Chapter 9
Braking system

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Degrees of difficulty

Easy, suitable for novice with little experience 

Fairly easy, suitable for beginner with some experience 

Fairly difficult, suitable for competent DIY mechanic 

Difficult, suitable for experienced DIY mechanic 

Very difficult, suitable for expert DIY or professional 

Specifications

Front brakes

Disc diameter	266.0 mm
Disc thickness:	
New:	
Solid disc	10.0 mm
Ventilated disc	20.4 mm
Minimum thickness:	
Solid disc	9.0 mm
Ventilated disc	18.0 mm
Maximum disc run-out	0.07 mm
Brake pad minimum thickness	2.0 mm

Rear drum brakes

Drum internal diameter:	
New 228.6 mm	
Maximum diameter after machining	229.6 mm
Brake shoe lining minimum thickness	1.0 mm

Rear disc brakes

Disc diameter	247.0 mm
Disc thickness:	
New 8.0 mm	
Minimum thickness	6.0 mm
Maximum disc run-out	0.07 mm
Brake pad minimum thickness	2.0 mm

Torque wrench settings	Nm	lbf ft
Hydraulic pipe unions	15	11
Front brake caliper:		
Guide pin bolts (Girling caliper)**	35	26
Caliper mounting bolts (Bendix caliper):*^:		
Early (solid) type hub carrier	120	89
Later (hollow) type hub carrier	105	77
Caliper mounting bracket bolts (Girling caliper):*^		
Early (solid) type hub carrier	120	89
Later (hollow) type hub carrier	105	77
Rear brake caliper:		
Guide pin bolts*	35	26
Caliper mounting bracket bolts*	55	41
Master cylinder-to-servo unit nuts	15	11
Brake pedal pivot bolt nut	20	15
Vacuum servo unit securing nuts	20	15
ABS wheel sensor securing bolts*	10	7
ABS wheel sensor adjuster bolt (Bendix “integral” ABS)	3	2
ABS hydraulic modulator mounting nuts	20	15
Roadwheel bolts	85	63

**Use thread-locking compound.*
***Use new bolts coated with thread-locking compound*
^Refer to note in Chapter 10, Section 2.

1 General information

The braking system is of the servo-assisted, dual-circuit hydraulic type. The arrangement of the hydraulic system is such that each circuit operates one front and one rear brake from a tandem master cylinder. Under normal circumstances, both circuits operate in unison. However, in the event of hydraulic failure in one circuit, full braking force will still be available at two wheels.

Some large-capacity engine models have disc brakes all round as standard; other models are fitted with front disc brakes and rear drum brakes. ABS is fitted as standard to certain models, and is offered as an option on most other models (refer to Section 23 for further information on ABS operation).

The front disc brakes are actuated by single-piston sliding type calipers, which ensure that equal pressure is applied to each disc pad.

On models with rear drum brakes, the rear brakes incorporate leading and trailing shoes, which are actuated by twin-piston wheel cylinders. On models not equipped with an underbody-mounted rear brake pressure regulating valve, the wheel cylinders incorporate integral pressure-regulating valves, which control the hydraulic pressure applied to the rear brakes. The regulating valves help to prevent rear wheel lock-up during emergency braking. On some models, an underbody-mounted load-sensitive rear pressure-regulating valve is fitted. A self-adjust mechanism is incorporated, to automatically compensate for brake shoe wear. As the brake shoe linings wear, the footbrake operation automatically operates the adjuster mechanism, which effectively lengthens the shoe strut and repositions the brake shoes, to remove the lining-to-drum clearance.

On models with rear disc brakes, the brakes are actuated by single-piston sliding calipers which incorporate mechanical handbrake mechanisms. A load-sensitive pressure-regulating valve is fitted to regulate the hydraulic pressure applied to the rear brakes. The regulating valve is similar to that fitted to drum brake models with ABS, and helps to prevent rear wheel lock-up during emergency braking.

On all models, the handbrake provides an independent mechanical means of rear brake application.

Note: *When servicing any part of the system, work carefully and methodically; also observe scrupulous cleanliness when overhauling any part of the hydraulic system. Always renew components (in axle sets, where applicable) if in doubt about their condition, and use only genuine Peugeot replacement parts, or at least those of known good quality. Note the warnings given in “Safety first” and at relevant points in this Chapter concerning the dangers of asbestos dust and hydraulic fluid.*

2 Hydraulic system - bleeding

Warning: Hydraulic fluid is poisonous; wash off immediately and thoroughly in the case of skin contact, and seek immediate medical advice if any fluid is swallowed or gets into the eyes. Certain types of hydraulic fluid are inflammable, and may ignite when allowed into contact with hot components; when servicing any hydraulic system, it is safest to assume that the fluid is inflammable, and to take precautions against the risk of fire as though it is petrol that is being handled. Hydraulic fluid is also an effective paint stripper, and will attack plastics; if any is spilt, it should be washed off immediately, using copious quantities of fresh water. Finally, it is hygroscopic (it absorbs moisture from the air) - old fluid may be contaminated and unfit for further use. When topping-up or renewing the fluid, always use the recommended type, and ensure that it comes from a freshly-opened sealed container.

Warning: Do not attempt to bleed any part of the hydraulic system on models equipped with the Bendix “integral” ABS. Special equipment is required, and the task must be referred to a Peugeot dealer.

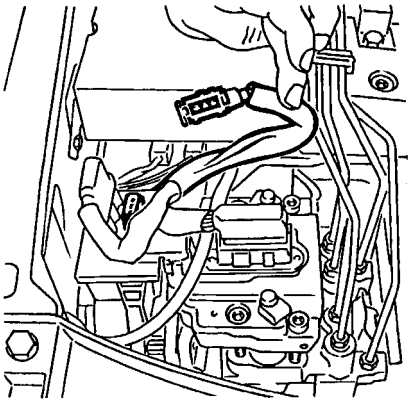
General

1 The correct operation of any hydraulic system is only possible after removing all air from the components and circuit; this is achieved by bleeding the system.

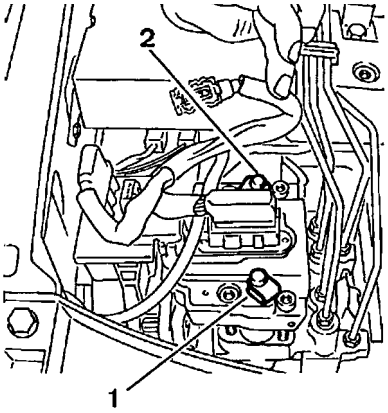
2 During the bleeding procedure, add only clean, unused hydraulic fluid of the recommended type; never re-use fluid that has already been bled from the system. Ensure that sufficient fluid is available before starting work.

3 If there is any possibility of incorrect fluid being already in the system, the brake components and circuit must be flushed completely with uncontaminated, correct fluid, and new seals should be fitted to the various components.

4 If hydraulic fluid has been lost from the system, or air has entered because of a leak, ensure that the fault is cured before proceeding further.



2.10a Disconnect the 3-pin brown wiring connector before bleeding the Bendix "additional" ABS



2.10b Bleed the hydraulic modulator using the bleed screws (1) first, and (2) second - Bendix "additional" ABS

5 Park the vehicle on level ground, switch off the engine and select first or reverse gear, then chock the wheels and release the handbrake.
6 Check that all pipes and hoses are secure, unions tight and bleed screws closed. Clean any dirt from around the bleed screws.
7 Unscrew the master cylinder reservoir cap, and top the master cylinder reservoir up to the "MAX" level line; refit the cap loosely, and remember to maintain the fluid level at least above the "MIN" level line throughout the procedure, or there is a risk of further air entering the system.
8 There are a number of one-man, do-it-yourself brake bleeding kits currently available from motor accessory shops. It is recommended that one of these kits is used whenever possible, as they greatly simplify the bleeding operation, and also reduce the risk of expelled air and fluid being drawn back into the system. If such a kit is not available, the basic (two-man) method must be used, which is described in detail below.
9 If a kit is to be used, prepare the vehicle as described previously, and follow the kit manufacturer's instructions, as the procedure may vary slightly according to the type being used; generally, they are as outlined below in the relevant sub-section.
10 Whichever method is used, the same sequence must be followed to ensure the removal of all air from the system.

Bleeding sequence

Conventional braking system

a) Right-hand rear wheel.
b) Left-hand front wheel.
c) Left-hand rear wheel.
d) Right-hand front wheel.

Bendix "additional" ABS

Note: *Before carrying out any bleeding, switch off the ignition, and disconnect the 3-pin brown wiring connector from the hydraulic modulator assembly* ***(see illustration)****.*

a) Rear brake furthest from master cylinder.
b) Rear brake nearest master cylinder.
c) Front brake furthest from master cylinder.
d) Front brake nearest master cylinder.
e) Hydraulic modulator ***(see illustration)****.*

Bosch "additional" ABS

Note: *Before carrying out any bleeding, switch off the ignition, and disconnect the 4-pin black wiring connector from the hydraulic modulator assembly.*

a) Left-hand front wheel.
b) Right-hand front wheel.
c) Left-hand rear wheel.
d) Right-hand rear wheel.

Note: *If difficulty is experienced in bleeding the hydraulic circuit on models with Bosch "additional" ABS, using the above sequence, try bleeding the complete system working in the following order:*

a) Right-hand rear brake.
b) Left-hand rear brake.
c) Left-hand front brake.
d) Right-hand front brake.

Bleeding - basic (two-man) method

11 Collect a clean glass jar, a suitable length of plastic or rubber tubing which is a tight fit over the bleed screw, and a ring spanner to fit the screw. The help of an assistant will also be required.
12 Remove the dust cap from the first screw in the sequence **(see illustrations)**. Fit the spanner and tube to the screw, place the other end of the tube in the jar, and pour in sufficient fluid to cover the end of the tube.
13 Ensure that the master cylinder reservoir fluid level is maintained at least above the "MIN" level line throughout the procedure.
14 Have the assistant fully depress the brake pedal several times to build up pressure, then maintain it on the final downstroke.
15 While pedal pressure is maintained, unscrew the bleed screw (approximately one turn) and allow the compressed fluid and air to flow into the jar. The assistant should maintain pedal pressure, following it down to the floor if necessary, and should not release it until instructed to do so. When the flow stops, tighten the bleed screw again, have the assistant release the pedal slowly, and recheck the reservoir fluid level.
16 Repeat the steps given in paragraphs 14 and 15 until the fluid emerging from the bleed screw is free from air bubbles. If the master cylinder has been drained and refilled, and air is being bled from the first screw in the sequence, allow approximately five seconds between cycles for the master cylinder passages to refill.
17 When no more air bubbles appear, tighten the bleed screw securely, remove the tube and spanner, and refit the dust cap. Do not overtighten the bleed screw.
18 Repeat the procedure on the remaining screws in the sequence, until all air is removed from the system and the brake pedal feels firm again.

Bleeding - using a one-way valve kit

19 As their name implies, these kits consist of a length of tubing with a one-way valve fitted, to prevent expelled air and fluid being drawn back into the system; some kits include a translucent container, which can be positioned so that the air bubbles can be more easily seen flowing from the end of the tube.
20 The kit is connected to the bleed screw, which is then opened. The user returns to the driver's seat, depresses the brake pedal with a smooth, steady stroke, and slowly releases it; this is repeated until the expelled fluid is clear of air bubbles **(see illustration)**.
21 Note that these kits simplify work so



2.12a Bleed nipple (arrowed) on front disc caliper



2.12b Bleed nipple (arrowed) on rear wheel cylinder



2.20 Using a one-man brake bleeding kit on a front caliper

much that it is easy to forget the master cylinder reservoir fluid level; ensure that this is maintained at least above the "MIN" level line at all times.

Bleeding - using a pressure-bleeding kit

22 These kits are usually operated by the reservoir of pressurised air contained in the spare tyre. However, note that it will probably be necessary to reduce the pressure to a lower level than normal; refer to the instructions supplied with the kit.

23 By connecting a pressurised, fluid-filled container to the master cylinder reservoir, bleeding can be carried out simply by opening each screw in turn (in the specified sequence), and allowing the fluid to flow out until no more air bubbles can be seen in the expelled fluid.

24 This method has the advantage that the large reservoir of fluid provides an additional safeguard against air being drawn into the system during bleeding.

25 Pressure-bleeding is particularly effective when bleeding "difficult" systems, or when bleeding the complete system at the time of routine fluid renewal.

All methods

26 When bleeding is complete, and firm pedal feel is restored, wash off any spilt fluid, tighten the bleed screws securely, and refit their dust caps.

27 Check the hydraulic fluid level in the master cylinder reservoir, and top-up if necessary (Chapter 1).

28 Discard any hydraulic fluid that has been bled from the system; it will not be fit for re-use.

29 Check the feel of the brake pedal. If it feels at all spongy, air must still be present in the system, and further bleeding is required. Failure to bleed satisfactorily after a reasonable repetition of the bleeding procedure may be due to worn master cylinder seals.

30 On models with ABS, reconnect the wiring connector to the hydraulic modulator assembly.



3.2 Flexible hose-to-rigid pipe union at front wheel arch

3 Hydraulic pipes and hoses - renewal



Note: *Before starting work, refer to the note at the beginning of Section 2 concerning the dangers of hydraulic fluid.*

1 If any pipe or hose is to be renewed, minimise fluid loss by first removing the master cylinder reservoir cap, then tightening it down onto a piece of polythene to obtain an airtight seal. Alternatively, flexible hoses can be sealed, if required, using a proprietary brake hose clamp; metal brake pipe unions can be plugged (if care is taken not to allow dirt into the system) or capped immediately they are disconnected. Place a wad of rag under any union that is to be disconnected, to catch any spilt fluid.

2 If a flexible hose is to be disconnected, unscrew the brake pipe union nut before removing the spring clip which secures the hose to its mounting bracket **(see illustration)**.

3 To unscrew the union nuts, it is preferable to obtain a brake pipe spanner of the correct size; these are available from most large motor accessory shops. Failing this, a close-fitting open-ended spanner will be required, though if the nuts are tight or corroded, their flats may be rounded-off if the spanner slips. In such a case, a self-locking wrench is often the only way to unscrew a stubborn union, but it follows that the pipe and the damaged nuts must be renewed on reassembly. Always clean a union and surrounding area before disconnecting it. If disconnecting a component with more than one union, make a careful note of the connections before disturbing any of them.

4 If a brake pipe is to be renewed, it can be obtained, cut to length and with the union nuts and end flares in place, from Peugeot dealers. All that is then necessary is to bend it to shape, following the line of the original, before fitting it to the car. Alternatively, most motor accessory shops can make up brake pipes from kits, but this requires very careful measurement of the original, to ensure that the replacement is of the correct length. The safest answer is usually to take the original to the shop as a pattern.

5 On refitting, do not overtighten the union nuts. It is not necessary to exercise brute force to obtain a sound joint.

6 Ensure that the pipes and hoses are correctly routed, with no kinks, and that they are secured in the clips or brackets provided. After fitting, remove the polythene from the reservoir, and bleed the hydraulic system as described in Section 2. Wash off any spilt fluid, and check carefully for fluid leaks.

4 Front brake pads - renewal



Warning: Renew both sets of front brake pads at the same time - never renew the pads on only one wheel, as uneven braking may result. Note that the dust created by wear of the pads may contain asbestos, which is a health hazard. Never blow it out with compressed air, and don't inhale any of it. An approved filtering mask should be worn when working on the brakes. DO NOT use petrol or petroleum-based solvents to clean brake parts; use brake cleaner or methylated spirit only.

1 Apply the handbrake, then jack up the front of the vehicle and support it on axle stands (see *"Jacking and Vehicle Support"*). Remove the front roadwheels.

2 Trace the brake pad wear sensor wiring back from the pads, and disconnect it from the wiring connector **(see illustration)**. Note the routing of the wiring, and free it from any relevant retaining clips.

3 Push the piston into its bore by pulling the caliper outwards.

4 There are two different types of front brake caliper fitted to the models covered in this manual as follows.

a) Models with solid front discs - Bendix calipers.

b) Models with ventilated front discs - Girling calipers.



4.2 Disconnecting the pad wear sensor wiring connector



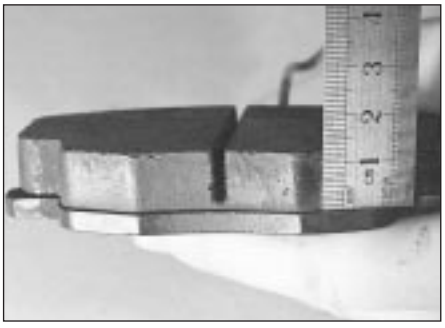
4.5a Extract the spring clip (arrowed) . . .



4.5b . . . then slide the pad retaining plate from the caliper - Bendix caliper



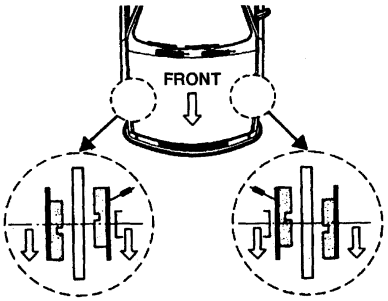
4.6 Withdrawing the outer brake pad - Bendix caliper

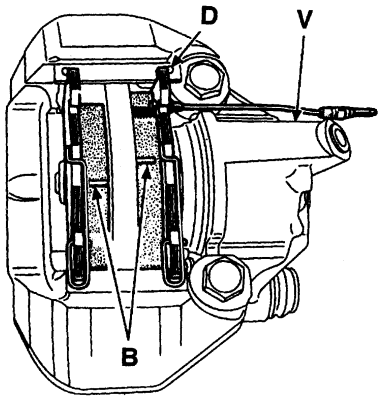


4.7 Measuring brake pad friction material thickness



4.12a Correct location of the anti-rattle springs on Bendix brake pads





4.12b Correct fitting of brake pads - Bendix caliper

B Grooves
D Pad retaining plate spring clip
V Bleed screw

Bendix caliper

Note: *A new pad retaining plate spring clip should be used on refitting.*

5 Using pliers, extract the small spring clip from the pad retaining plate, and then slide the plate out of the caliper **(see illustrations)**.

6 Withdraw the pads from the caliper, then make a note of the correct fitted position of each anti-rattle spring, and remove the spring from each pad **(see illustration)**.

7 First measure the thickness of each brake pad's friction material **(see illustration)**. If either pad is worn at any point to the specified minimum thickness or less, all four pads must be renewed. Also, the pads should be renewed if any are fouled with oil or grease; as there is no satisfactory way of degreasing friction material, once contaminated. If any of the brake pads are worn unevenly, or are fouled with oil or grease, trace and rectify the cause before reassembly. New brake pads and spring kits are available from Peugeot dealers.

8 If the brake pads are still serviceable, carefully clean them using a clean, fine wire brush or similar, paying particular attention to the sides and back of the metal backing. Clean out the grooves in the friction material, and pick out any large embedded particles of dirt or debris. Carefully clean the pad locations in the caliper body/mounting bracket.

9 Prior to fitting the pads, check that the guide pins are free to slide easily in the caliper body/mounting bracket, and check that the rubber guide pin gaiters are undamaged. Brush the dust and dirt from the caliper and piston, but *do not* inhale it, as it is injurious to health. Inspect the dust seal around the piston for damage, and the piston for evidence of fluid leaks, corrosion or damage. If attention to any of these components is necessary, refer to Section 10.

10 If new brake pads are to be fitted, the caliper piston must be pushed back into the cylinder to make room for them. Either use a G-clamp or similar tool, or use suitable pieces of wood as levers. Provided that the master cylinder reservoir has not been overfilled with hydraulic fluid, there should be no spillage, but keep a careful watch on the fluid level while retracting the piston. If the fluid level rises above the "MAX" level line at any time, the surplus should be siphoned off or ejected via a plastic tube connected to the bleed screw (see Section 2). **Note:** *Do not syphon the fluid by mouth, as it is poisonous; use a syringe or an old poultry baster.*

11 Fit the anti-rattle springs to the pads, so that when the pads are installed in the caliper, the spring end will be located at the opposite end of the pad in relation to the pad retaining plate.

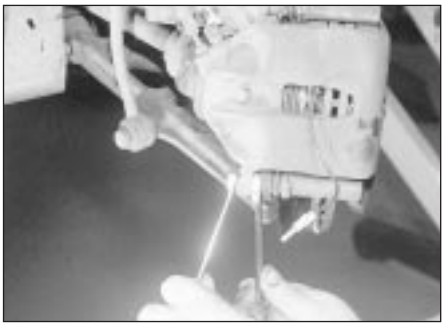
12 Locate the pads in the caliper, ensuring that the friction material of each pad is against the brake disc, and check that the anti-rattle spring ends are at the opposite end of the pad to which the retaining plate is to be inserted. Note that if the pads are installed correctly, looking at the pads from the front of the vehicle, the innermost pad groove must be higher than the outer pad groove. Ensure that the pads are fitted correctly before proceeding **(see illustrations)**.

13 Slide the retaining plate into place, and install the new small spring clip at its inner end. It may be necessary to file an entry chamfer on the edge of the retaining plate, to enable it to be fitted without difficulty.

14 Reconnect the brake pad wear sensor wiring connectors, ensuring that the outer wire is correctly routed through the anti-rattle spring loops, and that both wires pass through the loop of the bleed screw cap.

15 Depress the brake pedal repeatedly, until the pads are pressed into firm contact with the brake disc, and normal (non-assisted) pedal pressure is restored.

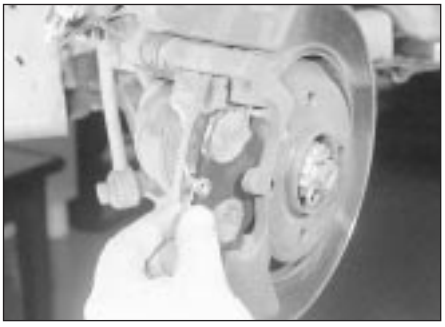
16 Repeat the above procedure on the remaining front brake caliper.



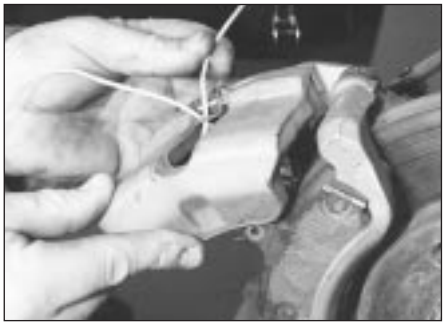
4.19 Hold the pin guide pin with an open-ended spanner while slackening the guide pin bolt - Girling caliper



4.20 Pivot the caliper upwards away from the brake pads - Girling caliper



4.22 Ensure that the brake pads are fitted the correct way around, with friction material facing the disc . . .



4.23 . . . then refit the caliper, feeding the pad wiring through the caliper aperture

17 Refit the roadwheels, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque setting.
18 Check the hydraulic fluid level as described in "Weekly Checks".

Girling caliper

Note: *A new lower guide pin bolt must be used on refitting.*
19 Where applicable, prise off the dust cover, then slacken and remove the lower caliper guide pin bolt, using a slim open-ended spanner to prevent the guide pin itself from rotating **(see illustration)**. Discard the guide pin bolt - a new bolt must be used on refitting.
20 With the lower guide pin bolt removed, pivot the caliper upwards, away from the brake pads and mounting bracket, taking care not to strain the flexible brake hose **(see illustration)**.
21 Withdraw the two brake pads from the caliper mounting bracket, and examine them as described above in paragraphs 7 to 10.
22 Apply a little brake grease to the rear of the pads, then Install the pads in the caliper mounting bracket, ensuring that the friction material of each pad is against the brake disc **(see illustration)**.
23 Position the caliper over the pads, and pass the pad warning sensor wiring through the caliper aperture and underneath the retaining clip **(see illustration)**. If the threads of the new guide pin bolt are not already pre-coated with locking compound, apply a suitable thread-locking compound to them. Pivot the caliper into position, then install the guide pin bolt, tightening to the specified torque setting while retaining the guide pin with an open-ended spanner. Where applicable, refit the dust cover to the guide pin.
24 Reconnect the brake pad wear sensor wiring connector, ensuring that the wiring is correctly routed through the loop of the caliper bleed screw cap.
25 Depress the brake pedal repeatedly, until the pads are pressed into firm contact with the brake disc, and normal (non-assisted) pedal pressure is restored.
26 Repeat the procedure on the remaining front brake caliper.
27 Refit the roadwheels, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque setting.
28 Check the hydraulic fluid level as described in Chapter 1.

All calipers

29 New pads will not give full braking efficiency until they have bedded in. Be prepared for this, and avoid hard braking as far as possible for the first hundred miles or so after pad renewal.

5 Rear brake pads - renewal

Warning: Renew both sets of rear brake pads at the same time - never renew the pads on only one wheel, as uneven braking may result. Note that the dust created by wear of the pads may contain asbestos, which is a health hazard. Never blow it out with compressed air, and don't inhale any of it. An approved filtering mask should be worn when working on the brakes. DO NOT use petrol or petroleum-based solvents to clean brake parts; use brake cleaner or methylated spirit only.

Note: *A new upper caliper guide pin bolt must be used on refitting.*
1 Chock the front wheels, then jack up the rear of the vehicle and support securely on axle stands (*see "Jacking and Vehicle Support"*). Remove the rear roadwheels.
2 Disconnect the handbrake cable end from the operating lever on the caliper.
3 Where applicable, prise off the dust cover, then slacken and remove the upper caliper guide pin bolt, using a slim open-ended spanner to prevent the guide pin itself from rotating. Discard the guide pin bolt - a new bolt must be used on refitting.
4 With the upper guide pin bolt removed, pivot the caliper downwards, away from the brake pads and mounting bracket, taking care not to strain the flexible brake hose.
5 Withdraw the brake pads from the caliper mounting bracket.
6 First measure the thickness of each brake pad's friction material. If either pad is worn at any point to the specified minimum thickness or less, all four pads must be renewed. Also, the pads should be renewed if any are fouled with oil or grease; there is no satisfactory way of degreasing friction material, once contaminated. If any of the brake pads are worn unevenly, or are fouled with oil or grease, trace and rectify the cause before reassembly. New brake pads are available from Peugeot dealers.
7 If the brake pads are still serviceable, carefully clean them using a clean, fine wire brush or similar, paying particular attention to the sides and back of the metal backing. Pick out any large embedded particles of dirt or debris from the friction material. Carefully clean the pad locations in the caliper body/mounting bracket.
8 Prior to fitting the pads, check that the guide pins are free to slide easily in the caliper body/mounting bracket, and check that the rubber guide pin gaiters are undamaged. Brush the dust and dirt from the caliper and piston, but *do not* inhale it, as it is injurious to health. Inspect the dust seal around the piston for damage, and the piston for evidence of

fluid leaks, corrosion or damage. If attention is necessary, see Section 11.

9 If new brake pads are to be fitted, the caliper piston must be pushed back into the cylinder to make room for them. Provided that the master cylinder reservoir has not been overfilled with hydraulic fluid, there should be no spillage, but keep a careful watch on the fluid level while retracting the piston. If the fluid level rises above the "MAX" level line at any time, the surplus should be siphoned off or ejected via a plastic tube connected to the bleed screw (see Section 2). **Note:** *Do not syphon the fluid by mouth, as it is poisonous; use a syringe or an old poultry baster.*

10 Retract the caliper piston by applying pressure, and turning it clockwise. A special tool is available for this purpose but a pair of circlip pliers or any similar tool can be used instead. Take care not to damage the surface of the piston. Turn the piston to position the notches in the piston on the centreline of the slot in the front of the caliper.

11 Fit the pads, sliding them into position in the caliper bracket, with the friction material against the disc.

12 If the threads of the new guide pin bolt are not already pre-coated with locking compound, apply a suitable thread-locking compound to them. Pivot the caliper into position, then install the guide pin bolt, tightening to the specified torque setting while retaining the guide pin with an open-ended spanner. Where applicable, refit the dust cover to the guide pin.

13 Reconnect the handbrake cable to the caliper.

14 Depress the brake pedal repeatedly until the pads are pressed into firm contact with the brake disc, and normal (non-assisted) pedal pressure is restored.

15 Repeat the procedure on the remaining rear caliper.

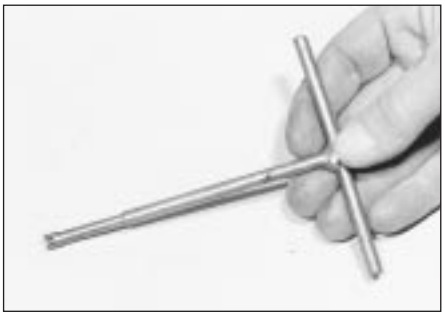
16 Refit the roadwheels, then lower the vehicle to the ground.

17 Check the hydraulic fluid level as described in Chapter 1.

18 New pads will not give full braking efficiency until they have bedded in. Be prepared for this, and avoid hard braking as far as possible for the first hundred miles or so after pad renewal.

6 Rear brake shoes - renewal

Warning: Brake shoes must be renewed on both rear wheels at the same time - never renew the shoes on only one wheel, as uneven braking may result. Also, the dust created by wear of the shoes may contain asbestos, which is a health hazard. Never blow it out with compressed air, and don't inhale any of it. An approved filtering mask should be worn when working on the brakes. DO NOT use petrol or petroleum-based solvents to clean brake parts; use brake cleaner or methylated spirit only.



6.6a Forked tool for removing early type Bendix shoe retainer springs



6.6b Removing an early type Bendix shoe retainer spring



6.7 Removing a later type Bendix shoe retainer spring



6.8 Ease the shoes out of the lower pivot point, and disconnect the lower return spring - Bendix rear brakes

1 Remove the brake drum (see Section 9).

2 Working carefully, and taking the necessary precautions, remove all traces of brake dust from the brake drum, backplate and shoes.

3 Measure the thickness of the friction material of each brake shoe at several points; if either shoe is worn at any point to the specified minimum thickness or less, all four shoes must be renewed as a set. The shoes should also be renewed if any are fouled with oil or grease; there is no satisfactory way of degreasing friction material, once contaminated.

4 If any of the brake shoes are worn unevenly, or fouled with oil or grease, trace and rectify the cause before reassembly.

5 To renew the brake shoes, proceed as described under the relevant sub-heading.

Bendix brake shoes

Note: *The components encountered may vary in detail, but the principles described in the following paragraphs are equally applicable to all models. Make a careful note of the fitted positions of all components before dismantling.*

6 On early models, unhook the shoe retainer springs from the brake backplate using a forked tool similar to that shown. The tool can be improvised using a screwdriver with a notch in the blade. The tool is pushed through the centre of the spring, and the spring hook can then be released from the backplate **(see illustrations)**.

7 On later models, using a pair of pliers, remove the shoe retainer spring cups by depressing and turning them through 90º **(see illustration)**. With the cups removed, lift off the springs and withdraw the retainer pins.

8 Ease the shoes out one at a time from the lower pivot point, to release the tension of the return spring, then disconnect the lower return spring from both shoes **(see illustration)**.

9 Ease the upper end of both shoes out from their wheel cylinder locations, taking care not to damage the wheel cylinder seals, and disconnect the handbrake cable from the trailing shoe **(see Haynes Hint)**. The brake shoe and adjuster strut assembly can then be manoeuvred out of position and away from the backplate. Do not depress the brake pedal until the brakes are reassembled.

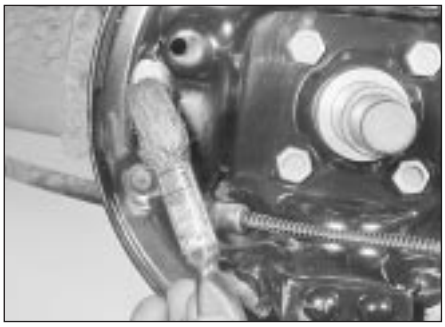
HAYNES HiNT



Restrain the wheel cylinder piston with a cable-tie or a strong elastic band



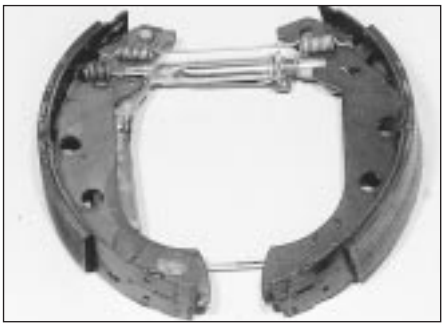
6.13 Correct fitted position of later type Bendix adjuster strut components



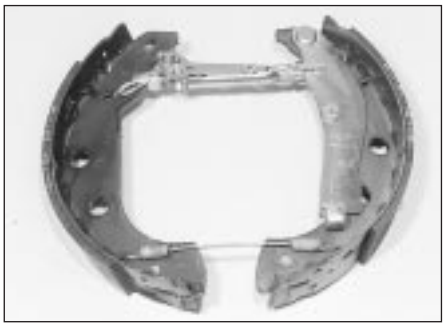
6.17 Apply high-melting-point grease to the shoe contact points on the backplate



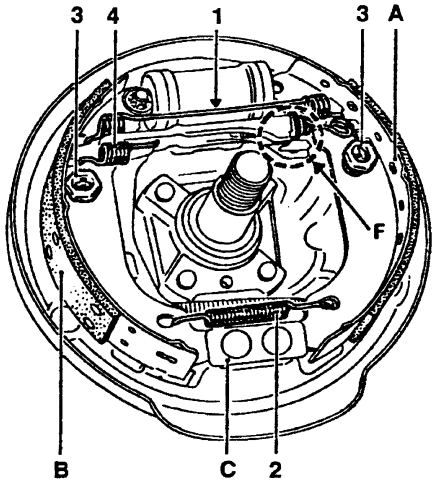
6.19a Fitting the brake shoes - early type Bendix brakes



6.19b Rear view of early type Bendix shoe assembly correctly assembled - removed from backplate for clarity



6.19c Front view of early type Bendix shoe assembly correctly assembled - removed from backplate for clarity



6.19d Later type Bendix shoe components correctly assembled

A Leading shoe
B Trailing shoe
C Lower pivot point
F Adjuster strut mechanism
1 Upper return spring
2 Lower return spring
3 Retaining pin, spring, spring cup
4 Adjuster strut-to-trailing shoe spring

10 With the shoe and adjuster strut assembly on a bench, make a note of the correct fitted positions of the springs and adjuster strut, to use as a guide on reassembly. Release the handbrake lever stop-peg (if not already done), then carefully detach the adjuster strut bolt retaining spring from the leading shoe. Disconnect the upper return spring, then detach the leading shoe and return spring from the trailing shoe and strut assembly. Unhook the spring securing the adjuster strut to the trailing shoe, and separate the two.

11 If genuine Peugeot brake shoes are being installed, it will be necessary to remove the handbrake lever from the original trailing shoe, and install it on the new shoe. Secure the lever in position with a new retaining clip. All return springs should be renewed, regardless of their apparent condition; spring kits are also available from Peugeot dealers.

12 Withdraw the adjuster bolt from the strut, and carefully examine the assembly for signs of wear or damage. Pay particular attention to the threads of the adjuster bolt and the knurled adjuster wheel, and renew if necessary. Note that left-hand and right-hand struts are not interchangeable - they are marked "G" (gauche) and "D" (droit) respectively. Also note that the strut adjuster bolts are not interchangeable; the left-hand strut bolt has a left-handed thread, and the right-hand bolt a right-handed thread.

13 Ensure that the components on the end of the strut are correctly positioned, then apply a little high-melting-point grease to the threads of the adjuster bolt **(see illustration)**. Screw the adjuster wheel onto the bolt until only a small gap exists between the wheel and the head of the bolt, then install the bolt in the strut.

14 Fit the adjuster strut retaining spring to the trailing shoe, ensuring that the shorter hook of the spring is engaged with the shoe. Attach the adjuster strut to the spring end, then ease the strut into position in its slot in the trailing shoe.

15 Engage the upper return spring with the trailing shoe, then hook the leading shoe onto the other end of the spring, and lever the leading shoe down until the adjuster bolt head is correctly located in its groove. Once the bolt is correctly located, hook its retaining spring into the slot on the leading shoe.

16 Peel back the rubber protective caps, and check the wheel cylinder for fluid leaks or other damage; check that both cylinder pistons are free to move easily. Refer to Section 12, if necessary, for information on wheel cylinder renewal.

17 Prior to installation, clean the backplate, and apply a smear of high-temperature brake grease or anti-seize compound to all those surfaces of the backplate which bear on the shoes, particularly the wheel cylinder pistons and lower pivot point **(see illustration)**. Do not allow the lubricant to foul the friction material.

18 Ensure that the handbrake lever stop-peg is correctly located against the edge of the trailing shoe, and remove the elastic band or cable-tie (as applicable) fitted to the wheel cylinder.

19 Manoeuvre the shoe and strut assembly into position on the vehicle, and engage the upper end of both shoes with the wheel cylinder pistons. Attach the handbrake cable to the trailing shoe lever. Fit the lower return spring to both shoes, and ease the shoes into position on the lower pivot point **(see illustrations)**.

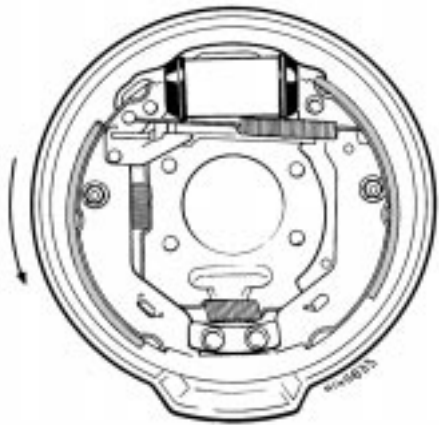
20 Tap the shoes to centralise them with the backplate, then refit the shoe retainer pins and springs, and secure them in position with the spring cups.

21 Using a screwdriver, turn the strut adjuster wheel to expand the shoes until the brake drum just slides over the shoes.

22 Refit the brake drum as described in Section 9.

23 Repeat the above procedure on the remaining rear brake.

24 Once both sets of rear shoes have been renewed, adjust the lining-to-drum clearance by repeatedly depressing the brake pedal. Whilst depressing the pedal, have an assistant listen to the rear drums, to check



6.27 Correct fitted positions of Girling rear brake components

Arrow indicates direction of wheel rotation

that the adjuster strut is functioning correctly; if so, a clicking sound will be emitted by the strut as the pedal is depressed.

25 Check and, if necessary, adjust the handbrake as described in Section 17.

26 On completion, check the hydraulic fluid level as described in Chapter 1.

Girling brake shoes

27 Make a note of the correct fitted positions of the springs and adjuster strut, to use as a guide on reassembly **(see illustration)**.

28 Carefully unhook both the upper and lower return springs, and remove them from the brake shoes.

29 Using a pair of pliers, remove the leading shoe retainer spring cup by depressing it and turning through 90º. With the cup removed, lift off the spring, then withdraw the retainer pin and remove the shoe from the backplate. Unhook the adjusting lever spring, and remove it from the leading shoe.

30 Detach the adjuster strut, and remove it from the trailing shoe.

31 Remove the trailing shoe retainer spring cup, spring and pin as described above, then detach the handbrake cable and remove the shoe from the vehicle. Do not depress the brake pedal until the brakes are reassembled.

> **HAYNES HiNT** ***Wrap a strong elastic band or a cable-tie around the wheel cylinder pistons to retain them.***

32 If genuine Peugeot brake shoes are being installed, it will be necessary to remove the adjusting lever from the original leading shoe, and install it on the new shoe. All return springs should be renewed, regardless of their apparent condition; spring kits are also available from Peugeot dealers.

33 Withdraw the forked end from the adjuster strut, and carefully examine the assembly for signs of wear or damage. Pay particular attention to the threads and the knurled adjuster wheel, and renew if necessary. Note that left-hand and right-hand struts are not interchangeable; the left-hand fork has a left-handed thread, and the right-hand fork a right-handed thread.

34 Peel back the rubber protective caps, and check the wheel cylinder for fluid leaks or other damage; check that both cylinder pistons are free to move easily. Refer to Section 12, if necessary, for information on wheel cylinder renewal.

35 Prior to installation, clean the backplate, and apply a thin smear of high-temperature brake grease or anti-seize compound to all those surfaces of the backplate which bear on the shoes, particularly the wheel cylinder pistons and lower pivot point. Do not allow the lubricant to foul the friction material.

36 Ensure that the handbrake lever stop-peg is correctly located against the edge of the trailing shoe, and remove the elastic band or cable-tie (as applicable) fitted to the wheel cylinder.

37 Locate the upper end of the trailing shoe in the wheel cylinder piston, then refit the retainer pin and spring, and secure it in position with the spring cup. Connect the handbrake cable to the lever.

38 Screw in the adjuster wheel until the minimum strut length is obtained, then hook the strut into position on the trailing shoe (note that the left and right-hand adjusters are not interchangeable - see paragraph 33). Rotate the adjuster strut forked end, so that the cut-out of the fork will engage with the leading shoe adjusting lever once the shoe is installed **(see illustration)**.

39 Fit the spring to the leading shoe adjusting lever, so that the shorter hook of the spring engages with the lever.

40 Slide the leading shoe assembly into position, ensuring that it is correctly engaged with the adjuster strut fork, and that the fork cut-out is engaged with the adjusting lever. Ensure that the upper end of the shoe is located in the wheel cylinder piston, then secure the shoe in position with the retainer pin, spring and spring cup.

41 Install the upper and lower return springs, then tap the shoes to centralise them with the backplate.

42 Using a screwdriver, turn the strut adjuster wheel to expand the shoes until the brake drum just slides over the shoes.

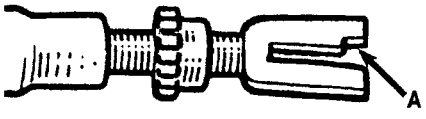
43 Refit the brake drum as described in Section 9.

44 Repeat the above procedure on the remaining rear brake.

45 Once both sets of rear shoes have been renewed, adjust the lining-to-drum clearance by repeatedly depressing the brake pedal. Whilst depressing the pedal, have an assistant listen to the rear drums, to check that the adjuster strut is functioning correctly; if so, a clicking sound will be emitted by the strut as the pedal is depressed.

46 Check and, if necessary, adjust the handbrake as described in Section 17.

47 On completion, check the hydraulic fluid level as described in Chapter 1.



6.38 On Girling rear brake shoes, adjuster strut fork cut-out (A) must engage with leading shoe adjusting lever on refitting

All shoes

48 New shoes will not give full braking efficiency until they have bedded in. Be prepared for this, and avoid hard braking as far as possible for the first hundred miles or so after shoe renewal.

7 **Front brake disc** - inspection, removal and refitting

Note: *Before starting work, refer to the note at the beginning of Section 4 concerning the dangers of asbestos dust.*

Inspection

Note: *If either disc requires renewal, BOTH should be renewed at the same time, to ensure even and consistent braking. New brake pads should also be fitted.*

1 Apply the handbrake, then jack up the front of the car and support it on axle stands (see *"Jacking and Vehicle Support"*). Remove the appropriate front roadwheel.

2 Slowly rotate the brake disc so that the full area of both sides can be checked; remove the brake pads if better access is required to the inboard surface. Light scoring is normal in the area swept by the brake pads, but if heavy scoring or cracks are found, the disc must be renewed.

3 It is normal to find a lip of rust and brake dust around the disc's perimeter; this can be scraped off if required. If, however, a lip has formed due to excessive wear of the brake pad swept area, then the disc's thickness must be measured using a micrometer **(see illustration)**. Take measurements at several places around the disc, at the inside and outside of the pad swept area; if the disc has



7.3 Using a micrometer to measure disc thickness



7.4 Checking disc run-out using a dial gauge



7.7 Removing a Girling caliper mounting bracket bolt



7.8 Disc securing screws (arrowed)

worn at any point to the specified minimum thickness or less, the disc must be renewed.

4 If the disc is thought to be warped, it can be checked for run-out. Either use a dial gauge mounted on any convenient fixed point, while the disc is slowly rotated, or use feeler blades to measure (at several points all around the disc) the clearance between the disc and a fixed point, such as the caliper mounting bracket **(see illustration)**. If the measurements obtained are at the specified maximum or beyond, the disc is excessively warped, and must be renewed; however, it is worth checking first that the hub bearing is in good condition (Chapters 1 and/or 10). Also try the effect of removing the disc and turning it through 180º, to reposition it on the hub; if the run-out is still excessive, the disc must be renewed.

5 Check the disc for cracks, especially around the wheel bolt holes, and any other wear or damage, and renew if necessary.

Removal

6 On models with Bendix calipers, remove the brake pads as described in Section 4.

7 On models with Girling calipers, unscrew the two bolts securing the caliper mounting bracket to the hub carrier **(see illustration)**. Using a piece of wire or string, tie the caliper to the front suspension coil spring, to avoid placing any strain on the fluid hose.

8 Use chalk or paint to mark the relationship of the disc to the hub, then remove the screw(s) securing the brake disc to the hub, and remove the disc **(see illustration)**. If it is tight, lightly tap its rear face with a hide or plastic mallet.

Refitting

9 Refitting is the reverse of the removal procedure, noting the following points:

a) Ensure that the mating surfaces of the disc and hub are clean and flat.

b) Align (if applicable) the marks made on removal, and securely tighten the disc retaining screws.

c) If a new disc has been fitted, use a suitable solvent to wipe any preservative coating from the disc, before refitting the caliper.

d) On models with Girling calipers, refit the caliper as described in Section 10.

e) On models with Bendix calipers, refit the pads as described in Section 4.

f) Refit the roadwheel, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque. On completion, repeatedly depress the brake pedal until normal (non-assisted) pedal pressure returns.

8 Rear brake disc - inspection, removal and refitting

Note: *Before starting work, refer to the note at the beginning of Section 4 concerning the dangers of asbestos dust.*

Inspection

Note: *If either disc requires renewal, BOTH should be renewed at the same time, to ensure even and consistent braking. New brake pads should be fitted also.*

1 Firmly chock the front wheels, then jack up the rear of the car and support it on axle stands (*see "Jacking and Vehicle Support"*). Remove the appropriate rear roadwheel.

2 Inspect the disc as described in Section 7.

Removal

3 Remove the brake pads as described in Section 5.

4 Use chalk or paint to mark the relationship of the disc to the hub, then remove the screw securing the brake disc to the hub, and remove the disc. If it is tight, lightly tap its rear face with a hide or plastic mallet.

Refitting

5 Refitting is the reverse of the removal procedure, noting the following points:

a) Ensure that the mating surfaces of the disc and hub are clean and flat.

b) Align (if applicable) the marks made on removal, and securely tighten the disc retaining screws.

c) If a new disc has been fitted, use a suitable solvent to wipe any preservative coating from the disc, before refitting the caliper.

d) Refit the brake pads as described in Section 5.

e) Refit the roadwheel, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque.

9 Rear brake drum - removal, inspection and refitting

Note: *Before starting work, refer to the note at the beginning of Section 4 concerning the dangers of asbestos dust.*

Removal

1 Chock the front wheels, then jack up the rear of the vehicle and support it on axle stands (see *"Jacking and Vehicle Support"*). Remove the appropriate rear roadwheel.

2 Remove the drum retaining screw **(see illustration)**.

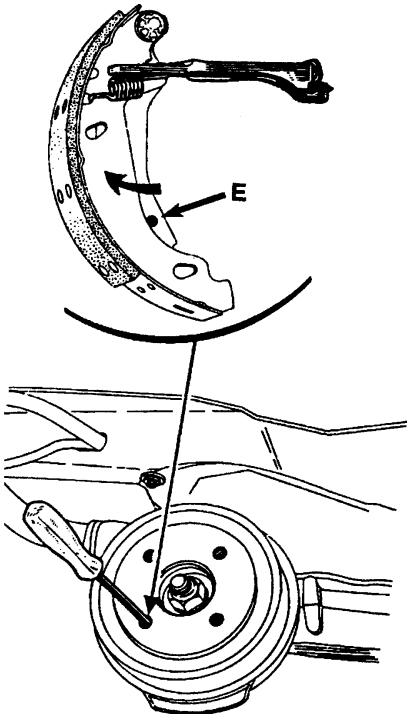
3 It should now be possible to withdraw the brake drum by hand. It may be difficult to remove the drum due to the brake shoes binding on the inner circumference of the drum. If the brake shoes are binding, proceed as follows.

a) First check that the handbrake is fully released, then referring to Section 17 for further information, fully slacken the handbrake cable adjuster nut, to obtain maximum free play in the cable.

b) Insert a screwdriver through the access hole in the rear of the backplate (prise out the blanking plug, where applicable), so



9.2 Rear brake drum retaining screw (arrowed)



9.3a Using a screwdriver inserted through the brake drum to release the handbrake operating lever

E Handbrake operating lever stop-peg location

*that it contacts the handbrake operating lever on the trailing brake shoe. Push the lever until the stop-peg slips behind the brake shoe web, allowing the brake shoes to retract fully **(see illustrations)**. The brake drum can now be withdrawn.*

Inspection

Note: *If either drum requires renewal, BOTH should be renewed at the same time, to ensure even and consistent braking. New brake shoes should also be fitted.*

4 Working carefully, remove all traces of brake dust from the drum, but avoid inhaling the dust, as it is injurious to health.

5 Clean the outside of the drum, and check it for obvious signs of wear or damage, such as cracks around the roadwheel bolt holes; renew the drum if necessary.

6 Examine carefully the inside of the drum. Light scoring of the friction surface is normal, but if heavy scoring is found, the drum must be renewed. It is usual to find a lip on the drum's inboard edge which consists of a mixture of rust and brake dust; this should be scraped away, to leave a smooth surface which can be polished with fine (120- to 150-grade) emery paper. If, however, the lip is due to the friction surface being recessed by excessive wear, then the drum must be renewed.

7 If the drum is thought to be excessively worn, or oval, its internal diameter must be measured at several points using an internal micrometer. Take measurements in pairs, the second at right-angles to the first, and compare the two, to check for signs of ovality. Provided that it does not enlarge the drum to beyond the specified maximum diameter, it may be possible to have the drum refinished by skimming or grinding; if this is not possible, the drums on both sides must be renewed. Note that if the drum is to be skimmed, BOTH drums must be refinished, to maintain a consistent internal diameter on both sides.



9.3b Releasing the handbrake operating lever



9.9 Check that the handbrake lever stop-peg (arrowed) is against the shoe edge

Refitting

8 If a new brake drum is to be installed, use a suitable solvent to remove any preservative coating that may have been applied to its interior. Note that it may also be necessary to shorten the adjuster strut length, by rotating the strut wheel, to allow the drum to pass over the brake shoes.

9 Ensure that the handbrake lever stop-peg is correctly repositioned against the edge of the brake shoe web **(see illustration)**, and ensure that the mating faces of the hub and brake drum are clean, then slide the brake drum onto the hub.

10 Refit and tighten the drum retaining screw.

11 Depress the footbrake several times to operate the self-adjusting mechanism.

12 Repeat the above procedure on the remaining rear brake assembly (where necessary), then check and, if necessary, adjust the handbrake cable as described in Section 17.

13 On completion, refit the roadwheel(s), then lower the vehicle to the ground and tighten the wheel bolts to the specified torque.

10 Front brake caliper - removal, overhaul and refitting

Note: *Before starting work, refer to the note at the beginning of Section 2 concerning the dangers of hydraulic fluid, and to the warning at the beginning of Section 4 concerning the dangers of asbestos dust.*

Bendix caliper

Removal

1 Apply the handbrake, then jack up the front of the vehicle and support it on axle stands (*see "Jacking and Vehicle Support"*). Remove the appropriate roadwheel.

2 Minimise fluid loss by first removing the master cylinder reservoir cap, and then tightening it down onto a piece of polythene, to obtain an airtight seal. Alternatively, use a brake hose clamp, a G-clamp or a similar tool to clamp the flexible hose **(see illustration)**.

3 Remove the brake pads as described in Section 4.

4 Clean the area around the union, then loosen the fluid hose union nut.

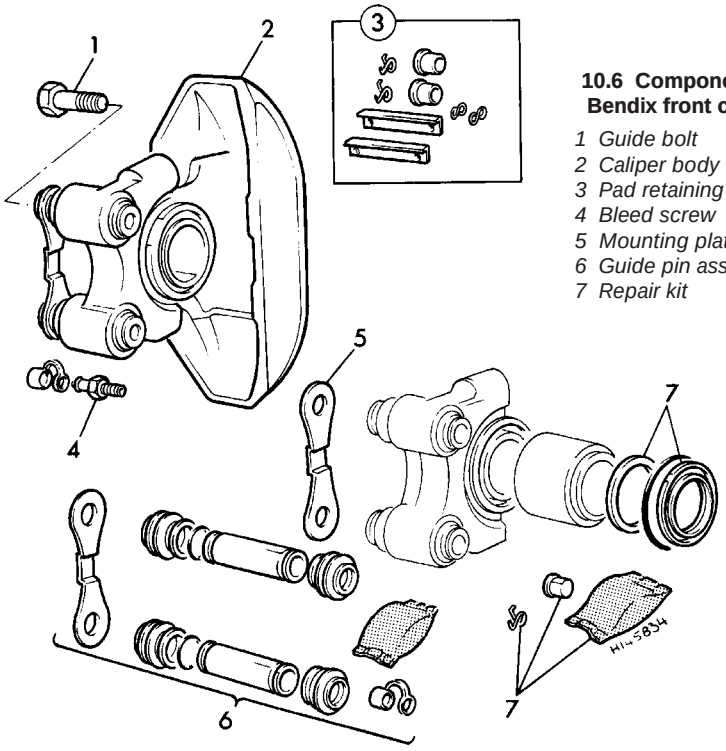
5 Slacken the two bolts securing the caliper assembly to the hub carrier and remove them along with the mounting plate, noting which way around the plate is fitted. Lift the caliper assembly away from the brake disc, and unscrew it from the end of the fluid hose. Plug the open ends of the caliper and hose to prevent dirt ingress and fluid loss.

Overhaul

6 The caliper can be overhauled after obtaining the relevant repair kit from a Peugeot dealer. Ensure that the correct repair kit is obtained for the caliper being worked on. Note the locations of all components to ensure correct refitting, and lubricate the new seals using clean brake fluid. Follow the assembly instructions supplied with the repair kit **(see illustration)**.

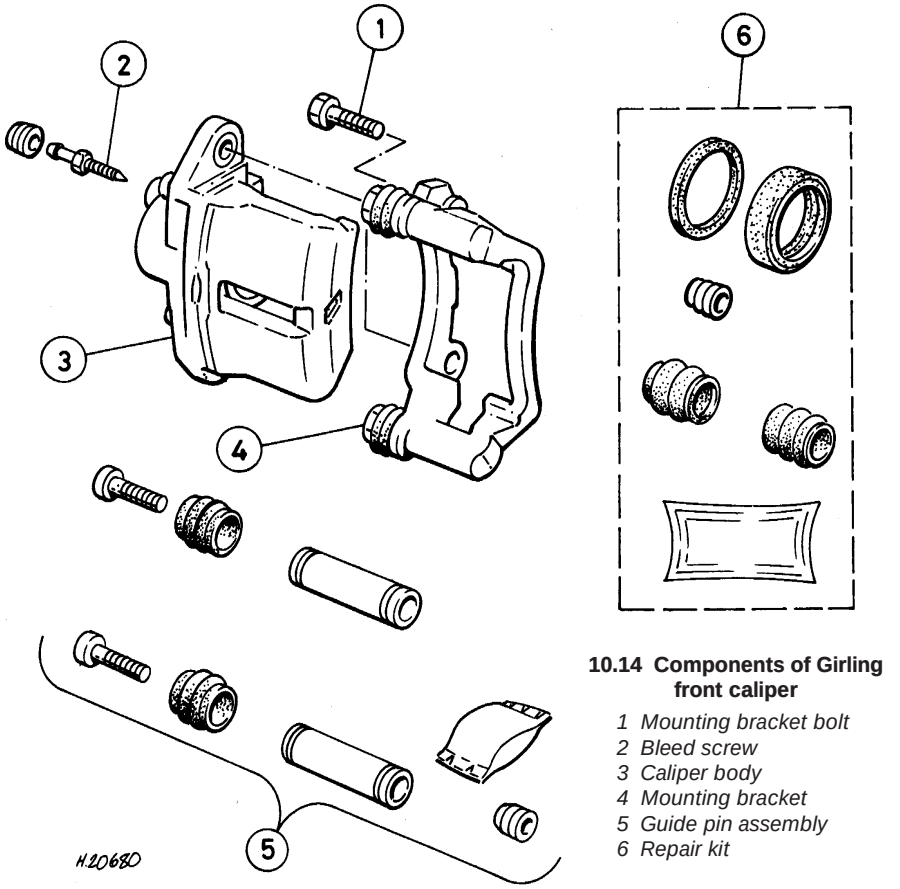


10.2 Using a clamp on the caliper hydraulic hose



10.6 Components of Bendix front caliper

1 Guide bolt
2 Caliper body
3 Pad retaining plate kit
4 Bleed screw
5 Mounting plate
6 Guide pin assembly
7 Repair kit



10.14 Components of Girling front caliper

1 Mounting bracket bolt
2 Bleed screw
3 Caliper body
4 Mounting bracket
5 Guide pin assembly
6 Repair kit



10.13 Removing a Girling caliper upper guide pin bolt

Refitting

7 Screw the caliper fully onto the flexible hose union, then position the caliper over the brake disc.

8 Clean the threads of the caliper mounting bolts, and apply a suitable locking compound to them. Refit the bolts along with the mounting plate, ensuring that the plate is fitted so that its bend curves away from the caliper body. With the plate correctly positioned, tighten the caliper bolts to the specified torque.

9 Securely tighten the brake hose union nut, then refit the brake pads as described in Section 4.

10 Remove the brake hose clamp or polythene, as applicable, and bleed the hydraulic system as described in Section 2. Note that, providing the precautions described were taken to minimise brake fluid loss, it should only be necessary to bleed the relevant front brake.

11 Refit the roadwheel, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque.

Girling caliper

Removal

Note: *New guide pin bolts must be used on refitting.*

12 Proceed as described in paragraphs 1 to 4.

13 Where applicable, remove the dust cover, then slacken and remove the upper caliper guide pin bolt, using a slim open-ended spanner to prevent the guide pin itself from rotating **(see illustration)**. Discard the guide pin bolt - a new bolt must be used on refitting. Lift the caliper away from the disc, and unscrew it from the end of the fluid hose. Plug the open ends of the caliper and hose to prevent dirt ingress and fluid loss.

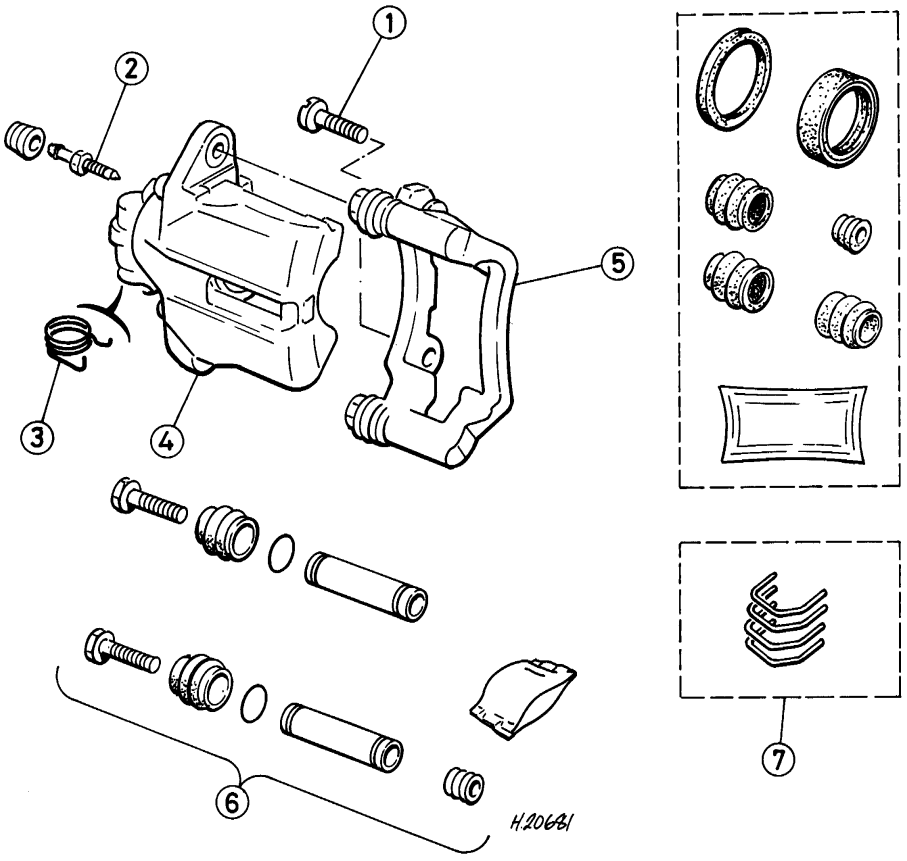
Overhaul

14 Proceed as described in paragraph 6 **(see illustration)**.

Refitting

15 Screw the caliper body fully onto the flexible hose union.

16 If the threads of the new guide pin bolts are not already pre-coated with locking compound, apply a suitable locking compound to them.



11.6 Components of rear caliper

1 Mounting bracket bolt
2 Bleed screw
3 Handbrake lever spring
4 Caliper body
5 Mounting bracket
6 Guide pin assembly
7 Repair kit

17 Manoeuvre the caliper into position, and fit the new upper guide pin bolt. Tighten the guide pin bolt to the specified torque, while retaining the guide pin with an open-ended spanner. Where applicable, refit the dust cover to the guide pin bolt.

18 Proceed as described in paragraphs 9 to 11.

11 Rear brake caliper - removal, overhaul and refitting

Note: *Before starting work, refer to the note at the beginning of Section 2 concerning the dangers of hydraulic fluid, and to the warning at the beginning of Section 4 concerning the dangers of asbestos dust.*

Note: *New caliper guide pin bolts must be used on refitting.*

Note: *To avoid the requirement to pre-bleed the caliper before refitting, unless the unit is to be overhauled, do not drain the hydraulic fluid from the caliper - plug the fluid port in the caliper to prevent fluid loss. Peugeot parts dealers will supply new calipers filled with brake fluid.*

Removal

1 Chock the front wheels, then jack up the rear of the vehicle and support it on axle stands (*see "Jacking and Vehicle Support"*). Remove the appropriate roadwheel.

2 Minimise fluid loss by first removing the master cylinder reservoir cap, and then tightening it down onto a piece of polythene, to obtain an airtight seal. Alternatively, use a brake hose clamp, a G-clamp or a similar tool to clamp the flexible hose.

3 Remove the brake pads (see Section 5).

4 Clean the area around the union, then loosen the fluid hose union nut.

5 Where applicable, prise off the dust cover, then slacken and remove the lower caliper guide pin bolt, using a slim open-ended spanner to prevent the guide pin itself from rotating. Discard the guide pin bolt - a new bolt must be used on refitting. Lift the caliper away from the disc, and unscrew it from the end of the fluid hose. Plug the open ends of the caliper and hose to prevent dirt ingress and fluid loss.

Overhaul

6 The caliper can be overhauled after obtaining the relevant repair kit from a Peugeot dealer. Ensure that the correct repair kit is obtained for the caliper being worked on. Note the locations of all components to ensure correct refitting, and lubricate the new seals using clean brake fluid. Follow the assembly instructions supplied with the repair kit **(see illustration)**.

Caliper pre-bleeding

Note: *This operation must be carried out whenever the caliper has been overhauled or drained of its fluid, and the operation must be carried out with the caliper removed.*

7 With the rear of the vehicle supported on axle stands, and the relevant roadwheel removed, proceed as follows.

8 Reconnect the fluid hose to the caliper, and tighten the union nut.

9 Place a trolley jack beneath the right-hand rear suspension trailing arm, and raise the arm to actuate the rear brake pressure regulating valve (see Section 21).

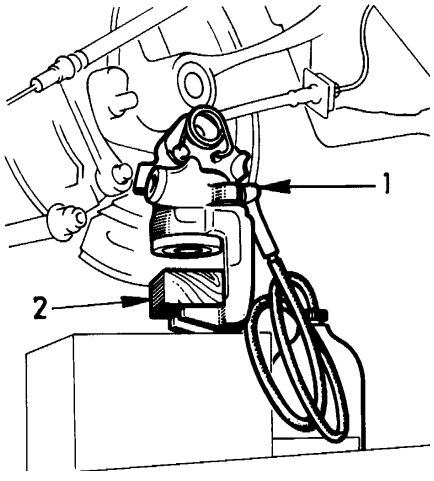
10 Position the caliper vertically, with the bleed screw uppermost, and keep it in this position throughout the following bleeding operation.

> **HAYNES HiNT** ***Rest the caliper on a block of wood under the vehicle.***

11 Place a block of wood approximately 20.0 mm thick between the caliper piston and the caliper body (*ie,* in the position normally occupied by the brake pads) to prevent the piston from being ejected.

12 Remove the brake hose clamp or polythene, as applicable, then connect a hose and bottle to the bleed screw, and bleed the caliper using one of the methods described in Section 3 (note that Peugeot recommend that pressure bleeding equipment is used). When the fluid emerging is free from air bubbles, tighten the bleed screw **(see illustration)**.

13 Continue to pressurise the hydraulic



11.12 Rear caliper ready for pre-bleeding

1 Bleed screw 2 Wooden block

system (*eg,* by "pumping" the brake pedal) until the caliper piston contacts the block of wood.

14 Open the caliper bleed screw, and remove the block of wood from the caliper.

15 Push the caliper piston fully into the caliper bore. Retract the caliper piston by applying pressure, and turning it clockwise. A special tool is available for this purpose but a pair of circlip pliers or any similar tool can be used instead. Take care not to damage the surface of the piston. Turn the piston to position the notches in the piston on the centreline of the slot in the front of the caliper.

16 Tighten the bleed screw.

17 Refit the block of wood to the caliper, then repeat the procedure described in paragraphs 12 to 17 inclusive.

18 On completion, ensure that the bleed screw is tightened, then disconnect the bleed hose.

19 Lower the trailing arm and remove the trolley jack, then refit the caliper as follows.

Refitting

Note: *Provided that the caliper has not been drained of its fluid, the unit can be refitted as follows. If the caliper has been overhauled or drained for any reason, the pre-bleeding procedure described in the preceding paragraphs* ***must*** *be carried out before refitting.*

20 Screw the caliper body fully onto the flexible hose union (if not already done).

21 If the threads of the new guide pin bolts are not already pre-coated with locking compound, apply a suitable locking compound to them.

22 Manoeuvre the caliper into position, and fit the new lower guide pin bolt. Tighten the guide pin bolt to the specified torque, while retaining the guide pin with an open-ended spanner. Where applicable, refit the dust cover to the guide pin bolt.

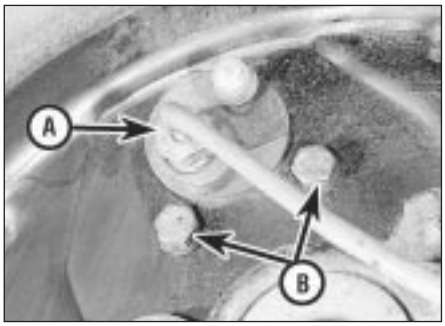
23 Securely tighten the brake hose union nut (if not already done), then refit the brake pads as described in Section 5.

24 Remove the brake hose clamp or polythene, as applicable, and bleed the hydraulic system as described in Section 2 (if not already done). Note that, providing the precautions described were taken to minimise brake fluid loss, it should only be necessary to bleed the relevant rear brake.

25 Refit the roadwheel, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque.

12 Rear wheel cylinder - removal, overhaul and refitting

Note: *Before starting work, refer to the note at the beginning of Section 2 concerning the dangers of hydraulic fluid, and to the warning at the beginning of Section 4 concerning the dangers of asbestos dust.*



12.4 Brake pipe union (A) and rear wheel cylinder retaining bolts (B)

Removal

1 Remove the brake drum (see Section 9).

2 Using pliers, carefully unhook the upper brake shoe return spring, and remove it from both brake shoes. Pull the upper ends of the shoes away from the wheel cylinder to disengage them from the pistons.

3 Minimise fluid loss by first removing the master cylinder reservoir cap, and then tightening it down onto a piece of polythene, to obtain an airtight seal. Alternatively, use a brake hose clamp, a G-clamp or a similar tool to clamp the flexible hose at the nearest convenient point to the wheel cylinder.

4 Wipe away all traces of dirt around the brake pipe union at the rear of the wheel cylinder, and unscrew the union nut **(see illustration)**. Carefully ease the pipe out of the wheel cylinder, and plug or tape over its end to prevent dirt entry. Wipe off any spilt fluid immediately.

5 Unscrew the two wheel cylinder retaining bolts from the rear of the backplate, and remove the cylinder, taking great care not to allow surplus hydraulic fluid to contaminate the brake shoe linings.

Overhaul

Models without underbody-mounted rear brake pressure-regulating valve (see Section 21)

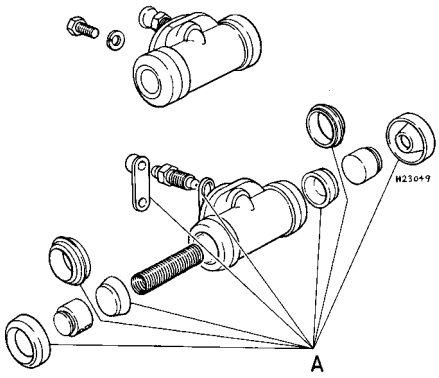
6 It is not possible to overhaul the cylinder, since no components are available separately. If faulty, the complete wheel cylinder assembly must be renewed.

Models with underbody-mounted rear brake pressure-regulating valve (see Section 21)

7 The wheel cylinder can be overhauled after obtaining the relevant repair kit from a Peugeot dealer. Ensure that the correct repair kit is obtained for the wheel cylinder being worked on. Note the locations of all components to ensure correct refitting, and lubricate the new seals using clean brake fluid. Follow the assembly instructions supplied with the repair kit **(see illustrations)**.

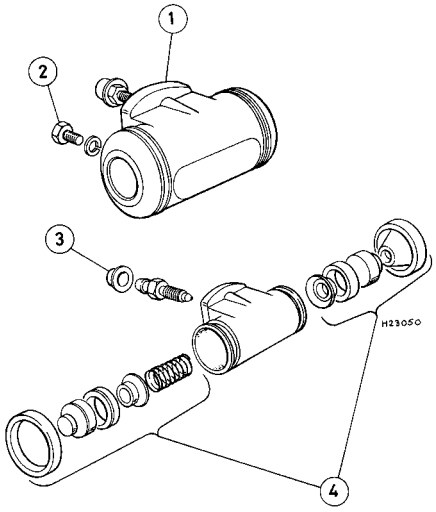
Refitting

8 Ensure that the backplate and wheel cylinder mating surfaces are clean, then



12.7a Girling rear wheel cylinder components - models with underbody-mounted brake pressure-regulating valve

A Repair kit items



12.7b Bendix rear wheel cylinder components - models with underbody-mounted brake pressure-regulating valve

1 Cylinder
2 Securing bolt
3 Bleed screw
4 Repair kit items

spread the brake shoes and manoeuvre the wheel cylinder into position.

9 Engage the brake pipe, and screw in the union nut two or three turns to ensure that the thread has started.

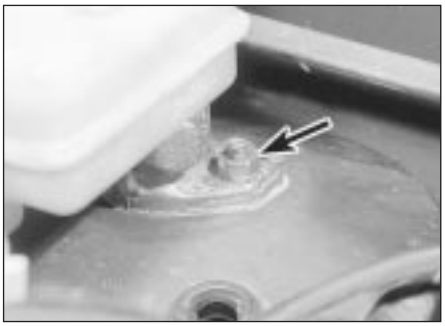
10 Insert the two wheel cylinder retaining bolts, and tighten them securely. Now fully tighten the brake pipe union nut.

11 Remove the clamp from the flexible brake hose, or the polythene from the master cylinder reservoir (as applicable).

12 Ensure that the brake shoes are correctly located in the cylinder pistons, then carefully refit the brake shoe upper return spring, using a screwdriver to stretch the spring into position.

13 Refit the brake drum (see Section 9).

14 Bleed the brake hydraulic system (see Section 2). Providing precautions were taken to minimise loss of fluid, it should only be necessary to bleed the relevant rear brake.



13.5 Master cylinder securing nut (arrowed)



13.7 Removing the master cylinder from the vacuum servo



14.4 Pedal pivot bolt and nut (arrowed)

13 Master cylinder - removal, overhaul and refitting

Removal

1 Disconnect the battery negative lead.
2 Remove the cap from the brake fluid reservoir, place a piece of polythene sheet over the filler neck, and refit the cap tightly. Alternatively, siphon all the fluid from the reservoir using an old teat pipette or poultry baster. This will minimise fluid loss during the following procedure.

> HAYNES HiNT
> ***Spread some cloth over the vacuum servo unit and surrounding area to catch fluid drips as the master cylinder is removed.***

3 To improve the clearance available for removal, remove the windscreen wiper arms (see Chapter 12), then remove the scuttle cover panel from the front edge of the windscreen (see Chapter 11).
4 Disconnect the wiring from the low brake fluid level warning sensor.
5 Unscrew the two nuts securing the master cylinder to the brake vacuum servo unit **(see illustration)**.
6 Unscrew the union nuts, and disconnect the brake fluid pipes from the master cylinder.
7 Lift the master cylinder, complete with the fluid reservoir, from the servo unit **(see illustration)**. Hold a cloth under the assembly to catch any fluid spillage. Recover the sealing ring.
8 Unscrew the clamp nut and bolt, release the plastic clamp, and withdraw the fluid reservoir from the master cylinder.

Overhaul

9 No spare parts are available from Peugeot for the master cylinder, and if faulty the complete unit must be renewed.

Refitting

10 Refitting is a reversal of removal, bearing in mind the following points.

a) Examine the master cylinder sealing ring and renew if necessary.
b) Ensure that the brake pipe union nuts are securely tightened.
c) Refit the windscreen wiper arms with reference to Chapter 12.
d) On completion, remove the polythene, where applicable, then top-up and bleed the hydraulic system as described in Section 2.

14 Brake pedal - removal and refitting

Note: *On models fitted with the Bendix "integral" ABS, the hydraulic modulator unit must be removed in order to remove the brake pedal. This task* ***must*** *be entrusted to a Peugeot dealer - see Section 23.*

Removal

1 The pedal assembly is removed complete with the vacuum servo, and the procedure is described in Section 15.
2 With the servo/pedal assembly removed, proceed as follows.
3 Remove the securing clip, and withdraw the pin securing the servo pushrod to the pedal.
4 Unscrew the nut from the pedal pivot bolt, and withdraw the pivot bolt to release the pedals **(see illustration)**.

Refitting

5 Refitting is a reversal of removal, but renew the nylon pedal pivot bushes if they are worn, and refit the servo/pedal assembly as described in Section 15.

15 Vacuum servo unit - testing, removal and refitting

Testing

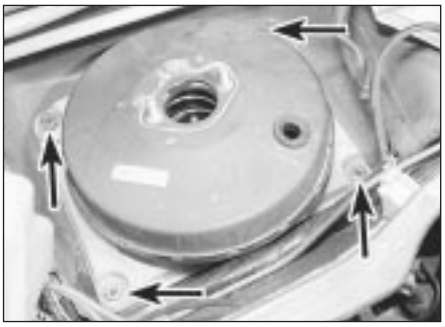
1 To test the operation of the servo unit, depress the footbrake several times to exhaust the vacuum, then start the engine whilst keeping the pedal firmly depressed. As the engine starts, there should be a noticeable "give" in the brake pedal as the vacuum builds up. Allow the engine to run for at least two minutes, then switch it off. If the brake pedal is now depressed it should feel normal, but further applications should result in the pedal feeling firmer, with the pedal stroke decreasing with each application.
2 If the servo does not operate as described, first inspect the servo unit check valve as described in Section 16.
3 If the servo unit still fails to operate satisfactorily, the fault lies within the unit itself. Repairs to the unit are not possible - if faulty, the servo unit must be renewed.

Removal

4 Disconnect the battery negative lead.
5 Remove the windscreen wiper motor/linkage assembly as described in Chapter 12.
6 Disconnect the wiring from the low brake fluid level warning sensor.
7 Pull the vacuum check valve from the grommet in the top of the servo **(see illustration)**.
8 Unscrew the two nuts securing the master cylinder to the brake vacuum servo unit, then ease the master cylinder up to disengage it from the servo, without disconnecting the fluid pipes. Take care not to strain the fluid pipes. If necessary, release the fluid pipes from their locating clips to enable them to move sufficiently.
9 Working in the driver's footwell, remove the carpet trim panel from under the facia to expose the pedal assemblies.
10 Where applicable, working under the facia, unscrew the bolts securing the relay bracket and the wiring connector bracket(s) to improve access.



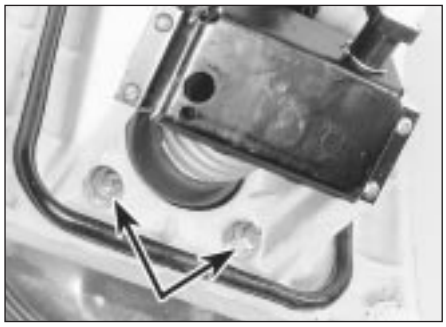
15.7 Pulling the vacuum check valve from the servo



15.14 Unscrew the nuts (arrowed) securing the servo to the scuttle



15.15 Removing the vacuum servo/pedal bracket assembly



15.16 Unscrew the nuts (arrowed) securing the servo to the pedal bracket

11 Where applicable, depress the retaining clip and detach the end of the clutch cable from the pedal (see Chapter 5).
12 Disconnect the wiring plug from the stop light switch.
13 Prise off the brake and clutch pedal rubbers.
14 Working in the scuttle, unscrew and remove the four nuts securing the servo to the scuttle **(see illustration)**.
15 Manoeuvre the complete vacuum servo, pedal bracket and pedal assembly from the scuttle **(see illustration)**.
16 Unscrew the four nuts securing the servo to the pedal bracket, and withdraw the servo **(see illustration)**. Where applicable recover the gasket.
17 The servo is a sealed unit, and if faulty, the complete unit must be renewed.

Refitting

18 Refitting is a reversal of removal, bearing in mind the following points.

a) Use a new gasket when refitting the servo.
b) Refit the wiper motor/linkage assembly with reference to Chapter 12.
c) Check the stop light adjustment with reference to Section 22.
d) Check the clutch cable adjustment as described in Chapter 6.

16 Vacuum servo unit check valve - removal, testing and refitting

Removal

1 For access to the valve, open the bonnet. The valve is a push-fit in the top of the brake vacuum servo unit located in the scuttle at the rear of the engine compartment.
2 Slacken the retaining clip (where fitted), and disconnect the vacuum hose from the servo unit check valve.
3 Withdraw the valve from its rubber sealing grommet, using a pulling and twisting motion. Remove the grommet from the servo.

Testing

4 Examine the check valve for signs of damage, and renew if necessary. The valve may be tested by blowing through it in both directions. Air should flow through the valve in one direction only - when blown through from the servo unit end of the valve. Renew the valve if this is not the case.
5 Examine the rubber sealing grommet and flexible vacuum hose for signs of damage or deterioration, and renew as necessary.

Refitting

6 Fit the sealing grommet into position in the servo unit.
7 Carefully ease the check valve into position, taking great care not to displace or damage the grommet. Reconnect the vacuum hose to the valve and, where necessary, securely tighten its retaining clip.

17 Handbrake - checking and adjustment

Checking

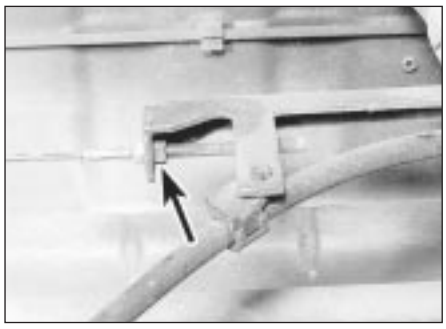
1 The handbrake is correctly adjusted when the rear wheels are fully locked when the handbrake lever has been pulled up by six to eight notches. This adjustment tolerance will be maintained if the automatic adjuster mechanism is operating correctly to compensate for brake shoe/pad wear.
2 To check the adjustment, proceed as follows.
3 Start the engine and release the handbrake.
4 Depress the brake pedal fully two or three times with the engine running, then stop the engine.
5 Chock the front wheels, then jack up the rear of the vehicle, and support securely on axle stands (*see "Jacking and Vehicle Support"*).
6 Apply the handbrake between six to eight notches, and check that both rear wheels are locked. If the wheels do not lock, or if the wheels lock before the handbrake lever has moved through at least six notches, adjust the mechanism as follows.

Adjustment - rear drum brakes

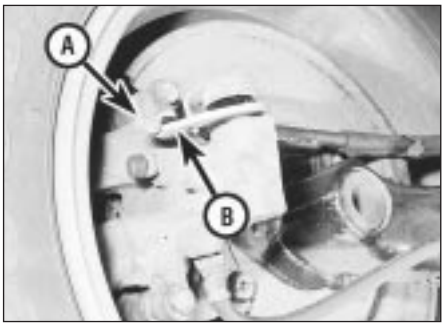
7 With the vehicle raised and supported at the rear, where applicable, remove the rear body undershield for access to the handbrake cable adjuster **(see illustration)**.
8 Slacken the locknut on the handbrake adjuster mechanism and turn the adjuster nut until the brake shoes are just beginning to drag on the drums.
9 Pull up the handbrake lever, and check that both rear wheels are locked with the lever pulled up between six and eight notches. If not, readjust using the adjuster nut as necessary.
10 With the mechanism correctly adjusted, tighten the adjuster locknut then, where applicable, refit the rear body undershield, and lower the vehicle to the ground.
11 Check that the "handbrake on" warning light illuminates with the handbrake lever at the first notch of its travel. If necessary, adjust the switch as described in Chapter 12.

Adjustment - rear disc brakes

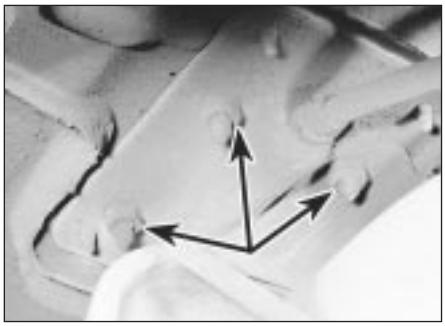
12 Where applicable, remove the rear body undershield for access to the handbrake cable adjuster, then lower the rear of the vehicle to the ground.
13 Chock the front wheels, and ensure that the handbrake is released.
14 Slacken the locknut on the handbrake adjuster mechanism, then turn the adjuster nut until there is a clearance of approximately 2.0 mm between the end faces of the cable end fittings and the handbrake operating levers on the rear calipers **(see illustration)**.
15 Operate the levers on the calipers manually, and check that the levers return fully to their stops when released.
16 Turn the adjuster nut to give a dimension



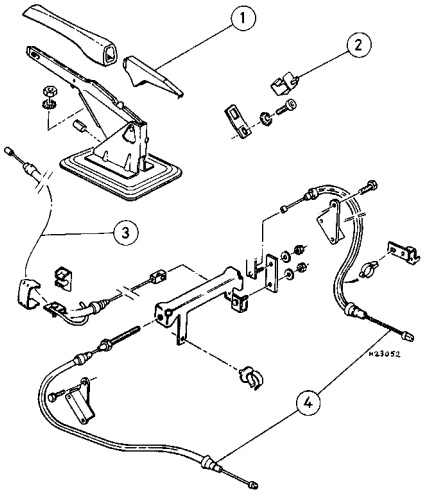
17.7 Handbrake cable adjuster (arrowed)



17.14 Adjust the clearance between the cable end fitting (A) and the handbrake operating lever (B) at the caliper



18.5 Three of the handbrake lever securing nuts (arrowed)



19.4 Handbrake lever and cable components

1 Handbrake lever
2 Switch assembly
3 Primary cable
4 Secondary cables

of approximately 15.0 mm between the rear face of the adjuster nut and the end of the threaded adjuster rod.

17 Proceed as described in paragraphs 9 to 11.

18 Handbrake lever - removal and refitting

Removal

1 Disconnect the rear of the handbrake primary cable from the right-hand secondary cable under the rear of the vehicle, as described in Section 19.

2 On models with a "lowline" centre console, pull the handbrake lever up, then unclip the front edge of the handbrake aperture trim panel from the top of the centre console. Withdraw the trim panel over the handbrake lever.

3 On models with a "highline" centre console, remove the centre console as described in Chapter 11.

4 Working under the vehicle, where applicable, for access to the handbrake lever securing nuts, remove the exhaust intermediate section as described in Chapter 4, then remove the underbody heat shield(s).

5 Unscrew the four handbrake lever securing nuts, noting that on certain models two of the nuts also secure an exhaust mounting bracket **(see illustration)**.

6 Carefully lower the lever assembly from under the vehicle, and disconnect the wiring plug from the "handbrake on" warning light switch. The mounting plate may be stuck to the floor with sealant, in which case cut around the plate with a sharp knife. Where applicable, recover the gasket.

7 Disconnect the end of the cable from the lever, then release the cable sheath from the lever mounting plate.

Refitting

8 Refitting is a reversal of removal, bearing in mind the following points.

a) Use a new gasket or new sealant, as applicable when refitting the lever mounting plate to the floor (clean the mating faces of the mounting plate and floor).

b) Where applicable, ensure that the exhaust mounting bracket is in position under the handbrake lever securing nuts, and refit the exhaust intermediate section with reference to Chapter 4.

c) On completion, check and if necessary adjust the handbrake mechanism as described in Section 17.

19 Handbrake cables - removal and refitting

Primary cable

Removal

1 Jack up the vehicle and support on axle stands (*see "Jacking and Vehicle Support"*).

2 Where applicable, remove the rear body undershield.

3 To gain access to the cable on certain models, it may be necessary to remove the heat shields from under the fuel tank and the rear underbody. To gain access to remove the heat shields, it may be necessary to remove the clamp securing the exhaust rear section to the intermediate section - this will allow the exhaust sections to move sufficiently to manipulate the heat shields out from under the vehicle.

4 Release the handbrake, then slacken the locknut on the adjuster mechanism and back off the adjuster nut **(see illustration)**.

5 Release the primary cable from the clips on the underbody, then release the cable from the right-hand secondary cable at the connector, and from the adjuster bracket.

6 Working under the handbrake lever, detach the cable sheath from the lever mounting plate.

7 On models with a "lowline" centre console, pull the handbrake lever up, then unclip the front edge of the handbrake aperture trim panel from the top of the centre console. Withdraw the trim panel over the handbrake lever.

8 On models with a "highline" centre console, remove the centre console as described in Chapter 11.

9 Pull the handbrake lever up to the 5th notch of travel, for access to the end of the cable.

10 Pull the end of the cable forwards and down to release it from the lug on the lever.

11 Feed the cable down through the lever mounting plate, and withdraw it from under the vehicle.

Refitting

12 Refitting is a reversal of removal, bearing in mind the following points.

a) Ensure that the cable is routed correctly, and is free from kinks.

b) On completion, check and if necessary adjust the handbrake mechanism as described in Section 17.

Secondary cable - models with rear drum brakes

Removal

13 Proceed as described in paragraphs 1 and 2.

14 Slacken the locknut on the adjuster mechanism and back off the adjuster nut.

15 If the left-hand cable is being removed, remove the adjuster nut from the end of the threaded adjuster rod, then detach the end of the cable from the adjuster bracket.

16 If the right-hand cable is being removed, disconnect the secondary cable from the primary cable at the connector.

17 Remove the relevant brake drum as described in Section 9.

18 Using a pair of pliers, unhook the end of the handbrake cable from the operating lever on the trailing brake shoe.

19 Where applicable, tap the cable sheath end fitting from the aperture in the brake backplate, and feed the cable through the



19.19 Tapping the handbrake cable sheath end fitting from the brake backplate

backplate (it may be necessary to remove the brake shoes for access - see Section 6) **(see illustration)**.

20 Release the cable from the underbody clips, noting its routing, and withdraw the cable from under the vehicle.

Refitting

21 Refitting is a reversal of removal, bearing in mind the following points.

a) Ensure that the cable is routed correctly, and is free from kinks.
b) Refit the brake drum (see Section 9).
c) On completion, check and if necessary adjust the handbrake mechanism as described in Section 17.

Secondary cable - models with rear disc brakes

Removal

22 Proceed as described in paragraphs 1 and 2.

23 Slacken the locknut on the adjuster mechanism and back off the adjuster nut.

24 If the left-hand cable is being removed, remove the adjuster nut from the end of the threaded adjuster rod, then detach the end of the cable from the adjuster bracket.

25 If the right-hand cable is being removed, disconnect the secondary cable from the primary cable at the connector.

26 Disconnect the end of the cable from the operating lever on the caliper, then release the cable sheath from the caliper bracket.

27 Release the cable from the underbody clips, noting its routing, and withdraw the cable from under the vehicle.

Refitting

28 Refitting is a reversal of removal, bearing in mind the following points.

a) Ensure that the cable is routed correctly, and is free from kinks.
b) On completion, check and if necessary adjust the handbrake mechanism as described in Section 17.

20 Handbrake "on" warning light switch - removal and refitting

Removal

1 Remove the handbrake lever as described in Section 18.

2 Mark the position of the switch bracket on the handbrake lever assembly.

3 Unbolt the switch bracket from the handbrake lever assembly, and unclip the switch.

Refitting

4 Refitting is a reversal of removal. If necessary, the position of the switch bracket can be adjusted (the hole in the bracket is elongated) to ensure that the warning light is off with the handbrake released, and on with the handbrake applied.

21 Rear brake pressure-regulating valve (underbody-mounted) - removal and refitting

Note: *On some models equipped with rear drum brakes, the pressure regulating valves are integral with the rear wheel cylinders. If fitted, the underbody-mounted pressure regulating valve is located on the right-hand side of the rear axle assembly.*

Warning: Do not attempt to remove the pressure-regulating valve on models equipped with the Bendix "integral" ABS system. On these models, the task should be entrusted to a Peugeot dealer - see Section 23.

Note: *On refitting, the valve must be adjusted using specialist test equipment. This task must be entrusted to Peugeot dealer.*

Removal

1 Chock the front wheels, then jack up the rear of the vehicle and support securely on axle stands (see *"Jacking and Vehicle Support"*).

2 Unhook the valve operating spring from the bracket attached to the trailing arm.

3 Place a suitable container under the valve, then disconnect the fluid pipes from the valve. Plug the open ends of the pipes and the valve to prevent dirt ingress and to reduce fluid spillage.

4 Unscrew the securing bolts, and withdraw the valve from its mounting bracket **(see illustration)**.

Refitting

5 Refitting is a reversal of removal, but on completion bleed the hydraulic system as described in Section 2, and have the valve adjusted by a Peugeot dealer.

22 Stop-light switch - removal, refitting and adjustment

Removal

1 The switch is mounted on the brake pedal bracket **(see illustration)**.

2 Disconnect the battery negative lead.

3 If necessary to improve access, remove the carpet trim panel from under the driver's side facia.

4 Disconnect the wiring plug from the switch, then pull the switch from the bracket to remove it.

Refitting

5 Depress the brake pedal fully.

6 Push the switch fully into its bracket as far as the stop.

7 Release the brake pedal, and allow it to contact the switch. The switch should retract, and automatically reset itself.

8 Reconnect the wiring plug, then reconnect the battery negative lead.

9 Check that the stop lights operate when the brake pedal is depressed with the ignition switched on.

10 If the stop lights fail to operate, and the wiring is in good order, renew the switch.

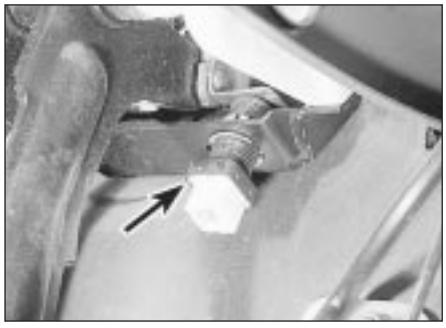
Adjustment

11 The switch is self-adjusting, and can be reset by removing and then refitting it as described previously in this Section.

12 If the switch fails to operate satisfactorily after removal and refitting, renew the switch.



21.4 Rear brake pressure-regulating valve securing bolts (arrowed)



22.1 Stop-light switch (arrowed) on brake pedal bracket

23 Anti-lock braking system (ABS) - general information

General

1 ABS is available as an option on certain models covered by this manual, and is fitted as standard equipment on some models. The purpose of the system is to prevent the wheel(s) locking during heavy braking. This is achieved by automatic release of the brake on the relevant wheel, followed by re-application of the brake. The system comprises an electronic control module, a hydraulic modulator block, the hydraulic solenoid valves and accumulators, the electrically-driven pump, and the roadwheel sensors.

2 The system operates on all four wheels, and vehicles may be fitted with rear disc or rear drum brakes.

3 The system prevents wheel lock-up by regulating the hydraulic pressure to the brakes.

4 Solenoids (which control the fluid pressure to the calipers) are controlled by the electronic control unit, which itself receives signals from the wheel sensors (fitted to all four wheels), which monitor the speed of rotation of each wheel. By comparing these speed signals from the wheels, the control unit can determine the speed at which the vehicle is travelling. It can then use this speed to determine when a wheel is decelerating at an abnormal rate, compared to the speed of the vehicle, and therefore predicts when a wheel is about to lock. During normal operation, the system functions in the same way as a non-ABS braking system.

5 The ABS system is fail-safe, and should a failure occur, a self-monitoring test facility is incorporated in the system which can be used in conjunction with dealer test equipment for fault diagnosis.

6 Three different types of ABS may be fitted, depending on model, as follows.

Bendix "integral" ABS

7 This system is fitted to certain models up to 1993 as standard equipment. The system is fitted instead of a conventional system, and the brake pedal acts directly on the hydraulic control unit, which replaces the master cylinder and vacuum servo in a conventional braking system.

8 The system operates at very high fluid pressure, typically 158 to 183 bar, generated by an electric pump fitted to the modulator assembly.

9 The system is fail-safe and will continue to operate even if one wheel sensor should fail. In the event of total failure, the control unit will revert the system to normal braking.

Warning: Due to the complexity of the system, the very high fluid pressures involved, and the need for special bleeding equipment and pressure gauges, any operation requiring removal or disconnection of any hydraulic component, pipe or fitting must only be carried out by a suitably-equipped Peugeot dealer. Failure to heed this warning may result in personal injury, or malfunction of the system at a critical time. Work on vehicles equipped with the Bendix "integral" ABS should therefore be confined to routine maintenance operations.

Bendix "additional" ABS

10 The Bendix "additional" system is fitted as an option to certain models, and the ABS components are fitted in addition to the conventional braking system components.

11 The system uses the pressure provided by the conventional master cylinder and vacuum servo.

12 The system is fail-safe, and conventional braking is maintained through the servo and master cylinder in the event of an ABS failure.

13 The braking system can be safely bled, and the fluid can be renewed as described in Chapter 1, as the system operates using the conventional pressure supplied by the master cylinder and servo.

Bosch 2E "additional" ABS

14 The Bosch 2E additional system is fitted to certain later models from 1993, and is similar to the Bendix "additional" system described previously.

24 Anti-lock braking system (ABS) components - removal and refitting

Front wheel sensor

Removal

1 Disconnect the battery negative lead.

2 To improve access, apply the handbrake, then jack up the front of the vehicle and support securely on axle stands (see *"Jacking and Vehicle Support"*). If desired, remove the roadwheel.

3 Trace the wiring back from the sensor, then disconnect the sensor wiring connector (on most models, the sensor wiring is routed through the inner wing panel, and the connector is located in the engine compartment.

4 Release the sensor wiring from any securing clips and, where applicable, push the wiring grommet from the inner wing panel and feed the wiring through the panel.

5 Unscrew the securing bolt, and withdraw the sensor from the hub carrier **(see illustration)**.

Refitting

6 Before refitting a sensor, ensure that the tip is clean. Where applicable, on new sensors remove the protective sticker from the tip.

7 Fit the sensor to the hub carrier.

8 Clean the sensor securing bolt, then apply thread-locking compound to the bolt threads. Fit the bolt and tighten to the specified torque.

9 On models fitted with the Bendix "integral" ABS system, proceed as follows **(see illustration)**.

a) Loosen the sensor adjuster bolt.
b) Position a 0.5 mm feeler blade between the sensor tip and the sensor ring on the driveshaft.
c) Press the sensor lightly against the feeler blade, and tighten the adjuster bolt to the specified torque.
d) Remove the feeler blade.

10 On completion, where applicable refit the roadwheel and lower the vehicle to the ground.

Rear wheel sensor

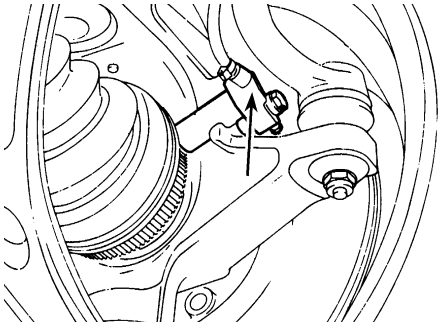
Removal

11 Disconnect the battery negative lead.

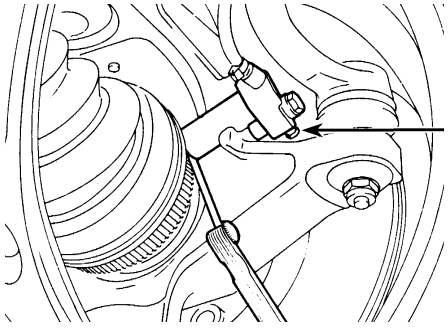
12 To improve access, chock the front wheels, then jack up the rear of the vehicle and support securely on axle stands (*see "Jacking and Vehicle Support"*).

13 Trace the wiring back from the sensor, then disconnect the sensor wiring connector (on most models, the sensor wiring is routed through the floor of the vehicle, and the connector is located behind the luggage compartment side trim panel.

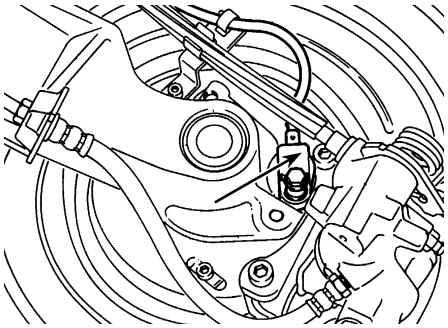
14 Release the wiring from the clips underneath the vehicle, and feed the wiring through the floor panel.



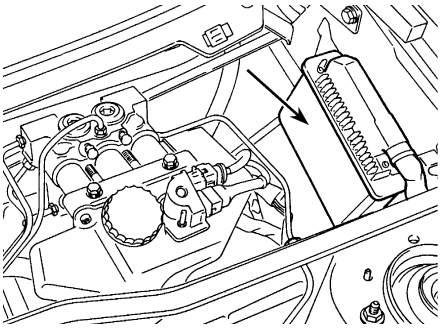
24.5 ABS front wheel sensor (arrowed)



24.9 ABS front wheel sensor adjustment (adjuster arrowed) - Bendix "integral" ABS



24.15 Rear wheel ABS sensor (arrowed)



24.20 Electronic control unit location (arrowed) - Bendix "integral" ABS (left-hand-drive models shown)

15 Unscrew the securing bolt, and remove the sensor from the trailing arm **(see illustration)**.

Refitting

16 Before refitting a sensor, ensure that the tip is clean. Where applicable, on new sensors remove the protective sticker from the tip.
17 Lightly grease the sensor location in the trailing arm, then refit the sensor.
18 Clean the sensor securing bolt, then apply thread-locking compound to the bolt threads. Fit the bolt and tighten to the specified torque.

Electronic control unit - Bendix ABS systems

Removal

19 Disconnect the battery negative lead.
20 The unit is located in the scuttle at the rear of the engine compartment **(see illustration)**.
21 Open the bonnet, and unclip the cover from the top of the scuttle to expose the control unit.
22 Release the securing clip, and disconnect the wiring plug from the top of the control unit.
23 Unscrew the clamp bolts or nuts, as applicable, securing the unit to the housing, then carefully withdraw the unit. Note that on some models, it may be necessary to disconnect the control unit wiring harness earth lead before the unit can be withdrawn.
24 Where applicable, separate the control unit from the mounting bracket.

Refitting

25 Refitting is a reversal of removal, but where applicable ensure that the wiring harness earth lead is securely reconnected.

Electronic control unit - Bosch ABS system

Removal

26 Disconnect the battery negative lead, then unclip the control unit cover from the top of the modulator assembly.
27 Disconnect the three wiring connectors from the control unit, then slacken and remove the six Torx retaining screws, and lift the control unit away from the modulator assembly **(see illustration)**.

Refitting

28 Refitting is a reversal of the removal procedure. Ensure that the wiring connectors are securely reconnected, and do not overtighten the retaining screws.

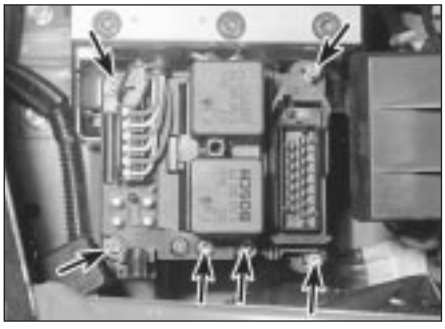
Hydraulic control unit and modulator assembly - Bendix "integral" ABS

Note: *Refer to the Warning in Section 23.*
29 No attempt should be made to remove any of the hydraulic system components on models equipped with the Bendix "integral" ABS - refer the operation to a Peugeot dealer.

Modulator assembly - Bendix "additional" ABS

Removal

30 Disconnect the battery negative lead.



24.27 Bosch ABS electronic control unit securing screws (arrowed)

31 Where applicable, unclip the plastic cover, then disconnect the wiring connectors from the modulator assembly.
32 Mark the locations of the hydraulic fluid pipes to ensure correct refitting, then unscrew the union nuts, and disconnect the pipes from the modulator assembly. Be prepared for fluid spillage, and plug the open ends of the pipes and the modulator, to prevent dirt ingress and further fluid loss. Note the position of the clip on the brake pipes to ensure correct refitting.
33 Working under the modulator, unscrew the two nuts securing the vertical mounting plate to the main bracket **(see illustration)**. Withdraw the plate and the mounting rubber assembly.
34 Unscrew the two nuts securing the remaining mounting studs to the main bracket, then manipulate the modulator assembly from the bracket.

Refitting

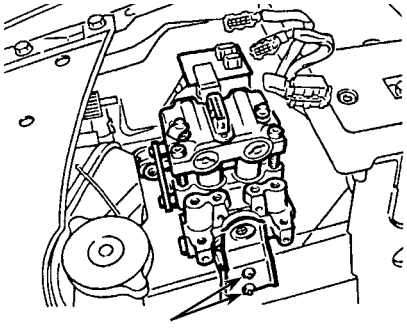
Warning: Do not reconnect the wiring connectors to the modulator until the hydraulic circuits have been bled as described in Section 2.

35 Refitting is a reversal of removal, bearing in mind the following.

a) Before refitting, examine the mounting rubbers, and renew if necessary.
b) Reconnect the fluid pipes to the assembly, as noted before removal, ensuring that no dirt enters the system. Ensure that the brake pipe clip is fitted as noted before removal.
c) Before reconnecting the wiring connectors, bleed the complete hydraulic system as described in Section 2.

Modulator assembly - Bosch ABS

36 Refer to paragraphs 30 to 35 of this Section for the Bendix "additional" ABS.



24.33 Modulator assembly vertical mounting bracket-to-main bracket nuts (arrowed) - Bendix "additional" ABS