# Chapter 7
# Brakes, wheels and tires

**Note:** *Unless specifically mentioned in this Chapter, the information given for the 1982 750 Sabre applies to the UK VF750S-C, and that for the 1987 and 1988 700/750 Magnas applies to the UK VF750C-H and C-J respectively.*

**Contents**

**Section**

**Specifications**

## Disc brakes

| | |
|---|---|
| Brake fluid type | See Chapter 1 |
| Disc thickness (front brake) | |
| New | |
| 1986 700 Magna model | 4.5 to 5.2 mm (0.18 to 0.20 in) |
| All other models | 4.8 to 5.2 mm (0.19 to 0.20 in) |
| Service limit | 4.0 mm (0.20 in) |
| Disc thickness (rear brake) | |
| New | |
| 1986 1100 Magna model | 7.1 to 7.7 mm (0.280 to 0.303 in) |
| Other 1100 models | 6.9 to 7.1 mm (0.272 to 0.280 in) |
| Service limit | |
| 1986 1100 Magna model | 6.6 mm (0.26 in) |
| Other 1100 models | 6.0 mm (0.24 in) |
| Disc maximum runout | 0.3 mm (0.012 in) |
| Caliper bore ID | |
| Front (700/750 models) | |
| New | 30.23 to 30.28 mm (1.1902 to 1.1921 in) |
| Service limit | 30.29 mm (1.1925 in) |
| Front (1100 models) | |
| New | 32.03 to 32.08 mm (1.2610 to 1.2630 in) |
| Service limit | 32.09 mm (1.263 in) |
| Rear (1100 models) | |
| New | 30.23 to 30.28 mm (1.1902 to 1.1921 in) |
| Service limit | 30.29 mm (1.193 in) |
| Caliper piston OD | |
| Front (700/750 models) | |
| New | 30.148 to 30.198 mm (1.1869 to 1.1889 in) |
| Service limit | 30.14 mm (1.1866 in) |
| Front (1100 models) | |
| New | 31.948 to 31.998 mm (1.2578 to 1.2598 in) |
| Service limit | 31.94 mm (1.258 in) |
| Rear (1100 models) | |
| New | 30.148 to 30.198 mm (1.1869 to 1.1889 in) |
| Service limit | 38.090 mm (1.500 in) |
| Front master cylinder bore ID | |
| 1982 through 1986 models | |
| New | 15.870 to 15.913 mm (0.6248 to 0.6265 in) |
| Service limit | 15.93 mm (0.6272 in) |
| 1987 and 1988 700/750 models | |
| New | 12.700 to 12.743 mm (0.500 to 0.5016 in) |
| Service limit | 12.755 mm (0.502 in) |
| Front master cylinder piston OD | |
| 1982 through 1986 models | |
| New | 15.827 to 15.854 mm (0.6231 to 0.6242 in) |
| Service limit | 15.82 mm (0.6228 in) |
| 1987 and 1988 700/750 models | |
| New | 12.657 to 12.684 mm (0.498 to 0.499 in) |
| Service limit | 12.645 mm (0.498 in) |
| Rear master cylinder bore ID (1100 models) | |
| New | 14.000 to 14.043 mm (0.5512 to 0.5529 in) |
| Service limit | 14.06 mm (0.553 in) |
| Rear master piston OD (1100 models) | |
| New | 13.957 to 13.984 mm (0.5495 to 0.5506 in) |
| Service limit | 13.95 mm (0.549 in) |

## Drum brake

| | |
|---|---|
| Brake shoe lining thickness | |
| New | 4.9 to 5.0 mm (0.19 to 0.20 in) |
| Service limit | 2.0 mm (0.08 in) |
| Brake drum ID | |
| 1985-on Magna models | |
| New | 180.0 to 180.3 mm (7.09 to 7.10 in) |
| Service limit | 181 mm (7.13 in) |
| All other models | |
| New | 160.0 to 160.3 mm (6.30 to 6.31 in) |
| Service limit | 161 mm (6.34 in) |

## Wheels

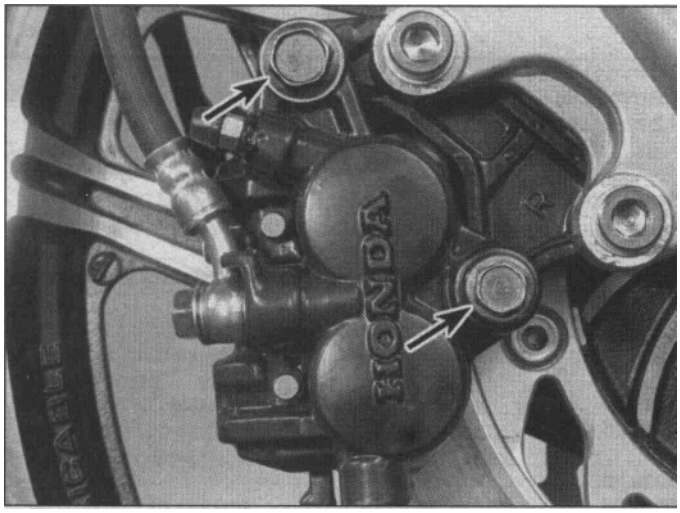
| | |
|---|---|
| Maximum wheel runout (front and rear) Axial (side-to-side) | 2.0 mm (0.08 in) |
| Radial (out-of-round) | 2.0 mm (0.08 in) |
| Maximum axle runout (front and rear) | 0.2 mm (0.01 in) |

## Tires

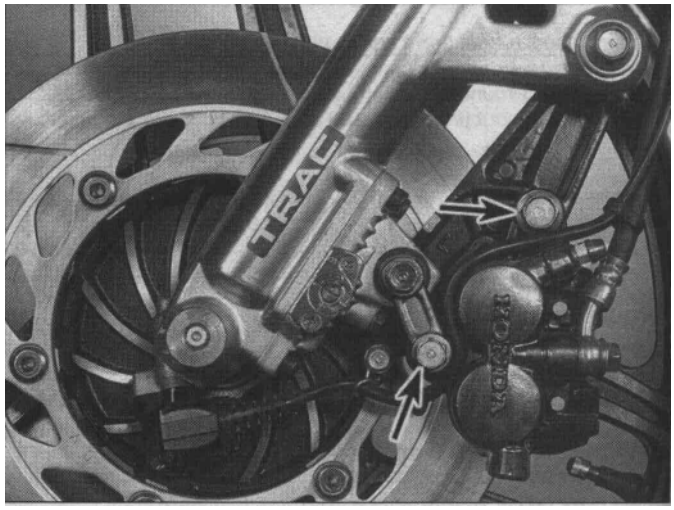
| | |
|---|---|
| Tire pressures | See Chapter 1 |
| Tire sizes | |
| Front | 120/60VR17or120/60ZR17 |
| Rear | 160/60 VR 17 or 160/60 ZR 17 |

| Torque settings | Nm | ft-lbs |
|---|---|---|
| Brake caliper-to-bracket bolts All Sabre models and 1982 through 1984 700/750 Magna models | | |
| Upper bolt | 25 to 30 | 18 to 22 |
| Lower bolt | 20 to 25 | 14 to 18 |
| 1985 and 1986 700 Magna models | | |
| Upper bolt | 30 to 40 | 22 to 29 |
| Lower bolt | 20 to 25 | 14 to 18 |
| 1987 and 1988 700/750 Magna models | 25 to 30 | 18 to 22 |
| 1100.Magna models | Not available | |
| Front brake caliper bracket-to-fork slider bolts Upper bolt (to slider lug) | | |
| All Sabres and 1982 through 1984 700/750 Magna models | 30 to 40 | 22 to 29 |
| 1100 Magna and 1985/86700 Magna models | 30 to 45 | 22 to 33 |
| Lower bolt (to anti-dive unit) | | |
| 1100 Sabre models | 10 to 14 | 7 to 10 |
| 1987 and 1988 700/750 Magna models | 30 to 45 | 22 to 33 |
| Brake disc retaining bolts | | |
| 1100 Sabre, 1983 through 1985 1100 Magna, 1982 through 1986 700/750 models | 25 to 30 | 18 to 22 |
| 1986 1100 Magna, 1987 and 1988 700/750 models | 37 to 43 | 27 to 31 |
| Front master cylinder clamp bolts (1100 models) | 10 to 14 | 7 to 10 |
| Brake hose banjo bolts | | |
| 1985 and 1986 700 Magna and 1986 1100 Magna models | 37 to 43 | 27 to 31 |
| 1100 Sabre models | 25 to 40 | 18 to 29 |
| All other models | 25 to 35 | 18 to 25 |
| Rear drum brake lever pinch bolt | 24 to 30 | 17 to 22 |
| Front wheel axle/axle nut | 55 to 65 | 40 to 47 |
| Front wheel axle pinch bolt(s) or nuts | | |
| 700/750 Sabre models | 18 to 28 | 13 to 20 |
| 1982 through 1984 700/750 Magna models | 15 to 25 | 11 to 18 |
| 1985 and 1986 700 Magna models | 20 to 30 | 14 to 22 |
| 1987 and 1988 700/750 Magna models | 18 to 25 | 13 to 18 |
| 1100 Sabre models | 20 to 30 | 14 to 22 |
| 1100 Magna models | 18 to 30 | 13 to 22 |
| Rear wheel axle nut | | |
| 1985-on 700/750 Magna models | 85 to 105 | 61 to 76 |
| All other 700/750 models | 60 to 80 | 43 to 58 |
| 1986 1100 Magna model | 80 to 100 | 58 to 72 |
| All other 1100 models | 85 to 105 | 61 to 76 |

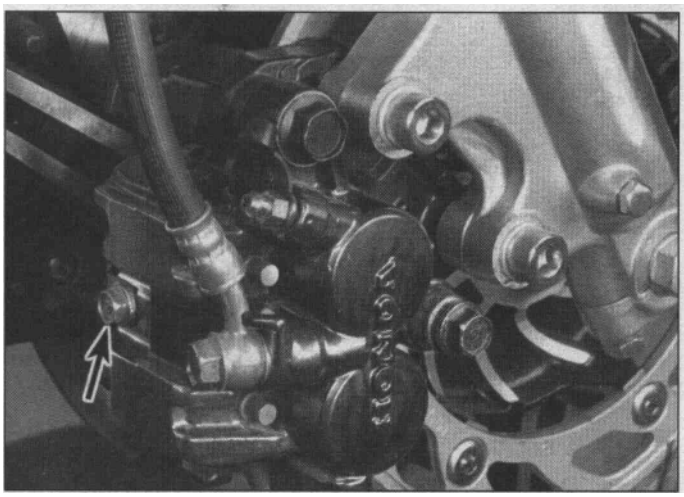
| | | |
|---|---|---|
| Rear wheel axle pinch bolt..... | 20 to 30 | 14 to 22 |
| Brake panel stop bolt..... | 35 to 45 | 25 to 33 |
| Brake panel-to-torque arm bolt..... | 15 to 25 | 11 to 18 |
| Final driven flange bolts (1983-on 700/750 Sabre models)..... | 50 to 60 | 36 to 43 |



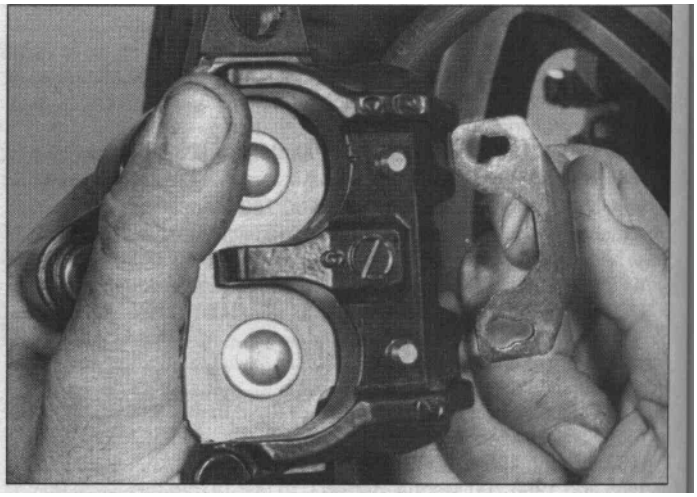

**2.1 a Caliper body-to-bracket mounting bolts (arrows) on right side ...**




**2.1b … and on left side (arrows)**



**2.2a Remove the pad pin retainer plate bolt (arrow)..**



**2.2b ... disengage the plate from the pin grooves ...**

### General information

The models covered in this manual are fitted with cast aluminum wheels designed to accept tubeless tires. The rear wheel of 1987 and 1988 700/750 Magna models is of the disc type, with a removable cover on the left side.

The front brake is a hydraulically-operated twin disc on 1982 through 1986 models, and a single disc on 1987 and 1988 700/750 Magna models; in all cases twin-piston brake calipers are fitted. The rear brake is a rod-operated drum on 700/750 models and a hydraulically-operated disc on 1100 models.

**Caution:** *Disc brake components rarely require disassembly. Do not disassemble components unless absolutely necessary. If any hydraulic brake line is loosened, the entire system be disassembled, drained, cleaned and then properly filled and bled upon reassembly. Do not use solvents on internal brake components. Solvents will cause the seals to swell and distort. Use only clean brake fluid or alcohol for cleaning. Use care when working with brake fluid as it can injure your eyes and it will damage painted surfaces and plastic parts.*

## 2 Front brake pads - replacement

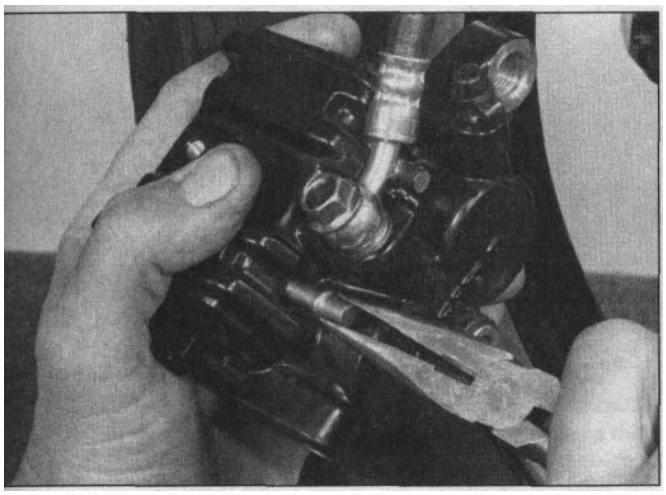
**Warning:** *When replacing the front brake pads on models with twin discs, always replace the pads in BOTH calipers - never just on one side. The dust created by the brake system may contain asbestos, which is harmful to your health. Never blow it out with compressed air and don't inhale any of it. An approved filtering mask should be worn when working on the brakes. Refer to illustrations 2.1a, 2.1b, 2.2a, 2.2b, 2.2c, 2.3, 2.4 and 2.11*

1 Remove the caliper body-to-bracket mounting bolts and slide the caliper off the disc, leaving the bracket attached to the fork slider (see **illustrations).** Support the caliper while it is removed so that no strain is placed on its hydraulic hose.

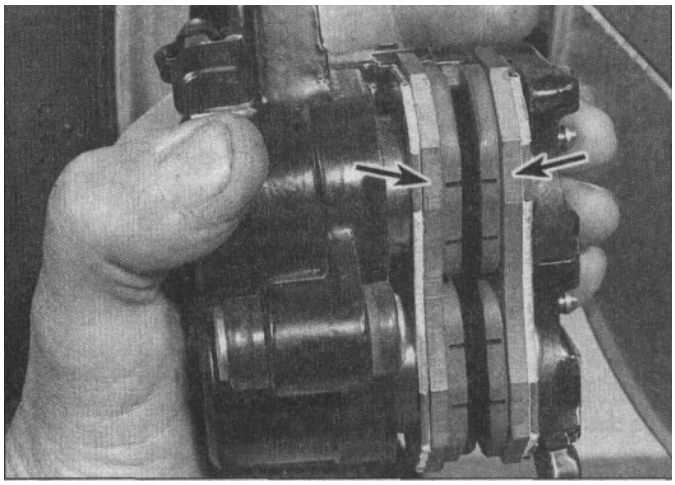
2 Remove the bolt that retains the pad pin retainer to the caliper, then disengage the retainer from the pins and pull both pins out of the caliper **(see illustrations).**

3 Lift out the brake pads **(see illustration).** The pad spring can be left in position in the caliper.

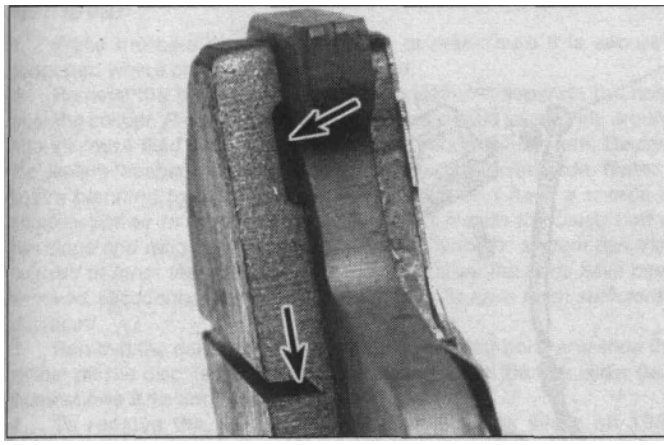
4 Inspect the surface of each pad for contamination and check that the friction material has not worn beyond its service limit groove, or



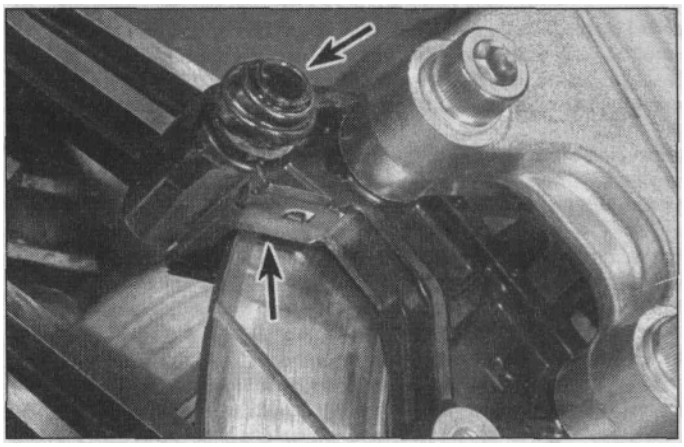
**2.2c ... and pull the pins out with pliers**



**2.3 Lift the brake pads (arrows) out of the caliper**



**2.4 Brake pad service limit groove (lower arrow) and cutout (upper arrow)**



**2.11 Anti-rattle spring position (lower arrow). Upper mounting dust boot (upper arrow)**

down to expose the cutout in the pad's rear edge; if worn down to this point or are approaching it, the pads must be replaced **(see illustration).** Similarly, if either pad is fouled with oil or grease, or heavily scored or damaged by dirt and debris, both pads must be replaced as a set. Note that it is not possible to degrease the friction material; if the pads are contaminated in any way they must be replaced.

5 If the pads are in good condition clean them carefully, using a fine wire brush which is completely free of oil and grease, to remove all traces of road dirt and corrosion. Using a pointed instrument, clean out the grooves in the friction material and dig out any embedded particles of foreign matter. Any areas of glazing may be removed using emery cloth.

6 Check the condition of the brake disc (see Section 4).

7 Remove all traces of corrosion from the pad pins. Inspect the pins and pad spring for signs of damage and replace if necessary. Also check the anti-rattle spring fitted to the top of the caliper bracket.

8 If installing new pads, push the pistons as far back into the caliper as possible using hand pressure only. Due to the increased friction material thickness of new pads, it may be necessary to remove the master cylinder reservoir cap, plate (where fitted) and diaphragm and syphon out some fluid.

9 Insert the pads into the caliper, ensuring the pad spring remains correctly positioned, so that the friction material of each pad is facing the disc. Insert one pad retaining pin making sure that it passes through the holes in both pads and into the caliper body, then hold both pads firmly against the rear of the caliper body to enable the remaining pin to be installed.

10 Install the pin retainer plate, pressing its slots into the pin grooves to lock them in place. Tighten the retainer plate screw securely.

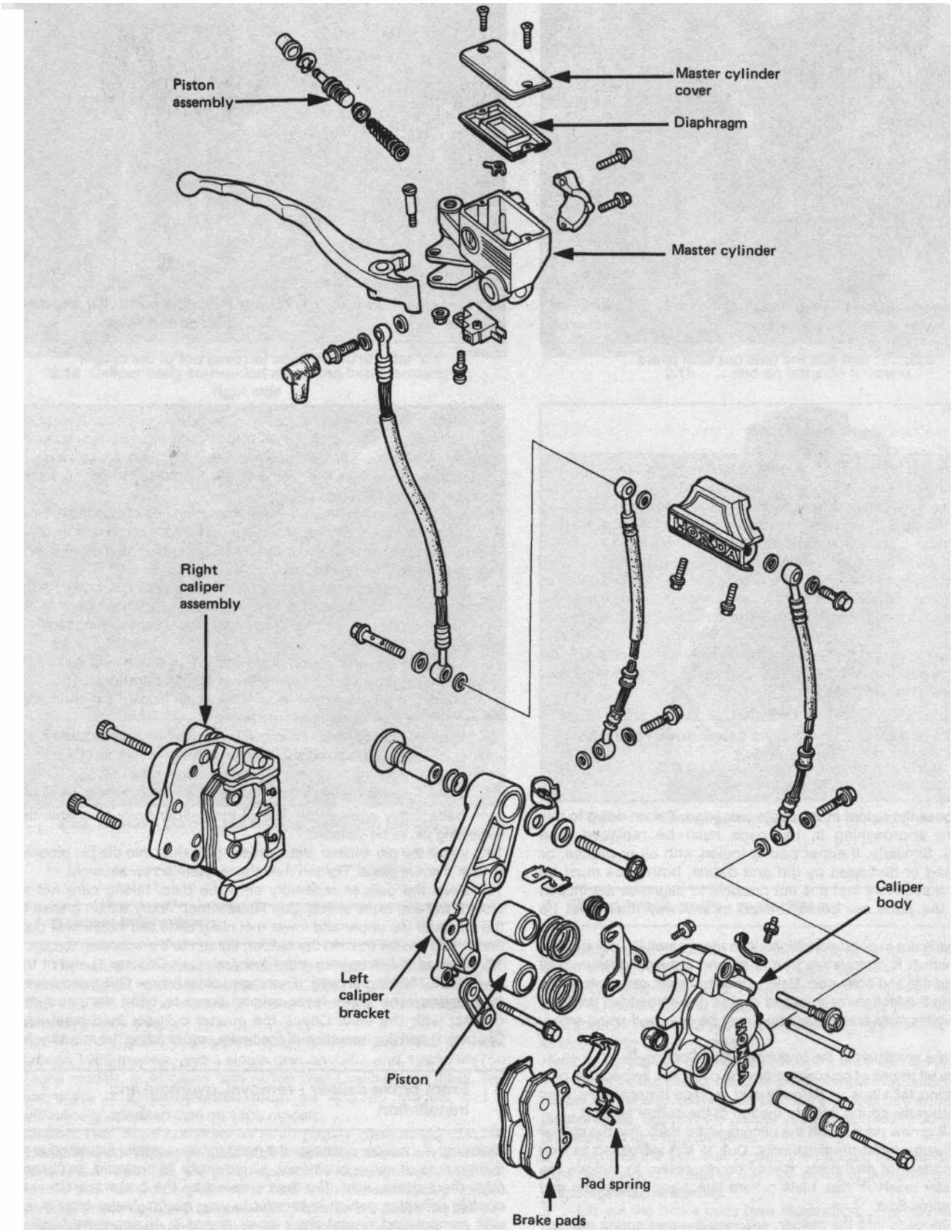
11 Slide the caliper assembly onto the disc, taking care not to disturb the anti-rattle spring **(see illustration).** Apply silicon grease to the shafts of the upper and lower mounting bolts and inside their dust boots, then install them in the caliper; tighten to the specified torque.

12 Top up the master cylinder reservoir (see Chapter 1) and fit the float (1988 750 Magna only), diaphragm, plate (where fitted) and cover.

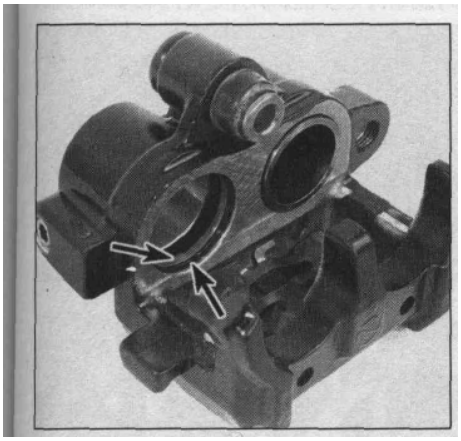
13 Operate the brake lever several times to bring the pads into contact with the disc. Check the master cylinder fluid level (see Chapter 1) and the operation of the brake before riding the motorcycle.

## 3 Front brake caliper - removal, overhaul and installation

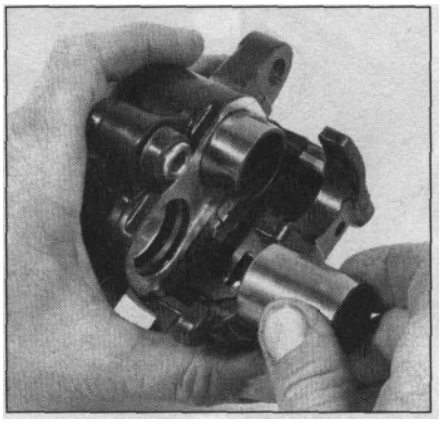
**Warning:** *If a caliper indicates the need for an overhaul (usually due to leaking fluid or sticky operation), all old brake fluid should be flushed from the system. A/so, the dust created by the brake system may contain asbestos, which is harmful to your health. Never blow it out with compressed air and don't inhale any of it. An approved filtering mask should be worn when working on the brakes. Do not, under any circumstances, use petroleum-based solvents to clean brake parts. Use clean brake fluid, brake cleaner or denatured alcohol only.*



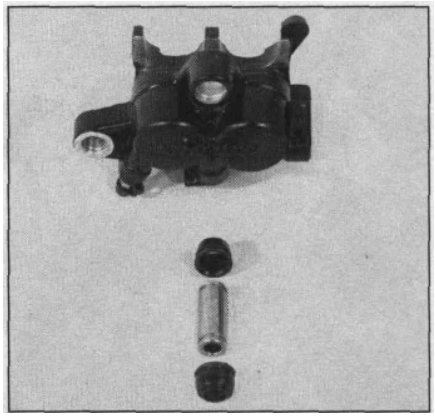

3.6 Front brake components (typical)



**3.14 Piston seal (upper arrow) and dust seal (lower arrow) locations in caliper bore**



**3.16 Ensure that the pistons are inserted squarely into their bores**



**3.17 Lower mounting bolt collar and dust boot arrangement**

## Removal

1 Place the bike on its main stand, or make sure it is securely supported where only a side stand is fitted.

2 Remove the brake hose banjo fitting bolt and separate the hose from the caliper. Plug the hose end or wrap a plastic bag tightly around it to minimize fluid loss and prevent dirt entering the system. Discard the sealing washers; new ones must be used on installation. **Note:** *If you're planning to overhaul the caliper and don't have a source of compressed air to blow out the pistons, just loosen the banjo bolt at this stage and retighten it lightly. The bike's hydraulic system can then be used to force the pistons out of the body once the pads have been removed. Disconnect the hose once the pistons have been sufficiently displaced.*

3 Remove the caliper body-to-bracket mounting bolts and slide the caliper off the disc, leaving the bracket attached to the fork slider **(see illustrations 2.1 a and 2.1b).**

4 To remove the caliper bracket from the fork slider on 1982 through 1986 models, remove the two bolts which retain it to the slider lugs (right side) or the upper bolt which retains it to the slider lug and the lower bolt which retains it to the anti-dive housing (left side). Note the exact order and position of any collars, cable guides, washers and dust seals at each mounting. Slip the speedometer cable/sensor wire out of the wire guide on the left caliper bracket.

5 On 1987 and 1988 models, the caliper bracket is retained to the slider lugs by two chrome-headed bolts. Slip the speedometer cable out of the wire guide on the bracket.

## Overhaul

*Refer to illustrations 3.6, 3.14,3.16 and 3.17*

6 Clean the exterior of the caliper with denatured alcohol or brake system cleaner **(see illustration).**

7 Remove the brake pads from the caliper body (see Section 2), then lift out the pad spring.

8 If the pistons weren't forced out using the bike's hydraulic system, place a wad of rag between the piston and caliper frame to act as a cushion, then use compressed air directed into the fluid inlet to force the pistons out of the body. Use only low air pressure to ease the pistons out and make sure both pistons are displaced at the same time. If the air pressure is too high and the pistons are forced out, the caliper and/or pistons may be damaged. **Warning:** *Never place your fingers in front of the pistons in an attempt to catch or protect them when applying compressed air, as serious injury could result. Keep each piston with its bore to ensure that they are not interchanged on reassembly (label them if necessary).*

9 Using a wooden or plastic tool, remove the dust seals from the caliper bores. If a metal tool is being used, take great care not to damage the caliper bores.

10 Remove both the piston seals in the same way.

11 Clean the pistons and bores with denatured alcohol, clean brake fluid or brake system cleaner. **Caution:** Do *not, under any circumstances, use* a *petroleum-based solvent to clean brake parts.* If compressed air is available, use it to dry the parts thoroughly (make sure it's filtered and unlubricated).

12 Inspect the caliper bores and pistons for signs of corrosion, nicks and burrs and loss of plating. If surface defects are present, the caliper assembly must be replaced. If the caliper is in bad shape the master cylinder should also be checked.

13 If the necessary measuring equipment is available, compare the dimensions of the caliper bores and pistons to those given in the Specifications Section of this Chapter, replacing any component that is worn beyond the service limit.

14 Lubricate the new piston seals with clean brake fluid and install them in their grooves in the caliper bores **(see illustration).**

15 Lubricate the new dust seals with clean brake fluid and install them in their grooves in the caliper bores.

16 Lubricate the pistons with clean brake fluid and install them in the caliper bores **(see illustration).** Using your thumbs, push the pistons all the way in, making sure they enter their bores squarely.

17 Carefully remove the outside dust boots from the lower mounting bolt hole in the caliper, then slip the collar out of the caliper body **(see illustration).** Check the condition of the dust boots and replace them if split or cracked. Check the condition of the dust boot situated between the caliper body and bracket on the upper mounting bolt.

18 Lay the pad spring in place in the caliper. Apply a very thin coat of silicon grease to the lower mounting bolt collar and slip it into the caliper body; install the dust boots on each side of the collar, making sure they are properly seated in the collar grooves.

19 Install the brake pads (see Section 2).

## Installation

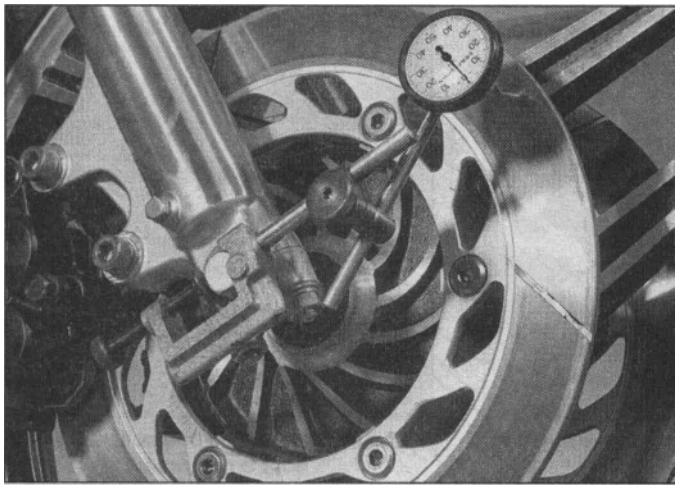
20 If removed from the fork slider, install the caliper bracket. Tighten the caliper bracket bolts to the specified torque (where given). Make sure that the anti-rattle spring is properly installed on the bracket **(see illustration 2.11).**

21 Install the caliper on the bracket, apply silicon grease to the shafts of the caliper mounting bolts and install them in the caliper; tighten them to the specified torque.

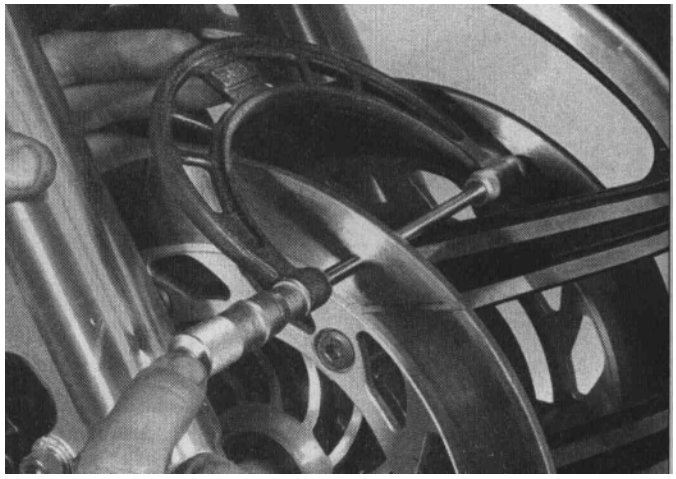
22 Connect the brake hose to the caliper, using new sealing washers on each side of the fitting. Tighten the banjo fitting bolt to the specified torque setting.

23 Fill the master cylinder with the recommended brake fluid (see Chapter 1) and bleed the hydraulic system as described in Section 11.

24 Check for leaks and thoroughly test the operation of the brake before riding the motorcycle.



**4.3 Measuring disc runout**



**4.5 Measuring disc thickness**

## 4 Front brake discs - inspection, removal and installation

### *Inspection*

*Refer to illustrations 4.3 and 4.5*

1 Set the bike on its main stand. Where no main stand is fitted, support the bike securely under the crankcase so that the front wheel is raised off the ground.

2 Visually inspect the surface of the discs for score marks and other damage. Light scratches are normal after use and won't affect brake operation, but deep grooves and heavy score marks will reduce braking efficiency and accelerate pad wear. If the discs are badly grooved they must be machined or replaced.

3 To check disc runout, mount a dial indicator to a fork leg, with the plunger on the indicator touching the surface of the disc about 10 mm (1/2 inch) from the outer edge **(see illustration).** Rotate the wheel and watch the indicator needle, comparing your reading with the limit listed in this Chapter's Specifications.

4 If the runout is greater than allowed, check the hub bearings for play. If the bearings are worn, replace them and repeat this check. If the disc runout is still excessive, it will have to be replaced, although machining by a competent engineering shop may be a solution. Confirm your findings by removing the disc and checking it for warpage on a surface plate using feeler blades.

5 The disc must not be machined or allowed to wear down to a thickness less than the service limit, listed in this Chapter's Specifications (check also for wear limits stamped on the disc itself). The thickness of the disc can be checked with a micrometer **(see illustration).** If the thickness of the disc is less than the minimum allowable, it must be replaced.

### *Removal*

6 Remove the wheel as described in Section 15. **Caution:** *Don't lay the wheel down and allow it to rest on either disc - the disc could become warped. Set the wheel on wood blocks so the disc doesn't support the weight of the wheel.*

*7* Mark the relationship of the disc to the wheel, so it can be installed in the same position. Remove the bolts that retain the disc to the wheel. Loosen the bolts a little at a time, in a criss-cross pattern, to avoid distorting the disc.

8 Remove the disc and on 1982 through 1986 models recover the gaskets which are positioned between the disc and wheel pillars. On twin disc models, the discs should be marked L or R near one of the bolt holes to denote on which side of the wheel they are fitted; if no marks are found, make some with a felt marker.

### *Installation*

9 On 1982 through 1986 models, position a new gasket on each of the wheel's disc mounting pillars. On early models the gaskets have a flat edge, which must face the cast flat on the wheel surface.

10 Install the disc on the wheel, aligning the previously applied match marks (if you're installing the original disc).

11 Install the bolts, ensuring the shims remain in position, and tighten them evenly and progressively to the specified torque. Clean off all grease from the brake disc(s) using acetone or brake system cleaner. If new brake discs have been installed, remove any protective coating from their working surfaces.

12 Install the wheel (see Section 15).

13 Operate the brake lever several times to bring the pads into contact with the disc. Check the operation of the brakes carefully before riding the motorcycle.

## 5 Front brake master cylinder - removal, overhaul and installation

1 If the master cylinder is leaking fluid, or if the lever does not produce a firm feel when the brake is applied, and bleeding the brakes does not help, master cylinder overhaul is recommended Before disassembling the master cylinder, read through the entire procedure and make sure that you have the correct rebuild kit. Also, you will need some new, clean brake fluid of the recommended type, some clean shop towels and internal snap-ring pliers. **Note:** *To prevent damage to the paint from spilled brake fluid, always cover the fuel tank when working on the master cylinder.*

***2*** **Caution:** *Disassembly, overhaul and reassembly of the brake master cylinder must be done in a spotlessly clean work area to avoid contamination and possible failure of the brake hydraulic system components.*

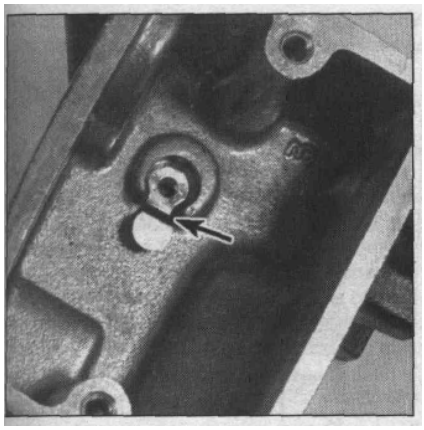
### *Removal*

3 Loosen, but do not remove, the screws holding the reservoir cover in place.

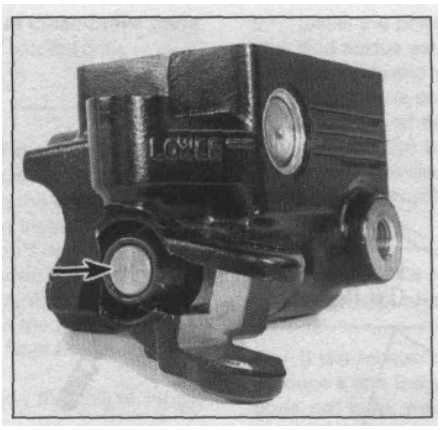
4 Disconnect the electrical connectors from the brake light switch.

5 Pull back the rubber boot, loosen the banjo fitting bolt and separate the brake hose from the master cylinder. Wrap the end of the hose in a clean rag and suspend the hose in an upright position or bend it down carefully and place the open end in a clean container. The objective is to prevent excessive loss of brake fluid, fluid spills and system contamination.

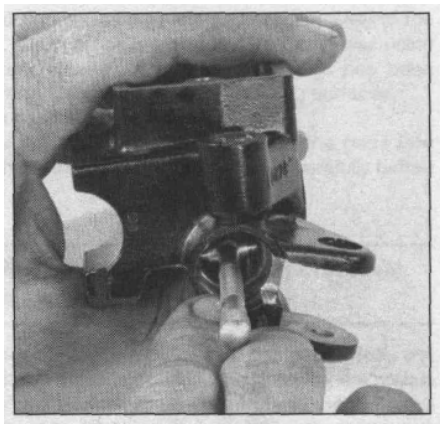
6 Remove the locknut from the underside of the brake lever pivot bolt, then unscrew the bolt and remove the brake lever.



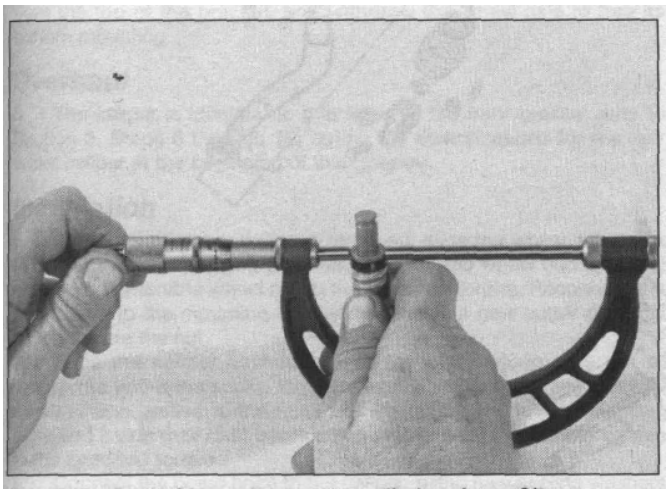
**5.8 Location of port baffle in fluid reservoir base**



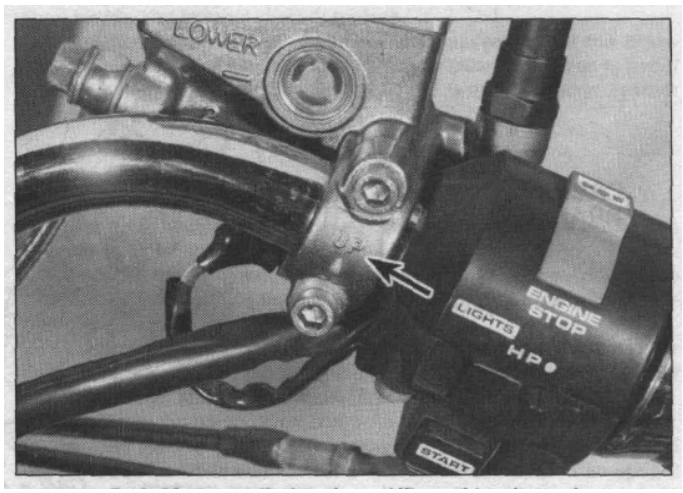
**5.10 Master cylinder piston and dust boot location**



**5.14a Measuring master cylinder bore ID**



**5.14b Measuring master cylinder piston OD**




**5.19 Master cylinder clamp UP marking (arrow)**

7 Remove the master cylinder mounting bolts and clamp to free the master cylinder from the handlebar. **Caution:** *Do not tip the master cylinder upside down or brake fluid will run out.*

## Overhaul

*Refer to illustrations 5.8,* 5.*10, 5.14a and 5.14b*

8 Detach the reservoir cover and remove the plate (where fitted), rubber diaphragm, and on 1988 750 Magnas lift out the float, then drain the brake fluid into a suitable container **(see illustration 3.6).** Wipe any remaining fluid out of the reservoir with a clean rag. If the port baffle in the base of the reservoir was disturbed, ensure it is installed correctly **(see illustration).**

9 Undo the screw and remove the brake light switch.

10 Carefully remove the rubber dust boot from the end of the piston **(see illustration).**

11 Using snap-ring pliers, remove the snap-ring and slide out the piston assembly and the spring. Lay the parts out in the proper order to prevent confusion during reassembly.

12 Clean all of the parts with brake system cleaner (available at auto parts stores), isopropyl alcohol or clean brake fluid. **Caution:** *Do not, under any circumstances, use* a *petroleum-based solvent to clean brake parts.* If compressed air is available, use it to dry the parts thoroughly (make sure it's filtered and unlubricated).

13 Check the master cylinder bore for corrosion, scratches, nicks and score marks. If damage is evident, the master cylinder must be replaced with a new one. If the master cylinder is in poor condition, then the calipers should be checked as well.

14 If the necessary measuring equipment is available, compare the dimensions of the master cylinder bore and piston to those given in the Specifications Section of this Chapter, replacing any component that it is worn beyond the service limit **(see illustrations).**

15 The dust boot, piston assembly and spring are included in the rebuild kit. Use all of the new parts, regardless of the apparent condition of the old ones.

16 Before reassembling the master cylinder, soak the piston and the rubber cup seals in clean brake fluid for ten or fifteen minutes. Lubricate the master cylinder bore with clean brake fluid, then carefully insert the piston and related parts in the reverse order of disassembly. Make sure the lips on the cup seals do not turn inside out when they are slipped into the bore and ensure the spring is fitted the correct way around.

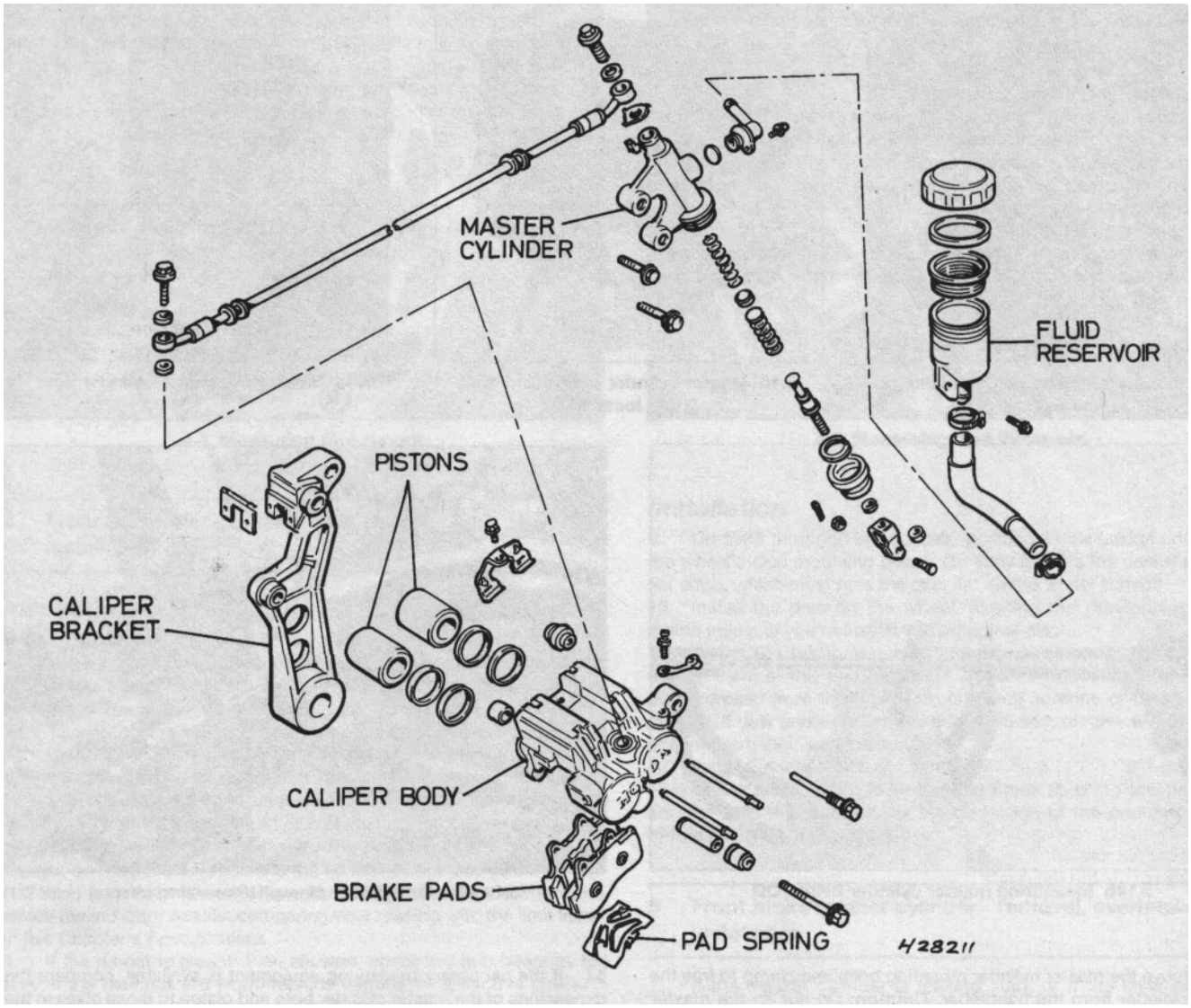
17 Depress the piston, then install the snap-ring (make sure the snap-ring is properly seated in the groove). Install the rubber dust boot (make sure the lip is seated properly in the piston groove).

18 Install the brake light switch and securely tighten its retaining screw.

## Installation

*Refer to illustration 5.19*

19 Attach the master cylinder to the handlebar then fit the clamp making sure the 'UP' mark is facing upwards **(see illustration).** On Magnas and 1984-on Sabres, the joint of the clamp should align with the punch mark on the handlebar to ensure that the reservoir is positioned upright. On all models, fully tighten the upper bolt first, then the lower, both to the specified torque (where given).




**6.2 Rear brake components (1100 models)**

20 Connect the brake hose to the master cylinder, using new sealing washers. Tighten the banjo fitting bolt to the specified torque setting.
21 Install the lever and pivot bolt. Install the pivot bolt locknut and tighten it securely. Connect the brake light switch wiring.
22 Refer to Section 11 and bleed the air from the system. Check the operation of the front brake carefully before riding the motorcycle.

## 6 Rear brake pads (1100 models) - replacement

**Warning:** *The dust created by the brake system may contain asbestos, which is harmful to your health. 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. Refer to illustration 6.2*

1 Set the bike on its main stand.
2 Remove the caliper mounting bolts and slide the caliper off the disc, leaving its mounting bracket in place **(see illustration).**
3 The caliper is identical to that fitted to the front brakes and pad renewal can be performed as described in Section 2, Steps 2 through 10.
4 Slide the caliper assembly onto the disc, taking care not to disturb the anti-rattle spring fitted to the top of the mounting bracket. Apply silicon grease to the shafts of the upper and lower mounting bolts and inside their dust boots and install them in the caliper; tighten to the specified torque.
5 Top up the master cylinder reservoir (see Chapter 1) and fit the diaphragm, plate and cap.
6 Operate the brake lever several times to bring the pads into contact with the disc. Check the reservoir fluid level (see Chapter 1) and the operation of the brake before riding the motorcycle.

## 7 Rear brake caliper (1100 models) - removal, overhaul and installation

**Warning:** *If the caliper indicates the need for an overhaul (usually due to leaking fluid or sticky operation), all old brake fluid should be flushed from the system. Also, the dust created by the brake system may contain asbestos, which is harmful to your health. 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, under any*

*circumstances, use petroleum-based solvents to clean brake parts. Use clean brake fluid, brake cleaner or denatured alcohol only.*

### Removal

1 Place the bike on its main stand.
2 Remove the brake hose banjo fitting bolt and separate the hose from the caliper. Plug the hose end or wrap a plastic bag tightly around it to minimize fluid loss and prevent dirt entering the system. Discard the sealing washers; new ones must be used on installation. Note: *If you're planning to overhaul the caliper and don't have a source of compressed air to blow out the pistons, just loosen the banjo bolt at this stage and retighten it lightly. The bike's hydraulic system can then be used to force the piston out of the body once the pads have been removed. Disconnect the hose once the pistons have been sufficiently displaced.*
3 Remove the caliper mounting bolts and slide the caliper off the disc.
4 If caliper bracket removal is required, ensure that the weight of the motorcycle is off the rear wheel. Disconnect the brake torque arm from the top of the bracket, and withdraw the wheel axle to free its bottom mounting.

### Overhaul

*5* The caliper is identical to that fitted to the front brakes; refer to Section 3, Steps 6 through 19, noting the Specifications for the rear brake caliper at the beginning of this Chapter.

### Installation

6 If the mounting bracket was removed, slide the wheel axle back through its lower mounting point and through the wheel hub and final drive unit; tighten the wheel nut to the specified torque. Reconnect the torque arm to the mounting bracket and install a new cotter pin (split pin) to secure the nut.
7 Slide the caliper assembly onto the disc, taking care not to disturb the anti-rattle spring fitted to the top of the mounting bracket. Apply silicon grease to the shafts of the upper and lower mounting bolts and inside their dust boots and install them in the caliper; tighten to the specified torque.
8 Connect the brake hose to the caliper, using new sealing washers on each side of the fitting. Tighten the banjo fitting bolt to the specified torque.
9 Fill the master cylinder with the recommended brake fluid (see Chapter 1) and bleed the hydraulic system as described in Section 11.
10 Check for leaks and thoroughly test the operation of the brake before riding the motorcycle on the road.

## 8 Rear brake disc (1100 models) - inspection, removal and installation

### Inspection

1 Refer to Section 4 of this Chapter, noting that the dial indicator should be attached to the swingarm.

### Removal

2 Remove the wheel as described in Section 16. **Caution:** *Don't lay the wheel down and allow it to rest on the disc - the disc could become warped. Set the wheel on wood blocks so the disc doesn't support the weight of the wheel.*
3 Mark the relationship of the disc to the wheel, so it can be installed in the same position. Remove the bolts that retain the disc to the wheel. Loosen the bolts a little at a time, in a criss-cross pattern, to avoid distorting the disc then remove the disc.

### Installation

4 Position the disc on the wheel, aligning the previously applied match marks (if you're reinstalling the original disc).
5 Install the bolts and tighten them evenly and progressively to the specified torque setting. Clean off all grease from the brake disc using acetone or brake system cleaner. If a new brake disc has been installed, remove any protective coating from its working surfaces.
6 Install the wheel as described in Section 16.
7 Operate the brake pedal several times to bring the pads into contact with the disc. Check the operation of the brake carefully before riding the motorcycle.

## 9 Rear brake master cylinder (1100 models) - removal, overhaul and installation

1 If the master cylinder is leaking fluid, or if the pedal does not produce a firm feel when the brake is applied, and bleeding the brakes does not help, master cylinder overhaul is recommended. Before disassembling the master cylinder, read through the entire procedure and make sure that you have the correct rebuild kit. Also, you will need some new, clean brake fluid of the recommended type, some clean shop towels and internal snap-ring pliers.
**2 Caution:** *Disassembly, overhaul and reassembly of the brake master cylinder must be done in a spotlessly clean work area to avoid contamination and possible failure of the brake hydraulic system components.*

### Removal

#### Sabre models

3 Set the bike on its main stand. Remove the right side cover (see Chapter 6).
4 Remove the right muffler (silencer) from the exhaust system (see Chapter 4). Remove the right passenger footpeg bracket (see Chapter 6).
5 Disconnect the reservoir-to-master cylinder hose at the master cylinder end and catch the escaping brake fluid. Remove the reservoir mounting screw and remove the reservoir from the motorcycle.
6 Unscrew the banjo union bolt from the top of the master cylinder. Discard the sealing washers on each side of the fitting. Wrap the end of the hose in a clean shop towel and suspend the hose in an upright position or bend it down carefully and place the open end in a clean container. The objective is to prevent excessive loss of brake fluid, fluid spills and system contamination.
7 Remove the two master cylinder mounting bolts and tilt it backwards to gain access to the pushrod-to-brake pedal clevis link. If access if available to the cotter pin (split pin), washer and clevis pin, remove them to allow separation of the pedal and link, but if not, fully unscrew the master cylinder pushrod from the locknuts on the link. Remove the master cylinder from the motorcycle. **Note:** *If the pushrod and link are separated, it is advised to mark the pushrod threads with white paint or tape, level with the surface of the top locknut so that the link can be returned to its original position on installation.*

#### Magna models

8 Set the bike on its main stand. Remove the right side cover (see Chapter 6).
9 Remove the right passenger footpeg bracket (see Chapter 6).
10 Unscrew the banjo union bolt from the top of the master cylinder. Discard the sealing washers on each side of the fitting. Wrap the end of the hose in a clean shop towel and suspend the hose in an upright position or bend it down carefully and place the open end in a clean container. The objective is to prevent excessive loss of brake fluid, fluid spills and system contamination.
11 Extract the cotter pin (split pin), washer and clevis pin from the master cylinder pushrod link and detach the link from the brake pedal.
12 Remove the two master cylinder mounting bolts, followed by the reservoir mounting screw, then withdraw the master cylinder/reservoir from the motorcycle. Remove the reservoir cap, plate and diaphragm, then drain all fluid from it and loosen the reservoir-to-master cylinder hose clamps at either end to separate the two components.

## Overhaul

13 Disengage the rubber dust boot from the bottom of the master cylinder. If the boot is split or damaged it must be replaced; on Magna models, this will necessitate removal of the clevis from the pushrod end (see Step 7).
14 Depress the pushrod and, using snap-ring pliers, remove the snap-ring. Slide out the piston assembly and spring. Lay the parts out in the proper order to prevent confusion during reassembly.
15 Clean all of the parts with brake system cleaner (available at auto parts stores), isopropyl alcohol or clean brake fluid. **Caution:** *Do not, under any circumstances, use a petroleum-based solvent to clean brake parts.* If compressed air is available, use it to dry the parts thoroughly (make sure it's filtered and unlubricated).
16 Check the master cylinder bore for corrosion, scratches, nicks and score marks. If damage is evident, the master cylinder must be replaced with a new one. If the master cylinder is in poor condition, then the caliper should be checked as well.
17 If the necessary measuring equipment is available, compare the dimensions of the master cylinder bore and piston to those given in the Specifications Section of this Chapter, replacing any component that it worn beyond the service limit.
18 A new piston and spring are included in the rebuild kit. Use them regardless of the condition of the old ones.
19 Before reassembling the master cylinder, soak the piston and the rubber cup seals in clean brake fluid for ten or fifteen minutes. Lubricate the master cylinder bore with clean brake fluid, then carefully insert the parts in the reverse order of disassembly, ensuring the tapered end of the spring is facing the piston. Make sure the lips on the cup seals do not turn inside out when they are slipped into the bore.
20 Depress the pushrod, then install the snap-ring (make sure the snap-ring is properly seated in the groove). Install the dust boot on the master cylinder. If the clevis was removed on Magna models, install the top locknut (using the previously made marks), clevis and bottom locknut; tighten the locknuts to secure the clevis.

## Installation

21 Installation is a reverse of removal, noting the following:

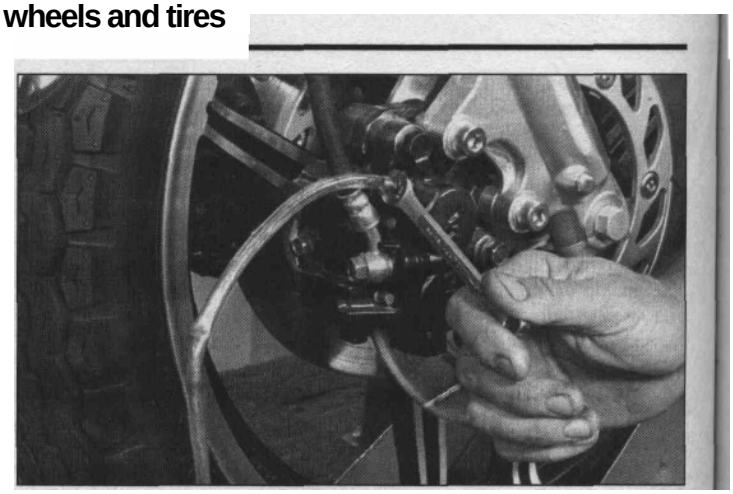
*a) On Sabre models, tighten the top and bottom locknuts to secure the clevis on the pushrod (use the previously made marks to return it to its original position).*
*b) On Magna models, connect the clevis to the brake pedal, insert the clevis pin, washer and a new cotter pin (split pin); bend the cotter pin legs around the pin end to secure it.*
*c) Use new sealing washers on each side of the banjo union bolt and ensure the union butts against the cast lug on the master cylinder when tightened to the specified torque.*
*d) If the reservoir hose adaptor on the master cylinder body was disturbed, install it using a new O-ring. Ensure the reservoir hose is securely clamped to its unions.*

22 Fill the fluid reservoir with the specified fluid (see Chapter 1) and bleed the system following the procedure in Section 11. Install the right side cover.
23 Check the brake pedal height and adjust it if necessary by altering the clevis position on the master cylinder pushrod (see Chapter 1). Check the operation of the rear brake carefully before riding the motorcycle.

# 10 Brake hoses - inspection and replacement

## Inspection

1 Once a week, or if the motorcycle is used less frequently, before every ride, check the condition of the brake hoses.
2 Twist and flex the rubber hoses while looking for cracks, bulges and seeping fluid. Check extra carefully around the areas where the hoses connect with the banjo fittings, as these are common areas for hose failure.
3 Inspect the metal banjo union fittings connected to brake hoses.



**11.5 Apparatus for bleeding the brakes**

If the fittings are rusted, scratched or cracked, replace them. 4 Inspect the three-way hose joint fitted to the lower triple clamp of 1982 through 1986 models. If it shows signs of leakage or corrosion, drain the system and remove it for inspection. Refer to Chapter 6 *'Steering stem - removal and installation'* for details of removal of the three-way union.

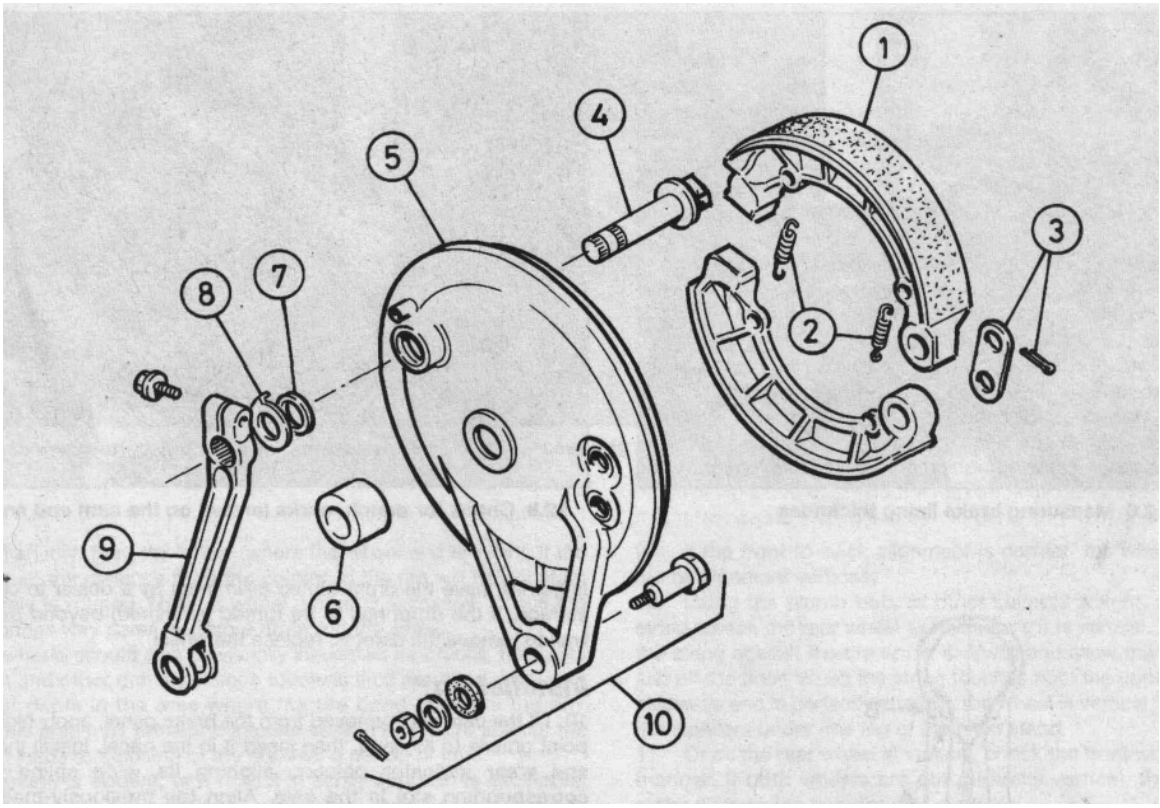
## Replacement

*5* The brake hoses have banjo union fittings on each end of the hose. Cover the surrounding area with plenty of shop towels and unscrew the banjo bolt on each end of the hose. Detach the hose from any clips that may be present and remove the hose. Discard the sealing washers.
6 Position the new hose, making sure it isn't twisted or otherwise strained, between the two components. Make sure the metal tube portion of the banjo fitting butts against or is located between the protrusions on the component it's connected to, if equipped. Install the banjo bolts, using new sealing washers on both sides of the fittings, and tighten them to the specified torque setting.
7 Flush the old brake fluid from the system, refill the system with the recommended fluid (see Chapter 1) and bleed the air from the system (see Section 11). Check the operation of the brakes carefully before riding the motorcycle.

# 11 Brake system bleeding

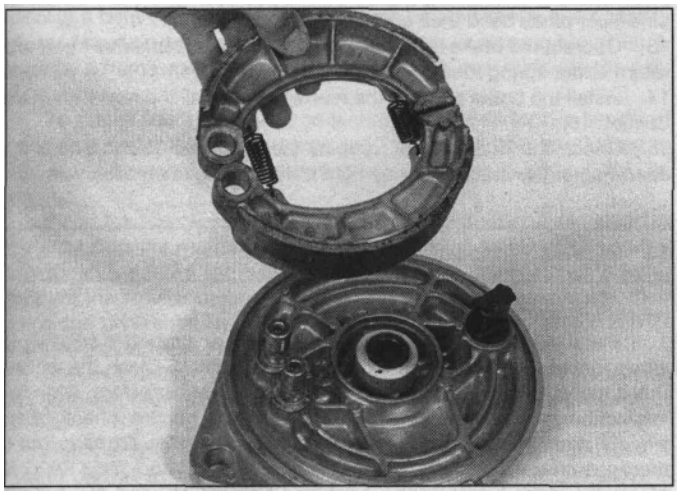
*Refer to illustration 11.5*

1 Bleeding the brakes is simply the process of removing all the air bubbles from the brake fluid reservoirs, the hoses and the brake calipers. Bleeding is necessary whenever a brake system hydraulic connection is loosened, when a component or hose is replaced, or when the master cylinder or caliper is overhauled. Leaks in the system may also allow air to enter, but leaking brake fluid will reveal their presence and warn you of the need for repair.
2 To bleed the brakes, you will need some new, clean brake fluid of the recommended type (see Chapter 1), a length of clear vinyl or plastic tubing, a small container partially filled with clean brake fluid, some shop towels and a wrench to fit the brake caliper bleeder valves.
3 Cover the fuel tank and other painted components to prevent damage in the event that brake fluid is spilled.
4 Remove the reservoir cap or cover, plate (where fitted), diaphragm and float (1988 750 Magna) and slowly pump the brake lever or pedal a few times, until no air bubbles can be seen floating up from the holes at the bottom of the reservoir. Doing this bleeds the air from the master cylinder end of the line. Install the reservoir cap/cover components loosely.
5 Attach one end of the clear vinyl or plastic tubing to the bleeder valve and submerge the other end in the brake fluid in the container **(see illustration).**




**12.3 Rear drum brake components**

1 *Brake shoes*
2 *Return springs*
3 *Retaining plate and cotter pins*
4 *Brake cam*
5 *Brake panel*
6 *Wheel spacer*
7 *Felt seal*
8 *Wear indicator plate*
9 *Brake lever*
10 *Torque arm connection components (later models)*



**12.4 Remove the brake shoes and springs as a single unit**

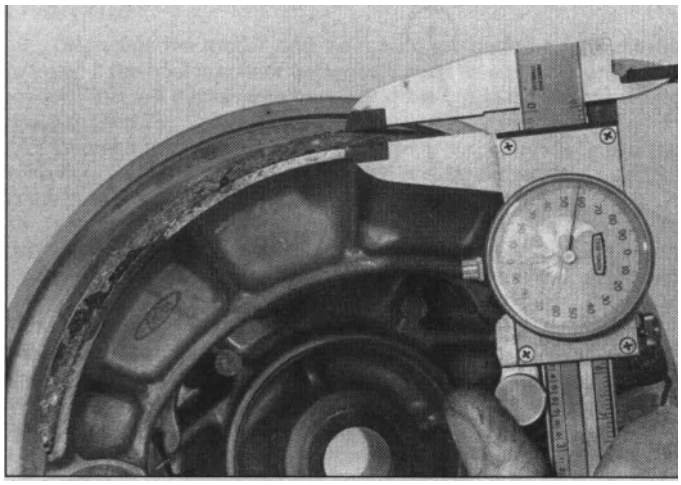
6 Remove the reservoir cap/cover components and check the fluid level. Do not allow the fluid level to drop below the lower mark during the bleeding process.
7 Carefully pump the brake lever or pedal three or four times and hold it in (front) or down (rear) while opening the caliper bleeder valve. When the valve is opened, brake fluid will flow out of the caliper into the clear tubing and the lever will move toward the handlebar or the pedal will move down.
8 Retighten the bleeder valve, then release the brake lever or pedal gradually. Repeat the process until no air bubbles are visible in the brake fluid leaving the caliper and the lever or pedal is firm when applied.
9 Install the reservoir cap or cover, wipe up any spilled brake fluid and check the entire system for leaks. **Note:** *If bleeding is difficult, it may be necessary to let the brake fluid in the system stabilize for a few hours (it may be aerated). Repeat the bleeding procedure when the tiny bubbles in the system have settled out.*

## 12 Rear drum brake (700/750 models) - removal, inspection and installation

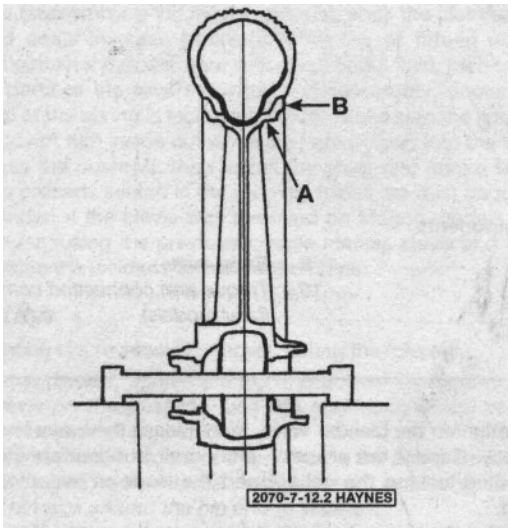
**Warning:** *The dust collected by the brake system may contain asbestos, which is harmful to your health. Never blow it out with compressed air and don't inhale any of it. An approved filtering mask should be worn when working on the brakes.*

### *Removal*

*Refer to illustrations 12.3 and 12.4*
1 Before you start, inspect the rear brake wear indicator (see Chapter 1).
2 Remove the rear wheel (see Section 16) and lift the brake panel out of the hub.
3 Remove the cotter pins (split pins) from the pivot posts and lift off the retaining plate **(see illustration).**
4 Fold the shoes toward each other to release the spring tension. Remove the shoes and springs from the brake panel **(see illustration).**

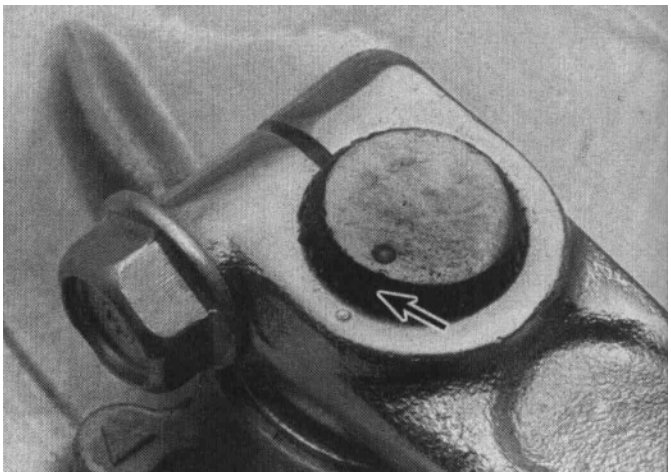


**12.6 Measuring brake lining thickness**




**13.2a Use a dial indicator to measure wheel runout**

*A Radial runout* *B Axial runout*



**12.8 Check for punch marks (arrow) on the cam end and lever**

fingernail, have the drum turned (skimmed) by a dealer to correct the surface. If the drum has to be turned (skimmed) beyond the service limit to remove the defects, replace the wheel.

## *Installation*

10 If the cam was removed from the brake panel, apply high-melting point grease to its shaft, then insert it in the panel. Install the felt seal and wear indicator pointer, aligning its wide spline with the corresponding slot in the cam. Align the previously-made match marks, and install the brake lever on the cam splines. Install and tighten its pinch bolt to the specified torque.

11 Apply high-melting point grease to the shoe pivots and the cam.

12 Hook the springs into the shoe holes. Position the shoes in a V on the brake panel, then fold them down into position. Make sure the ends of the shoes fit correctly against the cam and over the pivot posts. Install the retaining plate over the pivot posts and fit new cotter pins (split pins); bend their ends around the posts.

13 Operate the brake lever and check that the shoes move freely and return under spring tension.

14 Install the brake panel in the rear wheel. Install the rear wheel (see Section 16).

15 Check the brake pedal freeplay (see Chapter 1) and check the operation of the brake and stop light before riding the motorcycle.

## *Inspection*

*Refer to illustrations 12.6 and 12.8*

*5* Check the linings for wear, damage and signs of contamination from road dirt or water. If the linings are visibly defective, replace them.

6 Measure the thickness of the lining material (just the lining material, not the metal backing) and compare with the service limit in this Chapter's Specifications **(see illustration).** Replace the shoes if the lining is near to or worn beyond the service limit.

7 Check the ends of the shoes where they contact the brake cam and pivot posts. Replace the shoes if there's visible wear at these points.

8 Check the brake cam and pivot posts for wear and damage. Look for punch alignment marks on the cam end and lever, and if none are found make your own, then remove the pinch bolt, lever, wear indicator pointer, felt seal and cam from the brake panel **(see illustration).**

9 Check the brake drum (inside the wheel hub) for wear and damage. Measure the diameter at several points with a brake drum micrometer. If the measurements are uneven (indicating that the drum is out-of-round) or if there are scratches deep enough to snap a

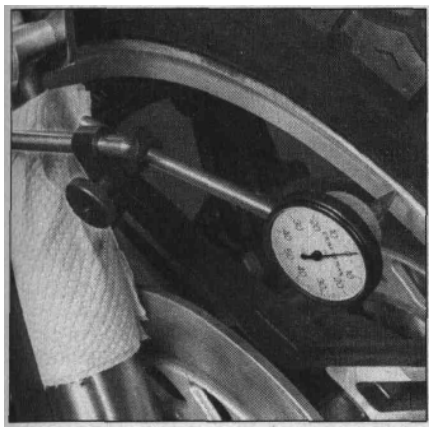
## 13 Wheels - inspection and repair

*Refer to illustrations 13.2a, 13.2b and 13.2c*

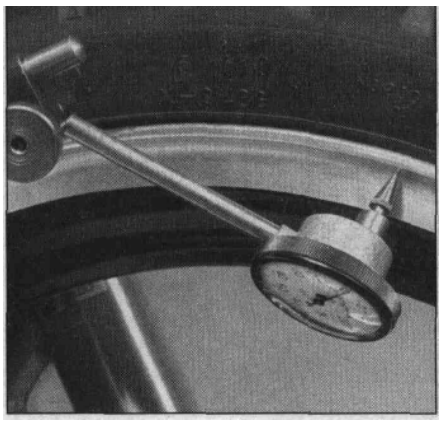
1 Place the motorcycle on the main stand, or support it securely in an upright position where only a side stand is fitted. Clean the wheels thoroughly to remove mud and dirt that may interfere with the inspection procedure or mask defects. Make a general check of the wheels and tires as described in Chapter 1. **Note:** *To carry out a thorough check of the rear wheel casting on 1987 and 1988 700/750 Magna models, remove the wheel* (see Section 16) *and remove the wheel cover from the left side; it is retained by three screws to the wheel hub.*

*2* With the wheel being checked raised off the ground, attach a dial indicator to the fork slider or the swingarm and position its stem against the side of the rim **(see illustrations).** Spin the wheel slowly and check the side-to-side (axial) runout of the m, then compare your readings with the value listed in this Chapter's Specifications. In order to accurately check radial runout with the dial indicator, the wheel would have to be removed from the machine. With the axle clamped in a vise, the wheel can be rotated to check the runout **(see illustration).**

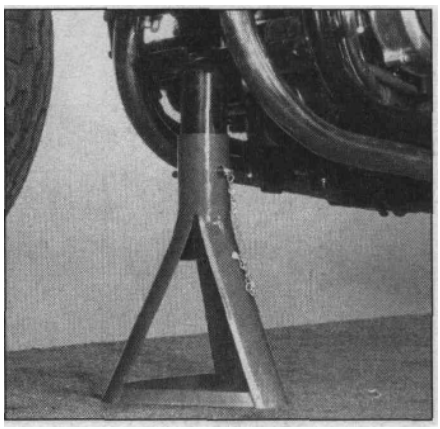
3 An easier, though slightly less accurate, method is to attach a stiff wire pointer to the fork slider or the swingarm and position the end a



**13.2b Measuring axial runout**



**13.2c Measuring radial runout**



**15.1 Use a jackstand to raise the front wheel off the ground**

fraction of an inch from the wheel (where the wheel and tire join). If the wheel is true, the distance from the pointer to the rim will be constant as the wheel is rotated. **Note:** *If wheel runout is excessive, check the wheel bearings very carefully before replacing the wheel.*

4 The wheels should also be visually inspected for cracks, flat spots on the rim and other damage. Since tubeless tires are fitted, look very closely for dents in the area where the tire bead contacts the rim. Dents in this area may prevent complete sealing of the tire against the rim, which leads to deflation of the tire over a period of time.

5 If damage is evident, or if runout in either direction is excessive, the wheel will have to be replaced with a new one. Never attempt to repair a damaged cast aluminum wheel.

## 14 Wheels - alignment check

1 Misalignment of the wheels, which may be due to a cocked rear wheel or a bent frame or triple clamps, can cause strange and possibly serious handling problems. If the frame or triple clamps are at fault, repair by a frame specialist or replacement with new parts are the only alternatives.

2 To check the alignment you will need an assistant, a length of string or a perfectly straight piece of wood and a ruler graduated in 1/64 inch increments. A plumb bob or other suitable weight will also be required.

3 Place the motorcycle on the main stand. Where no main stand is fitted, support the motorcycle securely under the crankcase so that it is vertical. Measure the width of both tires at their widest points. Subtract the smaller measurement from the larger measurement, then divide the difference by two. The result is the amount of offset that should exist between the front and rear tires on both sides.

4 If a string is used, have your assistant hold one end of it about half way between the floor and the rear axle, touching the rear sidewall of the tire.

5 Run the other end of the string forward and pull it tight so that it is roughly parallel to the floor. Slowly bring the string into contact with the front sidewall of the rear tire, then turn the front wheel until it is parallel with the string. Measure the distance from the front tire sidewall to the string.

6 Repeat the procedure on the other side of the motorcycle. The distance from the front tire sidewall to the string should be equal on both sides.

7 As was previously pointed out, a perfectly straight length of wood may be substituted for the string. The procedure is the same.

8 If the distance between the string and tire is greater on one side, or if the rear wheel appears to be cocked, first check the condition of the swingarm bearings (see Chapter 6). If the bearings are not worn, the swingarm or frame may be bent.

9 If the front-to-back alignment is correct, the wheels still may be out of alignment vertically.

10 Using the plumb bob, or other suitable weight, and a length of string, check the rear wheel to make sure it is vertical. To do this, hold the string against the tire upper sidewall and allow the weight to settle just off the floor. When the string touches both the upper and lower tire sidewalls and is perfectly straight, the wheel is vertical. If it is not, place thin spacers under one leg of the main stand.

11 Once the rear wheel is vertical, check the front wheel in the same manner. If both wheels are not perfectly vertical, the frame and/or major suspension components are bent.

## 15 Front wheel - removal and installation

### *Removal*

*Refer to illustrations 15.1, 15.9, 15.10 and 15.11*

1 Place the motorcycle on its main stand, then raise the front wheel off the ground by tying down the rear of the machine or using a jackstand under the engine **(see illustration).** On models without a main stand, remove the belly fairing (see Chapter 6) and place a floor jack, with a wood block on the jack head, under the crankcase; raise the jack to lift the wheel off the ground.

#### Sabre models

2 On 1100 models and 1982/83 750 Sabres, remove its set screw and release the speedometer sensor unit from the left side of the axle. On 1984/85 700 Sabres, remove the set screw and withdraw the speedometer cable from the drive unit. Release its wiring or cable (as applicable) from the guide on the left caliper bracket.

3 Remove the two caliper bracket-to-fork slider bolts and withdraw the right caliper complete with its bracket from the slider. Support the caliper so that it does not hang by its hose. **Note:** *Place a wood or plastic wedge between the brake pads to prevent their accidental expulsion if the brake lever is operated.*

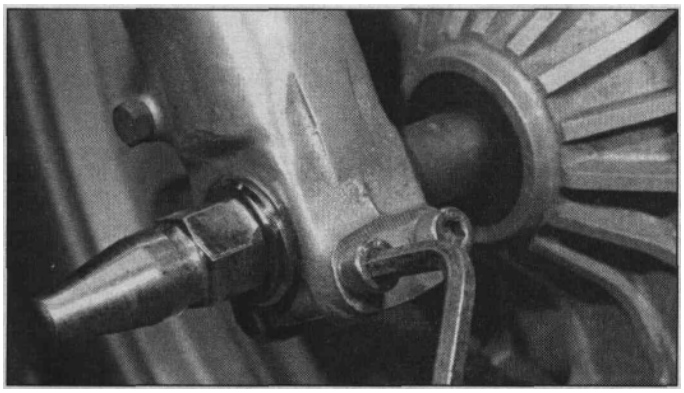
4 Loosen the axle clamp bolts (700/750) or axle pinch bolt (1100) **on** the right side, then unscrew and withdraw the axle from the right side.

#### 1982 through 1986 Magna models

5 Remove its set screw and pull the speedometer cable out of the speedometer drive unit.

6 Remove the two caliper-to-caliper bracket bolts from each caliper and slide the calipers off the disc; support their hoses to prevent strain on them. **Note:** *Place a wood or plastic wedge between the brake pads to prevent their accidental expulsion if the brake lever is operated.*

7 Loosen the axle pinch bolt on the right side, then unscrew and withdraw the axle from the right side.



**15.9 Axle clamp bolts on 1987 and 1988 700/750 Magnas**

### 1987 and 1988 700/750 Magna models

8 Remove its set screw and pull the speedometer cable out of the speedometer drive unit.

9 Loosen the axle pinch bolts on the left, then right side, remove the axle nut from the right side and pull the axle out from the left side **(see illustration).** Lower the wheel out of the brake caliper.

### All models

10 Remove the spacer from the right side of the wheel and the speedometer drive from the left side **(see illustration). Caution:** *Don't lay the wheel down and allow it to rest on one of the discs - the disc could become warped. Set the wheel on wood blocks so the disc doesn't support the weight of the wheel.* **Note:** *Do not operate the front brake lever with the wheel removed.*

11 If the axle is corroded, remove the corrosion with fine emery cloth. Set the axle on V-blocks and measure the runout with a dial test indicator; if runout exceeds the service limit, replace the axle **(see illustration).**

12 Check the condition of the wheel bearings (see Section 17).

## *Installation*

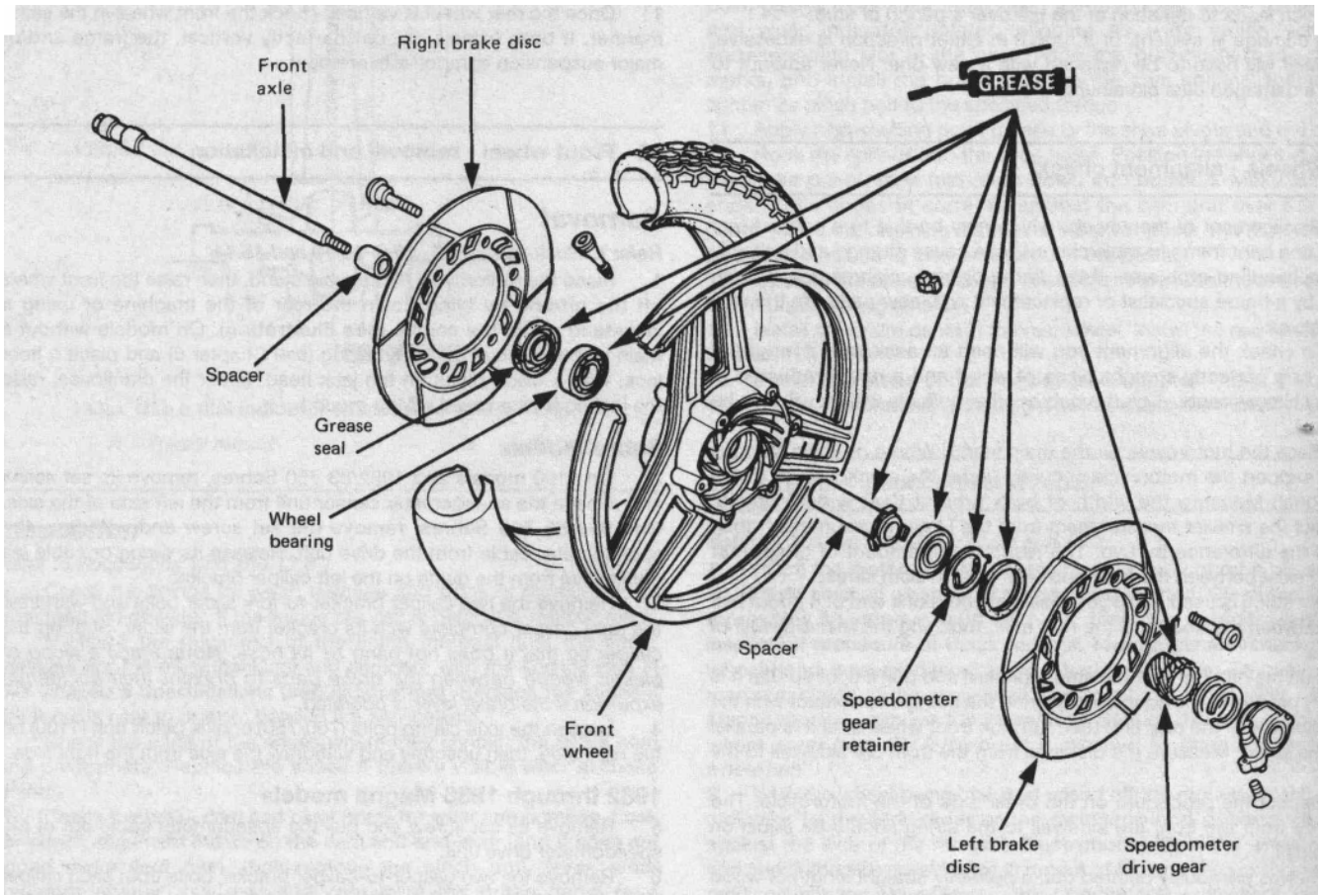
*Refer to illustrations 15.14 and 15.16*

13 Fit the speedometer drive unit to the left side wheel aligning its drive gear slots with the driveplate tabs. Install the spacer in the right side of the wheel.

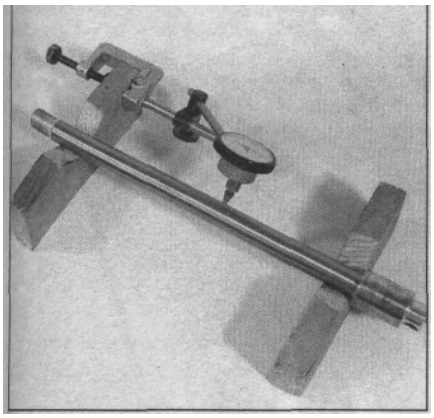
14 Maneuver the wheel into position. Apply a thin coat of grease to the axle. If the axle clamp was removed on 700/750 Sabre models, install it with its cast arrow facing forward, but leave its nuts loose at this stage **(see illustration).**

15 Lift the wheel into position, guiding the disc(s) between the brake pads on models where the calipers were not removed. Check that the right side spacer remains in place and position the speedometer drive unit so that its lug butts against the back of the cast lug on the left slider.

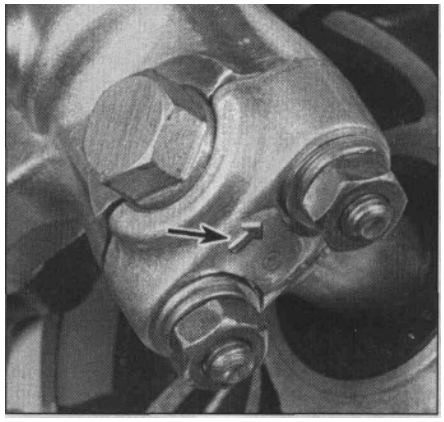
16 On 1982 through 1986 models, slide the axle into position from the right side and thread it into the threads of the left slider; tighten it to




**15.10 Front wheel components**

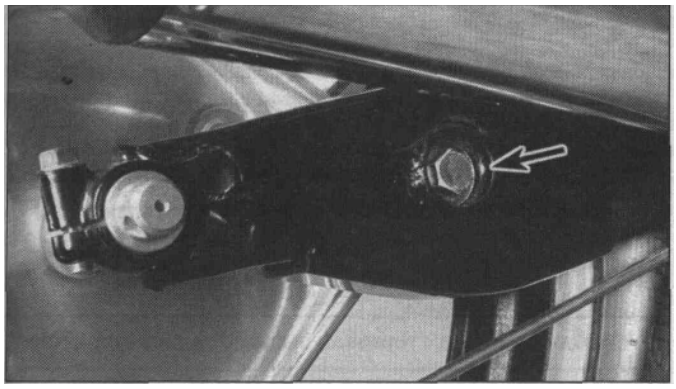


15.11 Measuring wheel axle runout

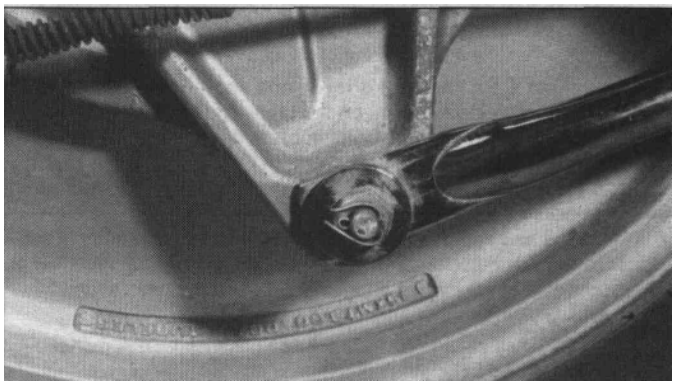


15.14 Arrow mark must face forward on 700/750 Sabre axle clamp

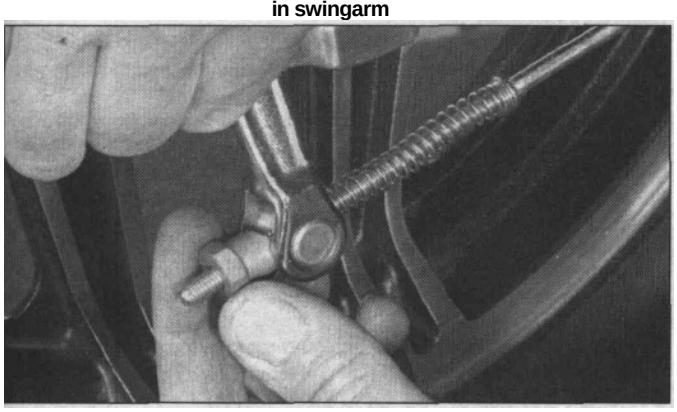
15.16 Measuring disc-to-caliper bracket clearance



16.3 Brake stopper bolt (arrow) is hidden behind cover in swingarm



16.4 Brake torque arm is retained to brake panel by split pin, nut and pivot bolt on 1985-on models



16.5 Fully unscrew the rear brake adjusting nut from the brake rod

the specified torque. If they were removed, install the calipers on the brake discs and tighten their mounting bolts to the specified torque. Using a 0.7 mm (0.028 in) feeler blade, measure the clearance between the right caliper bracket and the brake disc; if the clearance is less than the gauge thickness, pull the right slider outwards at the axle and leave it in place while the clamp or pinch bolts are tightened **(see illustration).** Tighten the pinch bolt or nuts to the specified torque, noting that on 700/750 models the forward nut on the clamp must be fully tightened, followed by the rear nut.

17 On 1987 and 1988 700/750 models, insert the axle from the left side, install the nut and tighten it to the specified torque.

18 Connect the speedometer cable or sensor to the drive unit and securely tighten its retaining screw. Loop the cable/wire through the wire guide on the left caliper bracket.

19 Remove the support from under the engine and rest the front wheel on the ground. Pump the front forks a few times to settle all components in position.

## 16 Rear wheel - removal and installation

### *Removal*

#### 700/750 models

*Refer to illustrations 16.3, 16.4, 16.5 and 16.6*

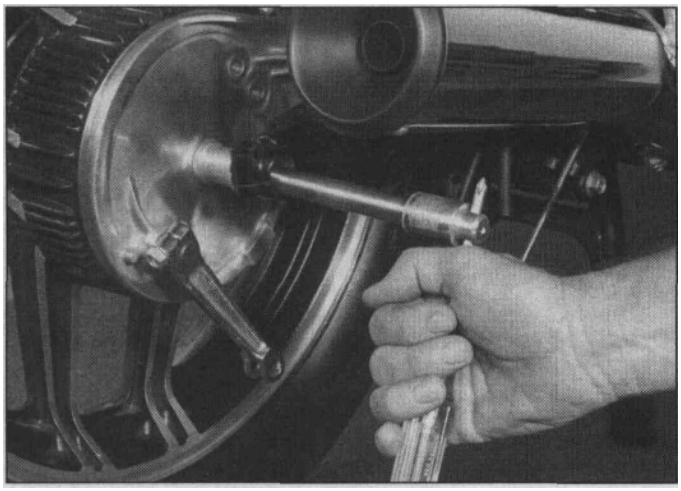
1 Set the bike on its main stand. On models without a main stand, place a floor jack, with a wood block on the jack head, under the rear of the engine and raise it so that the rear wheel is off the ground; support the bike securely using a jackstand.

2 Remove the rear axle nut on the left side of the wheel.

3 On Sabres and 1982 through 1984 Magnas, remove the plastic cover in the right side of the swingarm to gain access to the brake stopper bolt, then remove the bolt **(see illustration). Note:** *Hold the brake panel with your hand so the stopper bolt will come out freely.*

4 On 1985-on Magnas, remove the cotter pin (split pin), plain and rubber washers and pivot bolt from the brake torque arm end, and lower the torque arm away from the brake panel **(see illustration).**

5 While pushing forward on the rear brake lever to compress the spring, remove the rear brake adjusting nut and disengage the brake rod from the brake lever pivot trunnion **(see illustration).** Remove the



**16.6 Use a bar through the axle head to pull it from position**

pivot trunnion from the brake lever and thread the spring, pivot trunnion and adjusting nut back on the brake rod for safekeeping.

6 Loosen the axle pinch bolt located on the right side of the swingarm. Insert a screwdriver through the right end of the rear axle and pull the axle out **(see illustration).** Do not lose the spacer as the axle is withdrawn.

7 With the axle removed, pull the wheel (with the brake panel still in place) to the right, separating it from the final drive unit. Work it out toward the rear by passing it on the right side of the rear fender.

### 1100 models

8 Set the bike on its main stand.

9 Remove the rear axle nut on the left side of the wheel.

10 On Sabre models, remove the two caliper-to-bracket bolts and slip the caliper off the brake disc. Support it so that it doesn't hang by its hose.

11 Loosen the axle pinch bolt on the right end of the swingarm and withdraw the axle from the right side.

12 Pull the wheel to the right to separate it from the final drive unit. Work it out toward the rear by passing it on the right side of the rear fender. **Caution:** *Don't lay the wheel down and allow it to rest on the disc; it could become warped. Set the wheel on wood blocks so the disc doesn't support the weight of the wheel. Do not operate the brake pedal with the wheel removed.*

### All models

13 If the axle is corroded, remove the corrosion with fine emery cloth. Set the axle on V-blocks and measure the runout with a dial test indicator; if runout exceeds the service limit, replace the axle **(see illustration 15.11).**

14 Check the condition of the wheel bearings (see Section 17).

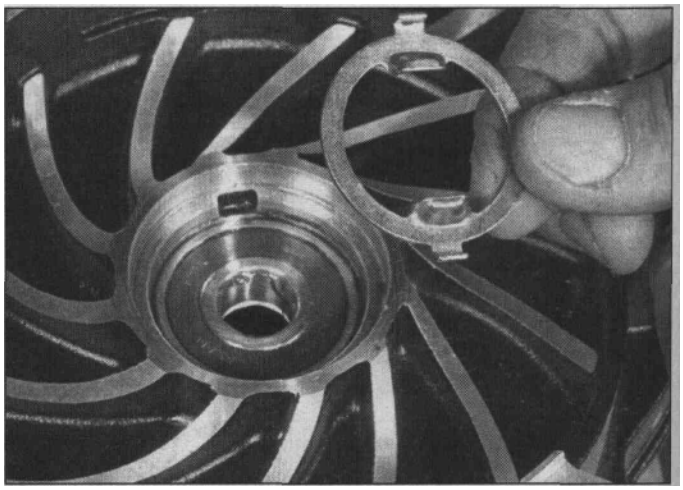
## *Installation*

15 Installation is the reverse of the removal procedure, noting the following. **Note:** *Honda advise that the three final drive unit-to-swingarm nuts be loosened very slightly to ease axle installation.*

*a) Apply multi-purpose grease (Honda specify type NLGI No. 2 grease with $M_0S2$ to the splines of the final drive flange attached to the left side of the hub.*

*b) Apply a thin coat of grease to the axle before installing it, then tighten its nut to the specified torque. Tighten the final drive-to-swingarm nuts to the specified torque (see Chapter 6 Specifications) once the axle has been installed.*

*e) Tighten the brake panel stop bolt (early 700/750s) or torque arm pivot bolt nut (later 700/750s) to the specified torque; install a new cotter pin (split pin) in the torque arm pivot bolt and bend its ends to secure the nut.*



**17.13 Speedometer driveplate tangs should fit in hub cutouts**

*d) Tighten the brake caliper bolts (1100 Sabre) to the specified torque.*

*e) Tighten the axle* pinch bolt to *the specified torque.*

*f) Adjust the rear brake freeplay on 700/750 models* (see Chapter 1).

16 Operate the brake pedal to bring the pads back into contact with the disc on 1100 models. Check brake operation on all models before riding the motorcycle.

## 17 Wheel bearings - removal, inspection and installation ***Front wheel bearings***

*Refer to illustration 17.13*

**Note:** Always *replace the wheel bearings in pairs. Never replace the bearings individually.*

1 Remove the wheel (see Section 15),

2 Set the wheel on blocks so as not to allow the weight of the wheel rest on the brake discs.

3 Remove the speedometer drive unit and spacer from the wheel hub **(see illustration 15.10).**

4 Using a flat-bladed screwdriver, pry out the grease seal from the left side of the wheel, then withdraw the speedometer driveplate.

5 Pry out the grease seal from the right side of the wheel.

6 Using a metal rod (preferably a brass drift punch) inserted through the center of the hub bearing, tap evenly around the inner race of the opposite bearing to drive it from the hub. The bearing spacer will also come out.

7 Lay the wheel on its other side and remove the remaining bearing using the same technique.

8 If the bearings are of the unsealed type or only sealed on one side, clean them with a high flash-point solvent (one which won't leave any residue) and blow them dry with compressed air (don't let the bearings spin as you dry them). Apply a few drops of oil to the bearing. **Note:** *If the bearing is sealed on both sides don't attempt to clean it.*

9 Hold the outer race of the bearing and rotate the inner race - if the bearing doesn't turn smoothly, has rough spots or is noisy, replace it with a new one.

10 If the bearing checks out okay and was not damaged on removal from the hub, wash it in solvent once again and dry it, then pack the bearing with high-quality wheel bearing grease.

11 Thoroughly clean the hub area of the wheel. Install the bearing into the recess in the hub, with the marked or sealed side facing out. Using a bearing driver or a socket large enough to contact the outer race of the bearing, drive it in until it's completely seated.

12 Turn the wheel over and install the bearing spacer. Unless the

bearings are sealed on both sides, pack the remaining space no more than 2/3 full of high-melting point wheel bearing grease. Once the grease is packed in, driving the second bearing into place as described above.

13 Fit the speedometer driveplate to the left side of the wheel ensuring its locating tangs are correctly located in the hub slots **(see illustration).**

14 Install new grease seals, using a seal driver, large socket or a flat piece of wood to drive them into place.

15 Fit the speedometer drive unit to the left side of the wheel aligning its drive gear slots with the driveplate tabs. Install the spacer in the right side of the wheel. Clean off all grease from the brake disc(s) using acetone or brake system cleaner then install the wheel as described in Section 15.

## *Rear wheel bearings*

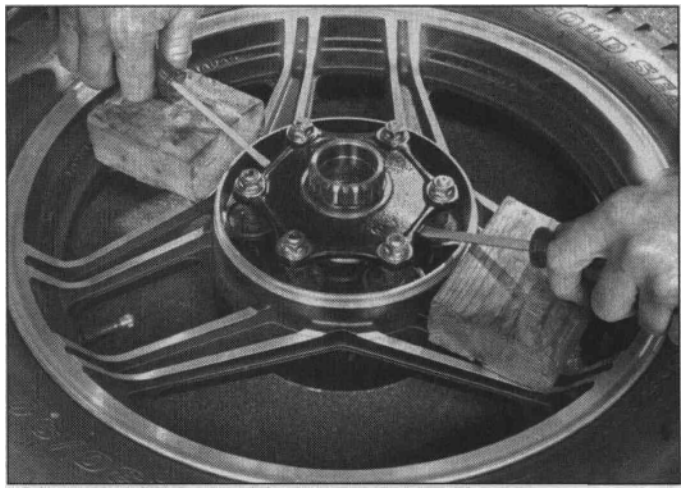
Note: *Always replace the wheel bearings in pairs. Never replace the bearings individually.*

*Refer to illustrations 17.18a, 17.18b 17.19, 17.20, 17.22a, 17.22b and 17.22c*

16 Remove the rear wheel (see Section 16). On 700/750 models, lift out the brake panel.

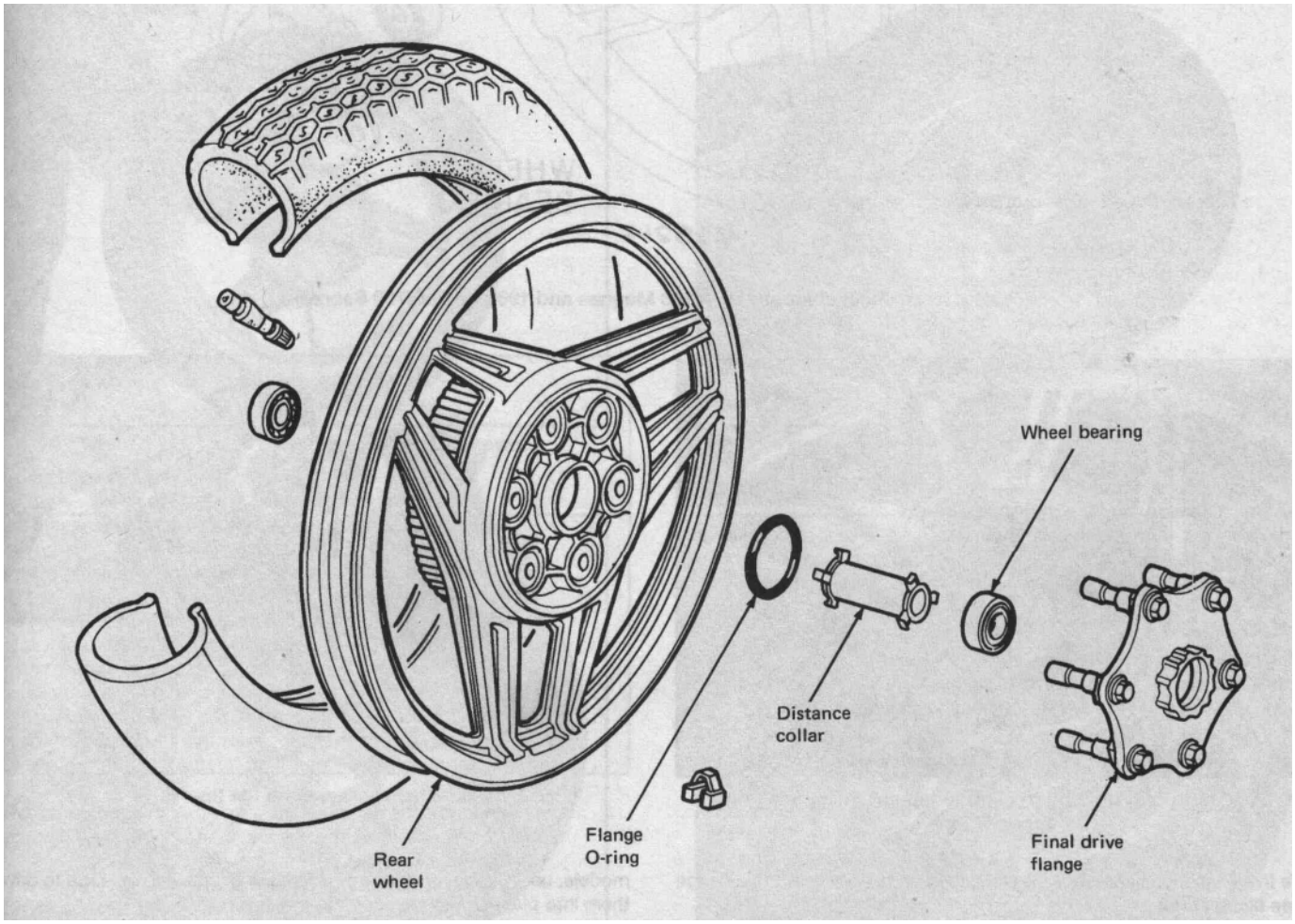
17 On 1100 models remove the brake disc (see Section 8) and pry out the spacer and grease seal on that side.

18 On 1100 Sabres, 700/750 Magnas and 1982 750 Sabres, lever the final drive flange out of the hub left side, leaving the rubber dampers in place in the wheel hub **(see illustrations). Caution:** *Do not attempt to unscrew the flange nuts - the posts are a press fit during manufacture and the nuts staked in place for security.*

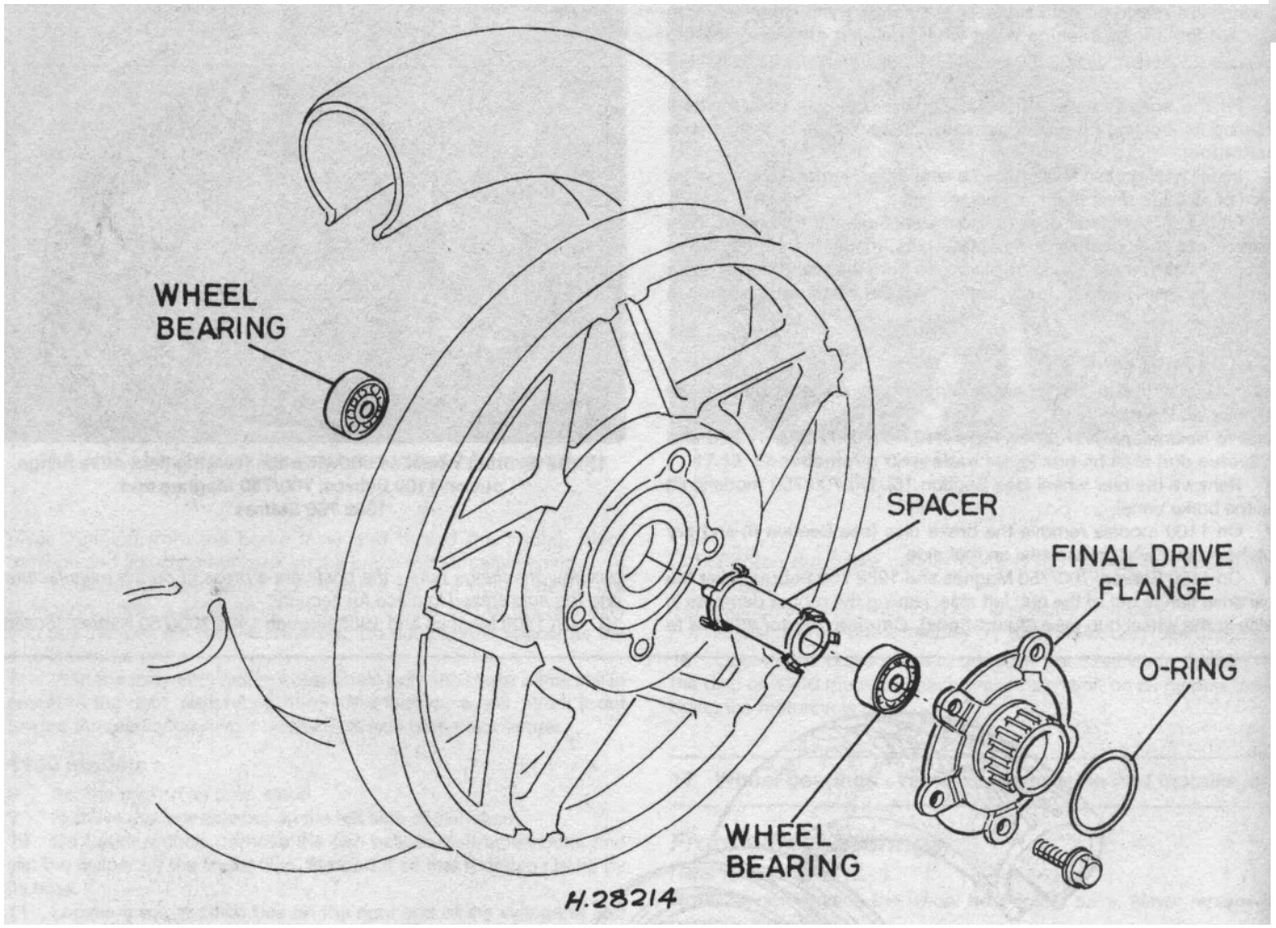


**17.18a Protect wheel as shown when levering final drive flange out on 1100 Sabres, 700/750 Magnas and 1982 750 Sabres**

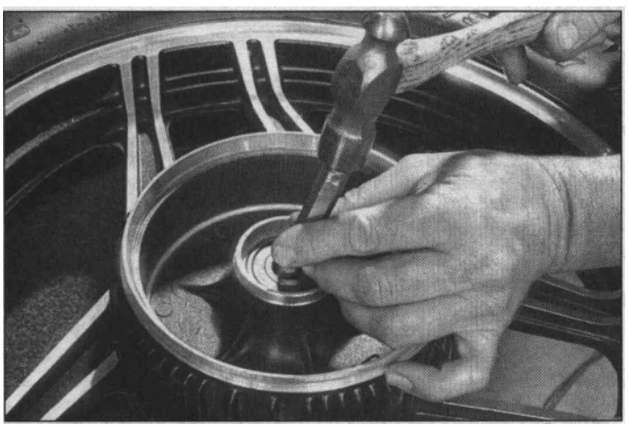
19 On 1100 Magnas and 1983 through 1985 700/750 Sabres, loosen



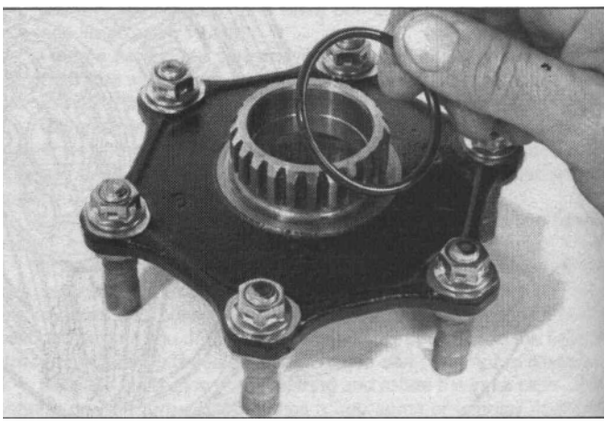

**17.18b Rear wheel components (1100 Sabres, 700/750 Magnas and 1982 750 Sabres)**




**17.19 Rear wheel components (1100 Magnas and 1983-on 700/750 Sabres)**



**17.20 Pass a drift through the hub to tap out the bearing on the opposite side**



**17.22a Install a new O-ring on the final drive flange**

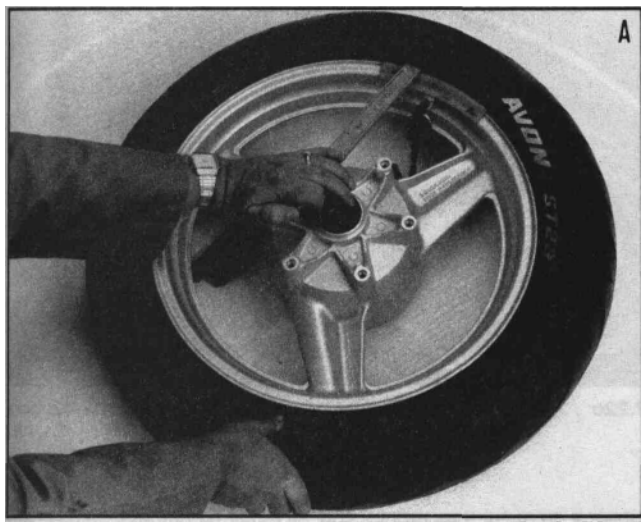
the five final drive flange bolts evenly, then lift out the final drive flange **(see illustration).**

20 Remove, inspect and install the bearings as described above in Steps 6 through 12 **(see illustration).**

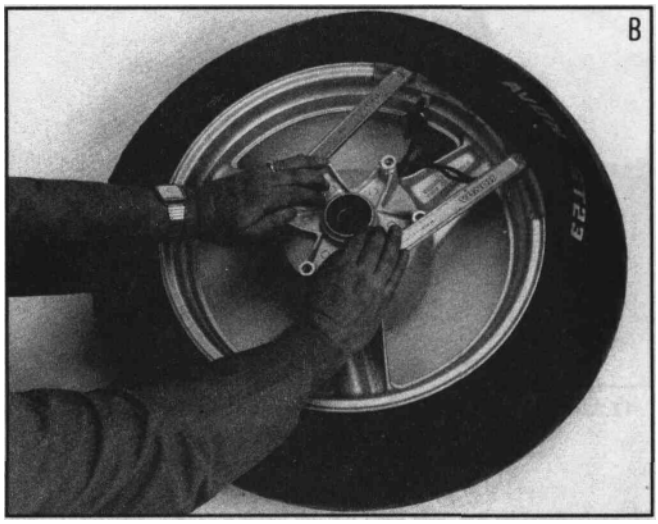
21 Install a new grease seal to the right side of the wheel on 1100 models, using a seal driver, large socket or a flat piece of wood to drive them into place. Fit the spacer into the seal.

22 Install a new O-ring on the final drive flange and apply a smear of grease to the O-ring. On 1100 Magnas and 1983-on 700/750 Sabres, install the drive flange to the wheel and tighten the bolts in a criss-

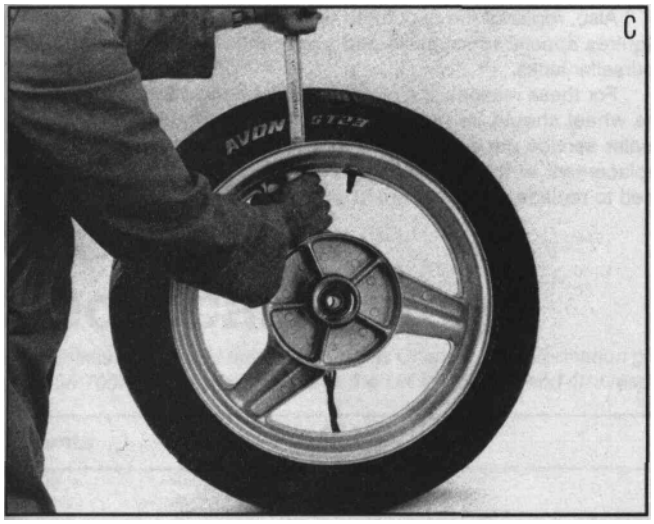
# TIRE CHANGING SEQUENCE - TUBELESS TIRES



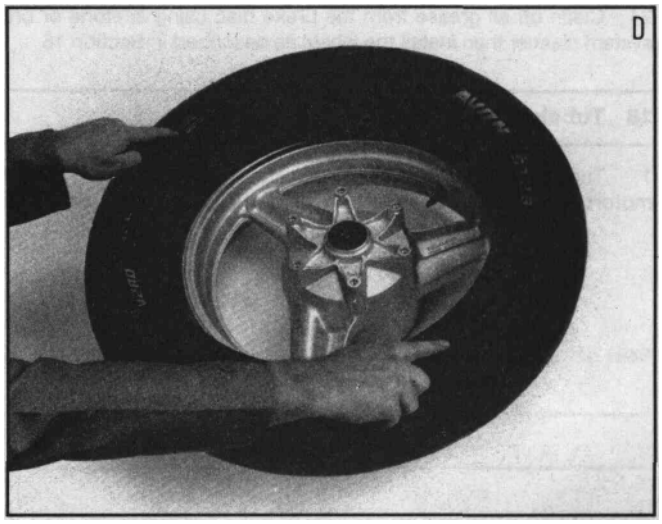

Deflate tire. After releasing beads, push tire bead into well of rim at point opposite valve. Insert lever next to valve and work bead over edge of rim.



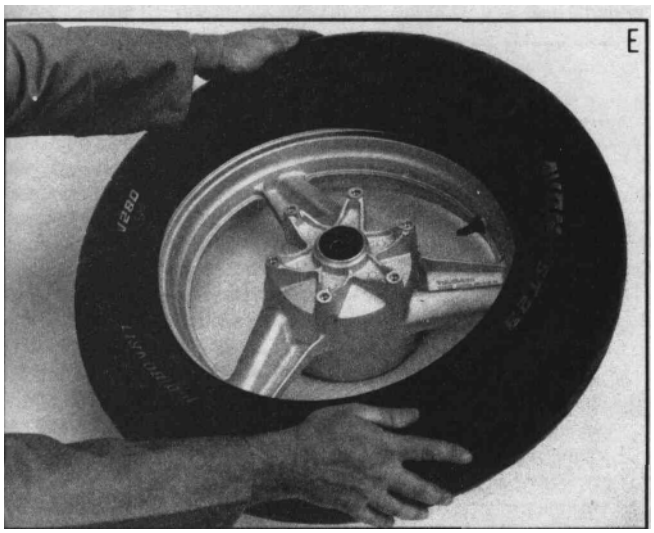

Use two levers to work bead over edge of rim. Note use of rim protectors.



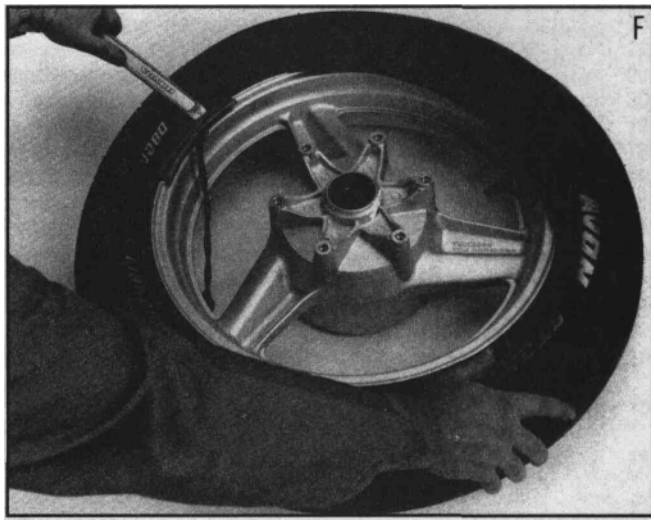

When first bead is clear, remove tire as shown.



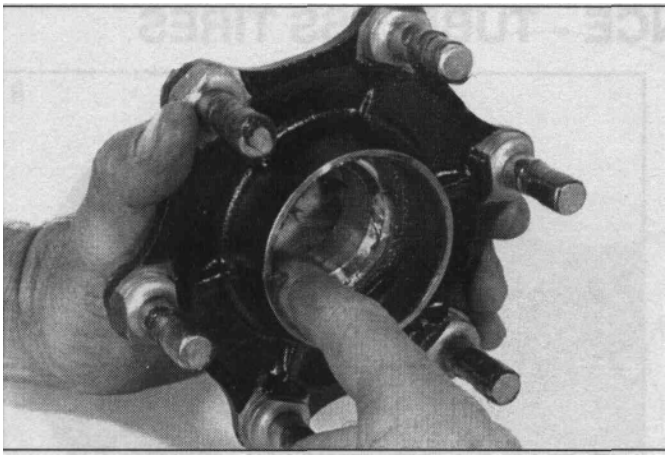

Before installing, ensure that tire is suitable for wheel. Take note of any sidewall markings such as direction of rotation arrows.



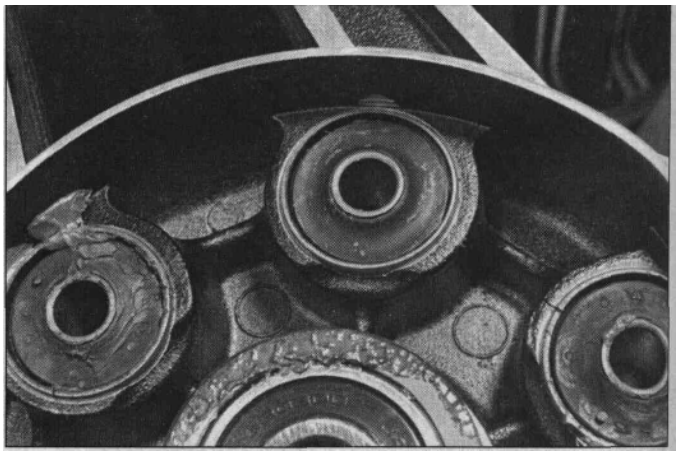

Work first bead over the rim flange.




Use a tire lever to work the second bead over rim flange.



**17.22b Grease the flange posts and inner face on 1100 Sabres, 700/750 Magnas and 1982 750 Sabres ...**



**17.22c ... and insert the flange posts into the cush drive rubbers**

cross pattern to the specified torque (where given). On 1100 Sabres, 700/750 Magnas and 1982 750 Sabres apply grease to the posts and install the drive flange **(see illustrations).**

23 On 1100 models, refit the disc to the rear wheel (see Section 8).

24 Clean off all grease from the brake disc using acetone or brake system cleaner then install the wheel as described in Section 16.

## 18 Tubeless tires - general information

1 Tubeless tires are used as standard equipment on this motorcycle. They are generally safer than tube-type tires but if problems do occur they require special repair techniques.

2 The force required to break the seal between the rim and the bead of the tire is substantial, and is usually beyond the capabilities of an individual working with normal tire irons.

3 Also, repair of the punctured tire and installation on the wheel rim requires special tools, skills and experience that the average do-it-yourselfer lacks.

4 For these reasons, if a puncture or flat occurs with a tubeless tire, the wheel should be removed from the motorcycle and taken to a dealer service department or a motorcycle repair shop for repair or replacement of the tire. The accompanying color illustrations can be used to replace a tubeless tire in an emergency.