throttle conditions when a high manifold depression (vacuum) exists which allows the PCV valve to open and all the crankcase vapours to be scavenged.

At wide open throttle, manifold depression is insufficient to scavenge all of the crankcase vapours and the ventilation flow reverses with some of the blow by fumes entering the air cleaner instead of the inlet manifold.

If the engine is excessively worn and blow by is at a high level, then irrespective of throttle operation a certain amount of crankcase vapour will recycle back through the rocker covers and into the air cleaner.

#### TO SERVICE THE SYSTEM

The system should be regularly serviced with particular attention given to the following:

(1) Check the condition of the rubber hoses ensuring that they are not blocked, collapsed or deteriorated. Renew the hoses or hose clips as necessary.

(2) Check the seals on the engine oil filter cap and the dipstick. Renew the seals if they are damaged or if their sealing quality is suspect.

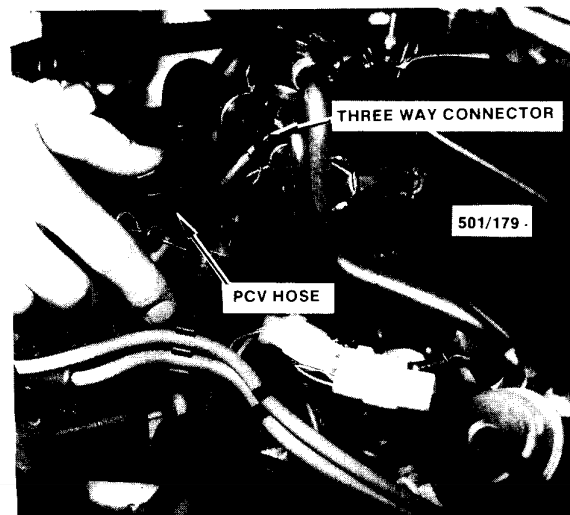
#### TO CHECK OPERATION

Check the operation of the PCV valve as follows:

(1) With the engine running at a steady idle speed disconnect the PCV valve hose at the three way connector.

(2) Place a finger over the just disconnected hose. A strong vacuum should be immediately felt as the finger is placed over the hose.

(3) Connect the PCV valve hose to the three way connector.



With the engine running disconnect the PCV hose at the three way connector. A strong vacuum should be felt if the PCV system is functioning correctly. 1986 model shown.