HONDA

PA50 Camino

**49cc. 1976 to 1987 UK models,
1978 to 1980 US models**

OWNERS WORKSHOP MANUAL

Haynes

THE BOOK

Honda PA50 Camino Owners Workshop Manual

by Chris Rogers

with an additional Chapter on the 1981 to 1987 models

by Jeremy Churchill

Models covered

PA50 L Camino. 49cc. UK July 1976 to February 1978
PA50 VL Camino. 49cc. UK July 1976 to November 1978, September 1984 to 1986
PA50 DX VL Camino Deluxe. 49cc. UK June 1978 to February 1984
PA50 DX VLS Camino Sport. 49cc. UK April 1981 to June 1983
PA50 DX VLM Camino Deluxe Special. 49cc. UK February 1982 to February 1984
PA50 VLC Camino. 49cc. May 1986 on
PA50 I and II. 49cc. US 1978 to 1980

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The Avon Rubber Company kindly supplied information and technical assistance on tyre fitting; NGK Spark Plugs (UK) Limited supplied information on sparking plug maintenance and electrode conditions, and Renold Limited gave advice on chain care and renewal.

Last, but not least, thanks are due to all of those people at Sparkford who helped in the production of this manual. Particularly Alan Jackson and Tony Steadman who carried out the mechanical work and took the photographs respectively and Mansur Darlington who edited the text.

About this manual

The purpose of this manual is to present the owner with a concise and graphic guide which will enable him to tackle any operation from basic routine maintenance to a major overhaul. It has been assumed that any work would be undertaken without the luxury of a well-equipped workshop and a range of manufacturer's service tools.

To this end, the machine featured in the manual was stripped and rebuilt in our own workshop, by a team comprising a mechanic, a photographer and the author. The resulting photographic sequence depicts events as they took place, the hands shown being those of the author and the mechanic.

The use of specialised, and expensive, service tools was avoided unless their use was considered to be essential due to risk of breakage or injury. There is usually some way of improvising a method of removing a stubborn component, provided that a suitable degree of care is exercised.

The author learnt his motorcycle mechanics over a number of years, faced with the same difficulties and using similar facilities to those encountered by most owners. It is hoped that this practical experience can be passed on through the pages of this manual.

Where possible, a well-used example of the machine is chosen for the workshop project, as this highlights any areas which might be particularly prone to giving rise to problems. In this way, any such difficulties are encountered and resolved before the text is written, and the techniques used to deal with them can be incorporated in the relevant section. Armed with a working knowledge of the machine, the author undertakes a considerable amount of research in order that the maximum amount of data can be included in this manual.

Each Chapter is divided into numbered sections. Within these sections are numbered paragraphs. Cross reference throughout the manual is quite straightforward and logical. When reference is made 'See Section 6.10' it means Section 6, paragraph 10 in the same Chapter. If another Chapter were intended the reference would read, for example, 'See Chapter 2, Section 6.10'. All the photographs are captioned with a section/paragraph number to which they refer and are relevant to the Chapter text adjacent.

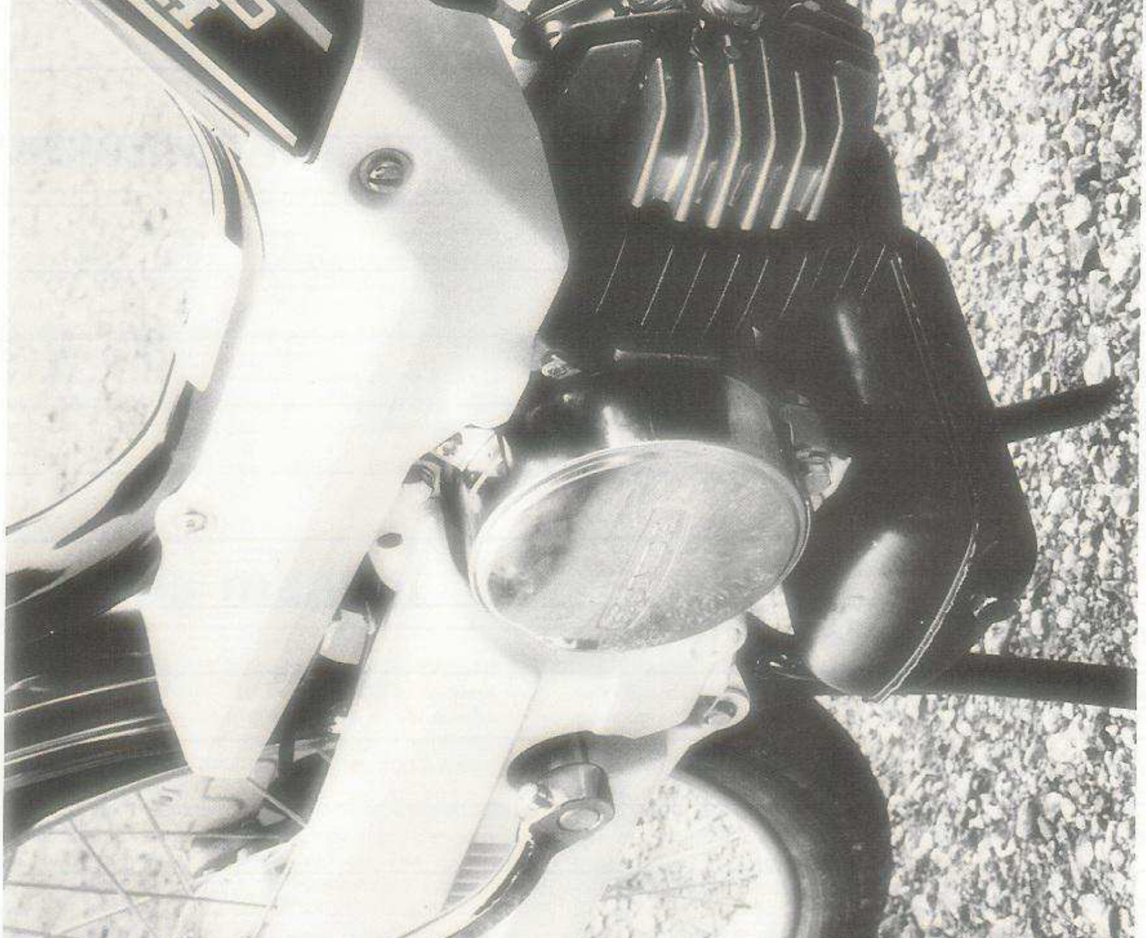
Figures (usually line illustrations) appear in a logical and numerical order, within a given Chapter. Fig. 1.1 therefore refers to the first figure in Chapter 1.

Left-hand and right-hand descriptions of the machines and their components refer to the left and right of a given machine when the rider is seated normally.

Motorcycle manufacturers continually make changes to specifications and recommendations, and these, when notified, are incorporated into our manuals at the earliest opportunity.

Whilst every care is taken to ensure that the information in this manual is correct no liability can be accepted by the author or publishers for loss, damage or injury caused by any errors in or omissions from the information given.

Contents



Engine close-up – Honda Camino

Right-hand view of 1980 Honda PA50 Camino

Left-hand view of 1980 Honda PA50 Camino

Introduction to the Honda PA 50 Camino

The present Honda empire, which started in a wooden shack in 1947, now occupies vast factory space, covering all aspects of modern motorcycle design, research, testing and production. The facilities available to the large work force are second to none.

The first motorcycle to be imported into the UK in the early 1960s, the 250 cc twin cylinder 'Dream', was the thin edge of the wedge which has been the Japanese domination of the motorcycle industry. Strange it looked too, to Western eyes, with pressed steel frame, and 'square' styling.

There was, however, nothing strange about the way these modern machines were accepted, and sales were impressive. The trend set by these early machines, that of almost unheard of sophistication, especially on machines of small engine capacity, allied to a remarkably reasonable selling price and a lively performance, ensured their success and started the name Honda on its way to becoming known in virtually every home in the country.

Honda now offer machines to the public to cover every conceivable aspect of motorcycling. These include prestigious sports machines of transverse four and six-cylinder engine configurations, a specialized flat four engine tourer, two-stroke engine moto-cross machines, a plush 500 cc V-twin engine sports/touring machine, and even a three-wheeled, go-anywhere, off-road fun machine.

Although better known for their use of small single- cylinder four-stroke engines in the machines that form prehensive range of commuter machines, Honda in the PA 50 Camino range of mopeds a two-str basic design. The mechanical simplicity of this ty combined with the overall simplicity of the transm and cycle parts, make the Camino a light, easy easy to maintain moped of conventional design.

First imported into the UK market in July, 19 50 L Camino, the machine featured a single spe clutch which transmitted drive to the rear wh gearbox via a conventional V-belt. This model was in February, 1978.

In order to provide a machine with better hillc and also the capacity for the engine to cope working loads, Honda modified the basic PA 5 include a form of variable ratio (V-matic) trans model, known as the PA 50 VL Camino was also the UK in July, 1976, and discontinued in Nover

The PA 50 DX VL Camino, was first imported i June 1978 and is similar to the PA 50 VL model front basket fitted as standard equipment.

The equivalent Camino models imported into 1978) are the PA 50 I and PA 50 II models.

All 1981 on models (with the exception 50 DX VL, which remained in production unc discontinued in 1984) are covered in Chapter 7 of

Model dimensions and weight

Length	1650 mm (65 in)
Width	620 mm (24 in)
Height	985 mm (39 in)
Wheelbase	1055 mm (42 in)
Dry weight	45 kg (99 lb)

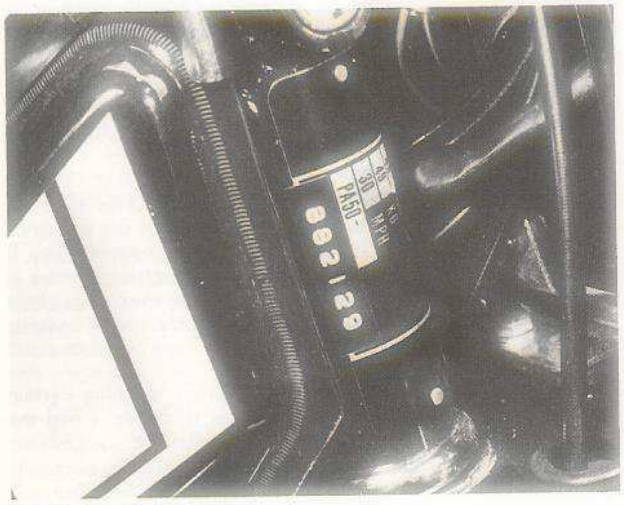
Ordering spare parts

When replacement parts are required for your Honda, it is advisable to deal direct with a recognised Honda agent or with the area distributor. They are better placed to supply the parts ex-stock and should have the technical experience that may not be available with other suppliers. When ordering parts, always quote the engine and frame numbers in full, since these will identify the model and its date of manufacture. It will sometimes help if the old part is presented when the replacement is ordered, to aid correct identification.

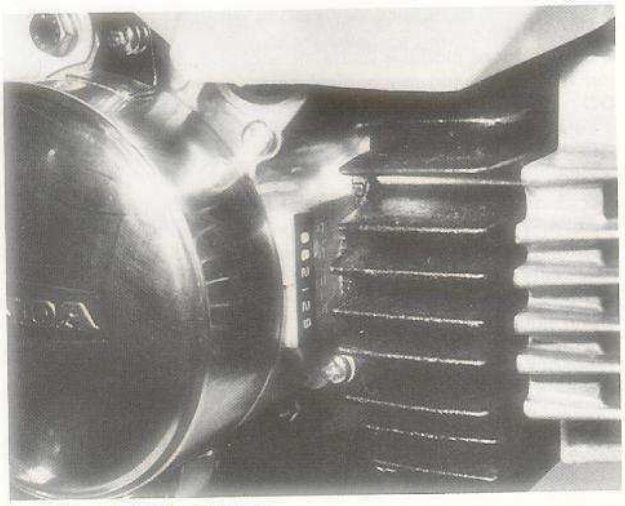
Always fit replacement parts of Honda manufacture and do not be tempted to use pattern parts. Although the pattern parts may appear similar they often give inferior service and may prove more expensive in the long run. In addition the use of parts not supplied by Honda may invalidate subsequent warranty claims.

The engine number is stamped on the right-hand crankcase half, adjacent to the cylinder barrel. The frame number is stamped on the right-hand side of the steering head.

Some of the more expendable parts such as sparking plugs, bulbs, tyres, oil and greases etc can be obtained from accessory shops and motor factors, who have convenient opening hours, and can often be found not far from home. It is also possible to obtain parts on a Mail Order basis from a number of specialists who advertise regularly in the motorcycle magazines.



Location of frame number.



Location of engine number

Safety First!

Professional motor mechanics are trained in safe working procedures. However enthusiastic you may be about getting on with the job in hand, do take the time to ensure that your safety is not put at risk. A moment's lack of attention can result in an accident, as can failure to observe certain elementary precautions.

There will always be new ways of having accidents, and the following points do not pretend to be a comprehensive list of all dangers; they are intended rather to make you aware of the risks and to encourage a safety-conscious approach to all work you carry out on your vehicle.

Essential DOs and DON'Ts

DON'T start the engine without first ascertaining that the transmission is in neutral.

DON'T suddenly remove the filler cap from a hot cooling system – cover it with a cloth and release the pressure gradually first, or you may get scalded by escaping coolant.

DON'T attempt to drain oil until you are sure it has cooled sufficiently to avoid scalding you.

DON'T grasp any part of the engine, exhaust or silencer without first ascertaining that it is sufficiently cool to avoid burning you.

DON'T allow brake fluid or antifreeze to contact the machine's paintwork or plastic components.

DON'T syphon toxic liquids such as fuel, brake fluid or antifreeze by mouth, or allow them to remain on your skin.

DON'T inhale dust – it may be injurious to health (see *Asbestos* heading).

DON'T allow any spilt oil or grease to remain on the floor – wipe it up straight away, before someone slips on it.

DON'T use ill-fitting spanners or other tools which may slip and cause injury.

DON'T attempt to lift a heavy component which may be beyond your capability – get assistance.

DON'T rush to finish a job, or take unverified short cuts.

DON'T allow children or animals in or around an unattended vehicle.

DON'T inflate a tyre to a pressure above the recommended maximum. Apart from overstressing the carcase and wheel rim, in extreme cases the tyre may blow off forcibly.

DO ensure that the machine is supported securely at all times. This is especially important when the machine is blocked up to aid wheel or fork removal.

DO take care when attempting to slacken a stubborn nut or bolt. It is generally better to pull on a spanner, rather than push, so that if slippage occurs you fall away from the machine rather than on to it.

DO wear eye protection when using power tools such as drill, sander, bench grinder etc.

DO use a barrier cream on your hands prior to undertaking dirty jobs – it will protect your skin from infection as well as making the dirt easier to remove afterwards; but make sure your hands aren't left slippery.

DO keep loose clothing (cuffs, tie etc) and long hair well out of the way of moving mechanical parts.

DO remove rings, wristwatch etc, before working on the vehicle – especially the electrical system.

DO keep your work area tidy – it is only too easy to fall over articles left lying around.

DO exercise caution when compressing springs for removal or installation. Ensure that the tension is applied and released in a controlled manner, using suitable tools which preclude the possibility of the spring escaping violently.

DO ensure that any lifting tackle used has a safe working load rating adequate for the job.

DO get someone to check periodically that all is well, when working alone on the vehicle.

DO carry out work in a logical sequence and check that everything is correctly assembled and tightened afterwards.

DO remember that your vehicle's safety affects that of yourself and others. If in doubt on any point, get specialist advice.

IF, in spite of following these precautions, you are unfortunate enough to injure yourself, seek medical attention as soon possible.

Asbestos

Certain friction, insulating, sealing, and other product such as brake linings, clutch linings, gaskets, etc – cont asbestos. *Extreme care must be taken to avoid inhalation dust from such products since it is hazardous to health.* If doubt, assume that they *do* contain asbestos.

Fire

Remember at all times that petrol (gasoline) is hig flammable. Never smoke, or have any kind of naked fla around, when working on the vehicle. But the risk does not e there – a spark caused by an electrical short-circuit, by t metal surfaces contacting each other, or even by sta electricity built up in your body under certain conditions c ignite petrol vapour, which in a confined space is hig explosive.

Always disconnect the battery earth (ground) termin before working on any part of the fuel or electrical system, a never risk spilling fuel on to a hot engine or exhaust.

It is recommended that a fire extinguisher of a type suitab for fuel and electrical fires is kept handy in the garage workplace at all times. Never try to extinguish a fuel or electri fire with water.

Fumes

Certain fumes are highly toxic and can quickly cau unconsciousness and even death if inhaled to any extent. Pet (gasoline) vapour comes into this category, as do the vapou from certain solvents such as trichloroethylene. Any draining pouring of such volatile fluids should be done in a w ventilated area.

When using cleaning fluids and solvents, read the instru tions carefully. Never use materials from unmarked containers they may give off poisonous vapours.

Never run the engine of a motor vehicle in an enclos space such as a garage. Exhaust fumes contain carbon mo oxide which is extremely poisonous; if you need to run t engine, always do so in the open air or at least have the rear the vehicle outside the workplace.

The battery

Never cause a spark, or allow a naked light, near t vehicle's battery. It will normally be giving off a certain amou of hydrogen gas, which is highly explosive.

Always disconnect the battery earth (ground) termin before working on the fuel or electrical systems.

If possible, loosen the filler plugs or cover when chargi the battery from an external source. Do not charge at a excessive rate or the battery may burst.

Take care when topping up and when carrying the batter The acid electrolyte, even when diluted, is very corrosive an should not be allowed to contact the eyes or skin.

If you ever need to prepare electrolyte yourself, always ad the acid slowly to the water, and never the other way roun Protect against splashes by wearing rubber gloves and goggle

Mains electricity

When using an electric power tool, inspection light e which works from the mains, always ensure that the appliance is correctly connected to its plug and that, where necessary, is properly earthed (grounded). Do not use such appliances damp conditions and, again, beware of creating a spark o applying excessive heat in the vicinity of fuel or fuel vapour.

Ignition HT voltage

A severe electric shock can result from touching certa parts of the ignition system, such as the HT leads, when th engine is running or being cranked, particularly if component are damp or the insulation is defective. Where an electron ignition system is fitted, the HT voltage is much higher an could prove fatal.

Routine maintenance

Periodic routine maintenance is a continuous process that begins immediately the machine is used. It must be carried out at specified mileage recordings or on a calendar basis if the machine is not used frequently, whichever is the sooner. Maintenance should always be regarded as an insurance policy, to help keep the machine in the peak of condition and to ensure long, trouble-free service. It has the additional benefit of giving early warning of any faults that may develop and will act as a safety check, to the obvious benefit of both rider and machine alike.

The various maintenance tasks are described under their respective mileage and calendar headings. Accompanying diagrams are provided, where necessary. It should be remembered that the interval between the various maintenance tasks serves only as a guide. As the machine gets older or is used under particularly adverse conditions, it is advisable to reduce the intervals between each check.

Some of the tasks are described in detail, where they are not mentioned fully elsewhere in the text. If a specific item is mentioned but not described in detail, it will be covered fully in the appropriate Chapter.

No special tools are required for the normal routine maintenance tasks, the tools found in the average household should suffice.

Weekly, or every 200 miles (300 km)

1 *Legal check*

Check the operation of the electrical system, ensuring that the lights and horn are working properly and that the lenses are clean. Note that in the UK it is an offence to use a vehicle on which the lights are defective. This applies even when the machine is used during daylight hours. The horn is also a statutory requirement.

Give each tyre a quick visual check for cuts or splits, and check that the depth of tread left is above that required by law.

2 *Tyre pressures*

Check the tyre pressures. Always check with the tyres cold, using a pressure gauge known to be accurate. It is recommended that a pocket pressure gauge is purchased to offset any fluctuation between garage forecourt instruments. The correct tyre pressures are:-

Front 28 psi (2.0 kg/cm²)
Rear 36 psi (2.5 kg/cm²)

3 *Control cable lubrication*

Apply a few drops of oil to the exposed lengths of inner cable at the tops of the various control cables. This will prevent the cables drying out between the more thorough lubrication given during the six monthly/2500 mile service.

Check tyre pressures using an accurate gauge

Monthly, or every 350 miles (500 km)

Complete all the checks listed in the weekly/200 mile service, and then the following additional items:

1 *Sparking plug*

Remove the sparking plug, using a proper sparking plug spanner to avoid any risk of damage to the ceramic insulator. Examine the colour and condition of the electrodes, comparing this with the sparking plug condition chart in Chapter 3. This will give an indication of the general condition of the engine. Clean the plug electrodes using a wire brush and a small magneto file or fine emery cloth. If the outer electrode is thin, or the centre electrode has been eroded excessively, the plug must be renewed. The gap can be measured with a feeler gauge, and should be 0.6 to 0.7 mm (0.024 to 0.028 in)

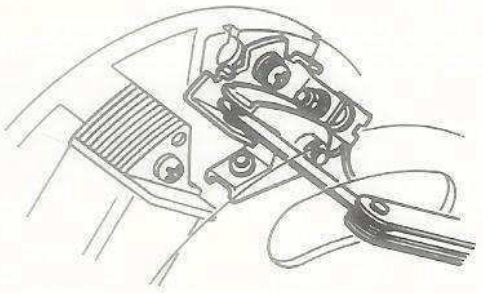
If necessary, adjust the gap by bending the outer electrode. On no account should any attempt be made to bend the inner electrode, or damage to the ceramic insulator nose will almost certainly result. Clean the sparking plug threads and wipe them with a trace of graphited grease. Refit the plug by hand, then tighten it carefully with the plug spanner, without overtightening.

2 *Contact breaker points – adjustment*

Detach the flywheel generator cover from the right-hand side of the machine so that access may be made to the contact breaker assembly. Remove the sparking plug. Rotate the engine, by turning the flywheel, until the contact breaker points are in the fully open position. The points can be viewed through the apertures in the flywheel face.

Check that the point faces are not excessively burnt or pitted. If they are, remove and renew the assembly as described in Section 5 of Chapter 3.

If the contacts are in good condition, measure the gap using a feeler gauge. A 0.35 mm (0.014 in) gauge should be a light sliding fit – the points **must** be within the range 0.3 – 0.4 mm (0.012 – 0.016 in). Should they require adjustment, slacken the securing screw *just* enough to permit the fixed contact to be moved, using a small screwdriver. Tighten the securing screw and then recheck the gap. Because no provision is given for adjustment of the ignition timing the point at which firing occurs is dependent on the contact breaker gap. Because of this, if contact breaker adjustment is made the ignition timing must be checked as a matter of course to determine whether it is still accurate.

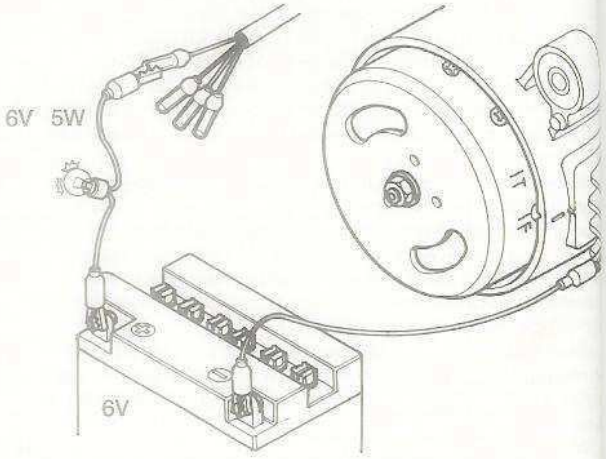


Method of measuring contact breaker gap

3 *Ignition timing*

The ignition timing should be checked only after the contact breaker gap has been checked and if necessary adjusted, for the reasons given in the preceding maintenance item. Ignition timing is checked by determining the point at which the contact breaker gap opens in relation to the position of the piston. To aid this, timing marks are scribed on the periphery of the generator rotor and an index mark in the form of a notch will be found on the periphery of the generator rotor housing in the 3 o'clock position. To verify the exact moment of contact breaker opening a battery and bulb should be interconnected with the contact breaker and the machine's wiring as follows: trace the leads which run from the generator to their snap connectors and separate the connector of the black/white wire. Connect a battery and bulb as shown in the accompanying illustration. Although a bulb of about 5 watts is recommended, it was found in practice that an ordinary torch bulb and battery served this purpose admirably. When the contact breaker opens the bulb will dim.

Rotate the generator rotor in a clockwise direction until the F mark on the rotor is aligned with the index mark on the housing wall. If the ignition timing is correct, the bulb will dim just as the F mark is reached. If the ignition timing is incorrect, slacken the contact breaker gap adjustment screw and adjust the contact breaker so that the bulb dims at the correct point. Retighten the screw. Rotate the rotor until the points are fully open and then check the gap. If the gap is within the specified range of 0.3 – 0.4 mm (0.012 – 0.016 in) all is well. If, however, the gap is outside the range it is evident that the contact breakers have worn to a point where correct ignition timing and correct contact breaker clearance cannot be maintained simultaneously. If this is the case the contact breaker assembly must be renewed as described in Chapter 3 Section 5.

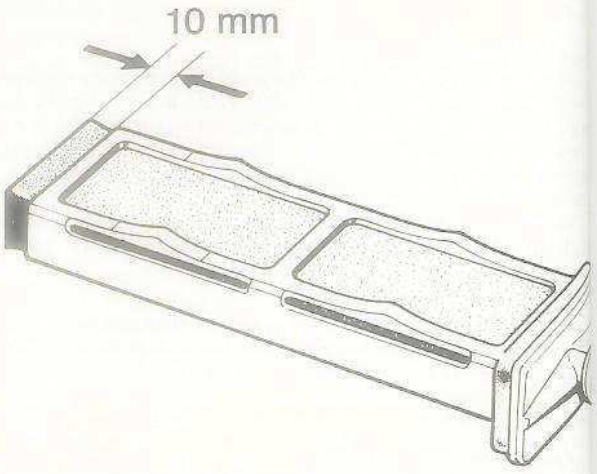


Test circuit used to determine position at which contact breaker points open

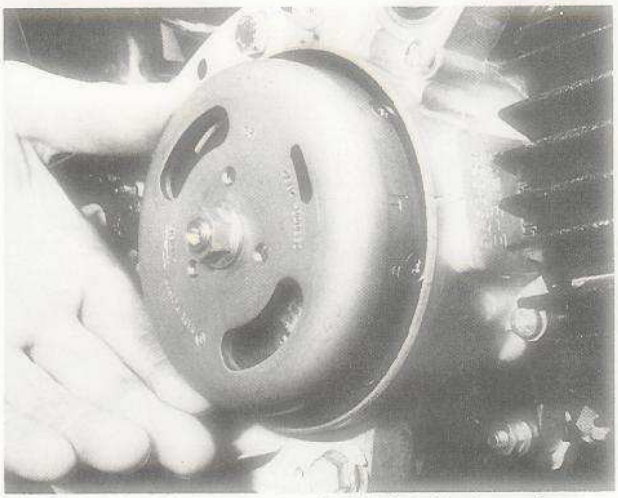
4 *Cleaning the air filter*

Remove the left-hand transmission cover, release the filter tray retaining clip and remove the tray from the machine. Withdraw the foam element from the tray, taking care not to tear the foam material. The element should be cleaned thoroughly in petrol to remove all traces of the oil and accumulated dust, and then squeezed out and allowed to dry. Reimpregnate the element with SAE 40 oil, squeezing out the excess so that the element is wet but not dripping. Do not wring out the element because this will damage the foam, necessitating its renewal.

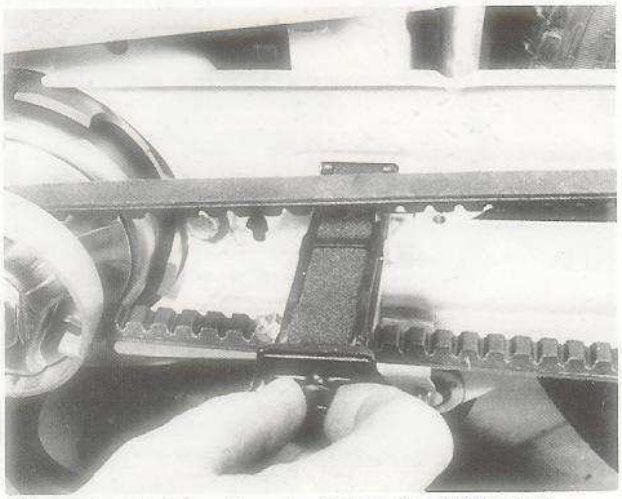
On reassembly, ensure that 10 mm (0.40 in) of the element is left protruding from the end of the tray. If the element has become damaged or hardened with age, it should be renewed as a matter of course.



Correct positioning of air filter element within tray



Note timing marks on generator flywheel and index mark on housing wall



Release the retaining clip and withdraw the air filter tray

5 *Check tighten nuts, bolts and fasteners*

Moving in a logical sequence around the machine, check to ensure that all nuts, bolts and fasteners are correctly located and secured in position. Retighten any items found to be loose and note their position to ensure they are checked at the next service interval. Ensure all locking devices, such as split-pins, are correctly fitted and in good condition.

This simple check will ensure that the risk of a component becoming detached from the machine and possibly causing a serious accident to occur is greatly reduced.

Three monthly, or every 600 miles (1000 km)

Complete all the checks listed in the weekly/200 mile service and the monthly/350 mile service, and then the following additional items:

1 *Carburettor adjustment*

Carburettor adjustment should be carried out with the machine on its centre stand and the engine at normal operating temperature. A throttle stop screw and a pilot air screw are provided to allow an even idling speed to be obtained. Start the engine and using a screwdriver, turn the pilot air screw until the highest possible tick-over speed is obtained. Experimentation should be made by first turning the screw one way and then the other. When the correct position is established, reduce the tick-over speed by turning the throttle stop screw until the engine is running at about 1800 rpm. This is the recommended tick-over speed. The location of both adjustment screws is shown in Chapter 2.

2 *Adjusting the drive belt tension – single speed models*

Provision is made on the single speed models for adjusting the tension of the drive belt. This is accomplished by moving the rear wheel in the swinging arm members to obtain the correct tension. It is important to maintain this setting; an overtight belt will place an excessive loading on the engine main bearings and the rear hub unit bearings, whilst a slack belt will allow slip to occur in the transmission.

Remove the left-hand plastic side cover to gain access to the belt. Place a finger on the upper run of the belt at a mid-point position and push down on the belt. The belt should deflect by 10 – 20 mm (0.4 – 0.8 in). Ideally, a downward loading of 5 kg (11 lb) should be applied to the bolt by suspending weights from the belt or by pulling it down with a spring balance. To adjust the belt tension, slacken the wheel to swinging arm securing bolts and move the wheel back or forwards until the correct setting is obtained. Retighten the securing bolts and check that the bolts that pass through the graduated plate are aligned on the same mark on both sides. Refit the plastic side cover.

3 *Adjusting the drive belt tension – variable ratio models*

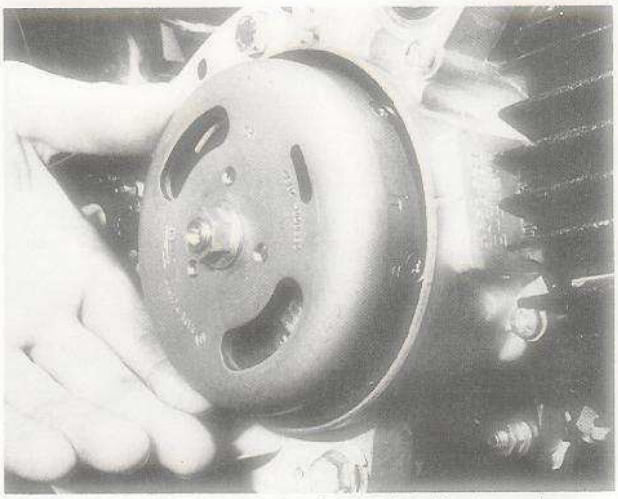
As in the single speed models, tensioning of the drive belt is accomplished by moving the rear wheel in the swinging arm members. The correct tension must be maintained; an overtight belt will place an excessive loading on the engine main bearings and the rear hub unit bearings whilst a slack belt will allow slip to occur in the transmission.

Remove the left-hand plastic side cover to gain access to the belt. Place a straight-edge across the rear face of the pulley as shown in the accompanying photograph and using a feeler gauge, measure the distance between the straight-edge and the belt. This distance should be 2 mm (0.078 in) with the belt in tension. To adjust the belt tension, loosen slightly the top two wheel to swinging arm securing bolts. Slacken the two bottom securing bolts and move the wheel backwards or forwards to obtain the correct setting. A screwdriver inserted up through the slot in the swinging arm plate below each lower securing bolt may be used as a means of levering the wheel back and forth. It should be noted that there are graduation marks above each lower securing bolt slot and that each bolt must be kept aligned in the same mark on both sides during adjustment.

3 Once the correct setting is obtained, retighten the securing bolts and turn the wheel several times to settle the belt on the pulleys. Recheck that the belt is still in tension and that the 2 mm (0.078 in) clearance has not changed. Readjust the belt tension, if necessary, and having checked the four securing bolts for tightness, refit the plastic side cover.

4 *Adjusting the pedal chain tension*

Remove the right-hand plastic side cover to expose the pedal chain and adjuster assembly. To tension the chain correctly, loosen the chain tensioner bracket securing bolt and push up on the rearmost tensioner wheel, using moderate finger pressure only. Retighten the securing bolt and refit the side cover.



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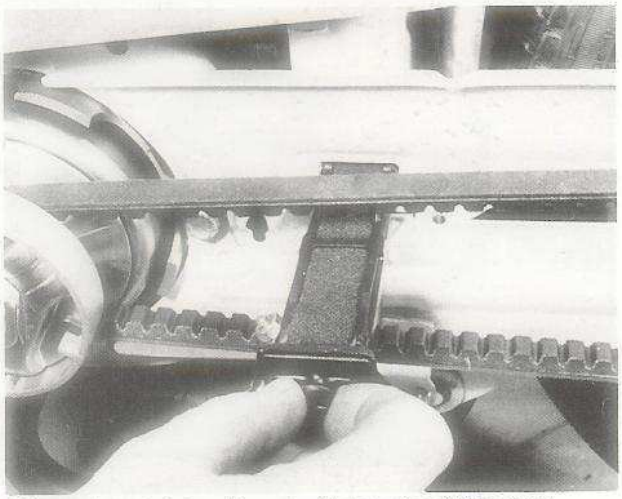

Release the retaining clip and withdraw the air filter tray

5 *Check tighten nuts, bolts and fasteners*

Moving in a logical sequence around the machine, check to ensure that all nuts, bolts and fasteners are correctly located and secured in position. Retighten any items found to be loose and note their position to ensure they are checked at the next service interval. Ensure all locking devices, such as split-pins, are correctly fitted and in good condition.

This simple check will ensure that the risk of a component becoming detached from the machine and possibly causing a serious accident to occur is greatly reduced.

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2 *Adjusting the drive belt tension – single speed models*

Provision is made on the single speed models for adjusting the tension of the drive belt. This is accomplished by moving the rear wheel in the swinging arm members to obtain the correct tension. It is important to maintain this setting; an overtight belt will place an excessive loading on the engine main bearings and the rear hub unit bearings, whilst a slack belt will allow slip to occur in the transmission.

Remove the left-hand plastic side cover to gain access to the belt. Place a finger on the upper run of the belt at a mid-point position and push down on the belt. The belt should deflect by 10 – 20 mm (0.4 – 0.8 in). Ideally, a downward loading of 5 kg (11 lb) should be applied to the bolt by suspending weights from the belt or by pulling it down with a spring balance. To adjust the belt tension, slacken the wheel to swinging arm securing bolts and move the wheel back or forwards until the correct setting is obtained. Retighten the securing bolts and check that the bolts that pass through the graduated plate are aligned on the same mark on both sides. Refit the plastic side cover.

3 *Adjusting the drive belt tension – variable ratio models*

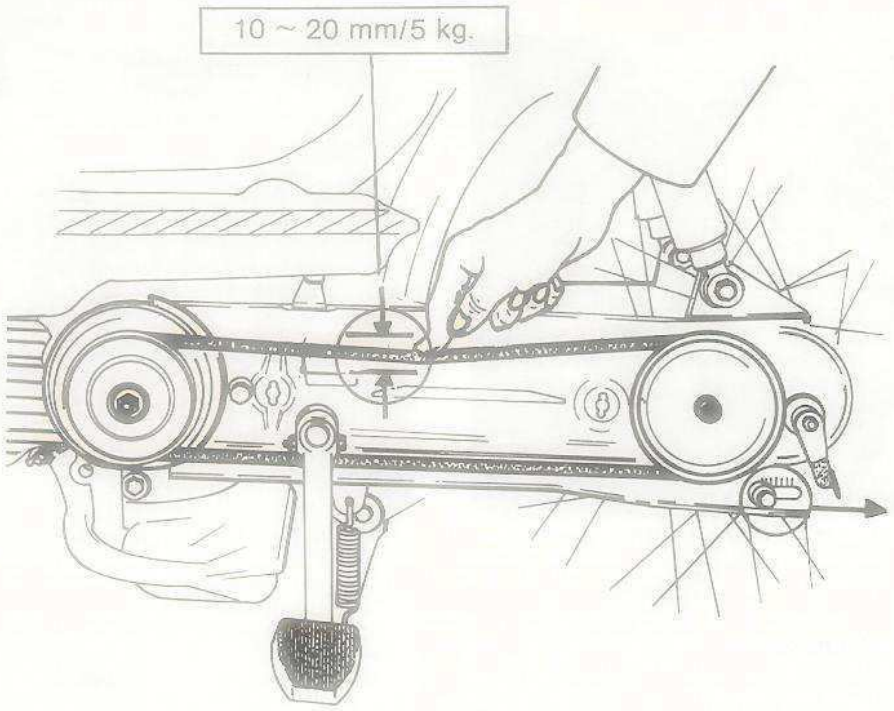
As in the single speed models, tensioning of the drive belt is accomplished by moving the rear wheel in the swinging arm members. The correct tension must be maintained; an overtight belt will place an excessive loading on the engine main bearings and the rear hub unit bearings whilst a slack belt will allow slip to occur in the transmission.

Remove the left-hand plastic side cover to gain access to the belt. Place a straight-edge across the rear face of the pulley as shown in the accompanying photograph and using a feeler gauge, measure the distance between the straight-edge and the belt. This distance should be 2 mm (0.078 in) with the belt in tension. To adjust the belt tension, loosen slightly the top two wheel to swinging arm securing bolts. Slacken the two bottom securing bolts and move the wheel backwards or forwards to obtain the correct setting. A screwdriver inserted up through the slot in the swinging arm plate below each lower securing bolt may be used as a means of levering the wheel back and forth. It should be noted that there are graduation marks above each lower securing bolt slot and that each bolt must be kept aligned in the same mark on both sides during adjustment.

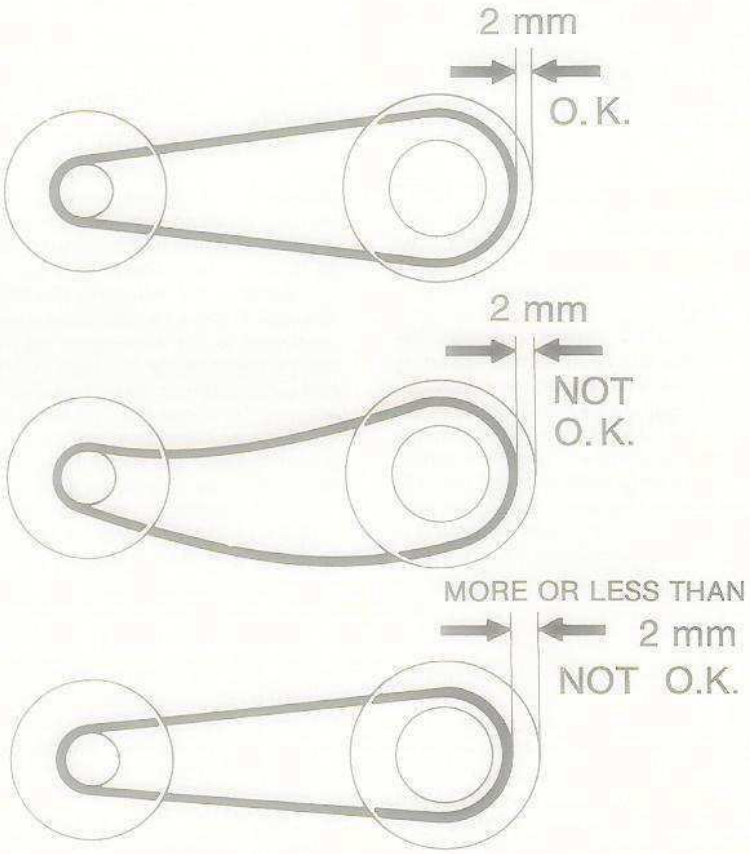
3 Once the correct setting is obtained, retighten the securing bolts and turn the wheel several times to settle the belt on the pulleys. Recheck that the belt is still in tension and that the 2 mm (0.078 in) clearance has not changed. Readjust the belt tension, if necessary, and having checked the four securing bolts for tightness, refit the plastic side cover.

4 *Adjusting the pedal chain tension*

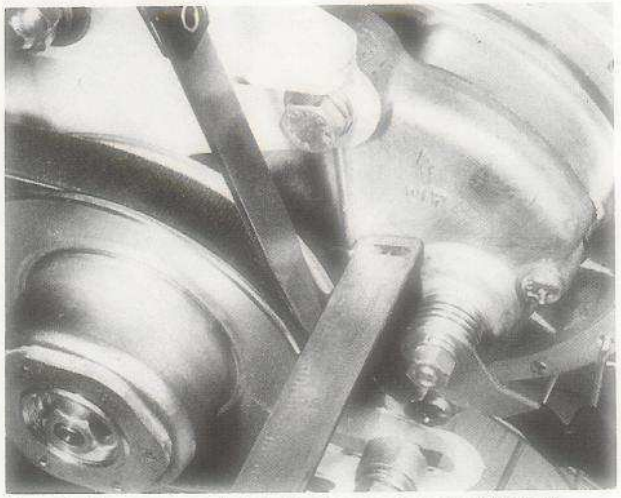
Remove the right-hand plastic side cover to expose the pedal chain and adjuster assembly. To tension the chain correctly, loosen the chain tensioner bracket securing bolt and push up on the rearmost tensioner wheel, using moderate finger pressure only. Retighten the securing bolt and refit the side cover.



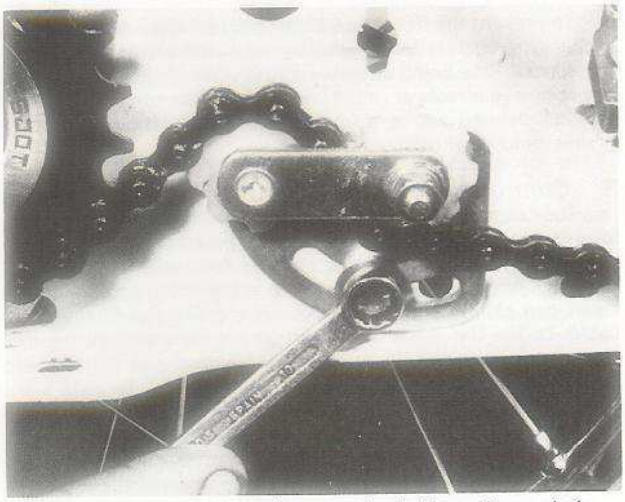
Method of drive belt adjustment – single speed models



Method of drive belt adjustment – variable ratio models



Use a feeler gauge and straight edge to measure drivebelt tension setting (variable ratio models)



Loosen chain tensioner bracket securing bolt to release chain tension

5 *Brake adjustment*

Adjustment of cable free play for both the front and rear brakes is made by means of threaded adjusters at the handlebar lever stocks. These adjusters are held in position by locknuts.

Undo the locknut and turn the adjuster so that 15 – 20 mm (0.4 – 0.6 in) of free play is obtainable at the handlebar lever end before the brake begins to operate. The point at which the brake shoes come into contact with the drum may be checked by spinning the wheel, with the machine on its main stand and the relevant wheel clear of the ground. The wheel should be seen to stop spinning as the lever reaches the end of the 15 – 20 mm free play.

Check that the brake shoes free off completely from the drum as the lever is released, because any slight binding will have a marked effect on the performance of the machine. On completion of adjustment, ensure that the locknut on the threaded adjuster is fully tightened.

Six monthly, or every 2500 miles (4000 km)

Carry out the tasks listed in all the preceding Routine Maintenance sections and then complete the following:

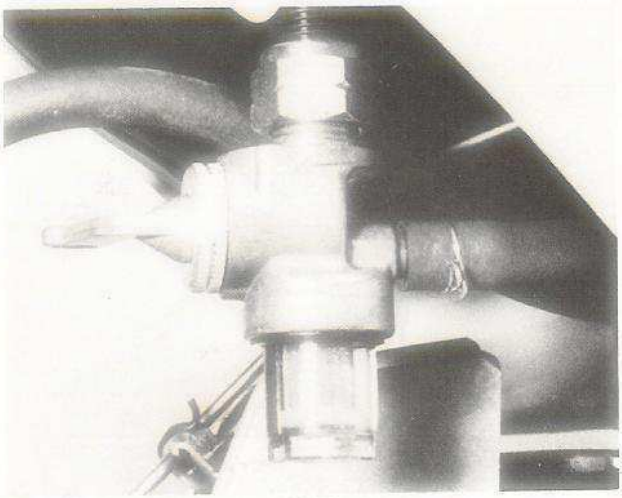
1 *Fuel filter cleaning*

The fuel filter is situated within a clear plastic bowl located at the base of the fuel tap, therefore the filter may be inspected for contamination without actually having to remove it from the tap assembly.

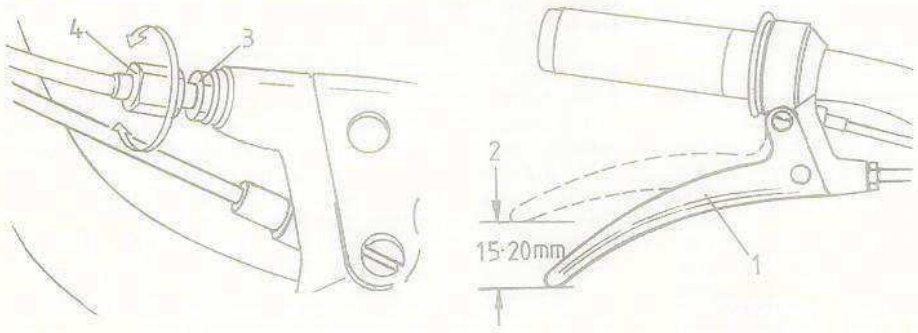
If the filter is seen to be contaminated, remove it from the tap by turning the tap lever to the OFF position and unscrewing the plastic bowl from th base of the tap. Great care should be taken when removing the bowl not to overstress and therefore crack the plastic moulding. Ensure the spanner used is a good fit over the hexagonal end of the bowl and that only moderate force is used to free the thread.

With the filter removed from the bowl, clean it in petrol, using a soft bristle brush to loosen any deposits of rust or paint. The filter must be renewed if it is seen to be damaged.

Refitting the filter is a reversal of the removal procedure. Check that the bowl is free of any sediment before inserting the filter; it may be cleaned in the same way as the filter. Take great care not to overtighten the plastic bowl when refitting it to the tap housing.



Fuel filter is located at base of fuel tap



Adjustment of free play at brake operating levers

1 *Operating lever*
2 *Correct amount of free play*
3 *Locknut*
4 *Cable adjuster*

2 Exhaust silencer box plug lubrication

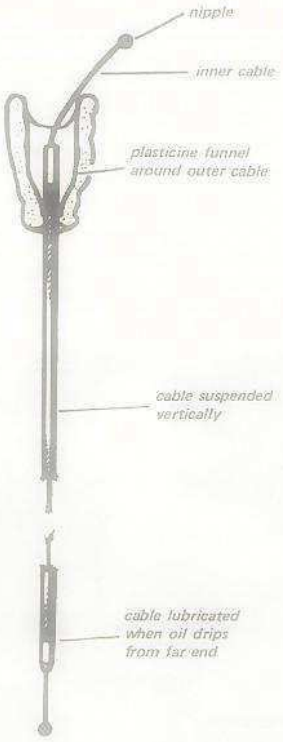
To prevent the hexagon headed plug situated at the tailpipe end of the silencer box becoming permanently seized, due to the silencer box being subject to variations in temperature and the corrosive effects of road salts, it should be removed and the threads cleaned and smeared with a molybdenum disulphide grease before refitting.

3 Control cable lubrication

The control cable lubrication detail given in the weekly/250 mile service schedule will serve to supplement the full lubrication, which should be carried out as follows.

Disconnect the top of the cable in question, and build up a small cap of plasticine or similar around the top of the outer cable. Lodge the cable in an upright position, and fill the cup with light machine oil or engine oil; leave the oil to drain through, preferably overnight.

A quicker and more positive method of lubrication is to use an hydraulic cable oiler which is fairly inexpensive and can be obtained from many motorcycle shops or by mail order from companies advertising in the motorcycle press.

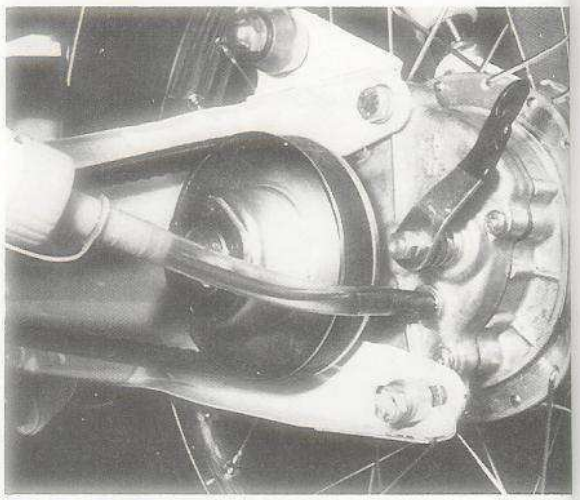


Oiling a control cable

4 Rear hub reduction gearbox – checking the oil level

Although Honda does not specify a routine maintenance interval at which to carry out this operation, it is suggested that the machine be placed on level ground and the gearbox oil level checked by removing the filler/level plug situated below the drive disconnection lever. Access to the plug is gained by removing the left-hand transmission cover. Ideally, the level should be checked with the machine off the mainstand. Top the oil level up, if necessary, by using SAE 90 Hypoid gear oil in a plastic squeeze bottle. Refit the plug, with a new sealing washer, taking care not to overtighten it.

At this point, it is advisable to check the gearbox casing for any signs of oil leakage. If any leakage is evident, the cause should be rectified as soon as possible and the interval between checks shortened until the leak is stopped.



Top up gearbox to level hole with SAE 90 Hypoid gear oil

Yearly, or every 4500 miles (7000 km)

Complete all the checks listed under the preceding time/mileage headings, and then the following additional items:

1 Decarbonising the engine unit

For normal decarbonising work, it will only be necessary to remove the cylinder head leaving the cylinder barrel undisturbed. Slacken the four bolts a little at a time in a diagonal sequence. The cylinder head may now be lifted off together with the cylinder head gasket.

With the piston at the top of the cylinder barrel bore, smear some grease between the edge of the piston crown and the bore surface; this will prevent any carbon deposits from dropping into the bore and make the final cleaning of carbon deposits from the recess between the piston and bore much easier, owing to the fact that the carbon deposits will become stuck to the grease.

Using a hardwood or plastic scraper, remove the carbon deposits from the piston crown. It is desirable to obtain as smooth a finish as is possible, although this is difficult without removing the piston. Take care not to damage the bore surface or piston crown, and avoid the use of sharp instruments, such as screwdrivers, for this reason. The piston crown may, finally, be polished to lessen the likelihood of future carbon build-up and to remove any small remaining traces of carbon; metal polish and a buffing wheel or piece of rag may be used for this purpose. Ensure all traces of polish are removed prior to reassembly to prevent premature wear of the piston and bore.

The cylinder head may be dealt with in a similar manner. Any stubborn traces of carbon may be removed by using a fine abrasive paper, although great care must be taken not to remove any great amount of metal from the surface thereby altering the shape of the combustion chamber.

Refit the cylinder head after having removed all traces of grease and carbon from around the piston crown and bore. Use a new head gasket and tighten the four securing bolts evenly and in a diagonal sequence to avoid any risk of distorting the cylinder head. Finally, torque load the bolts to 0.8 – 1.2 kg-m (5.8 – 8.7 lbf ft). Further details on the cylinder head/barrel and piston assembly may be found in Chapter 1 under the appropriate Section heading.

2 Decarbonising the exhaust system

To decarbonise the exhaust system it is first necessary to remove the assembly from the machine by removing

exhaust pipe flange to cylinder barrel securing nuts, undoing and withdrawing the two silencer box bracket to crankcase securing bolts, and allowing the system to drop down and away from the machine.

The areas most likely to require attention are the exhaust pipe and tailpipe, which will tend to become choked if not kept clear. A two-stroke engine is very susceptible to this fault, which is caused by the oily nature of the exhaust gases. As the sludge builds up back pressure will increase with a resulting fall off in performance.

If the build up of carbon and oil is not too great, a wash with a petrol/paraffin mix will probably suffice as the cleaning medium. Otherwise more drastic action will be necessary such as the application of a blowlamp flame to burn away the accumulated deposits.

Access to the inside of the silencer box is provided by means of a hexagon headed plug situated at the tailpipe end of the box. With the plug removed, a scraper may be inserted into the silencer baffle and any carbon removed. It should be noted that with the silencer box being subject to variations in temperature and the corrosive effects of road salts, the plug will become seized in position unless it is removed at frequent intervals (every 6 months) and the threads smeared with a molybdenum disulphide grease. Whilst the exhaust system is removed it is a good opportunity to remove any carbon deposits from the exhaust port. This can be done in conjunction with cylinder head/piston decarbonisation.

Refitting of the exhaust system is a reversal of the removal procedure, noting that a new exhaust port ring gasket should be fitted. Further information on the exhaust system may be found under the appropriate Section headings in Chapter 1.

3 Rear hub reduction gearbox – draining and refilling

Although Honda does not specify a routine maintenance interval at which to carry out this operation, it is suggested that the gearbox be emptied of its oil content and filled with new oil annually. Because no drain plug is fitted to the gearbox, it is necessary to remove the rear wheel assembly from the machine so that the oil may be drained from the filler/level plug. Details of rear wheel removal and refitting are contained in Chapter 5 of this Manual.

With the gearbox drained and refitted to the machine, and with the machine resting on both wheels on level ground, refill the gearbox with SAE 90 Hypoid gear oil to the level of the filler plug. Approximately 75 cc of oil will be needed. It is worth purchasing the oil in a plastic squeeze bottle, because these are ideal for introducing oil into the filler hole. When refilling the filler/level plug, fit a new sealing washer and take care not to overtighten the plug.

Quick glance
maintenance adjustments and capacities

Engine lubrication ratio	25 : 1 or 4% 1 tank cap measure (4%) of oil to 1 pint of petrol 1 tank cap measure (4%) of oil to 0.5 litre of petr
Reduction gearbox capacity	75 cc
Contact breaker gap	0.3 – 0.4 mm (0.012 – 0.016 in)
Sparking plug gap	0.6 – 0.7 (0.024 – 0.028 in)
Sparking plug type	NGK BP-6HS or BP-5HS
Tyre pressures	
Front	28 psi (2.0 kg/cm^2)
Rear	36 psi (2.5 kg/cm^2)

Recommended lubricants

Component	Type of lubricant
Engine	Self mixing 2-stroke oil
Reduction gearbox	SAE 90 Hypoid gear oil
All greasing points	Multi-purpose high melting point lithium based g
Cables (not nylon lined) etc	Light machine oil or engine oil
Air filter	SAE 40 oil

Castrol Lubricants

Castrol Engine Oils

Castrol Grand Prix

Castrol Grand Prix 10W/40 four stroke motorcycle oil is a superior quality lubricant designed for air or water cooled four stroke motorcycle engines, operating under all conditions.

Castrol TT Two Stroke Oil

Castrol TT Two Stroke oil is a high quality lubricant specially formulated for both air and water cooled two stroke motorcycle engines. It is readily miscible with fuel and is designed to protect against malfunction of sparking plugs, build up of combustion chamber deposits, seizure and scuffing of pistons and exhaust port blocking.

Castrol R40

Castrol R40 is a castor-based lubricant specially designed for racing and high speed rallying, providing the ultimate in lubrication. Castrol R40 should never be mixed with mineral-based oils, and further additives are unnecessary and undesirable. A specialist oil for limited applications.

Castrol Gear Oils

Castrol Hypoy EP90

An SAE 90 mineral-based extreme pressure multi-purpose gear oil, primarily recommended for the lubrication of conventional hypoid differential units operating under moderate service conditions. Suitable also for some gearbox applications.

Castrol Hypoy Light EP 80W

A mineral-based extreme pressure multi-purpose gear oil with similar applications to Castrol Hypoy but an SAE rating of 80W and suitable where the average ambient temperatures are between 32°F and 10°F. Also recommended for manual transmissions where manufacturers specify an extreme pressure SAE 80 gear oil.

Castrol Hypoy B EP80 and B EP90

Are mineral-based extreme pressure multi-purpose gear oils with similar applications to Castrol Hypoy, operating in average ambient temperatures between 90°F and 32°F. The Castrol Hypoy B range provides added protection for gears operating under very stringent service conditions.

Castrol Greases

Castrol LM Grease

A multi-purpose high melting point lithium-based grease suitable for most automotive applications, including chassis and wheel bearing lubrication.

Castrol MS3 Grease

A high melting point lithium-based grease containing molybdenum disulphide. Suitable for heavy duty chassis application and some CV joints where a lithium-based grease is specified.

Castrol BNS Grease

A bentone-based non melting high temperature grease for ultra severe applications such as race and rally car front wheel bearings.

Other Castrol Products

Castrol Girling Universal Brake and Clutch Fluid

A special high performance brake and clutch fluid with an advanced vapour lock performance. It is the only fluid recommended by Girling Limited and surpasses the performance requirements of the current SAE J1703 Specification and the United States Federal Motor Vehicle Safety Standard No. 116 DOT 3 Specification.
In addition, Castrol Girling Universal Brake and Clutch fluid fully meets the requirements of the major vehicle manufacturers.

Castrol Fork Oil

A specially formulated fluid for the front forks of motorcycles, providing excellent damping and load carrying properties.

Castrol Chain Lubricant

A specially developed motorcycle chain lubricant containing non-drip, anti corrosion and water resistant additives which afford excellent penetration, lubrication and protection of exposed chains.

Castrol Everyman Oil

A light-bodied machine oil containing anti-corrosion additives for both household use and cycle lubrication.

Castrol DWF

A de-watering fluid which displaces moisture, lubricates and protects against corrosion of all metals. Innumerable uses in both car and home. Available in 400gm and 200gm aerosol cans.

Castrol Easing Fluid

A rust releasing fluid for corroded nuts, locks, hinges and all mechanical joints. Also available in 250ml tins.

Castrol Antifreeze

Contains anti-corrosion additives with ethylene glycol. Recommended for the cooling system of all petrol and diesel engines.

Working conditions and tools

When a major overhaul is contemplated, it is important that a clean, well-lit working space is available, equipped with a workbench and vice, and with space for laying out or storing the dismantled assemblies in an orderly manner where they are unlikely to be disturbed. The use of a good workshop will give the satisfaction of work done in comfort and without haste, where there is little chance of the machine being dismantled and reassembled in anything other than clean surroundings. Unfortunately, these ideal working conditions are not always practicable and under these latter circumstances when improvisation is called for, extra care and time will be needed.

The other essential requirement is a comprehensive set of good quality tools. Quality is of prime importance since cheap tools will prove expensive in the long run if they slip or break and damage the components to which they are applied. A good quality tool will last a long time, and more than justify the cost. The basis of any tool kit is a set of open-ended spanners, which can be used on almost any part of the machine to which there is reasonable access. A set of ring spanners makes a useful addition, since they can be used on nuts that are very tight or where access is restricted. Where the cost has to be kept within reasonable bounds, a compromise can be effected with a set of combination spanners – open-ended at one end and having a ring of the same size on the other end. Socket spanners may also be considered a good investment, a basic $\frac{3}{8}$ in or $\frac{1}{2}$ in drive kit comprising a ratchet handle and a small number of socket heads, if money is limited. Additional sockets can be purchased, as and when they are required. Provided they are slim in profile, sockets will reach nuts or bolts that are deeply recessed. When purchasing spanners of any kind, make sure the correct size standard is purchased. Almost all machines manufactured outside the UK and the USA have metric nuts and bolts, whilst those produced in Britain have BSF or BSW sizes. The standard used in the USA is AF, which is also found on some of the later British machines. Other tools that should be included in the kit are a range of crosshead screwdrivers, a pair of pliers and a hammer.

When considering the purchase of tools, it should be remembered that by carrying out the work oneself, a large proportion of the normal repair cost, made up by labour charges, will be saved. The economy made on even a minor overhaul will go a long way towards the improvement of a tool kit.

In addition to the basic tool kit, certain additional tools can prove invaluable when they are close to hand, to help speed up a multitude of repetitive jobs. For example, an impact screwdriver will ease the removal of screws that have been tightened by a similar tool during assembly, without damaging the screw heads. And, of course, it can be used to retighten the screws, to ensure an oil or airtight seal. Circlip pliers have their uses too, since gear pinions, similar components are frequently retained by circlips not too easily displaced by a screwdriver. There are two circlip pliers, one for internal and one for external circlips may also have straight or right-angled jaws.

One of the most useful of all tools is the torque wrench form of spanner that can be adjusted to slip when a predetermined amount of force is applied to any bolt or nut. Torque settings are given in almost every modern workshop manual, where the extent is given to which a component, such as a cylinder head, can be tightened without risk of distortion or leakage. The tightening of bearing caps is another example. Overtightening will stretch or even break bolts, necessitating extra work to extract the broken portion.

As may be expected, the more sophisticated the machine the greater is the number of tools likely to be required to keep be kept in first class condition by the home mechanic. Unfortunately there are certain jobs which cannot be accomplished successfully without the correct equipment, although there is invariably a specialist who will undertake the work for a fee, the home mechanic will have to dig more and more in his pocket for the purchase of similar equipment if he does not wish to employ the services of others. Here a word of caution is necessary, since some of these jobs are best left to the expert. Although an electrical multimeter of the AVO type will prove helpful in tracing electrical faults, in inexperienced hands it may irrevocably damage some of the electronic components if a test current is passed through them in the wrong direction. This can apply to the synchronisation of twin or multiple carburettors too, where a certain amount of expertise is needed when setting them up with vacuum gauges. There are, however, exceptions. Some instruments, such as a stroboscope are virtually essential when checking the timing of a machine powered by a CDI ignition system. In short, do not purchase any of these special items unless you have the experience to use them correctly.

Although this manual shows how components can be removed and replaced without the use of special service tools (unless absolutely essential), it is worthwhile giving consideration to the purchase of the more commonly used tools. A machine is regarded as a long term purchase. Whilst the alternative methods suggested will remove and replace components without risk of damage, the use of the special tools recommended and sold by the manufacturer will invariably save

Chapter 1 Engine and transmission

For information relating to 1981 on models, see Chapter 7

Contents

Specifications

Engine	
Type	Single cylinder, in-line horizontal, air cooled 2-stroke
Bore	40 mm (1.57 in)
Stroke	39.6 mm (1.56 in)
Capacity	49 cc (2.99 cu in)
Lubrication	By petrol/oil mixture
Piston and rings	
Cylinder bore to piston clearance	0.025 – 0.055 mm (0.001 – 0.002 in)
Service limit	0.08 mm (0.003 in)
Ring to groove clearance:-	
Top ring	0.040 – 0.060 mm (0.0016 – 0.0023 in)
Service limit	0.1 mm (0.004 in)
2nd ring	0.025 – 0.055 mm (0.001 – 0.002 in)
Service limit	0.1 mm (0.004 in)
Ring gap	0.15 – 0.35 mm (0.006 – 0.0137 in)
Service limit	0.6 mm (0.023 in)
Piston/pin clearance (max)	0.06 mm (0.0023 in)
Piston diameter	39.975 – 39.945 mm (1.559 – 1.558 in)
Cylinder barrel	
Standard bore diameter	40.00 – 40.01 mm (1.560 – 1.5604 in)
Service limit	40.09 mm (1.5635 in)

Crankshaft	
Runout	0.05 mm (0.002 in)
Service limit	0.3 mm (0.0117 in)
Axial clearance	0 – 0.64 mm (0 – 0.025 in)
Service limit	1.0 mm (0.039 in)
Small-end clearance (max)	1.5 mm (0.06 in)
Clutch	
Type	Automatic centrifugal
Shoe/lining overall diameter	104.0 – 104.1 mm (4.056 – 4.060 in)
Spring free length	29.2 mm (1.139 in)
Starter clutch	
Type	Automatic centrifugal
Shoe/lining overall diameter	96.8 – 97.0 mm (3.775 – 3.783 in)
Spring free length	19.5 mm (0.760 in)
Transmission	
Type	Single speed of variable ratio, direct drive via centri (incorporating V-matic pulley for variable ratio model or V-belt, and reduction gearbox located in rear wh
Final reduction ratio	12.46:1

Torque wrench settings	lbf ft	kgf m
Cylinder head/barrel retaining bolts or nuts	5.8 – 8.7	0.8 – 1.2
Crankcase securing screws	5.8 – 8.7	0.8 – 1.2
Engine to swinging arm retaining bolts	21.7 – 29.0	3.0 – 4.0
Engine to frame pivot bolt nut	21.7 – 29.0	3.0 – 4.0
Carburettor securing bolts	5.8 – 8.7	0.8 – 1.2
Flywheel rotor retaining nut	21.7 – 29.0	3.0 – 4.0
Drive pulley retaining nut	21.7 – 29.0	3.0 – 4.0
27 mm special retaining nut (V-matic)	21.7 – 29.0	3.0 – 4.0
Driven pulley retaining nut	14.5 – 18.0	2.0 – 2.5

1 General description

The engine unit fitted to the Honda PA 50 models is a horizontal air cooled, single cylinder 2-stroke, employing reed valve induction and three-part loop scavenging. The full flywheel crankshaft is pressed up and is supported on two journal ball bearings. It is housed in a two-piece crankcase which separates in the vertical plane. The connecting rod big- and small-end bearings are both of the caged roller type. An aluminium alloy piston is used, working in a steel cylinder bore. Two piston rings are fitted. These are pegged in traditional 2-stroke fashion to prevent their ends from becoming caught in the port windows and fracturing.

The cylinder head incorporates a decompressor mechanism to facilitate easy starting and stopping of the engine. This takes the form of a small poppet valve, similar to the inlet and exhaust valves of a 4-stroke engine, which is held by a spring in the closed position and opened by means of a handlebar mounted lever and control cable.

The cylinder head and crankcase castings are manufactured in aluminium alloy. The right-hand crankcase casting incorporates a recessed housing for the flywheel generator; the left-hand casting incorporates a housing for the centrifugal and starter clutch unit. Both crankcase castings house rubber bush assemblies through which the engine unit/swinging arm assembly pivot pin locates.

No gearbox as such is used, either a variable ratio or single speed system of drive being employed on the two types of models. Both these systems utilise centrifugal clutches and either vee or toothed belts. Engine starting is by the standard moped system of turning the engine via the rear wheel by means of bicycle type pedals. Chain drive is employed from the pedal sprocket to rear wheel sprocket and belt drive from the rear wheel reduction gearbox to the engine crankshaft pulley.

The unit is lubricated by oil carried in suspens incoming fuel. As the fuel is drawn into the crankca content lubricates the various moving parts with whic into contact; namely, the big-end, small-end and mai and the lower part of the cylinder bore. A certain am is released during the combustion stroke, which a upper cylinder lubricant, the remainder being burnt an along with the exhaust gases.

2 Operations with the engine in the frame

It is not necessary to remove the engine from the swinging arm assembly to carry out the following op

1 Cylinder head removal and refitting.
2 Cylinder barrel removal and refitting.
3 Flywheel generator removal and refitting.
4 Crankshaft clutch and pulley assembly removal and refitting
5 Exhaust system removal and refitting.

3 Method of engine removal

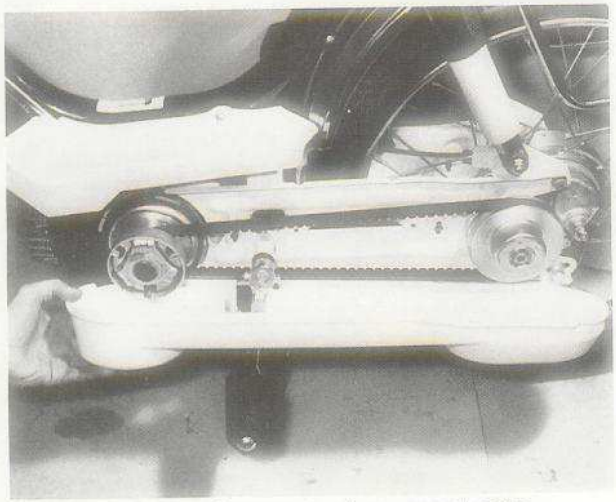
In practice the engine is removed from the frame a the pressed steel swinging arm assembly, the carbur complete exhaust system. The centre stand may also position and used in conjunction with the swing assembly as an engine stand.

4 Removing the engine from the frame

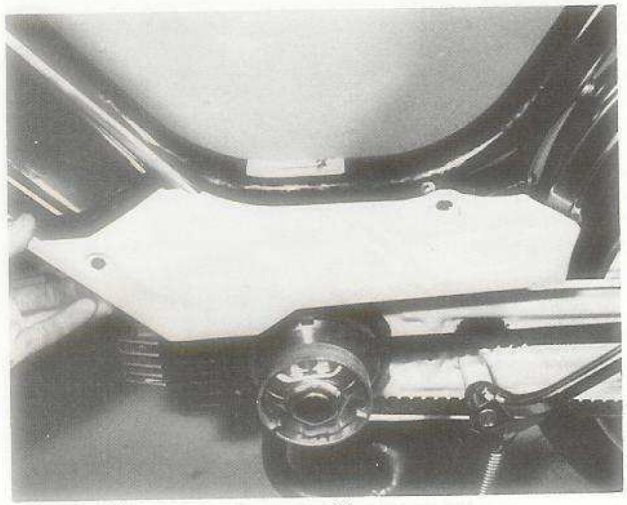
1 Place the machine on its centre stand. If possible, it is recommended that the machine is placed on some sort of raised platform to make working easier. The machine may be lifted bodily by one person onto the platform but it is recommended that an assistant be found as help will also be required to lift the rear of the machine in order to remove the rear wheel.
2 Start by removing the plastic transmission covers and the two engine covers. These are retained by two plastic Dzus-type fasteners each and two screws each respectively. Remove both pedals (if considered necessary) by unscrewing the cotter pin retaining nuts so that the upper faces of the nuts are flush with the top of the threads and tapping smartly on the top of each nut with a soft metal drift and hammer to free the pins. This method of removal will avoid damage to the pin thread. Remove the nuts, withdraw the pins and pull each pedal from its shaft.
3 Ensure the fuel tap is in the off position and disconnect the fuel line from the tap. Remove the electrical loom rubber cover, situated above the clutch assembly, by pulling it forward to expose the wiring connections. Mark each wire, for reconnection, and disconnect the wires.
4 Release the pedal chain tensioner securing nut and move the tensioner lever down. This will allow enough slack in the chain to enable it to be lifted clear of the rear wheel sprocket. Release the rear brake cable from the rear wheel brake operating arm by first screwing fully in the handlebar cable adjuster and then pushing forward on the brake operating arm to allow the nipple to be pulled clear of the arm end.
5 Slacken the wheel to swinging arm securing bolts and move the wheel forward to enable the drive belt to be pulled clear of the wheel reduction gear pulley. With the belt removed from the machine remove the four securing bolts, noting their lengths and the positioning of the spacers, and with the help of an assistant lift the rear of the machine and pull the wheel clear of its attachment points. With the rear wheel clear of the machine, lower the machine back onto its centre stand. It is a good idea to place some form of support under the swinging arm to steady the machine whilst preparation work continues; a wooden block is ideal.
6 Moving to the front of the engine, disconnect the HT lead suppressor cap from the sparking plug. The decompressor valve operating cable should now be disconnected from the cylinder head by pushing down on the top of the spring end to allow the inner cable to be pulled clear of the spring end ring. With the spring released, the cable nipple may now be detached from the operating lever.
7 Disconnect the throttle cable at the carburettor by unscrewing the cable clamping screw located within the solderless nipple and pulling the cable clear of the engine. With an assistant ready to take the weight of the machine at the rear mudguard support stays, remove the swinging arm to suspension unit securing bolts taking care to retain the plain washers located beneath the bolt heads.
8 With the support block removed from beneath the swinging arm and the swinging arm clear of the rear suspension units, disconnect the engine from the forward frame pivot support by unscrewing the pivot bolt securing nut and withdrawing the pivot bolt. The frame may now be raised to allow the engine and swinging arm assembly to be moved clear of the machine. Ensure that the HT lead is free from its frame retaining clip before finally removing the engine.

5 Separating the engine from the swinging arm assembly

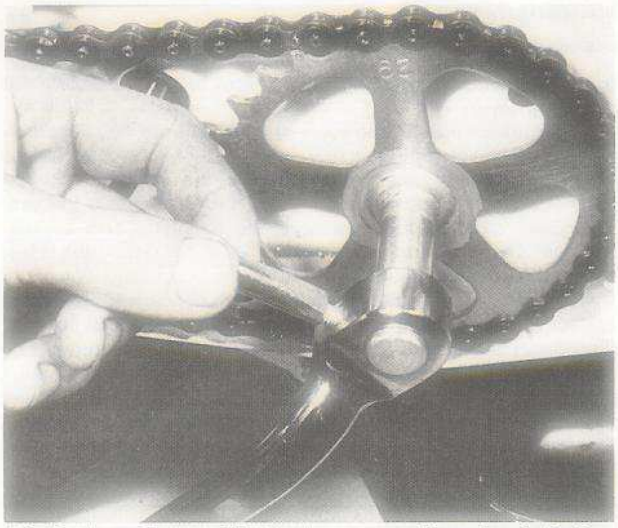
1 If complete dismantling of the engine is necessary then the engine must be removed from the swinging arm assembly. It should however be noted that it is far more practical to use the swinging arm and main stand assembly as an engine stand when carrying out such jobs as removing the cylinder head or flywheel generator rotor, where there is no need to separate the crankcase halves.
2 Check that the black/white electrical lead is disconnected at its bullet connection. Remove the blue earth lead by unscrewing the engine to swinging arm securing bolt to which it is connected. Remove the remaining five engine to swinging arm securing bolts after having first removed the flywheel generator cover in order to gain access to one of the bolt heads. The generator cover is attached to the engine casing by two crosshead screws and it will be necessary to employ an impact driver in order to loosen these screws. The condition of the dust seal inserted in the cover edge should be noted before placing the cover to one side; if it is in any way damaged then it should be renewed. When withdrawing each engine to swinging arm securing bolt, take care to retain the nut inset in the engine casing and keep both the bolt and nut together for reassembly.
3 The engine may now be detached from the swinging arm assembly. At this stage the routing of the breather pipes and electrical wires should be noted for reference when refitting the engine.



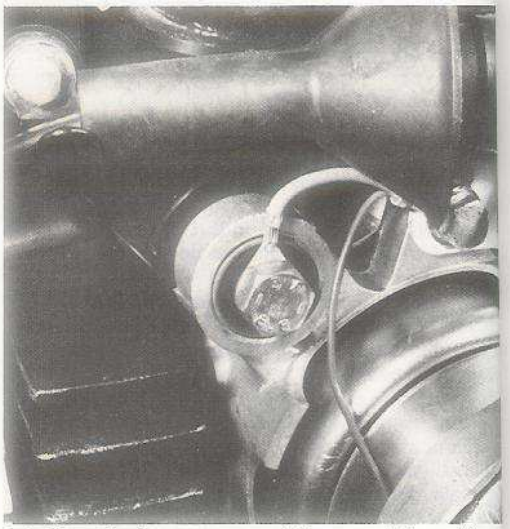
4.2a Release the two fasteners to allow removal of the transmission covers



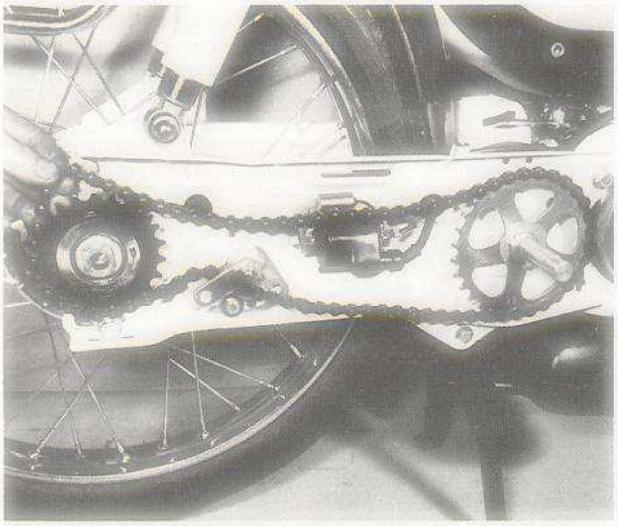
4.2b Each engine cover is retained by two screws



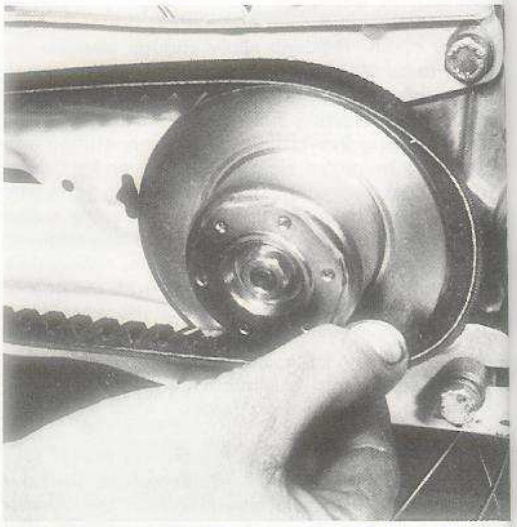
4.2c Each pedal assembly may be removed from the shaft after removal of the cotter pin



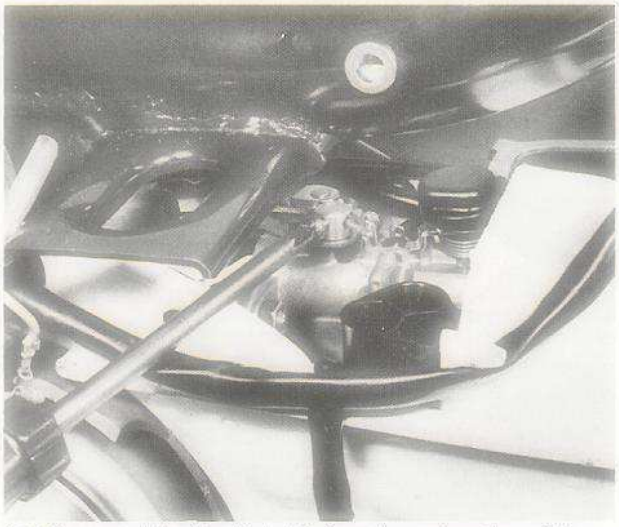
4.3 Move the loom cover and disconnect the wiring c tions



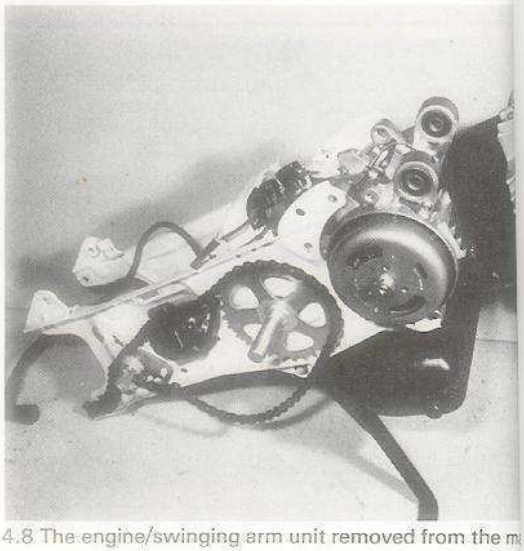
4.4 Release the chain tensioner and lift the chain clear of the sprocket



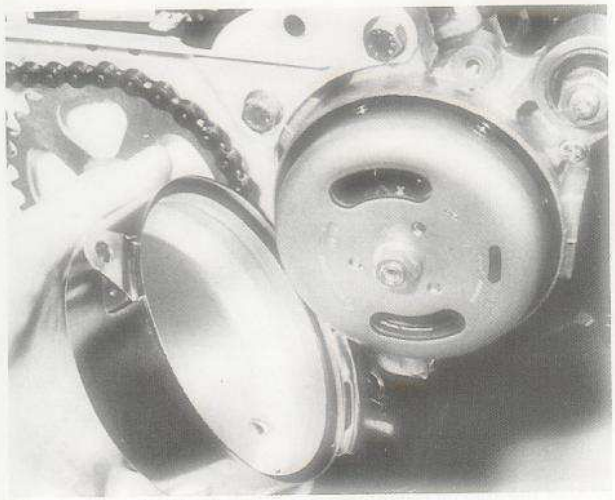
4.5 With the wheel moved forward, pull the belt off th



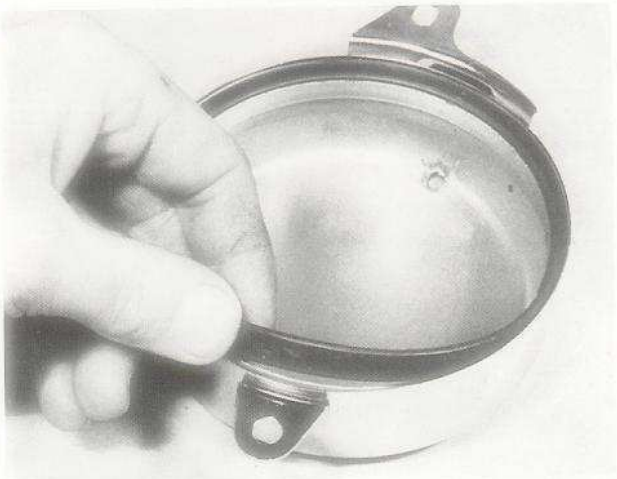
4.7 Disconnect the throttle cable from the carburettor solder-less nipple



4.8 The engine/swinging arm unit removed from the m



5.2a Remove the flywheel generator cover ...



5.2b ... and check the condition of the dust seal

6 Dismantling the engine: general

1 Before commencing work on the engine unit, the external surfaces should be cleaned thoroughly. A motorcycle engine has very little protection from road grit and other foreign matter, which will find its way into the dismantled engine if this simple precaution is not taken. One of the proprietary cleaning compounds, such as 'Gunk' or 'Jizer' can be used to good effect, particularly if the compound is worked into the film of oil and grease before it is washed away. Special care is necessary, when washing down to prevent water from entering any exposed parts of the engine unit.
2 Never use undue force to remove any stubborn part unless specific mention is made of this requirement. There is invariably good reason why a part is difficult to remove, often because the dismantling operation has been tackled in the wrong sequence.
3 It should be noted at this juncture that a service tool will be required to remove the centrifugal clutch housing from the crankshaft taper. The part number of this tool is 07933 – 1480000. This tool may be purchased through an authorised Honda Service Agent but in view of the infrequency of its use it is unlikely that it will be worthwhile buying it. If the owner is on good terms with his local Honda Agent, then he may be persuaded to lend or hire the tool over a weekend when he is unlikely to need it himself. Alternatively, the engine may be taken to the Service Agent and he can then remove the clutch housing. Prior arrangement should be made for this to be done. It is our experience that the service tool is absolutely essential. There is no safe alternative method of removing the clutch housing.
4 Two other tools will be needed for dismantling the engine. The first, an impact driver, is essential if the cross head screws securing the crankcase halves and flywheel generator cover are to be removed without damaging the heads. The second, a 3-legged puller, will be needed to remove the contact breaker cam. It should be noted when obtaining this tool, that the feet of the puller should be small enough to fit behind the cam face without coming into contact with, and thus damaging, the generator coil windings.

7 Dismantling the engine: removing the exhaust system

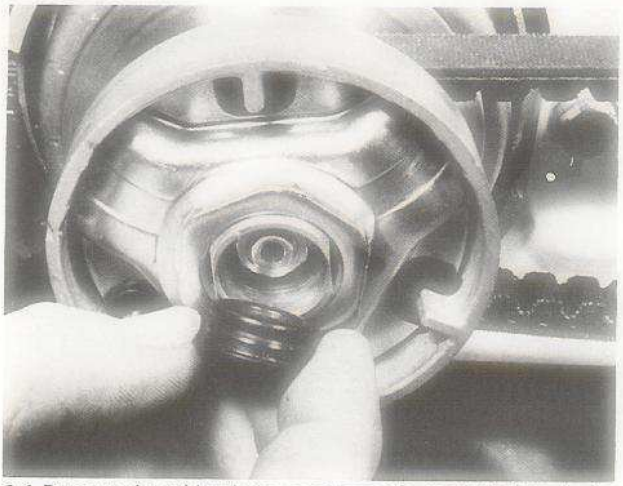
1 To remove the exhaust system from the cylinder barrel, unscrew and remove the two securing nuts and lift the exhaust assembly away from the engine, noting the gasket inset in the barrel. This gasket should be removed and discarded. Details of exhaust system inspection and maintenance may be found in Section 11 of Chapter 2.

8 Dismantling the engine: removing the carburettor and reed valve assembly

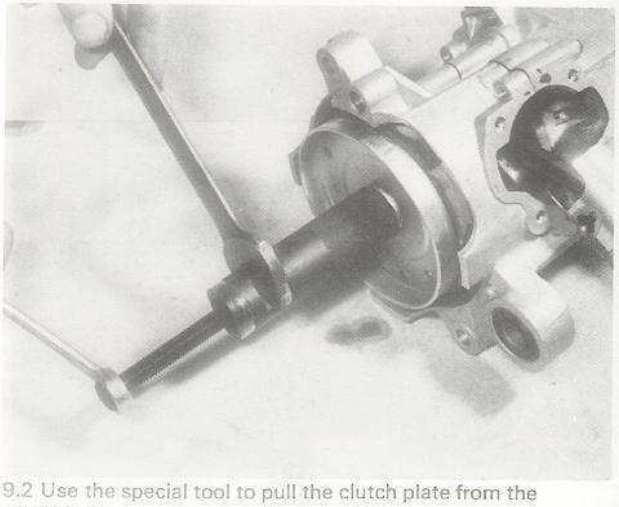
1 The carburettor and reed valve assembly may be removed from the engine either separately or as a unit; the reed valve and inlet stub being secured to the crankcase by four hexagon headed screws and the carburettor being attached to the inlet stub studs by two nuts.
2 Details of examination and dismantling procedures for these components may be found in Chapter 2 of this Manual. Always slacken the appropriate screws or nuts evenly and in a diagonal sequence to avoid any risk of distortion to the mating faces.

9 Dismantling the engine: removing the centrifugal clutch assembly

1 On models fitted with the V-matic unit, remove the rubber bung from the centre of the unit; this is located on the left-hand end of the crankshaft. Remove the inner nut and washer from the crankshaft end by using a socket or box spanner and turning it against a spanner placed over the flywheel generator rotor retaining nut. With the inner nut removed, the starter clutch and V-matic unit may be pulled off the crankshaft quite easily by hand.
2 On models fitted with a fixed pulley, unscrew the centre nut which retains the pulley to the crankshaft end and pull the pulley off the crankshaft. The crankshaft may be prevented from rotating whilst undoing the centre nut by placing a spanner over the flywheel generator rotor retaining nut.
3 The centrifugal clutch assembly should now be pulled off the crankshaft taper by using Honda special tool no 07933 – 1480000 (see Section 6 of this Chapter). It was found that considerable force was needed to free the clutch assembly. Great care should therefore be taken to ensure that the special tool is correctly located on the clutch plate thread and that the spanners used to both hold and turn the tool are of the correct size. These simple precautions will prevent damage occuring to either the tools, the engine or one's person. With the tool in position on the clutch plate, hold the outer part of the tool steady with a spanner and turn the inner threaded part of the tool in (clockwise) to draw the plate off the crankshaft.



9.1 Remove the rubber bung to expose the crankshaft end nut



9.2 Use the special tool to pull the clutch plate from the crankshaft

10 Dismantling the engine: removing the cylinder head, barrel and piston

1 Slacken evenly and in a diagonal sequence the four bolts that secure the cylinder head and barrel in position. Some models may have studs, nuts and washers fitted in place of these bolts. Remove the bolts and lift off the cylinder head. Discard the cylinder head gasket, a new gasket must be fitted on reassembly to ensure a gas tight seal. In the event of the cylinder head being stuck in position, it should be tapped smartly with a soft faced mallet to break the seal.

2 Lift the cylinder barrel carefully away from the crankcase, taking care to catch the piston as it emerges from the bore thus preventing it coming into sharp contact with the crankcase. As a precaution against pieces of broken piston rings entering the crankcase mouth, a piece of clean rag should be used to pack around the connecting rod thus covering the openings. This should be done prior to the piston rings leaving the confines of the cylinder bore.

3 Remove the piston by removing the gudgeon pin retaining circlips and pushing out the gudgeon pin. The circlips should be discarded and new ones used on reassembly. If the gudgeon pin is found to be a particularly tight fit, the piston should be warmed first to expand the alloy and release the grip on the steel pin; a clean rag soaked in boiling water and wrapped around the piston is a particularly safe and effective way of achieving this. If it is necessary to tap the gudgeon pin out of position, ensure the connecting rod is well supported against the impact of the hammer and drift. On no account use excessive force.

4 It will be found that the needle roller bearing will be displaced from the small-end eye when the gudgeon pin is withdrawn and the piston removed. It should be noted that the piston crown is marked with an 'EX' mark on the side of the crown facing the bottom of the engine. This is a useful guide to ensure that the piston is refitted correctly.

11 Dismantling the engine: removing the flywheel generator

1 The flywheel generator rotor is secured to the end of the crankshaft by a nut and washer and is located in position on the flanged contact breaker cam by three small pins projecting into the rotor. Before removing the nut and washer it is necessary to prevent the engine from turning by passing a close fitting bar through the connecting rod small-end eye and allowing the ends of the bar to rest on two wooden blocks placed across the crankcase mouth. With the nut and washer removed, the rotor may be pulled away from the crankshaft end; a strong magnetic resistance should be felt as the rotor is withdrawn.

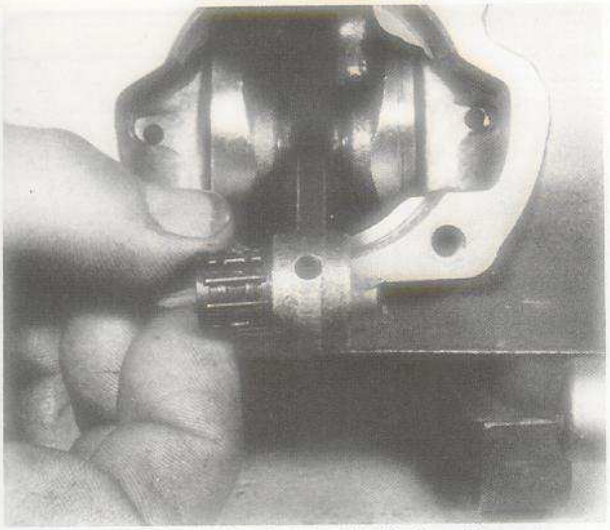
2 The flanged contact breaker cam is a tapered fit on the crankshaft end and is located by a Woodruff key. Because of this the cam is a very tight fit on the crankshaft and the only satisfactory method of removal is by using a three-legged puller. Great care should be taken to ensure that the feet of the puller do not come into contact with the generator coils during the removal procedure. Before placing the puller in position refit the rotor securing nut on the crankshaft end so that the outer face of the nut is flush with the threaded end of the crankshaft. This will help prevent damage to the shaft. If the cam refuses to release from the tapered shaft, do not continue tightening the puller centre screw; this will only damage the shaft. With the screw tightened down, firmly strike the screw head with a hammer. This will release the cam.

3 After removing the cam, prise the Woodruff key from the tapered portion of the shaft and store it in a safe place. If the key is firmly located in the taper, removal is not required.

4 Slacken and remove the two screws which hold the stator plate in position. The leads from the generator pass through a grommet seated in an aperture in the rear of the stator housing. Grasp the leads and ease the grommet from position so that the leads can be pulled through and the stator plate freed.

5 The generator rotor and stator plate should be stored in a safe place so that accidental damage is prevented. Care should be taken to ensure that metallic swarf does not adhere to the rotor magnets.

10.3 Remove the gudgeon pin retaining circlips



10.4a The needle roller bearing may be displaced from the small-end eye

10.4b Note the EX mark on the piston crown

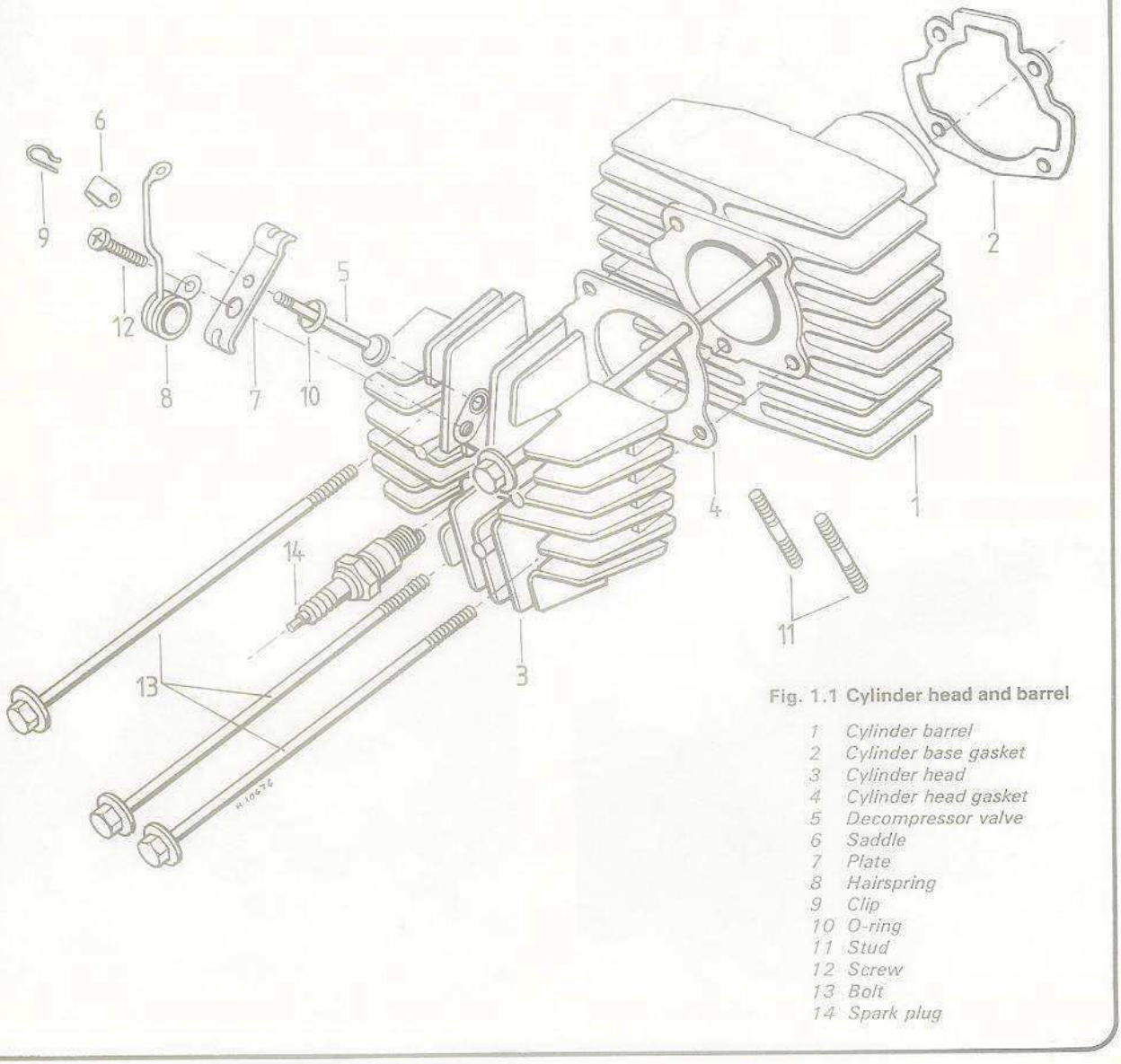
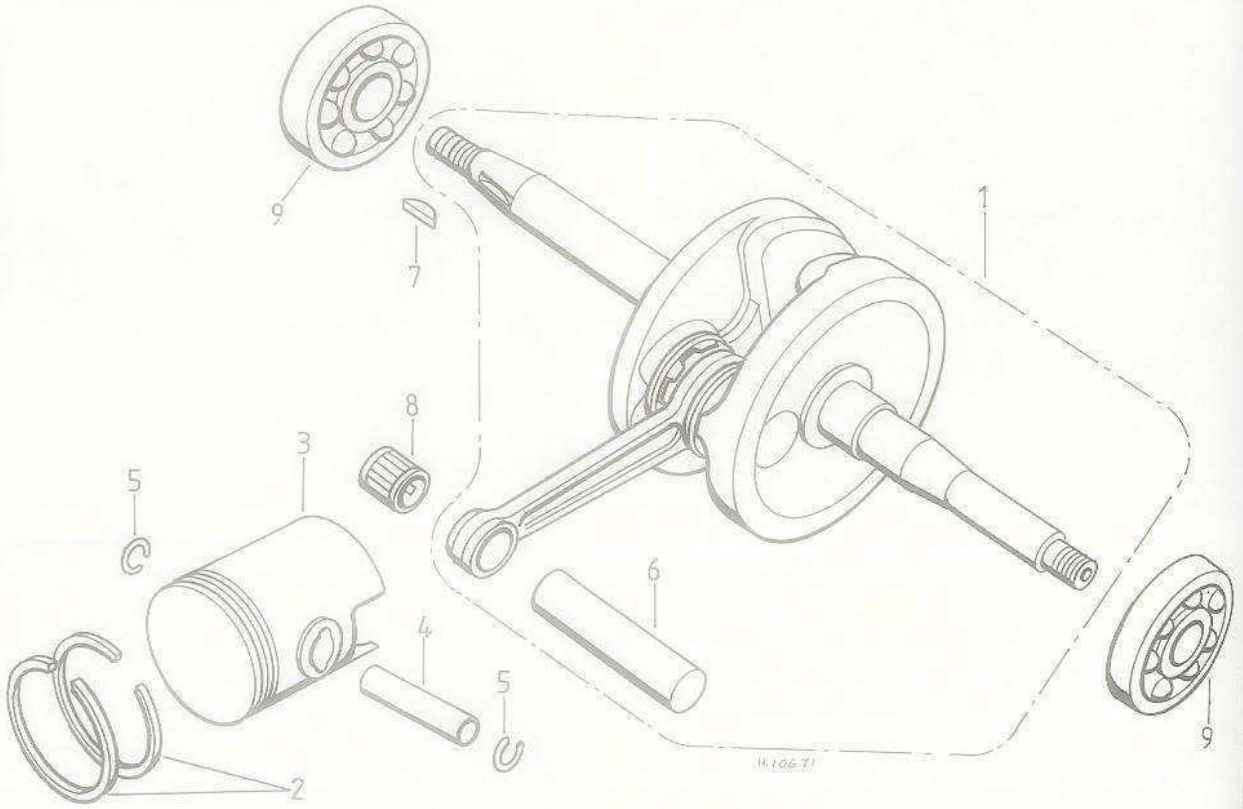


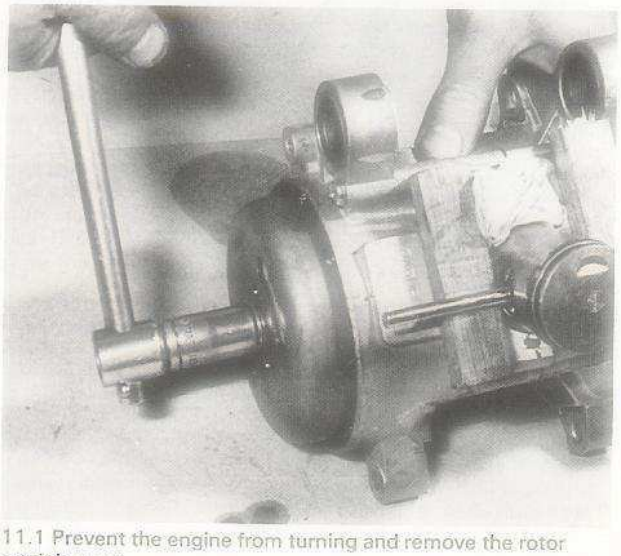
Fig. 1.1 Cylinder head and barrel

1 *Cylinder barrel*
2 *Cylinder base gasket*
3 *Cylinder head*
4 *Cylinder head gasket*
5 *Decompressor valve*
6 *Saddle*
7 *Plate*
8 *Hairspring*
9 *Clip*
10 *O-ring*
11 *Stud*
12 *Screw*
13 *Bolt*
14 *Spark plug*

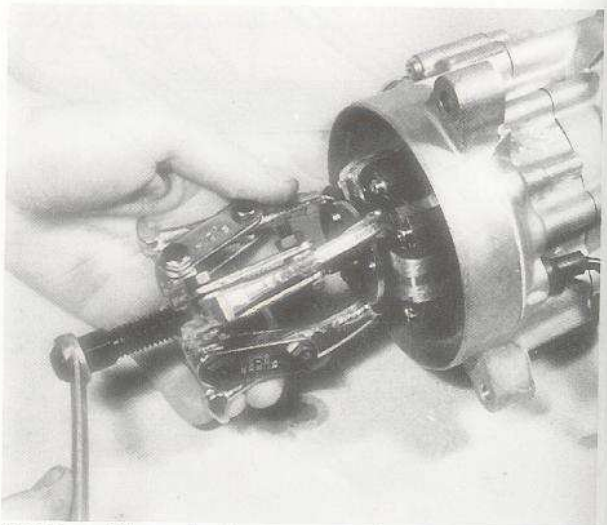


1 Crankshaft assembly
2 Piston ring set
3 Piston
4 Gudgeon pin
5 Circlip
6 Crank pin
7 Woodruff key
8 Needle roller bearing
9 Ball bearing

Fig. 1.2 Piston and crankshaft



11.1 Prevent the engine from turning and remove the rotor retaining nut



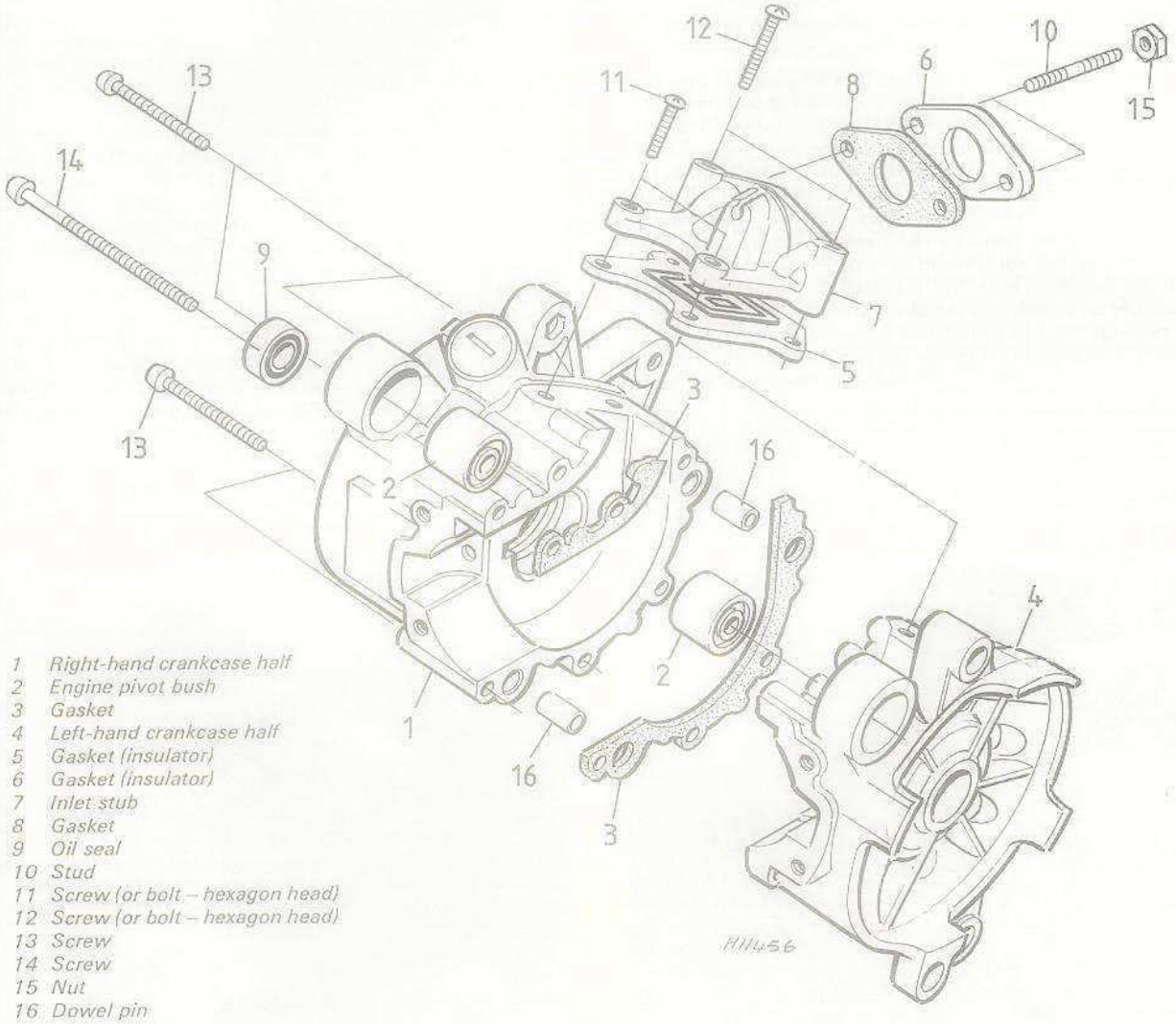
11.2 Use a 3-legged puller to remove the contact breaker cam

12 Dismantling the engine: separating the crankcase halves

1 With the engine placed on wooden blocks so that the end of the crankshaft is clear of the bench and the heads of the crankcase half securing screws face uppermost, remove the cross head securing screws by using an impact driver. It should be noted that one of these six securing screws is longer than the others; the position of this screw should be noted for re-assembly.

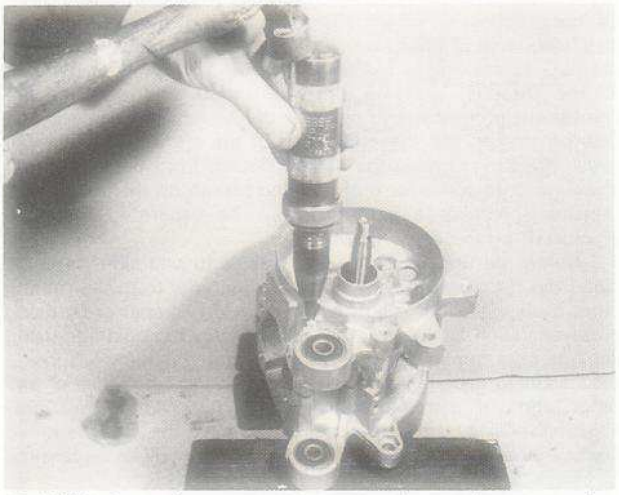
2 The crankcase halves may now be separated by placing the engine on the bench with the crankshaft in the horizontal plane, supporting one crankcase half and tapping the other half away from it with a soft wooden block. This job is made easier by recruiting an assistant to support the crankcase half whilst using a hammer in conjunction with the wooden block to separate the crankcase halves. It will be found that the initial separation of the halves will be made difficult by the tightness of the locating dowels, the wooden block should be moved around the crankcase casting to ensure even separation. With the crankcase halves separated but still on the crankshaft, it will be found necessary to tap sharply the end of the crankshaft to free finally one of the halves. This should be done by first fitting the nuts to the end of the crankshaft so as to prevent damage to the threads, grasping one crankshaft end so that the crankshaft is vertical and clear of the bench and using a soft faced mallet to tap the upper end of the crankshaft. This will cause the lower crankcase half to detach from the crankshaft and drop onto some form of padding placed on the bench. The remaining crankcase half may now be separated from the crankshaft by the same method.

3 Before putting the crankcase halves to one side, carefully clean the remaining pieces of gasket material from the mating faces by using either a soft wood or nylon scraper or by using a solvent such as methylated spirit. Clean the castings using lint-free rags to avoid any particles of material being left inside the castings. Examine carefully each casting for cracks or any other signs of damage. If a crack is discovered, seek professional advice. It may be possible to have the crack repaired but in extreme cases renewal of the casting will be necessary.

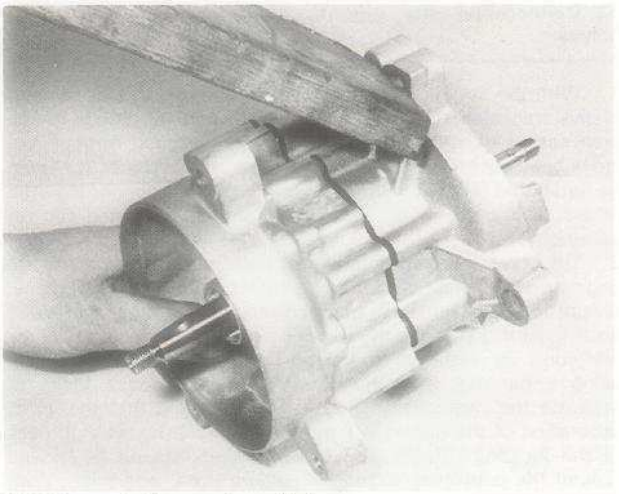


1 Right-hand crankcase half
2 Engine pivot bush
3 Gasket
4 Left-hand crankcase half
5 Gasket (insulator)
6 Gasket (insulator)
7 Inlet stub
8 Gasket
9 Oil seal
10 Stud
11 Screw (or bolt – hexagon head)
12 Screw (or bolt – hexagon head)
13 Screw
14 Screw
15 Nut
16 Dowel pin

Fig. 1.3 Crankcase assembly



12.1 With the engine supported, remove the crankcase securing screws



12.2 Separate the crankcase halves

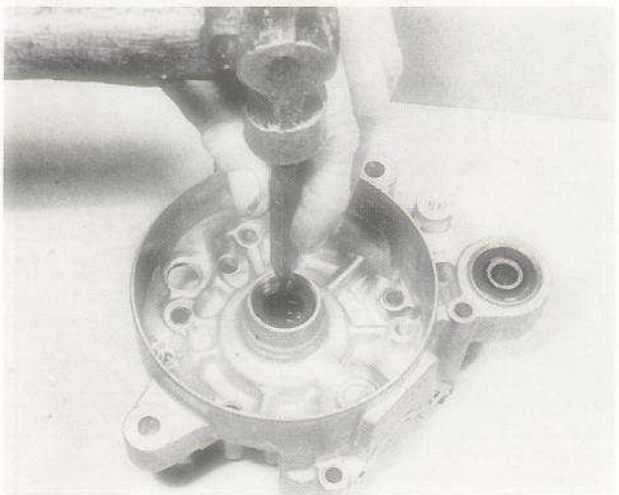
13 Main bearings: examination, removal and refitting

1 Before examining the main bearings for wear it is necessary to remove all old oil deposits from them; this should be done by washing them thoroughly in petrol. If any play is evident or if the bearings do not run freely or smoothly then they must be replaced. Warning of main bearing failure is usually given by a characteristic rumble that can be readily heard when the engine is running. Some vibration will also be felt, which will be transmitted via the footrests and frame in general.

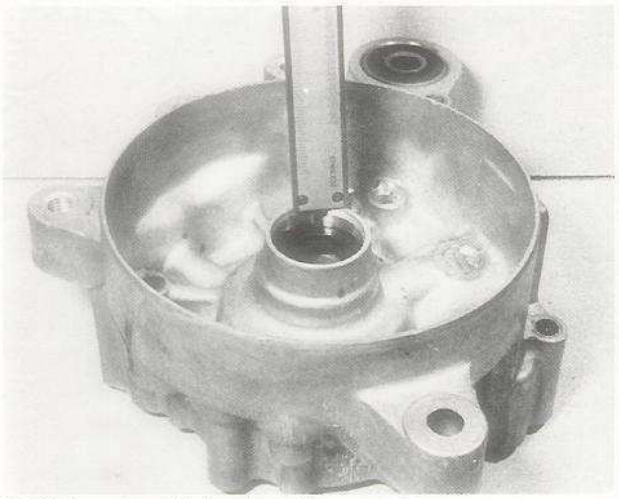
2 If bearing renewal is found to to be necessary the bearings must be removed from the crankshaft or crankcase halves depending on where they remained after crankshaft removal. If the bearings have been retained in the crankcase halves then removal is easily carried out by drifting out each bearing using a metal drift and a hammer. The bearings should be drifted out away from the seals. Before removing the seals it should be noted that the seal contained in the right-hand half of the crankcase is recessed a distance of 6.5 mm (0.254 in) whereas the seal in the left-hand half of the crankcase is flush with the outer surface. These seals should be renewed as a matter of course whenever the engine is dismantled. Although the seals may have functioned correctly in service they are damaged easily during dismantling and the risk of their subsequent failure should be avoided. The seals may be prised from position using a long-shanked screwdriver, care being taken not to bruise the crankcase surfaces adjacent to the seal housings.

3 Always fit the new seals before the bearings as this will allow access to be gained to both sides of the seal should repositioning of the seal be necessary to obtain the previously noted positions. The bearings may then be greased and fitted to the crankcase halves by using a socket or piece of metal tube placed on the outer bearing case. This may then be used to drift the bearing into the crankcase whilst ensuring that the crankcase is well supported from the other side and that the bearing enters the crankcase squarely.

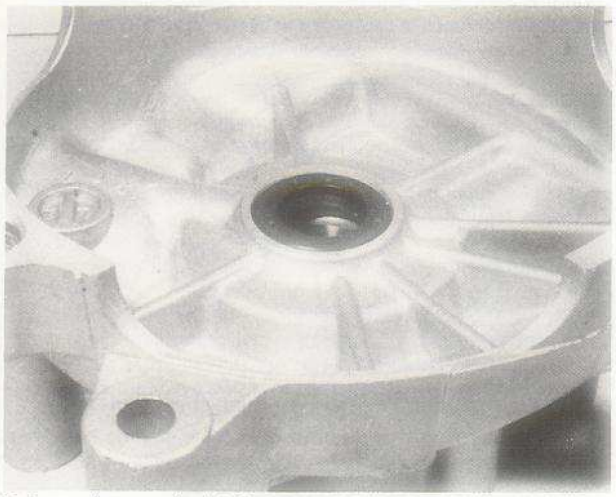
4 Where the bearings have remained on the crankshaft during separation of the crankcase halves, it will be found necessary to use special pullers to remove the bearings. This is a job that is best entrusted to an official Honda Service Agent who will have the special tools with which to remove the old bearings without damage occuring to the crankshaft. This also applies in the case of big-end bearing wear (see Section 15 of this Chapter). There is no satisfactory alternative to the use of these special tools.



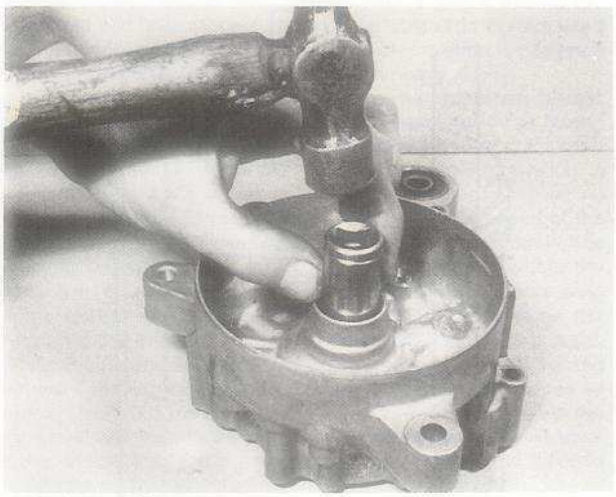
13.2a Drift each main bearing out away from the seal



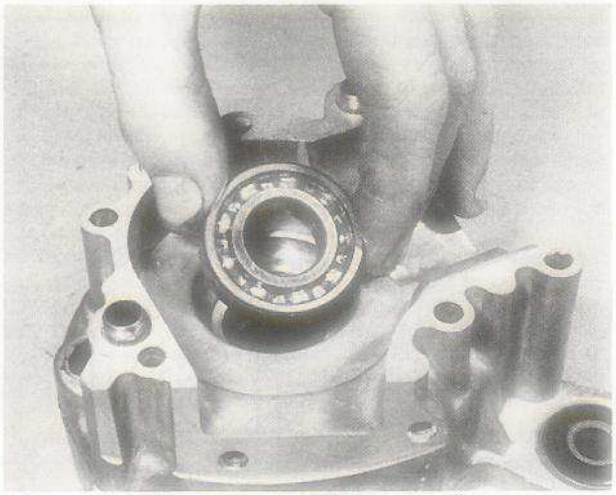
13.2b Note the right-hand seal is recessed ...



13.2c ... whereas the left-hand seal is flush



13.3a Always fit new seals



13.3b Grease the bearings before fitting

14 Piston and piston rings: examination and renovation

1 Attention to the piston and rings can be overlooked if a rebore is necessary because a new piston and rings will be fitted under these circumstances.

2 If a rebore is not considered necessary, the piston should be examined closely. Reject a piston if it is badly scored or discoloured as the result of the exhaust gases by-passing the rings. Check the gudgeon pin bosses to ensure that they are not enlarged or that the grooves retaining each circlip are not damaged.

3 Remove all carbon from the piston crown using a soft metal or hard wood scraper and taking great care not to scratch the metal surface. Metal polish may be used after the carbon has been removed to obtain a highly polished finish as carbon will adhere much less readily to a polished surface. Examination will show whether the engine has been rebored previously since the amount of overbore is invariably stamped on each piston crown.

4 The grooves in which the piston rings locate can become enlarged in use. The clearance between the edge of each piston ring and the groove in which it seats should not exceed the limits given in the Specifications at the beginning of this Chapter.

5 Remove the piston rings by pushing the ends apart with the thumbs whilst gently easing each ring from its groove. Great care is necessary throughout this operation because the rings are brittle and will break easily if overstressed. If the rings are gummed in their grooves, three strips of tin can be used, to ease them free, as shown in the accompanying illustration.

6 Piston ring wear can be checked by inserting the rings one at a time in the cylinder bore from the top and pushing them down about $1\frac{1}{2}$ inches with the base of the piston so that they rest squarely in the bore. Make sure that the end gap is away from any of the ports. If the end gap is within the range 0.15 – 0.35 mm (0.006 – 0.014 in) the ring is fit for further service.

7 Examine the working surface of each piston ring. If discoloured areas are evident, the ring should be renewed because these areas indicate the blow-by of gas. Check that there is not a build-up of carbon on the back of the ring or in the piston ring groove, which may cause an increase in the radial pressure. A portion of broken ring affords the best means of cleaning out the piston ring grooves.

8 Check that the piston ring pegs are firmly embedded in each piston ring groove. It is imperative that these retainers should not work loose, otherwise the rings will be free to rotate and there is a danger of the ends being trapped in the ports.

9 It cannot be over-emphasised that the condition of the piston and piston rings is of prime importance because they control the opening and closing of the ports by providing an effective moving seal. A two-stroke engine has only three working parts, of which the piston is one. It follows that the efficiency of the engine is very dependent on the condition of the piston and the parts with which it is closely associated.

10 Check the fit of the gudgeon pin in the piston bosses. Check also the clearance between the gudgeon pin and the small-end bearing. If the degree of wear exceeds that given in the Specifications at the beginning of this Chapter, the caged needle roller bearing must be renewed, as should the gudgeon pin if wear is evident on its bearing surface. If the small-end eye itself is oversize the connecting rod must be renewed.

15 Big-end bearing: examination, removal and refitting

1 To examine the big-end bearing for wear, grasp the connecting rod and feel for any discernible movement. Some axial clearance is intentional but any up and down movement will necessitate renewal of the crankpin assembly. Because of the method of fixing the central crankpin and of the high accuracy required in re-aligning the flywheels after bearing replacement, this operation is usually beyond the means of the average owner. It is recommended that the crankshaft assembly be returned to a Honda Agent and a Service Exchange component obtained.

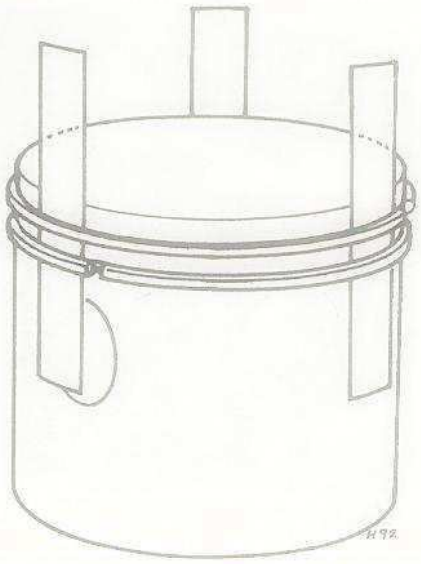


Fig. 1.4 Freeing gummed rings

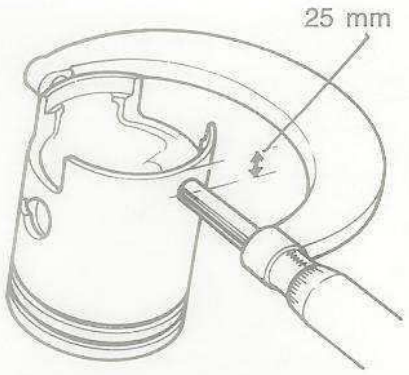


Fig. 1.5 Method of measuring piston diameter

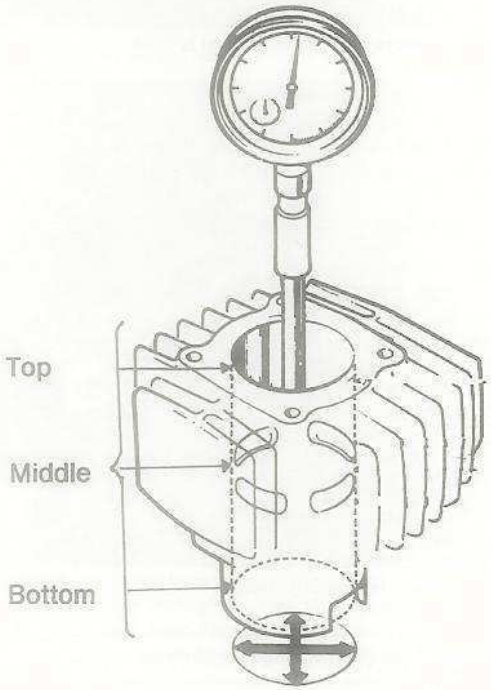


Fig. 1.6 Method of measuring cylinder bore diameter

16 Cylinder barrel: examination and renovation

1 The cylinder barrel should be carefully cleaned using a wire brush and petrol to remove any accumulation of grime around the cooling fins. After drying the bore with a clean rag, examine the surface for signs of wear or scoring. If scoring or scratches are in evidence in the bore, the cylinder will need to be rebored and a new piston fitted.

2 A small ridge may be in evidence near to the top of the bore. This marks the extent of travel of the top piston ring, and will probrably be more pronounced at one point (the thrust face) than at any other. If this is barely perceptible, and the piston and rings are in good condition, it will probably be safe to use the existing bore. If in any doubt, and in any case if the ridge is marked, the barrel should be taken to a Honda Service Agent for checking, together with its piston.

3 For those owners who have the correct equipment the condition of the piston and cylinder barrel may be determined by direct measurement. Measure the diameter of the piston at right-angles to the gudgeon pin line at a point 25 mm (0.975 in) from the bottom of the piston skirt. If the diameter is less than 39.945 mm (1.558 in) the piston is in need of renewal.

4 The cylinder bore should be measured at three different positions along the length of the cylinder sleeve and then a further three positions at right angles to the first measurements. If the smallest reading exceeds 40.09 mm (1.5635 in) the cylinder is in need of a rebore. It should be noted that the measurements given apply only to standard size components. If oversize components are being measured the relevant oversize should be added to the figure.

5 Clean all carbon deposits from the exhaust ports using a blunt ended scraper. It is important that all the ports should have a clean, smooth appearance because this will have the dual benefit of improving gas flow and making it less easy for carbon to adhere in the future. Finish off with metal polish, to heighten the polishing effect.

6 Do not under any circumstances enlarge or alter the shape of the ports under the mistaken belief that improved performance will result. The size and position of the ports predetermines the characteristics of the engine and unwarranted tampering can produce very adverse effects.

17 Cylinder head: examination and renovation

1 It is unlikely that the cylinder head will require any special attention apart from removing the carbon deposits from the combustion chamber. Finish off with metal polish; the polished surface will help improve gas flow and reduce the tendency of future carbon deposits to adhere so easily.

2 Check that the cooling fins are clean and unobstructed, so that they receive the full air flow.

3 Check the condition of the thread within the sparking plug hole. The thread is easily damaged if the sparking plug is overtightened. If necessary, a damaged thread can be reclaimed by fitting a Helicoil thread insert. Most Honda Service Agents have facilities for this type of repair, which is not expensive.

4 If there has been evidence of oil seepage from the cylinder head joint when the machine was in use, check whether the cylinder head is distorted by laying it on a sheet of plate glass. Severe distortion will necessitate renewal of the cylinder head, but if distortion is only slight, the head can be reclaimed by wrapping a sheet of emery paper around the glass and using it

as the surface on which to rub down the head with a rotary motion, until it is once again flat. The usual cause of distortion is failure to tighten down the cylinder head nuts evenly, in a diagonal sequence.

5 A decompressor valve assembly is fitted to the cylinder head. When opened, it allows the cylinder compression to pass straight into the exhaust system. The purpose of this is to allow the pedals to be turned quickly to facilitate starting, and it also acts as a means of stopping the engine. The valve will rarely require attention, but should there be evidence of leakage, proceed as follows.

6 Remove the clip which retains the saddle to the top of the valve stem. The valve may now be pushed down into the combustion chamber and withdrawn from its guide. If necessary, the large hairspring and plate may be removed from the cylinder head by removing the retaining screw.

7 Examine the valve and valve seat faces for signs of blow-by or leakage. If the sealing surfaces appear to be inadequate, they should be ground in a similar way to four-stroke engines. Smear a little fine grinding past on the valve seat and place the valve in position in the head. Because the valve head is too small to accommodate the normal type of valve grinding tool, the most satisfactory method of rotating the valve is by gripping the stem in the chuck of a hand drill and rotating the drill slowly whilst gently pulling on the stem. The two surfaces should be lapped together with a to and fro motion, this may be achieved by changing the direction of rotation of the drill at frequent intervals. The valve should be lifted and turned every two or three oscillations, to prevent grooves being formed by the abrasive particles. When finished, the valve and valve seat faces should have a uniform dull grey surface with no signs of scores or other marks. Ensure that all traces of the grinding paste are washed out prior to reassembly.

8 Reassembly is a direct reversal of the removal sequence. Note that some difficulty may be encountered in keeping the valve in place whilst the saddle and clip are refitted to the valve stem. A woodscrew screwed part way into the workbench, makes a suitable support for the valve head. Do not omit to check the condition of the O-ring, before refitting the hairspring and plate, renewing it if necessary.

18 Transmission: general description and operation

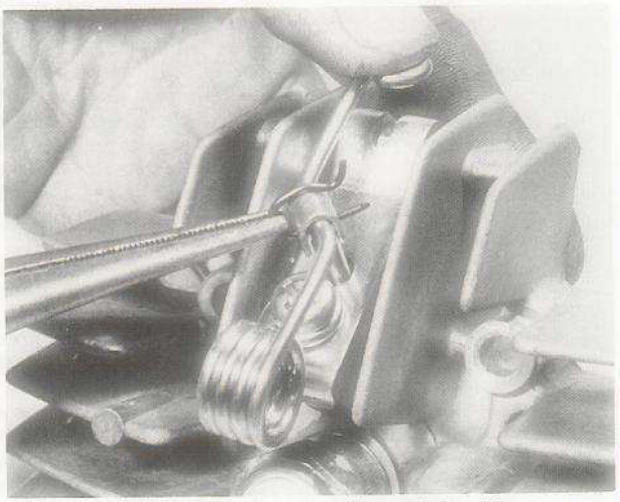
Two types of transmission system have been employed on the Honda PA 50 models, earlier models having a basic single speed automatic clutch arrangement with a V-belt driving the rear wheel and later models having a variable ratio system used in conjunction with a toothed belt. The later system is designed to give improved acceleration and hillclimbing ability.

On single speed models, drive from the crankshaft passes to a centrifugal clutch unit. The clutch contains three spring loaded shoes mounted on a backplate driven by the crankshaft and contained in a drum. At tickover, the spring tension is sufficient to hold the shoes in, against their stops, and so no drive is transmitted to the drum and pulley. As the speed of the engine rises, the shoes are thrown outwards by centrifugal force until they begin to rub on the drum. From this point, where the shoes are merely rubbing on the drum surface, increasing engine speed leads to greater pressure from the shoes on the drum until the drive between the crankshaft and pulley is solid.

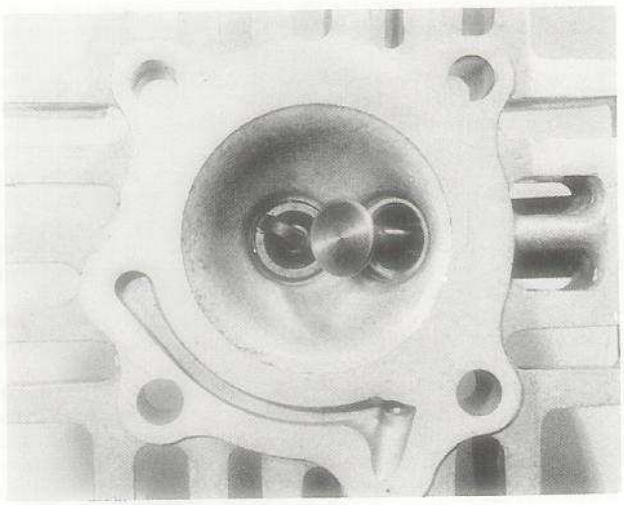
A second, smaller, clutch is incorporated in the unit, having just two lightly sprung shoes. This operates in the same way as the main unit, but transmits movement from the pedals, via the rear wheel and hub, to the engine for starting purposes. As soon as the engine starts and pedal movement ceases, the drive to the engine is disconnected.

Drive from the front pulley is transmitted by way of a V-belt to the fixed rear pulley. The rear pulley is mounted on the input shaft of the rear wheel reduction gear assembly, from which drive is transmitted by way of a small integral pinion via an idler gear to a larger pinion and thence to the rear wheel spindle.

On variable speed models, the crankshaft, as well as driving the starter and centrifugal clutch assemblies, also drives a centrifugal speed governor which incorporates a variable diameter pulley. At rest, the two pulley halves are at their farthest point apart, making the effective diameter of the pulley as small as possible. The rear pulley is also of variable diameter and is spring loaded to maintain belt tension. At rest, the two halves are pushed together to give the largest possible pulley diameter. This combination of pulley sizes gives a low overall gearing, providing improved acceleration from rest when compared with the fixed ratio models. As the engine speed rises, the sleeved rollers are forced outwards from the centre of the speed governor. This causes the outer half of the front pulley to move inwards, changing its effective size. As this happens, the rear pulley is forced apart against spring tension, thereby reducing its effective diameter. The result is that the overall gearing is raised giving a higher road speed at a lower engine speed. Apart from the spring loaded rear pulley, the rear wheel reduction gear assembly is identical to that employed on the single speed models.



17.6a Remove the valve stem to saddle retaining clip ...



17.6b ... and withdraw the valve

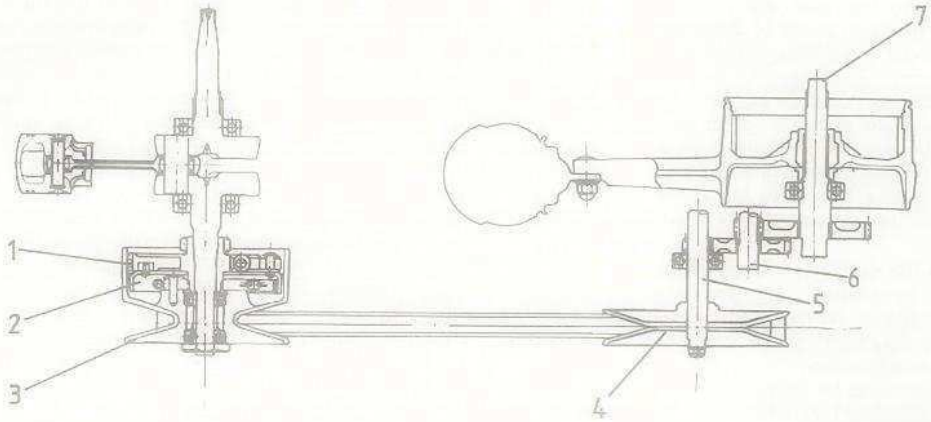


Fig. 1.7 Fixed ratio transmission

1 Centrifugal clutch shoe assembly
2 Starter clutch shoe assembly
3 Fixed pulley
4 Fixed pulley
5 Driveshaft
6 Intermediate shaft
7 Driven shaft

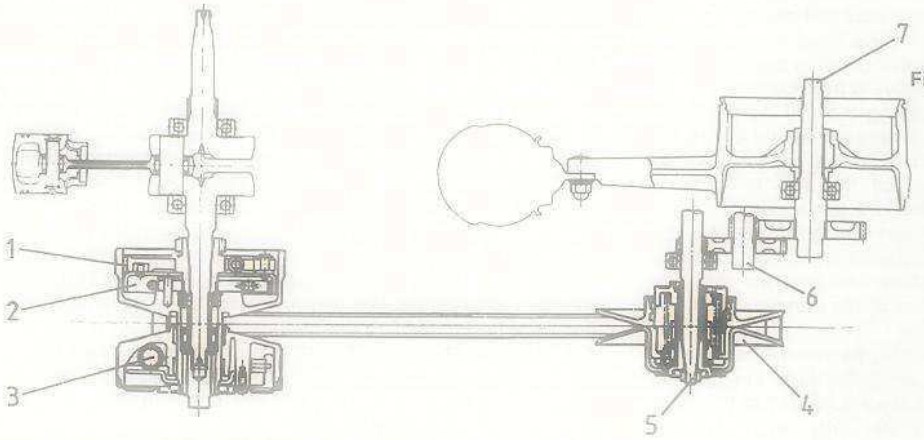


Fig. 1.8 Variable ratio transmission

1 Centrifugal clutch shoe assembly
2 Starter clutch shoe assembly
3 Clutch unit variable ratio pulley assembly
4 Reduction gearbox variable ratio pulley assembly
5 Driveshaft
6 Intermediate shaft
7 Driven shaft

19 Centrifugal clutch unit: examination and renovation

1 If it is found that the engine speed of the machine has to be abnormally high before the centrifugal clutch begins to take up drive, then the clutch unit must be removed from the engine so that the shoe linings may be inspected for excessive wear, oil or grease contamination, or scoring. If any of these factors are evident then the shoes will require renewal.

2 To remove the shoes from the backing plate, push the three retaining clips from their locating slots in the spigots and slide all three shoes and springs up and off the spigots. Note the positions of the springs before removing them from the shoes so that they may be refitted to the new shoes in the same positions; that is with the hook ends nearest the backing plate.

3 If the shoe linings are found only to be worn then no other action is necessary before fitting the new shoes. If, however, the linings are found to be contaminated with oil, then the crankcase oil seal must be inspected for signs of deterioration and renewed if necessary to prevent any contamination of the new shoe linings.

4 If the shoe linings are found to be badly scored, then the inner face of the clutch housing must be inspected for scoring and the housing renewed if considered necessary.

5 Fitting the new shoes is a reversal of the removal procedure. Check that when fitted, the shoes pivot easily on the spigots.

6 If it is found that the machine has a tendency to creep forwards when the engine is running at tickover speed, the clutch return springs may have weakened or stretched thus allowing the clutch shoes to engage prematurely. To determine the condition of the springs, remove them from the clutch shoes and measure their free length. This should be 29.20 mm (1.139 in) measured from the ends of the spring coil. If the measurement is found to be larger than this, renew the springs.

20 Starter clutch unit: examination and renovation

1 Should the engine fail to turn over when the machine is pedalled along, it is possible that the starter clutch is slipping. The clutch unit mechanism may be exposed by removing the V-matic unit or fixed pulley from the crankshaft as detailed in Section 9 of this Chapter.

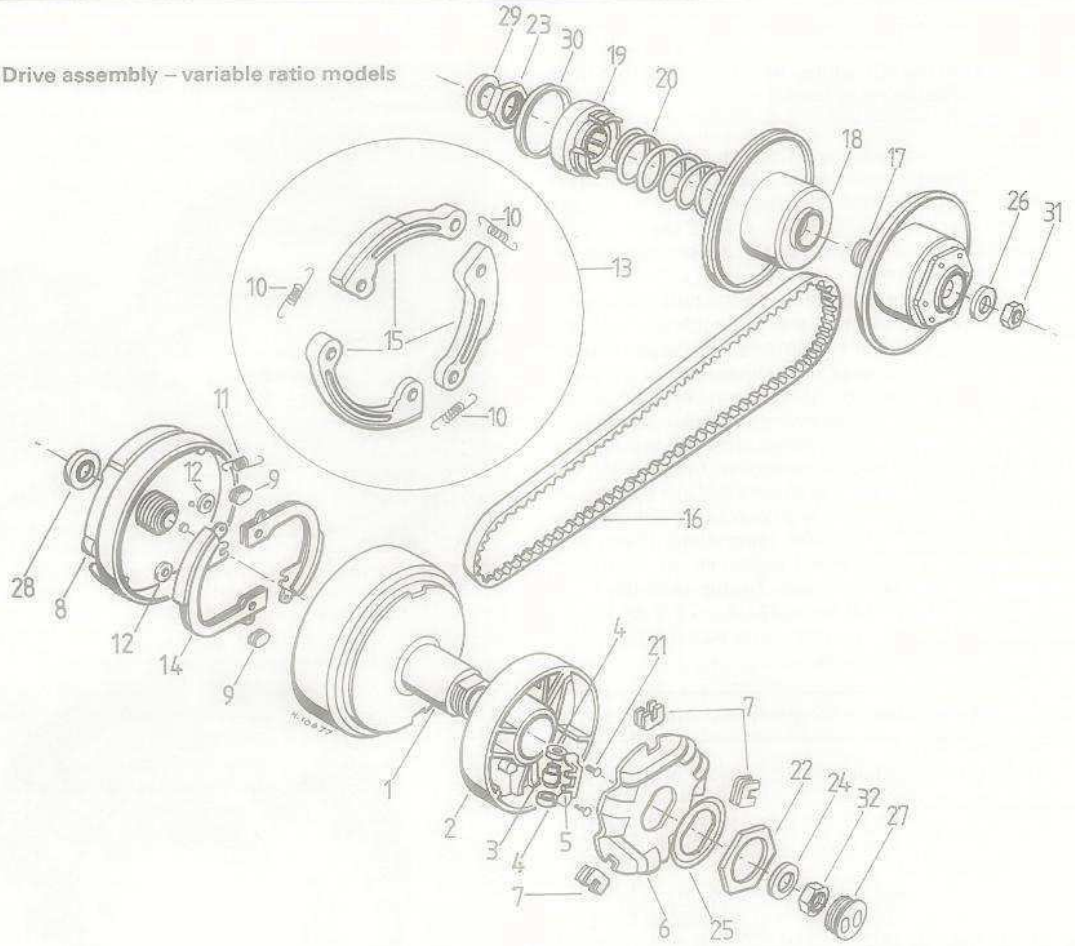
2 With the unit placed on a work surface with the clutch mechanism uppermost, remove the nylon washer from the top of each spigot and slide the two shoes and springs up and off the spigots. Examine the shoe linings for wear, oil contamination or scoring. If the shoe linings are worn then renewal of the shoes is necessary. Contamination of the linings by oil means that both renewal of the shoes and renewal of defective crankcase and centrifugal clutch backing plate oil seals is necessary. If the linings are found to be badly scored, then the inner face of the clutch housing must be inspected for scoring and the housing renewed if considered necessary.

3 Fitting new shoes is a reversal of the removal procedure. Check that when fitted, the shoes pivot easily on the spigots and that the OUT mark on each shoe faces outwards.

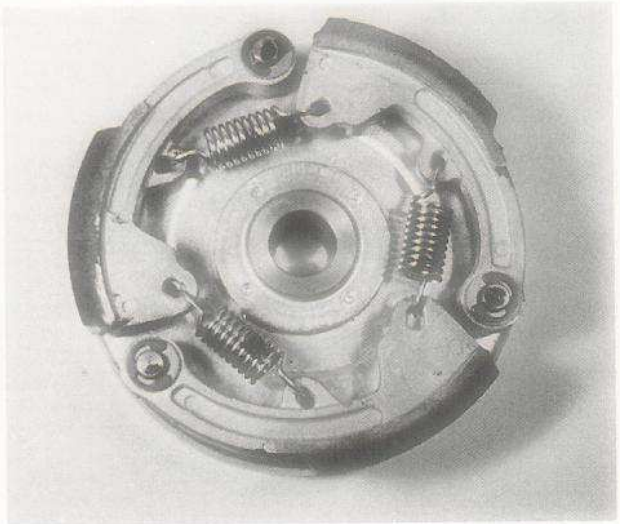
4 Inspect also the condition of the two rubber damper pads. If they are worn or have become heavily contaminated with oil then they should be renewed.

5 If the starter clutch should fail to disengage after the engine has started and the centrifugal clutch has come into operation, check the condition of the two clutch shoe return springs by removing them from the shoes and measuring their free length. This should be 19.50 mm (0.760 in) measured from the ends of the spring coil. If the measurement is found to exceed this, renew the springs.

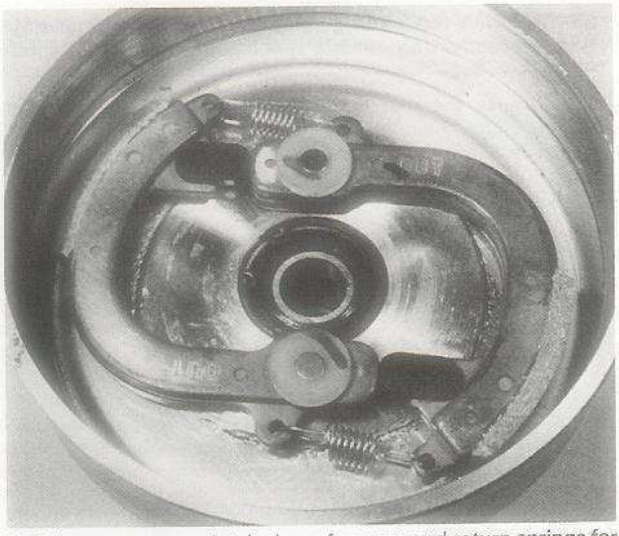
Fig. 1.9 Drive assembly – variable ratio models



1 Clutch housing
2 V-matic unit casing
3 Roller
4 Collar
5 Retaining plate
6 Ramp plate
7 Slide piece
8 Centrifugal clutch shoe lining
9 Damper pad
10 Centrifugal clutch shoe return spring
11 Starter clutch shoe return spring (2 off)
12 Nylon washer
13 Centrifugal clutch shoe assembly
14 Starter clutch shoe
15 Centrifugal clutch shoe
16 Drive belt (toothed)
17 Left-hand pulley face
18 Right-hand pulley face
19 Follower cam
20 Spring
21 Screw-panhead
22 Nut – special 27 mm
23 Nut – special 20 mm
24 Washer
25 Lockwasher
26 Washer
27 Rubber bung
28 Oil seal
29 Oil seal
30 Oil seal
31 Nut
32 Nut



19.2 Inspect centrifugal clutch shoes for wear and return springs for fatigue



20.2 Inspect starter clutch shoes for wear and return springs for fatigue

21 Clutch unit variable ratio pulley assembly: examination and renovation – variable ratio models

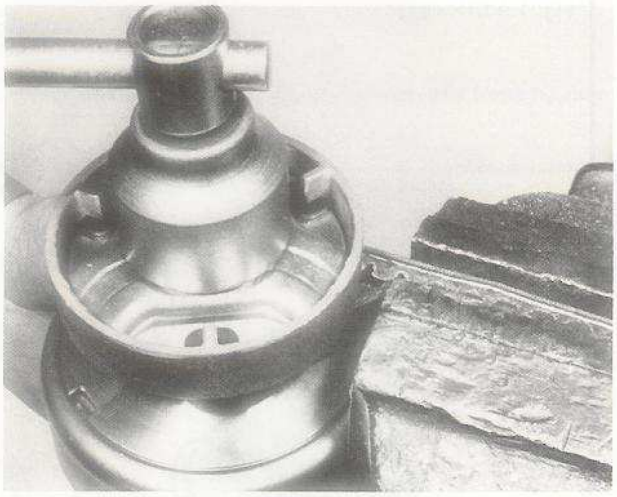
1 With the V-matic unit removed from the crankshaft end (see Section 9 of this Chapter), knock back the tab washer situated under the large central retaining nut and secure the unit by tightly gripping the toothed belt around the pulley by securing the length of the belt in the jaws of a vice. Remove the retaining nut and tab washer.
2 Mark the position of the ramp plate to the outer casing for reassembly purposes and remove the ramp plate. This will expose the three roller assemblies contained in the main body of the unit. Very little in the way of maintenance is required, with the exception of liberally greasing the rollers and tracks each time the unit is disturbed. Examine the roller assemblies for any signs of excessive wear, deterioration, or seizure and renew the assemblies, if considered necessary, by removing the two crosshead screws that secure each assembly to the casing.
3 Reassembly of the unit is a straightforward reversal of the removal sequence. When refitting the ramp plate, check that the plastic slide pieces are correctly located in the plate recesses and are not excessively worn. Torque load the large central retaining nut to 3.0 – 4.0 kgf m (21.7 – 29.0 lbf ft) and ensure the nut is correctly locked in position by bending up the tab washer against one of the flats.

22 Rear pulley: examination – single speed models

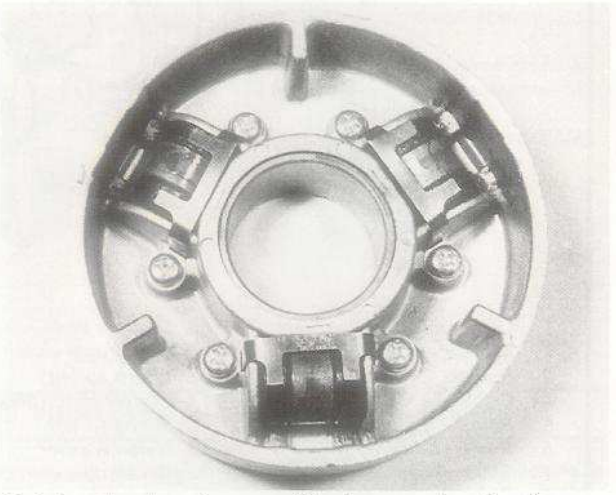
1 The rear pulley on all single speed models is a straightforward fixed size type, and will require no maintenance. Should wear or damage be evident, it will be necessary to remove the pulley for renewal. It is retained by a single, central, retaining nut and washer.
2 With the retaining nut and washer removed, the pulley may be drawn off the shaft by using either a three legged puller or Honda Service tool no 07960 – 1480100. Caution must be exercised if using a puller, not to apply excessive force to the edges of the pulley otherwise distortion of the pulley will occur necessitating replacement of the unit. If it seems that any great force is likely to be required to remove the pulley then the Honda service tool must be used. It is a good idea to carry out the simple task of removing the rear wheel and taking the whole assembly to an official Honda Service Agent who should have this tool.
3 When refitting the pulley, torque load the retaining nut to 2.0 – 2.5 kgf m (14.5 – 18.0 lbf ft).

23 Rear hub reduction gear assembly: removal, examination and renovation – single speed and variable ratio models

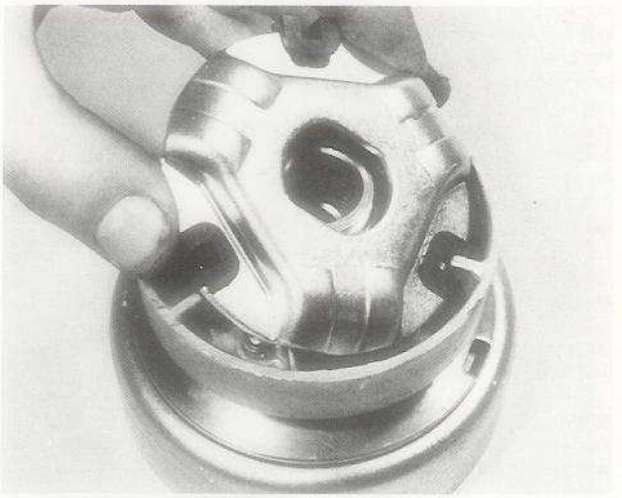
1 Because the rear hub unit is a self-contained assembly housed within the rear wheel hub, it is necessary to remove the rear wheel in order to gain access to the unit. Details of rear wheel removal are contained in Section 4, paragraphs 4 and 5, of this Chapter.
2 With the rear wheel placed on the workbench, unscrew the freewheel ratchet assembly and pull the brake assembly out of the wheel hub. The reduction gear assembly may now be withdrawn from the other side of the wheel.
3 Refer to Section 22 of this Chapter for details of removing the pulley fitted to the single speed models. The variable diameter pulley assembly fitted to the variable ratio models may be removed from the reduction gear assembly by first loosening the central retaining nut whilst holding the large outer nut by means of a spanner or in the jaws of a vice. With the central nut unscrewed so that it is flush with the end of the input shaft thread, sharply tap the end of the shaft with a soft faced mallet to free the pulley assembly from the shaft taper. Remove both the nut and pulley assembly from the shaft. If for any reason the aforementioned procedure fails to separate the pulley from the



21.1 Secure the unit to remove the retaining nut



21.2 Examine the roller assemblies for wear, deterioration or seizure



21.3 Check the location of the plastic slide pieces when fitting the ramp plate

shaft. Then a similar procedure to that given for the single speed models should be used. The Honda Service tool, should it be required, is No 07933 – 1480100.

4 It is strongly advised that no attempt should be made to dismantle the variable diameter pulley assembly as the unit contains an extremely strong spring that will cause the unit to fly apart once the two pulley halves are separated. It is better that the unit be replaced as a whole should renewal be necessary.

5 Drain the oil from the reduction gear assembly by removing the filler/level plug and sealing washer. Check the condition of the sealing washer and renew it if necessary.

6 With the assembly positioned on wooden blocks so that the splined shaft faces down and is clear of the bench surface, remove the crosshead screws that secure the casing halves. It should be noted that these screws are of varying lengths and should be refitted in their correct positions. It is a good idea to make up a cardboard template in which to retain the screws so that their fitted positions are not forgotten. An impact screwdriver will be needed to free the screws without damaging the heads.

7 Carefully lift off the upper casing half, moving it slowly so that the assembly is prevented from springing apart with the force of the main spring located on the driven shaft. The gear pinions and shafts may now be removed from the casings, together with associated spring and washers, and laid out on a clean work surface. Clean and examine each component for signs of wear or damage. It is unusual for these components to wear to any marked degree, but should this be the case, the components concerned must be renewed. There is no satisfactory way of reclaiming damaged parts. If in doubt as to the condition of a component, take the item to an official Honda dealer who will advise on whether renewal is necessary.

8 Providing the assembly has been kept properly lubricated, there should be little evidence of wear in the needle roller bearings contained in the casings. If they appear worn, it is recommended that the casings are taken to an official Honda Service Agent who will be able to check whether renewal is necessary and fit the new bearings, if required. The shafts that run in the bearings may also require renewal, and should therefore also be taken. As a guide to whether the shaft and bearing are worn, fit the shaft into the bearing and check for any side-to-side movement. If movement is detected then the opinion of the Service Agent should be sought.

9 Check the condition of the ball bearings in each casing after having first cleaned them in petrol to remove the old oil. If they are found to be worn, renew them by carrying out the following procedure. Lay the casing half containing the lever assembly face down on a clean work surface so that the lever is uppermost. Remove the bearing seal by carefully levering it out with a screwdriver, taking care not to damage the casing face. The bearing may now be removed by tapping it out with a hammer and drift. The drift should be moved around the bearing sleeve to ensure the bearing leaves the casing evenly and squarely.

10 At this point the lever assembly may be removed from the casing and the O-ring renewed. This is achieved by removing the nut and washer that retains the lever to its shaft, removing the lever and spring and withdrawing the shaft from the casing. Inspect the shaft fork for signs of wear before refitting the shaft. If in any doubt as to the condition of the shaft and fork assembly, take the item to an official Honda Service Agent who will be able to decide if renewal is necessary. With the shaft fitted, lightly lubricate the new O-ring and slide it into position on the shaft. Refit the spring, lever, washer and retaining nut and check the lever for correct operation.

11 The new bearing and seal may now be fitted to the casing half. The casing should be well supported by wooden blocks so that the lever is clear of the work surface. Using a tube or socket the same size as the outer race of the bearing, carefully drive the bearing into the casing. Ensure that the casing is well supported directly below the bearing. The new seal may now be lightly lubricated and pressed into position with the seal lip facing the bearing.

12 The bearing and seal may now be removed from and fitted to the other half of the casing in a similar manner to that stated above. It is, however, easier to remove the bearing before removing the seal. Earlier models may have a circlip fitted to retain the bearing and this should be removed before attempting to drift out the bearing. It should be noted that even if the bearings are found to be in good condition, the seals should be renewed as leakage will almost certainly occur if the old ones are left fitted.

13 Ensure both casing halves are properly cleaned and that a new gasket is positioned over the locating dowels on the right-hand casing. Reassemble the reduction gear assembly as follows. Fit the spring seat plate onto the driven shaft with the recess in the plate facing the splined end of the shaft. Fit the spring over the shaft followed by the driven pinion. The pinion should be pushed over the keys on the shaft and twisted so that it locks itself, the spring and the plate in position. The shaft assembly may now be fitted into the right-hand casing.

14 Fit the intermediate gear and shaft assembly into the right-hand casing, ensuring that the thrustwasher is correctly located on the shaft before doing so. Fit the driveshaft, with thrustwasher, into the needle roller bearing located in the right-hand casing. Finally, fit the thrustwashers to the intermediate and driven shaft ends.

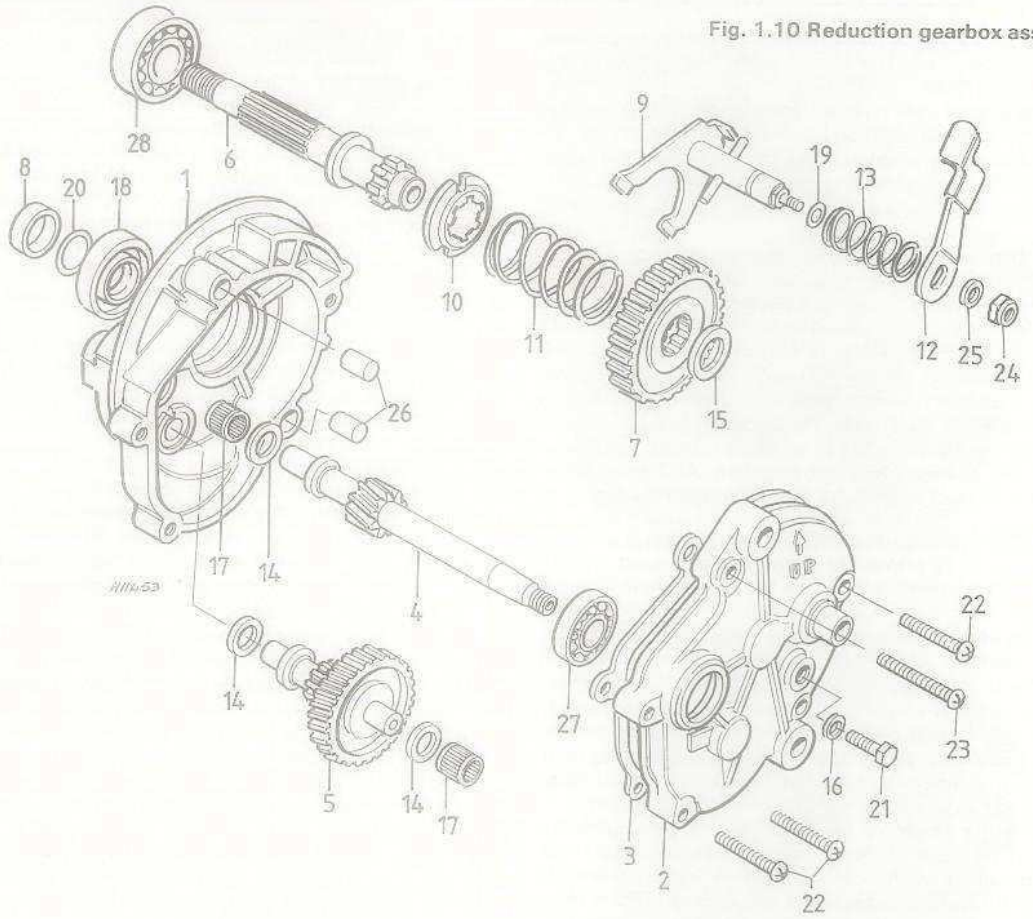
15 The two casing halves may now be fitted together. Ensure the dowels are correctly aligned with their locating holes in the left-hand casing and push the two halves together. Support the assembly on wooden blocks so that the splined shaft points downwards and is clear of the worksurface. Fit the crosshead screws in their previously noted positions and tighten using the impact driver.

16 The splined shaft may now be turned to locate the driven pinion on the keyed part of the shaft, a loud click will be heard when this happens. Fit the new O-ring over the splined end of the shaft, lubricating it lightly before doing so, followed by the spacer. At this stage loosely fit the oil filter/level plug and washer to prevent any ingress of dirt into the unit during the wheel refitting procedure. Fit the pulley, plain washer and nut and tighten the nut to a torque of 2.0 – 2.5 kgf m (14.5 – 18.0 lbf ft).

17 The reduction gear assembly may now be refitted to the wheel hub and the brake assembly fitted over the splined shaft end and into the brake drum. Finally, fit and tighten the freewheel ratchet assembly. Refit the wheel in accordance with paragraph 4, Sections 37 of this Chapter. Once the wheel is refitted, place the machine on a level surface with both wheels touching the ground and refill the reduction gear assembly with SAE 90 Hypoid gear oil to the level of the filler plug. It is worth purchasing the oil in a plastic squeeze bottle, because these are ideal for introducing the oil into the filler hole. Approximately 75 cc of oil will be needed. Refit the filler/level plug and washer, taking care not to overtighten it.

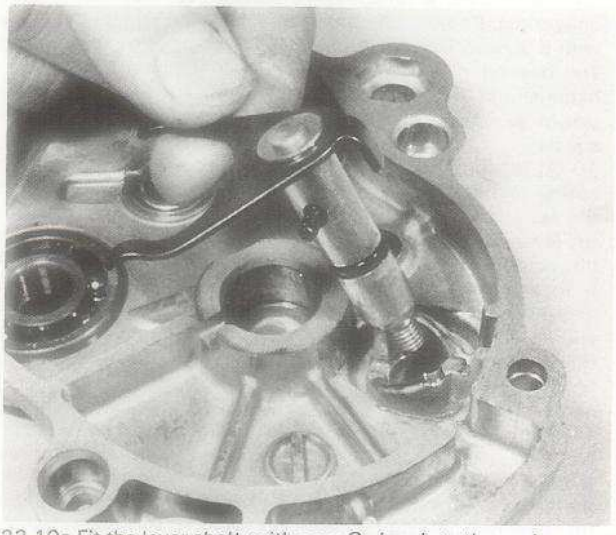
23.9a Carefully lever out the bearing seal ...

Fig. 1.10 Reduction gearbox assembly



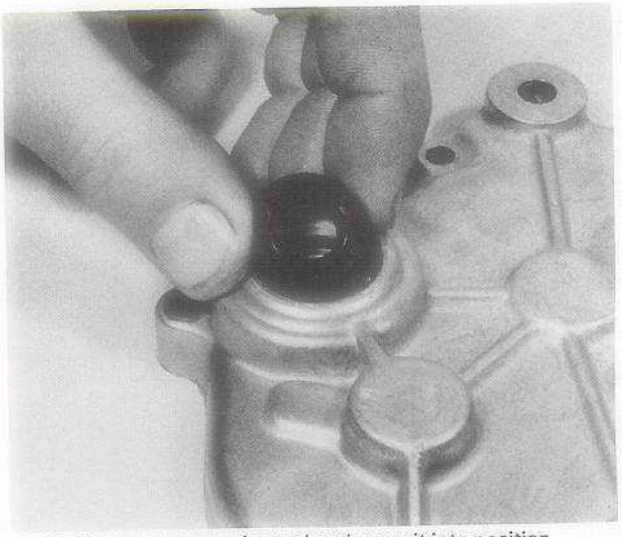
1 Right-hand casing half
2 Left-hand casing half
3 Gasket
4 Driveshaft
5 Intermediate gear and shaft assembly
6 Driven shaft
7 Driven pinion
8 Spacer
9 Lever shaft
10 Spring seat plate
11 Spring
12 Drive disconnect lever
13 Spring
14 Thrustwasher
15 Thrustwasher
16 Washer – sealing
17 Needle roller bearing
18 Oil seal
19 O-ring
19 O-ring
20 O-ring
21 Oil filler/level plug
22 Screw – panhead
23 Screw – panhead
24 Nut
25 Lockwasher
26 Dowel pin
27 Ball bearing
28 Ball bearing

23.9b ... and drift out the bearing

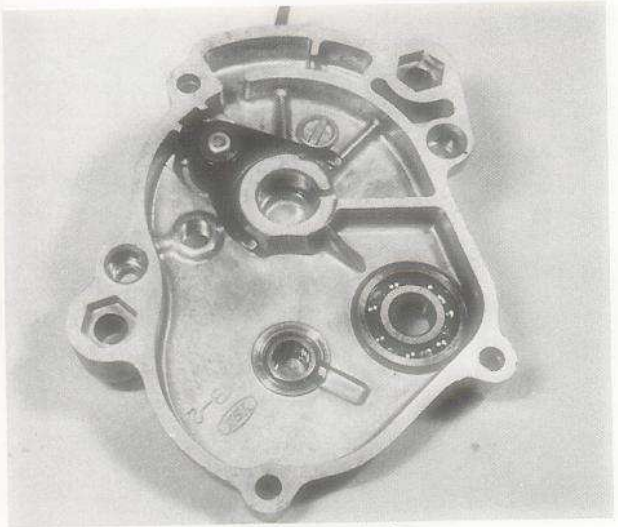


23.10a Fit the lever shaft, with new O-ring, into the casing ...

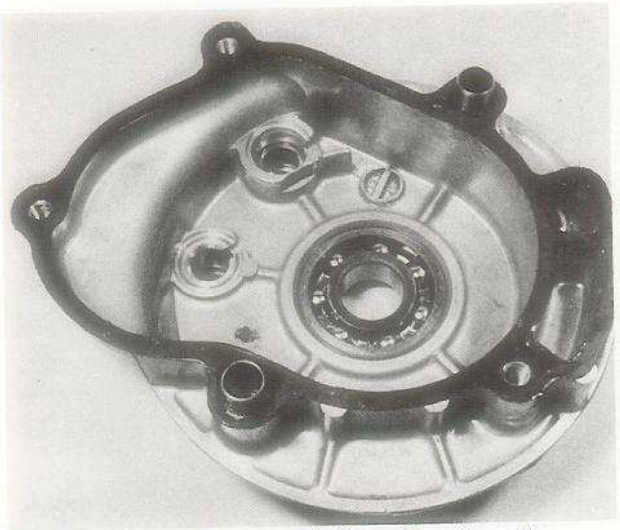
23.10b ... and refit the spring, lever, washer and retaining nut



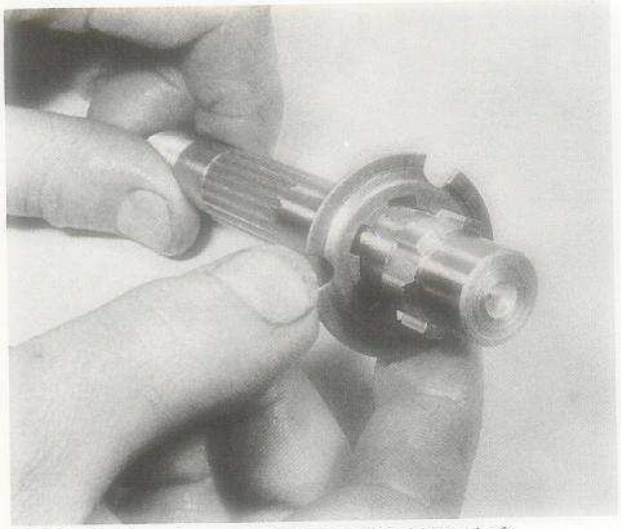
23.11 Lightly lubricate the seal and press it into position



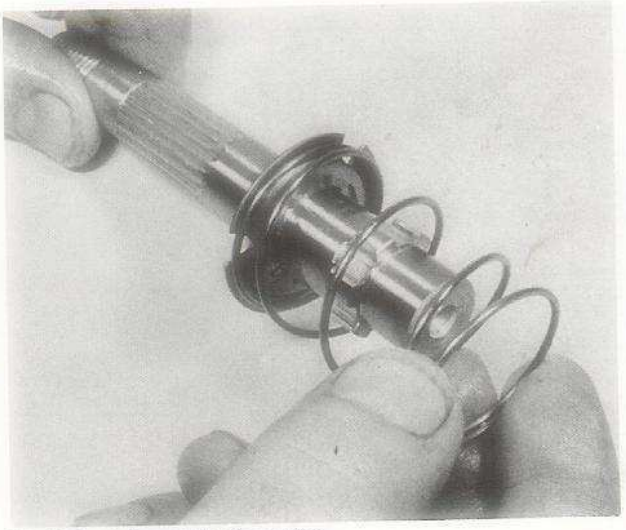
23.13a Ensure both casing halves are clean ...



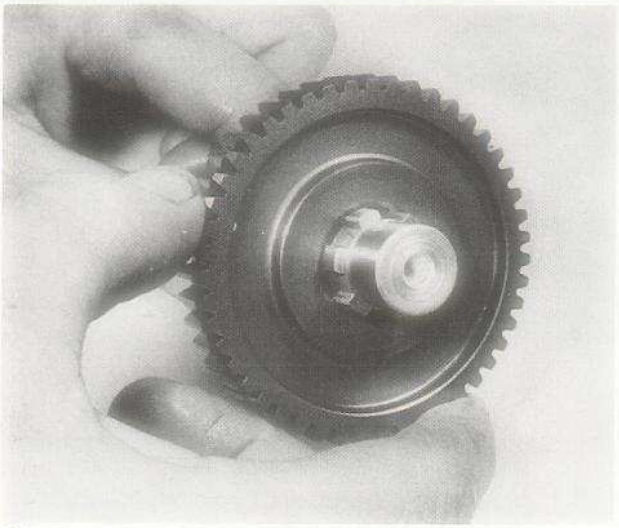
23.13b ... and that the new gasket is positioned over the locating dowels



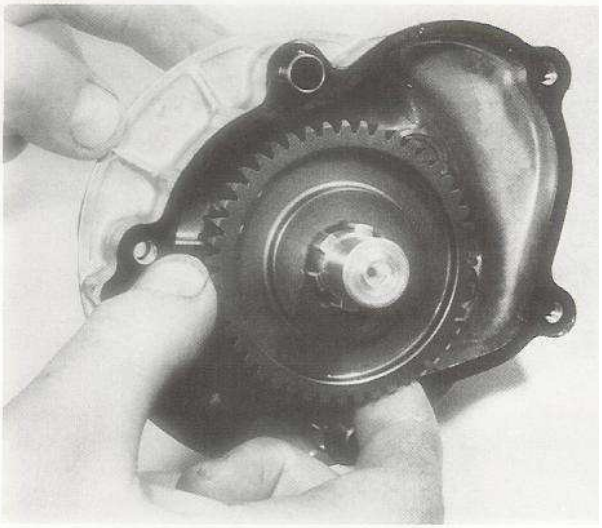
23.13c Fit the spring seat plate onto the driven shaft ...



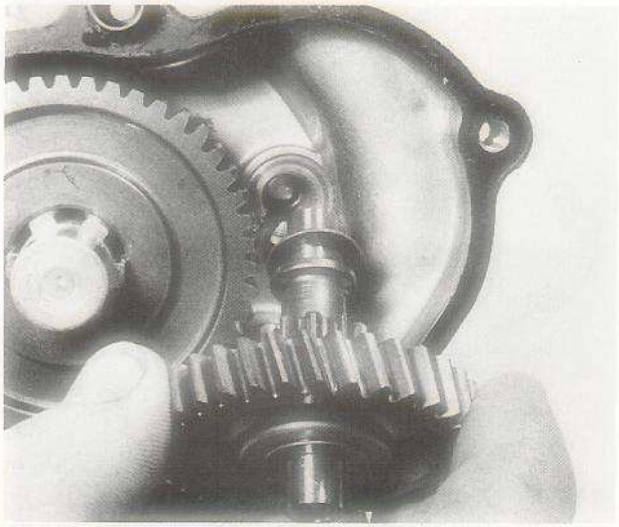
23.13d ... followed by the spring ...



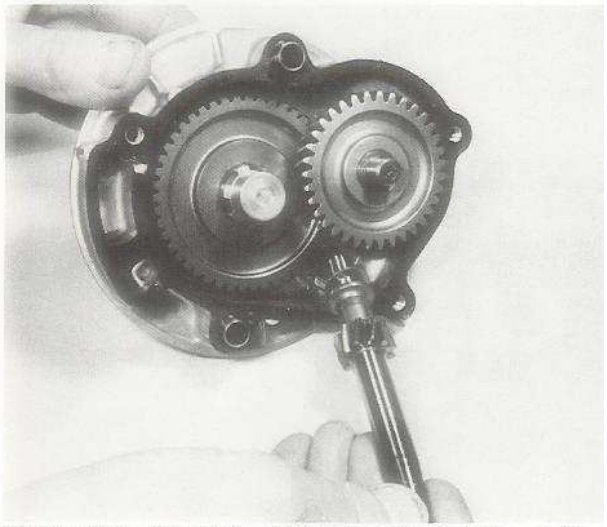
23.13e ... and the driven pinion



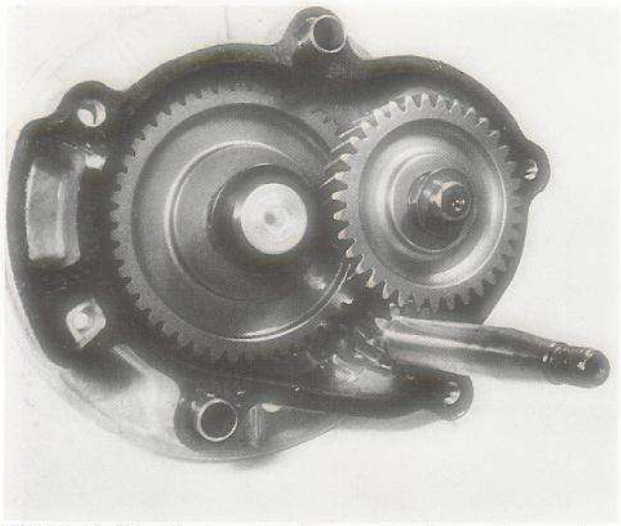
23.13f The shaft assembly may now be fitted into the casing



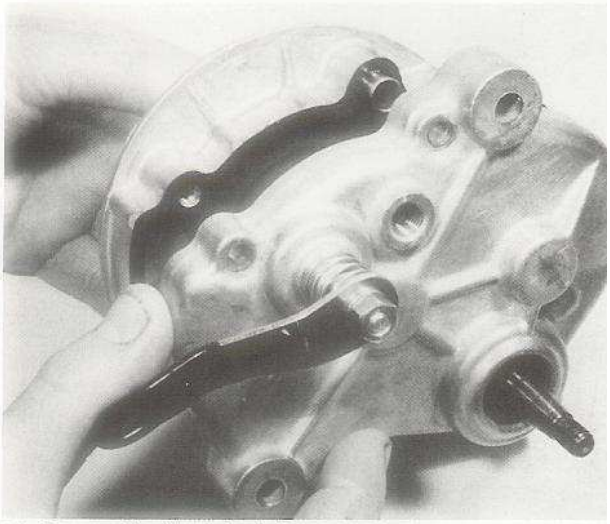
23.14a Fit the intermediate gear and shaft assembly, noting the thrust washer



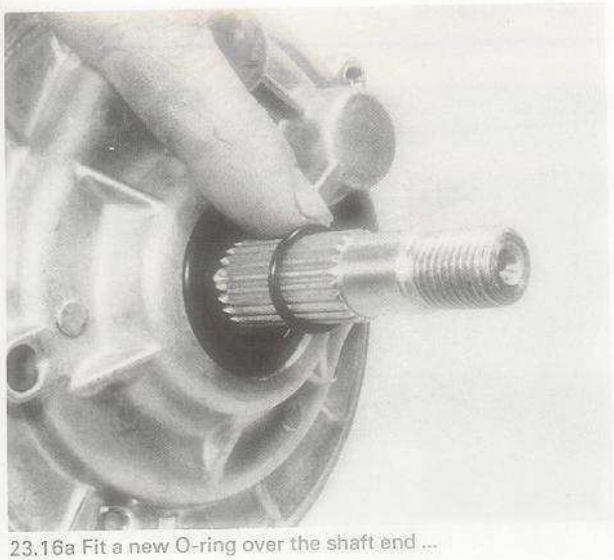
23.14b Fit the driveshaft, with thrust washer, into the needle roller bearing



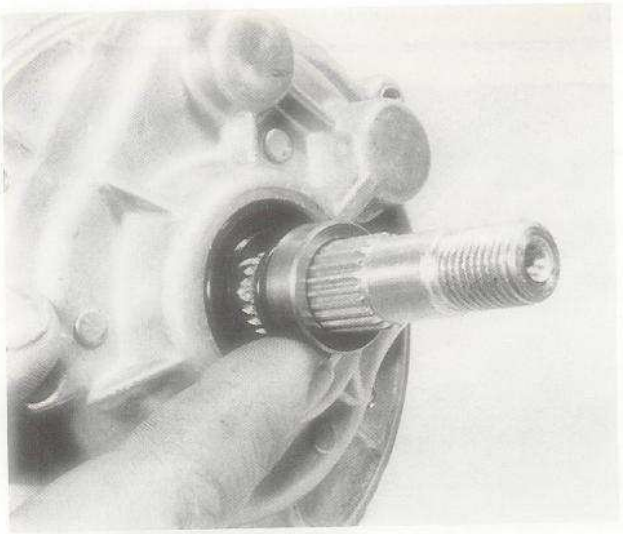
23.14c Position the thrust washers on the intermediate and driven shaft ends ...



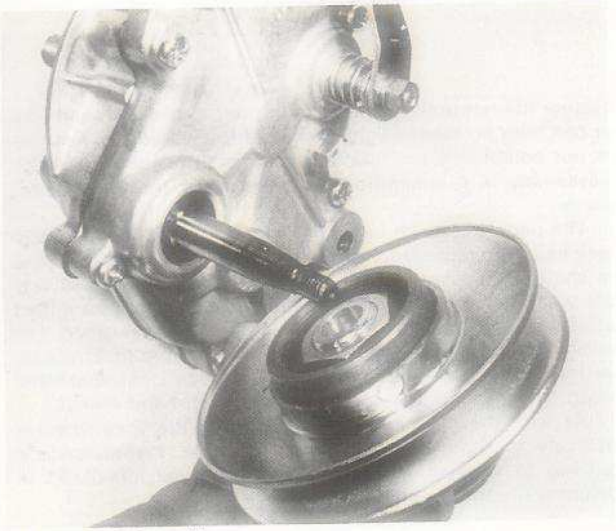
23.15 ... and fit the casing halves together



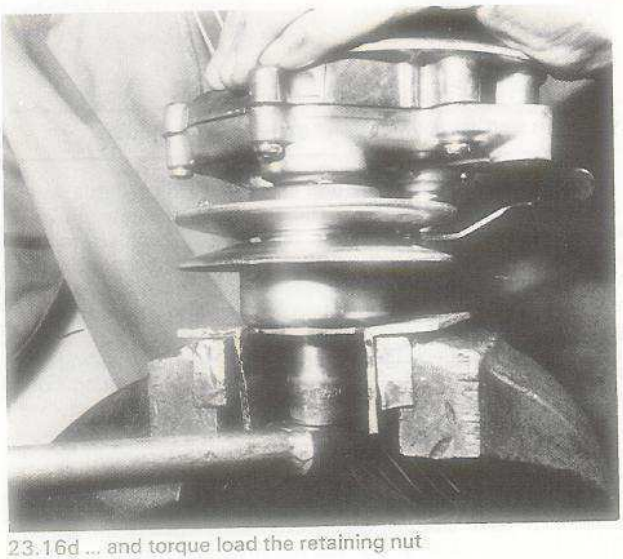
23.16a Fit a new O-ring over the shaft end ...



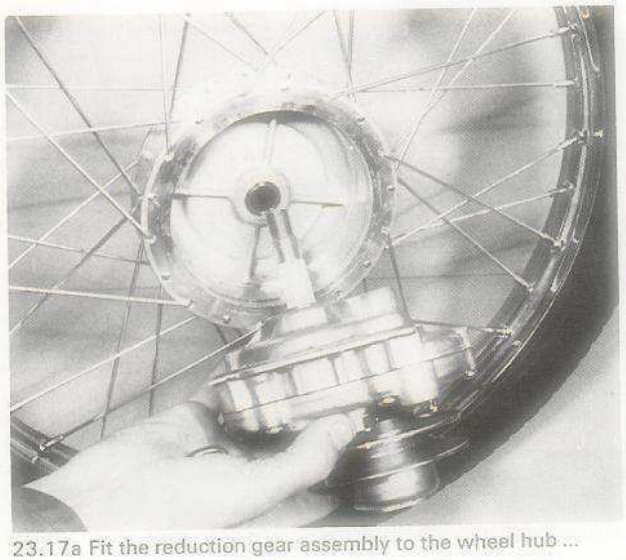
23.16b ... followed by the spacer



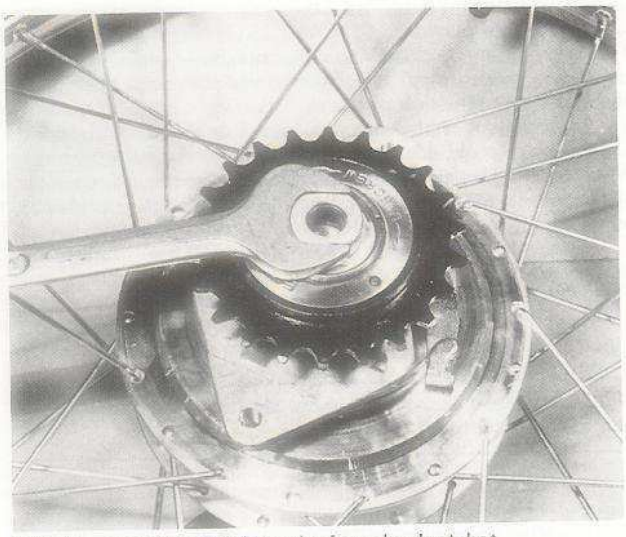
23.16c Refit the pulley ...



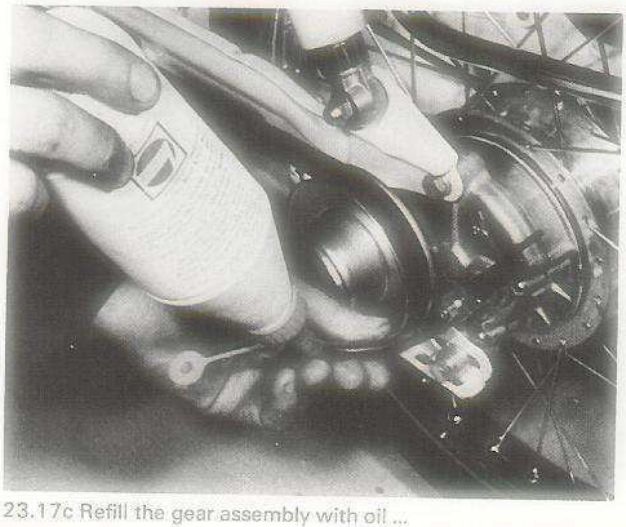
23.16d ... and torque load the retaining nut



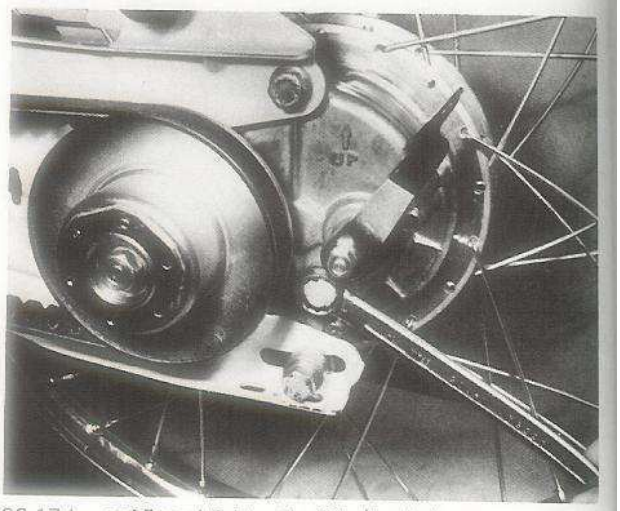
23.17a Fit the reduction gear assembly to the wheel hub ...



23.17b ... and fit and tighten the freewheel ratchet



23.17c Refill the gear assembly with oil ...



23.17d ... and fit and tighten the filler/level plug

24 Chain and freewheel unit: general – all models

1 The chain and freewheel unit see comparatively little wear during the life of the machine. The actual components are very similar to those used on bicycles, but enjoy a life of leisure and are completely isolated from the ravages of the elements. It is fairly safe to assume, therefore, that these parts will last almost indefinitely, given occasional lubrication with aerosol chain lubricant.

2 The chain tension should be checked when lubricating the chain by loosening the chain tensioner bracket securing bolt, pushing up on the rearmost tensioner wheel (using moderate finger pressure) and retightening the securing bolt.

3 To check whether the chain is due for replacement, lay it lengthwise in a straight line and compress it endwise until all play is taken up. Anchor one end, then pull in the opposite direction to take up the play which develops. If the chain extends by more than $\frac{1}{4}$ inch per foot, it should be renewed in conjunction with the sprockets. Note that this check should ALWAYS be made after the chain has been washed out, but before any lubricant is applied, otherwise the lubricant may take up some of the play.

4 When fitting the chain on the machine, make sure the spring link (when fitted) is positioned correctly with the closed end facing the direction of travel.

5 Replacement chains are now available in standard metric sizes from Renold Limited, the British chain manufacturer. When ordering a new chain, always quote the size, the number of chain links and the type of machine to which the chain is to be fitted.

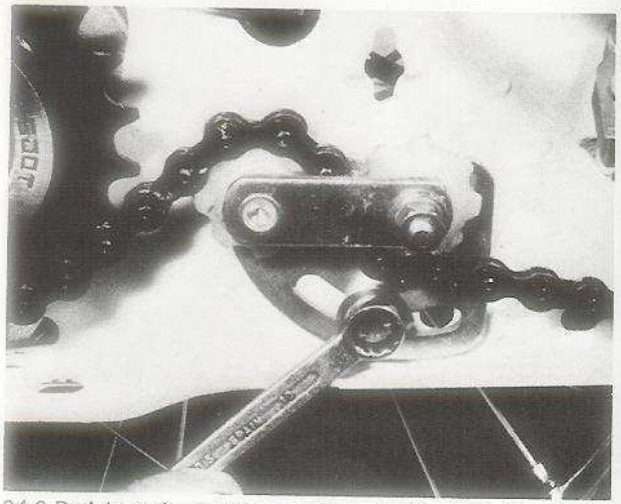
6 If for any reason, the freewheel unit fails, it must be unscrewed from the shaft and a new unit fitted. It is not practicable to effect a repair to this component.

25 Chainwheel, pedals and pedal shaft: removal, examination and replacement – all models

1 This assembly is similar in construction to those of bicycles with the exception of the pedal shaft being supported by two bushes rather than running in bearings. The pedal cranks are retained by cotter pins, which lock the pedal cranks in position in relation to the pedal shaft. To remove the pedal cranks, unscrew the nut until it is flush with the top of the thread. The nut can then be tapped lightly to free the tapered pin. Remove the nut completely and displace the pin to release the pedal. Reassembly is a straightforward reversal of the removal sequence.

2 The pedal shaft can be withdrawn after the left-hand pedal crank has been removed. Normally, it will be sufficient to grease the shaft and bushes occasionally, as they are subject to very little wear. If the bushes do become worn, they can be drifted out of their housings and new bushes tapped into position. The pedals can be removed by unscrewing them from their respective cranks. The left-hand pedal has a conventional right-hand thread, whilst the right-hand pedal has a left-hand thread.

3 As with the other related components, the chainwheel is not likely to show any real degree of wear. Maintenance is confined to keeping the teeth clean and well lubricated, in conjunction with the chain.



24.2 Retighten the tensioner bracket securing bolt after checking the chain tension

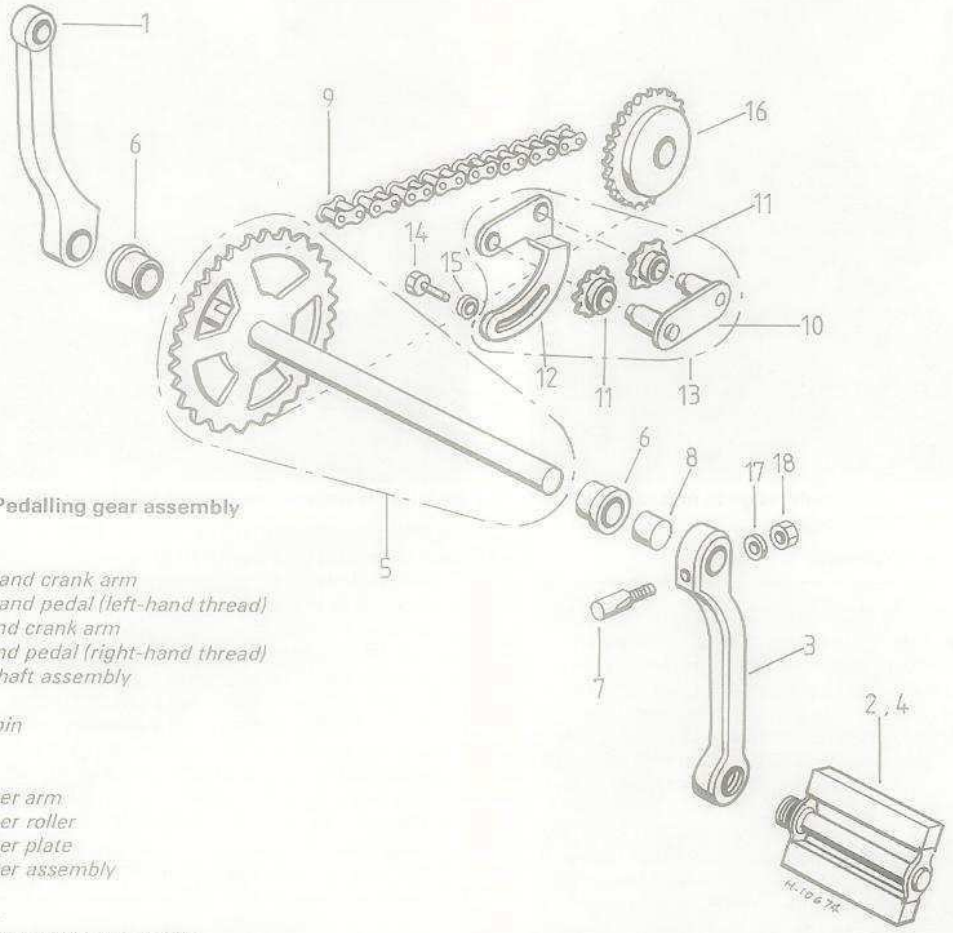


Fig. 1.11 Pedalling gear assembly

1 *Right-hand crank arm*
2 *Right-hand pedal (left-hand thread)*
3 *Left-hand crank arm*
4 *Left-hand pedal (right-hand thread)*
5 *Pedal shaft assembly*
6 *Bush*
7 *Cotter pin*
8 *Collar*
9 *Chain*
10 *Tensioner arm*
11 *Tensioner roller*
12 *Tensioner plate*
13 *Tensioner assembly*
14 *Bolt*
15 *Washer*
16 *Free wheel ratchet assembly*
17 *Washer*
18 *Nut*

26 Drive belt: adjustment – single speed models

1 Provision is made on the single speed models for adjusting the tension of the drive belt. This is accomplished by moving the rear wheel in the swinging arm members to obtain the correct tension. It is important to maintain this setting: an overtight belt will place an excessive loading on the engine main bearings and the rear hub unit bearings, whilst a slack belt will allow slip to occur in the transmission.

2 It is an easy matter to check the tension of the belt if it is suspected of being set incorrectly. This, of course, must be attended to whenever the setting is lost due to a part of the transmission system being disturbed.

3 Remove the left-hand plastic side cover to gain access to the belt. Place a finger on the upper run of the belt at a mid-point position and push down on the belt. The belt should deflect by 10 – 20 mm (0.4 – 0.8 in). Ideally, a downward loading of 5 kg (11 lb) should be applied to the belt by suspending weights from the belt or by pulling it down with a spring balance.

4 To adjust the belt tension, slacken the wheel to swinging arm securing bolts and move the wheel back or forwards until the correct setting is obtained. Retighten the securing bolts and check that the bolts that pass through the graduated plate are aligned on the same mark on both sides. Refit the plastic side cover.

27 Drive belt: adjustment – variable ratio models

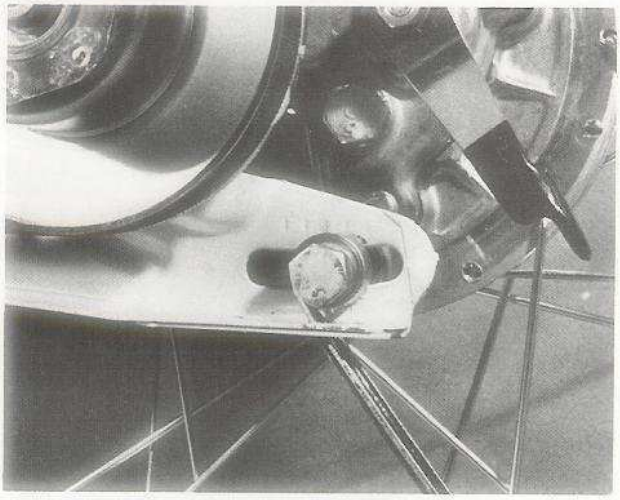
1 As on the single speed models, tensioning of the drive belt is accomplished by moving the rear wheel in the swinging arm members. The correct tension must be maintained; an overtight belt will place an excessive loading on the engine main bearings and the rear hub unit bearings whilst a slack belt will allow slip to occur in the transmission.

2 Tension of the belt must be checked if part of the transmission system is disturbed or if it is suspected of being set incorrectly; the procedure being as follows. Remove the left-hand plastic side cover to gain access to the belt. Place a straight-edge across the rear face of the pulley as shown in the accompanying photograph and using a feeler gauge, measure the distance between the straight-edge and the belt. This distance should be 2 mm (0.078 in) with the belt in tension.

3 To adjust the belt tension, loosen slightly the top two wheel to swinging arm securing bolts. Slacken the two bottom securing bolts and move the wheel backwards or forwards to obtain the correct setting. A screwdriver inserted up through the slot in the swinging arm plate below each lower securing bolt may be used as a means of levering the wheel back and forth. It should be noted that there are graduation marks above each lower securing bolt slot and that each bolt must be kept aligned on the same mark on both sides during adjustment.

4 Once the correct setting is obtained, retighten the securing bolts and turn the wheel several times to settle the belt on the pulleys. Recheck that the belt is still in tension and that the 2 mm (0.078 in) clearance has not changed. Readjust the belt tension, if necessary, and having checked the four securing bolts for tightness, refit the plastic side cover.

27.2 Use a feeler gauge and straight-edge to measure drivebelt tension setting (variable ratio models)



27.3 Use a screwdriver to lever the wheel back and forth

28 Engine reassembly: general

1 Before reassembly of the engine unit is commenced, the various component parts should be cleaned thoroughly and placed on a sheet of clean paper, close to the working area.
2 Make sure all traces of old gaskets have been removed and that the mating surfaces are clean and undamaged. One of the best ways to remove old gasket cement is to apply a rag soaked in methylated spirit. This acts as a solvent and will ensure that the cement is removed without resort to scraping and the consequent risk of damage.
3 Gather together all of the necessary tools and have available an oil can filled with clean engine oil. Make sure that all the new gaskets and oil seals are to hand, also all replacement parts required. Nothing is more frustrating than having to stop in the middle of a reassembly sequence because a vital gasket or replacement has been overlooked.

29 Engine reassembly: joining the crankcase halves

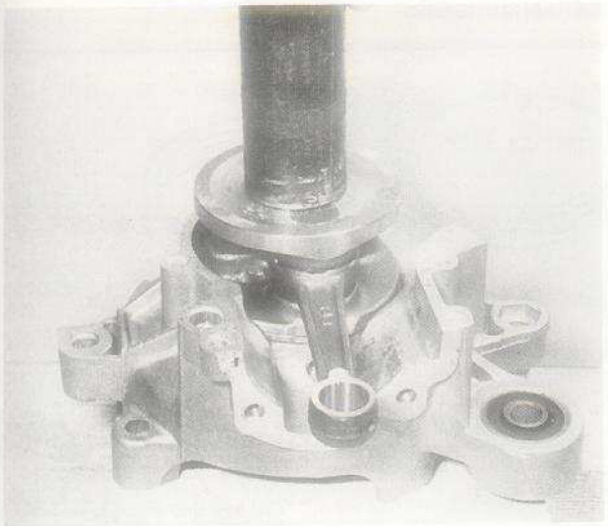
1 Place the right-hand crankcase half on the workbench supported on blocks so that when the crankshaft is installed, the projecting mainshaft will not foul the bench surface. Lower the crankshaft into position. If the main bearings have been refitted to the crankshaft, ensure that the crankshaft is positioned so that the right-hand main bearing enters the bearing housing squarely. The mainshaft and bearing should be lubricated thoroughly before fitting, to ease main bearing entry into the housing and to prevent damage to the oil seal lip.
2 Using a piece of metal tube and a soft-faced mallet, place the tube over the mainshaft and drift the crankshaft into position until the main bearing is fully home. During this operation it is essential that the bearing is not allowed to tilt because this may damage the bearing housing. As the crankshaft moves into position check that the connecting rod side does not foul the crankcase mating surface.
3 Place a new gasket on the crankcase mating surface. A few spots of gasket compound may be used to retain the gasket in its correct fitted position. Lubricate the main bearing and oil seal of the remaining crankcase half and after having also lubricated the mainshaft, push the crankcase half into position over the mainshaft as far as possible by hand, noting the location of the two hollow dowels. At this point it is advisable to insert some of the crankcase half securing screws; these will act to guide the two halves together during the final joining procedure.
4 Place some wooden blocks across the upper face of the crankcase half so that any impact is absorbed by the full area of the face. Using a soft faced mallet tap the crankcase halves together; ensuring that the mating faces are kept parallel to each other and that the locating dowels locate correctly in their respective holes. Fit the remaining screws and tighten all the screws evenly in a diagonal sequence. Make sure the crankshaft turns freely after final tightening has taken place. If the crankshaft appears to be stiff, sharply tap the keyed end of the shaft with a soft faced mallet to free it. Finally, using a sharp knife, trim off the excess gasket material that runs across the inlet port in the crankcase. If necessary trim the gasket in a similar manner at the sides of the crankcase mouth. Note that if the correct torque wrench adaptor is available for the cross-headed screws, then ideally the screws should be torque loaded to 0.8 – 1.2 kgf m (5.8 – 8.7 lbf ft).

30 Engine reassembly: refitting the flywheel generator

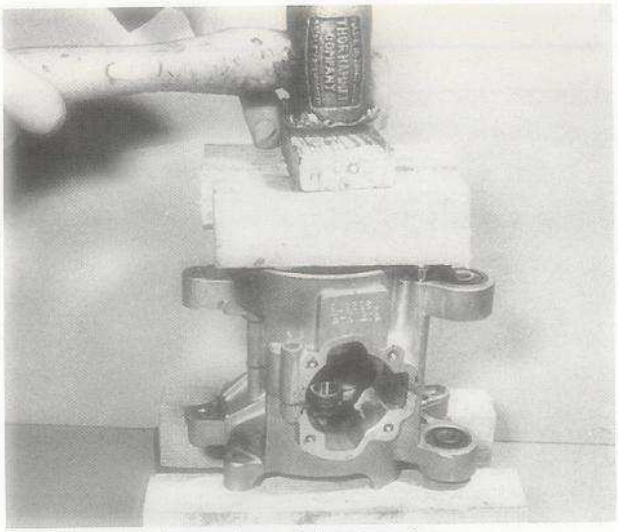
1 Fit the Woodruff key into the recessed portion of the tapered crankshaft end, tapping it firmly into place. Thread the leads from the generator stator coils through the hole in the rear of the generator housing and then draw them through until the tapered end of the grommet enters the hole. The grommet should be eased into position so that it seals the hole. Position the generator stator against the rear wall of the housing and insert and tighten the retaining screws.
2 Align the Woodruff key on the crankshaft with the keyway in the bore of the contact breaker cam, and push the cam into position. Tap the cam flange to ensure that the cam seats on the taper. Before further assembly is carried out the contact breaker gap and the ignition timing should be checked and if necessary reset. The procedure for the two operations is detailed fully in Chapter 3.
3 Position the generator rotor over the stator and engage it with the three pins which project from the contact breaker cam flange. Fit and tighten the rotor retaining nut to a torque loading of 3.0 – 4.0 kgf m (21.70 – 29.0 lbf ft) whilst preventing the crankshaft from turning by passing a bar through the connecting rod small-eye. Some form of padding must be used to prevent the ends of the bar from coming into contact with the crankcase surfaces.

31 Engine reassembly: refitting the centrifugal clutch assembly

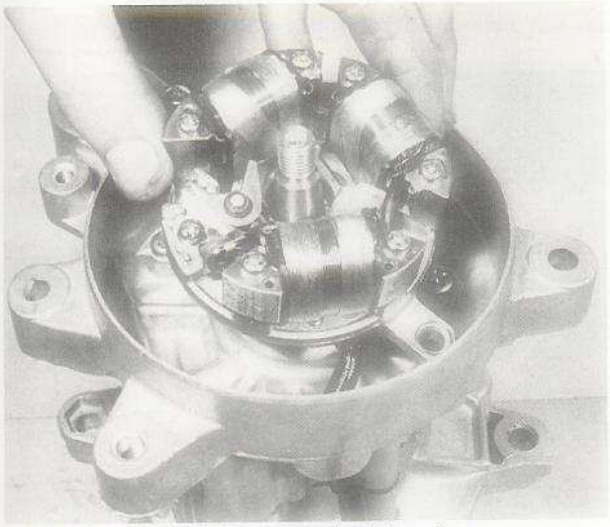
1 Refitting the centrifugal clutch assembly is a reversal of the removal procedure. Lightly tap the centrifugal clutch backing plate with a soft faced mallet to ensure it is fully located on the crankshaft taper before fitting the V-matic unit or fixed pulley. The inner retaining nut (where applicable) should be torque loaded to 3.0 – 4.0 kgf m (21.70 – 29.0 lbf ft).



29.2 Drift the crankshaft into position ...

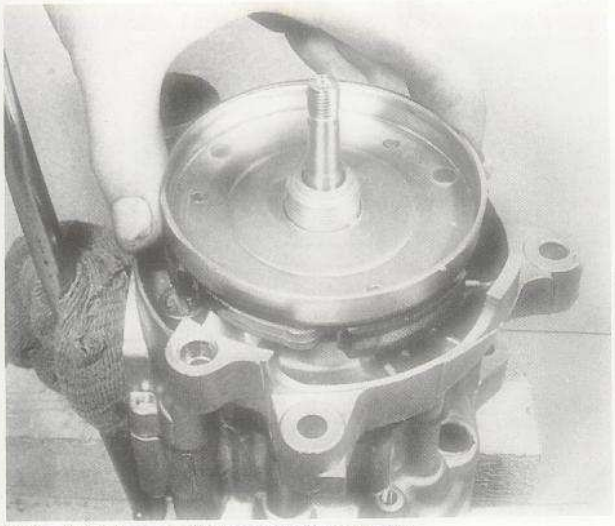


29.4 ... and tap the crankcase halves together

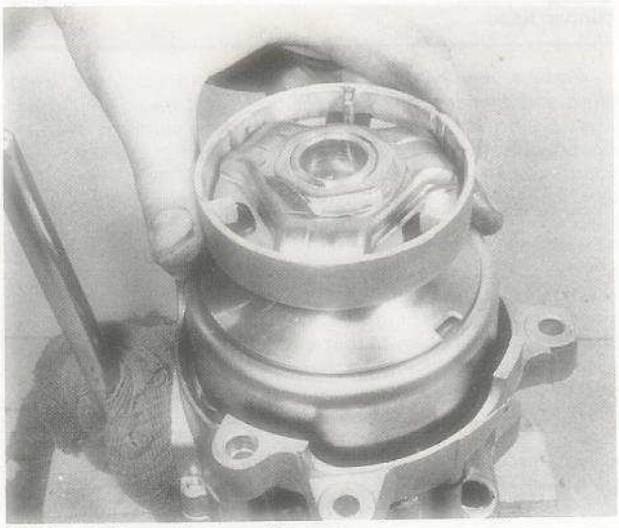


30.1 Position the generator stator in the housing

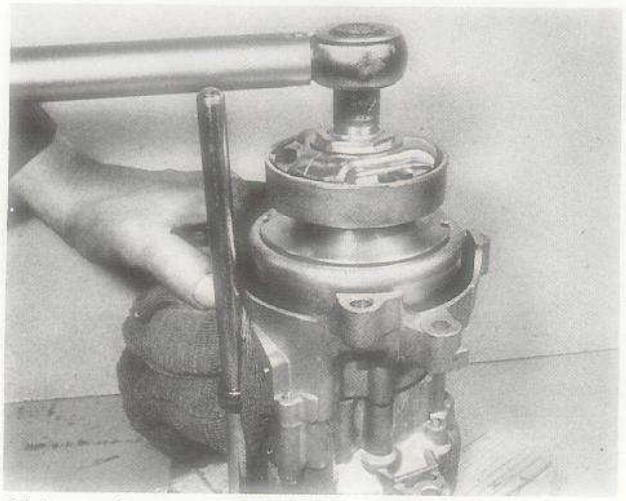
30.2 Fit the contact breaker cam into position over the Woodruff key



31.1a Refit the centrifugal clutch assembly ...



31.1b ... followed by the pulley unit ...



31.1c ... and torque load the inner retaining nut

32 Engine reassembly: refitting the piston

1 Before the piston is refitted, cover the crankcase opening with rag to obviate any risk of a displaced circlip entering the crankcase. The piston has a mark 'Ex' stamped on the crown which must point down towards the exhaust port when fitted.
2 If the gudgeon pin is a tight fit in the piston boss, the piston can be warmed with warm water to effect the necessary temporary expansion. Oil the gudgeon pin, the small-end bearing and piston bosses before the gudgeon pin is inserted, then fit the circlips, making sure that they are engaged fully with their retaining grooves. A good fit is essential, since a displaced circlip will cause extensive engine damage. Always fit new circlips, NEVER re-use the old ones.
3 Check that the piston rings are fitted correctly, with their ends either side of the ring pegs. If new rings are to be fitted note that the top surface of each is identified by an etched letter or number and letter. Top rings are marked with the letter N or T (or 1N or 1T) and the second ring is marked 2N or 2T. Do not mix the rings and ensure that the letter is the same for both, indicating that they are made by the same manufacturer.

33 Engine reassembly: refitting the cylinder barrel and cylinder head

1 Place a new cylinder base gasket over the cylinder barrel spigot and lubricate the cylinder bore with clean engine oil. Arrange the piston so that it is at top dead centre (TDC) and supported by two wooden blocks, placed across the crankcase mouth. Lower the cylinder barrel over the piston crown. The rings can now be squeezed one at a time until the cylinder barrel will slide over them, checking to ensure that the ends are still each side of the ring peg. Great care is necessary during this operation, since the rings are brittle and very easily broken.
2 When the rings have engaged fully with the cylinder bore withdraw the rag packing from the crankcase mouth and slide the cylinder barrel down so that it seats on the new base gasket. No gasket cement should be used either with or instead of the base gasket.
3 Fit a new gasket to the top of the cylinder barrel, positioning it so that the holes in the gasket align exactly with the holes in the barrel. Position the cylinder head on the gasket so that the decompressor assembly faces uppermost with the engine placed in the 'fitted' position. Insert and tighten the cylinder head/barrel retaining bolts (or nuts and washers) in an even and diagonal sequence. The recommended torque setting is 0.8 – 1.2 kgf m (5.8 – 8.7 lbf ft).

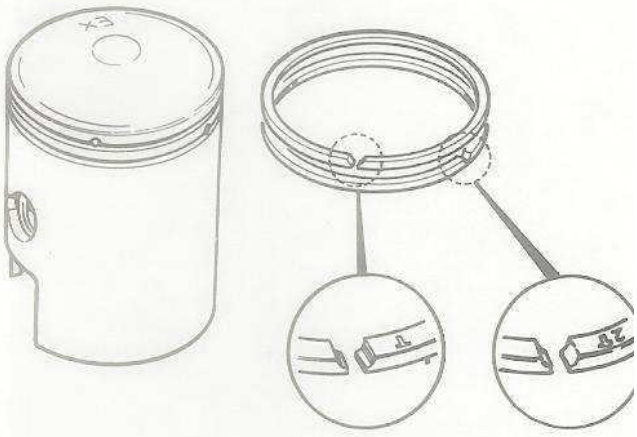
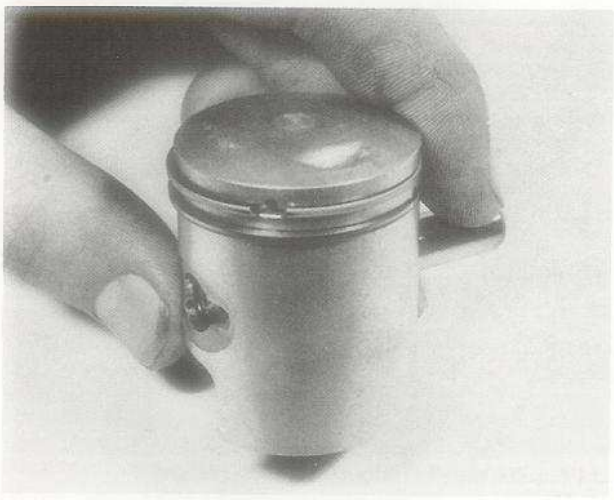
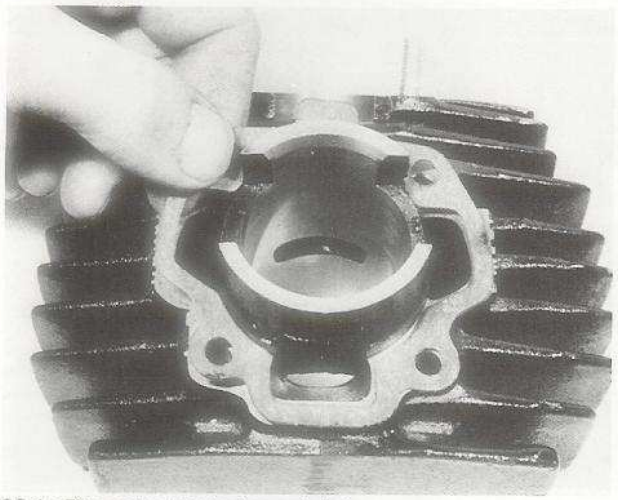


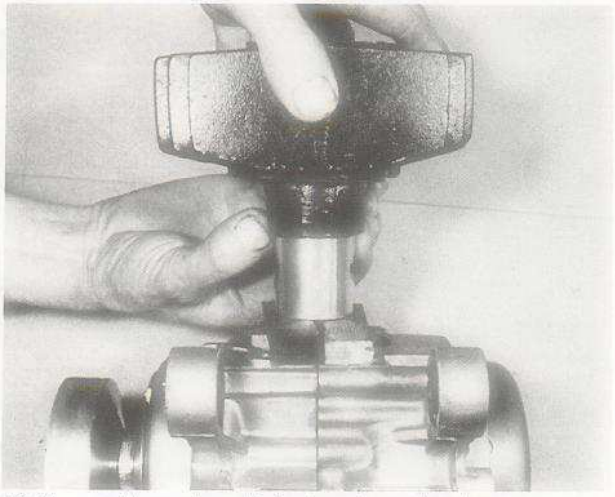
Fig. 1.12 Correct positioning of the piston rings



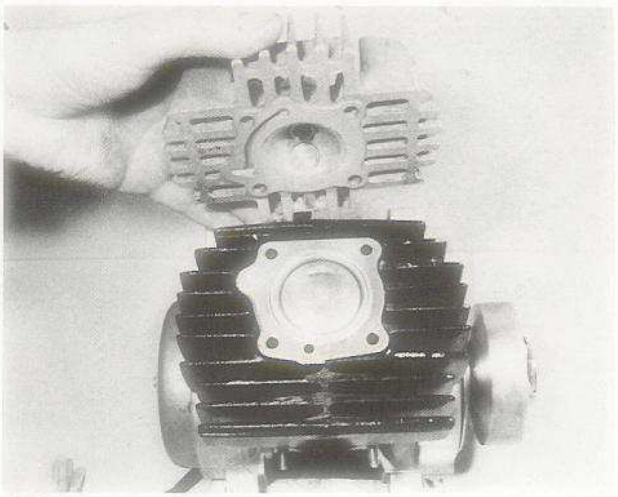
32.3 Position the ring ends either side of the pegs



33.1a Fit a new cylinder base gasket ...



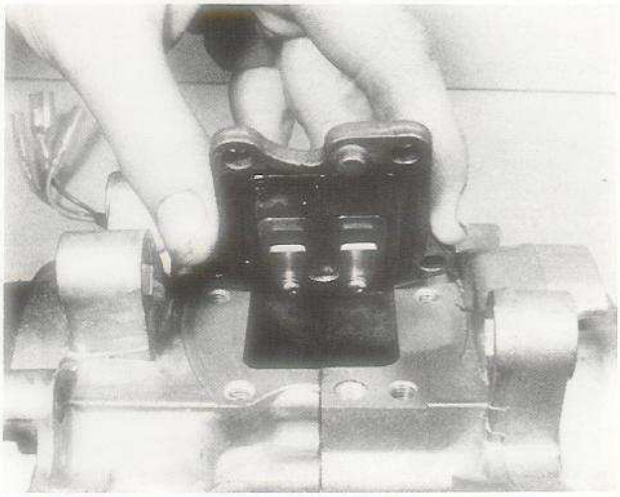
33.1b ... and lower the cylinder barrel over the piston



33.3 Refit the cylinder head

34 Engine reassembly: refitting the carburettor and reed valve assembly

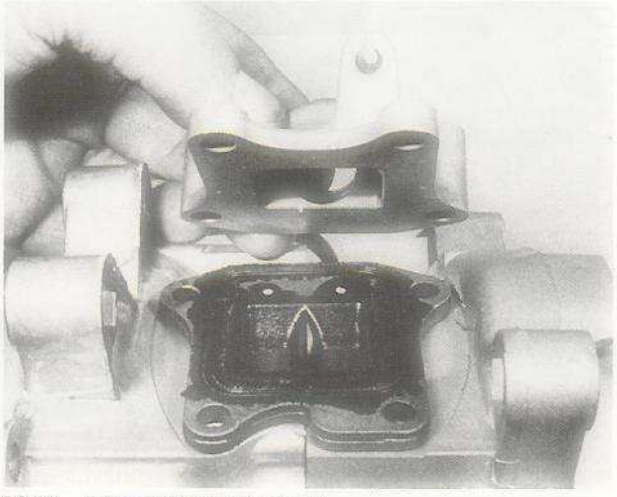
1 When refitting the reed valve to the crankcase, the inlet stub over the reed valve and the carburettor to the inlet stub, check the O-ring and gaskets for any signs of deterioration and renew them if necessary. If air is allowed to be drawn in through any of these joints there will be a marked effect on engine performance. The four bolts that secure the inlet stub to the crankcase should be tightened evenly and in a diagonal sequence to avoid distortion of the mating face. For the same reason, the two nuts that secure the carburettor to the inlet stud should be tightened evenly. Note the torque figure given in the Specifications at the beginning of this Chapter.



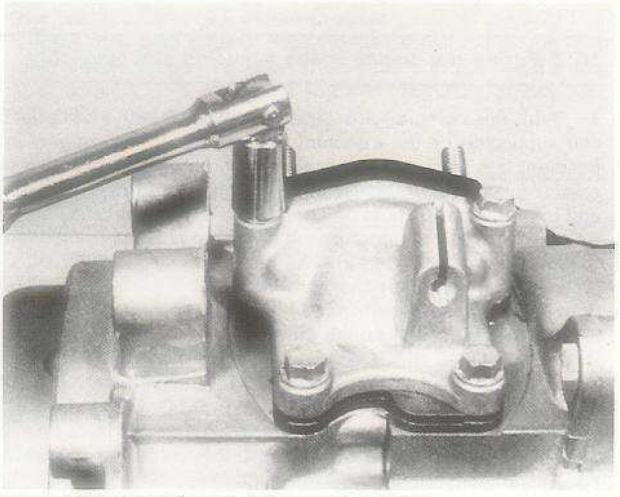
34.1a Refit the reed valve to the crankcase ...

35 Engine reassembly – refitting the exhaust system

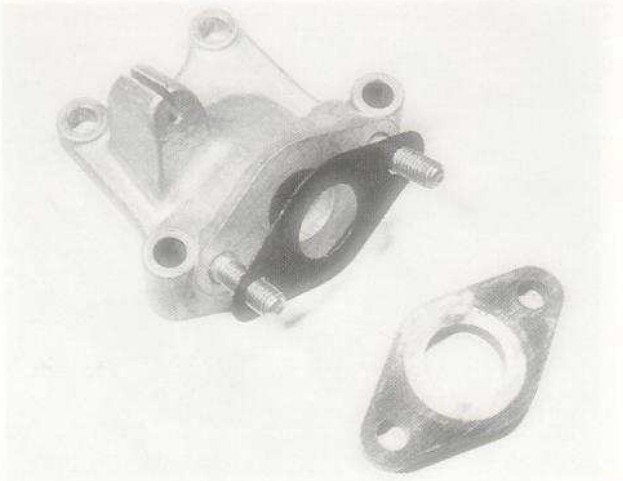
1 When refitting the exhaust system, always renew the exhaust port ring gasket. Failure to do this may well result in a leakage of exhaust gases from the joint causing a marked effect on engine performance. Refit the exhaust pipe flange over the cylinder barrel studs and position the silencer box brackets so that the holes in the brackets align with the corresponding holes in the crankcase. Fit and tighten evenly the two flange securing nuts.



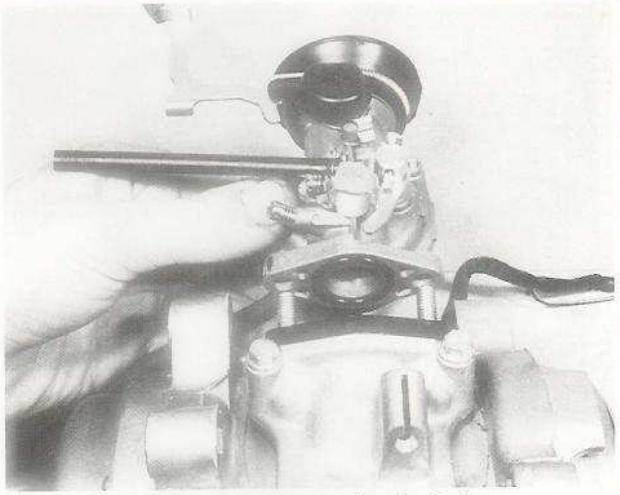
34.1b ... followed by the inlet stub



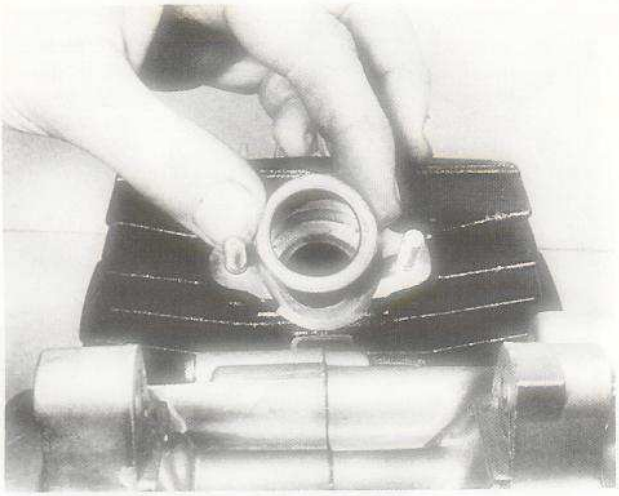
34.1c Fit and tighten the four securing bolts



34.1d Position the gaskets on the inlet stub ...



34.1e ... and refit the carburettor, noting the O-ring



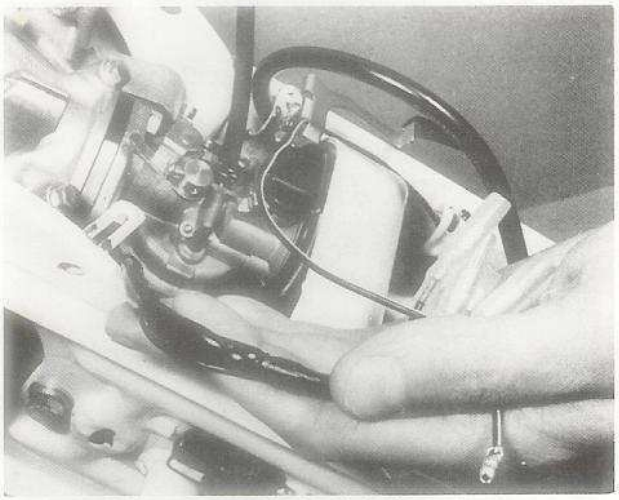
35.1a Renew the exhaust port ring gasket ...

35.1b ... and refit the exhaust system

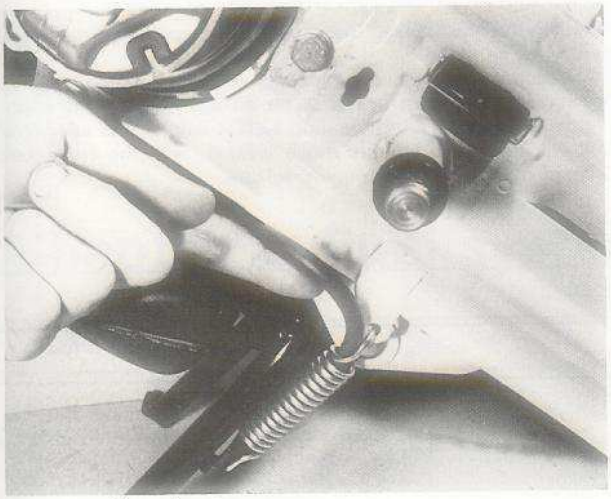
36 Refitting the engine in the swinging arm assembly

1 With the swinging arm assembly placed on the work bench and supported by the attached main stand, lift the engine into position. It is advisable to obtain assistance before securing the engine in position because the routing of the electrical wires and breather hoses must be checked to ensure that they are not trapped between the engine and swinging arm plates. A certain amount of manoeuvring will be needed when positioning the engine to ensure that the carburettor choke lever clears the right-hand swinging arm plate.

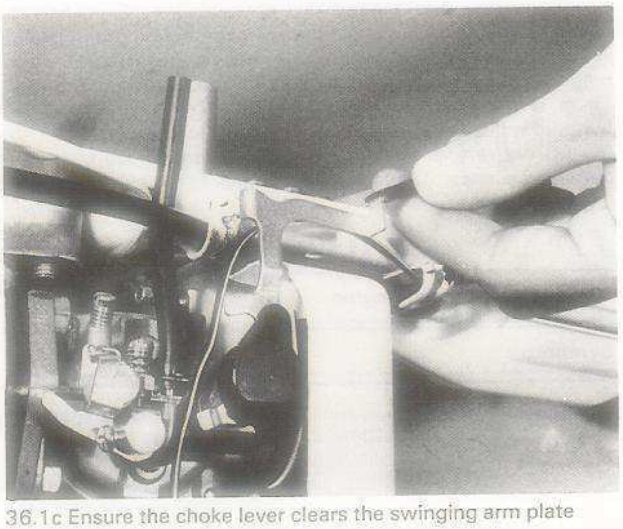
2 Insert the securing bolts through their respective holes and thread them into their captive nuts. If necessary, hold the nuts in position in their recesses with the flat of a screwdriver whilst tightening the bolts to a torque loading of 3.0 – 4.0 kgf m (21.7 – 29.0 lbf ft). Note that the blue earth lead should have one end secured under the head of the top left-hand bolt and that the two lower bolts should pass through the exhaust silencer box brackets.



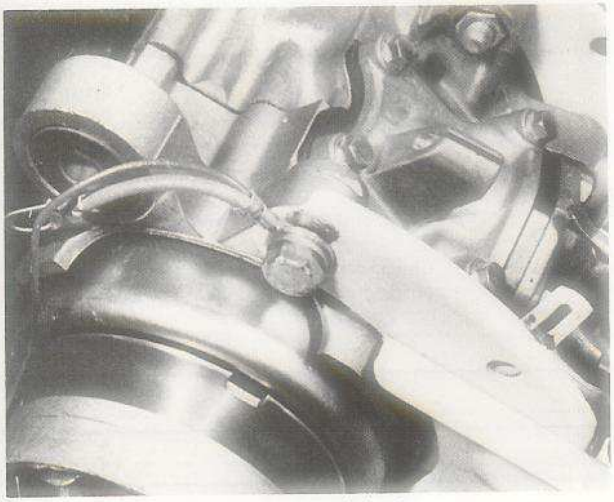
36.1a Note the routing of the electrical wires ...



36.1b ... and breather hoses



36.1c Ensure the choke lever clears the swinging arm plate



36.2 Correctly position the blue earth lead

37 Refitting the engine in the frame

1 Before commencing this operation it is advisable to recruit the help of two assistants. With the machine placed on a raised platform (if available), instruct one assistant to steady the front wheel of the machine whilst the other lifts the rear of the machine to allow the engine/swinging arm assembly to be positioned underneath. Lower the machine onto the engine so that the pivot mounting lugs on the engine casing align with the mounting point on the frame. Insert the pivot bolt, noting that the blue earth lead should have its free end located under the bolt head and plain washer and that the HT lead should be routed above the pivot along with the throttle cable. Fit the plain washer, spring washer and nut to the end of the pivot bolt and torque load the nut to 3.0 – 4.0 kgf m (21.7 – 29.0 lbf ft).
2 Refit the swinging arm to suspension securing bolts and tighten to 3.0 – 4.0 kgf m (21.7 – 29.0 lbf ft). The rear of the machine may now be lowered onto support blocks placed under the swinging arm assembly. Check that the throttle twistgrip is fully closed and that the outer cable is correctly located in the twistgrip housing. Reconnect the inner cable to the carburettor solderless nipple and check the throttle for correct operation.
3 Reconnect the wiring connections in the positions noted during the engine removal procedure and relocate the electrical loom rubber cover in the correct fitted position. Reconnect the decompressor valve operating cable at the cylinder head by connecting the nipple to the operating lever, pressing down on the spring and passing the inner cable through the gap in the spring and ring. Check the decompressor mechanism for correct operation. Pass the fuel tap to carburettor fuel line over the swinging arm pivot bolt and reconnect it to the fuel tap. Move the tap lever to the on position and check for any leaks at either end connection. The condition of the fuel line should also be checked; if any signs of deterioration or chafing are found, renew the line. On no account should the line be allowed to come into contact with the engine as it is not heat shielded and will therefore melt with disastrous consequences. Finally, check that all control cables and electrical leads are routed correctly through any retaining clips located on the swinging arm plates.
4 Refit both pedals, tapping home the cotter pins with a soft faced mallet and tightening the nuts. If the cotter pins show any signs of wear, they should be renewed. The rear wheel may now be refitted by using the reverse procedure to that given in paragraphs 4 and 5 of Section 4 of this Chapter. Adjust the pedal chain tension in accordance with paragraph 2 of Section 24 of this Chapter and the drive belt tension in accordance with either Section 26 or 27 of this Chapter.
5 Refit the two plastic transmission covers and the two engine covers to the machine. Check the contact breaker gap (see Chapter 3, Section 3) and adjust if necessary. Finally, refit the flywheel generator cover.

38 Starting and running the rebuilt engine

1 When the initial start-up is made, run the engine slowly for the first few minutes, especially if the engine has been rebored or a new crankshaft fitted. Check that all the controls function correctly and that there are no oil leaks, before taking the machine on the road. The exhaust will emit a high proportion of white smoke during the first few miles, as the excess oil used whilst the engine was reassembled is burnt away. The volume of smoke should gradually diminish until only the customary light blue haze is observed during normal running. It is wise to carry a spare sparking plug during the first run, since the existing plug may oil up due to the temporary excess of oil.

2 Remember that a good seal between the piston and the cylinder barrel is essential for the correct function of the engine. A rebored two-stroke engine will require more carefully running-in, over a longer period, than its four-stroke counterpart. There is a far greater risk of engine seizure during the first hundred miles if the engine is permitted to work hard.

3 Do not tamper with the exhaust system or use a holed or damaged silencer. Unwarranted changes in the exhaust system will have a very marked effect on engine performance, invariably for the worse. The same advice applies to dispensing with the air cleaner.

4 Do not on any account add extra oil to the petroil under the mistaken belief that a little extra oil will improve the engine lubrication. Apart from creating excess smoke, the addition of oil will make the mixture much weaker, with the consequent risk of overheating and engine seizure.

39 Fault diagnosis: engine

Symptom	Cause	Remedy
Engine will not start	Defective sparking plug	Remove plug and lay it on cylinder head Check whether spark occurs when engine is kicked over
	Dirty or closed contact breaker points	Check condition of points and whether gap is correct
	Fuel tank empty	Refill
Engine runs unevenly	Ignition and/or fuel system fault	Check as though engine will not start
	Blowing cylinder head joint	Oil leak should provide evidence. Check for warpage
	Choked silencer	Remove and clean
Lack of power	Fault in fuel system	Check system
	Choked silencer	See above
White smoke from exhaust	Engine needs rebore	Rebore and fit oversize piston
	Tank contains two-stroke petroil of wrong ratio	Drain and refill with petroil at 4% (25:1)
Engine overheats	Pre-ignition and/or weak mixture	Check carburettor settings also grade of plug fitted

40 Fault diagnosis: transmission

Symptom	Cause	Remedy
Engine fails to turn over when pedalled	Starting clutch slip	Dismantle and overhaul starting clutch unit
	Drive belt too slack	Check and adjust belt tension
	Drive belt worn	Check and renew belt
Engine runs normally but road speed abnormally slow	Drive belt worn or slack	See above
	Variable ratio pulley assembly jammed	Dismantle and overhaul clutch pulley assembly Check and renew rear wheel pulley assembly
	Centrifugal clutch shoes worn	Dismantle and overhaul centrifugal clutch unit
No drive between engine and rear wheel	Rear hub reduction unit gears disengaged or broken	Dismantle and overhaul reduction unit
No drive between pedals and rear wheel	Freewheel unit broken	Check and renew freewheel unit

Chapter 2 Fuel system and lubrication

For information relating to the 1981 on models, see Chapter 7

Contents

Specifications

Fuel tank	
Overall capacity	3.0 litre (0.66 Imp gal, 0.79 US gal)
Reserve capacity	0.5 litre (0.11 Imp gal, 0.13 US gal)
Carburettor	
Make	Keihin
Main jet	60 (Type 1) 78 (Type 2)
Engine tick-over speed	1500 rpm
Float height	10 mm (0.39 in)
Pilot screw setting	1¼ turns out from fully in
Lubrication	
System	By pre-mixed petrol/oil
Mixing ratio	25 : 1 (4%)
Oil type	Self-mixing 2-stroke oil

1 General description

The fuel system comprises a petrol tank from which fuel is gravity fed to the engine via a tap, fuel pipe, fixed jet Keihin carburettor and reed valve assembly. To aid cold starting a lever operated butterfly choke is fitted. The end of the choke lever protrudes through a slot located under the right-hand engine cover and should be set by hand before starting. The choke is cancelled automatically once full throttle is reached.

To prevent the ingress of abrasive dust and other foreign matter into the carburettor an air filter is fitted. The air filter box is attached to the carburettor and houses an oil impregnated foam filter element contained in a removable tray.

Engine lubrication is arranged in the traditional two-stroke fashion, using oil carried in solution in petrol. The mixture of the two is popularly known as petroil. The incoming mixture of air and petroil is drawn into the crankcase, where it comes onto contact with the various moving parts. A proportion of the oil is deposited during the combustion stroke. This system provides lubrication for the big-end, small-end and main bearings and also for the cylinder wall.

2 Petrol tank: removal and refitting

1 The petrol tank is located under the frame front downtube by two bolts passing through a rubber mounting on each side of the rear of the tank and a rubber mounting that locates in a bracket situated just to the rear of the steering head.

2 Before removing the tank it is considered advisable to lessen the weight of the unit by draining its fuel content into a suitable container as described in Section 5 of this Chapter. This will make the tank more manageable during the removal and refitting procedures and obviate the danger of any fuel leakage.

3 Remove both engine upper covers and with the fuel pipe disconnected from the fuel tap, unscrew and remove the left and right-hand tank securing bolts. Turn the handlebars to the full right-hand lock. Push the rear of the tank forward and down off the two rear attachment points so that it clears the engine cylinder head. The tank may now be pulled down and rearwards off the forward mounting and clear of the machine.

4 Refitting of the tank is a reversal of the removal procedure, noting the following points. Ensure that all rubber mountings are correctly positioned; if the tank is allowed to chatter against the frame tube, failure of the metal tank skin will soon occur causing serious fuel leakage. Ensure the electrical loom retaining clip is correctly positioned under the head of the left-hand tank retaining bolt. Finally, check the disturbed fuel line connections for any leakage of fuel and rectify if necessary.

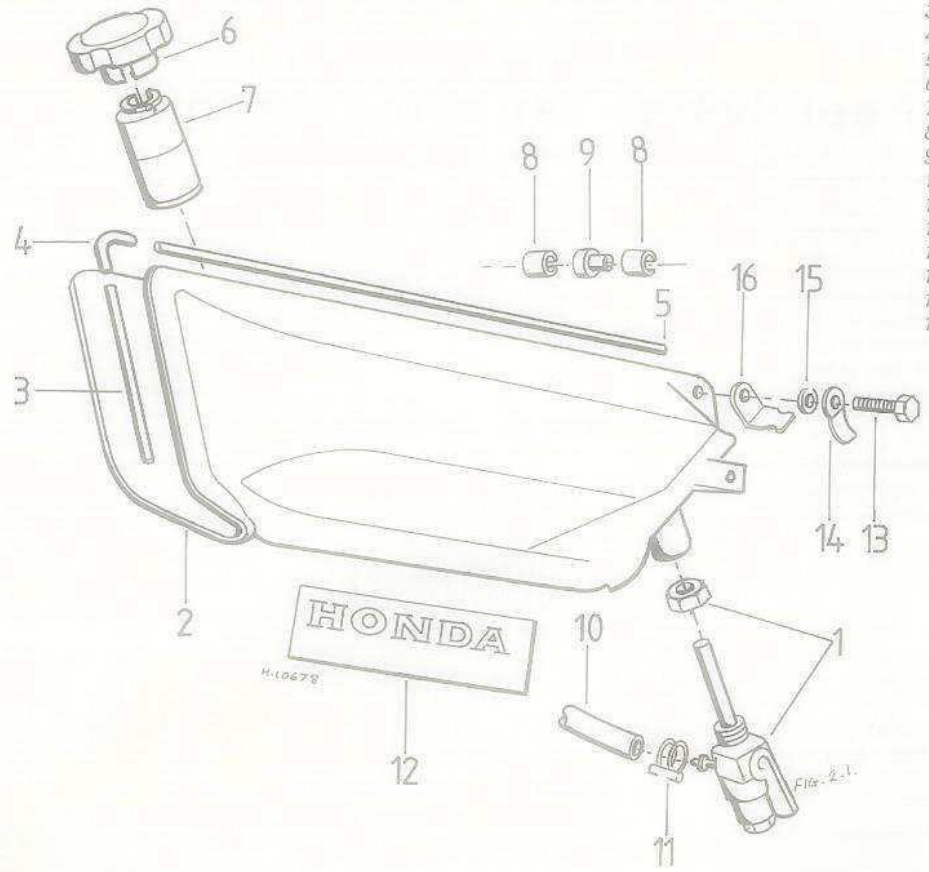
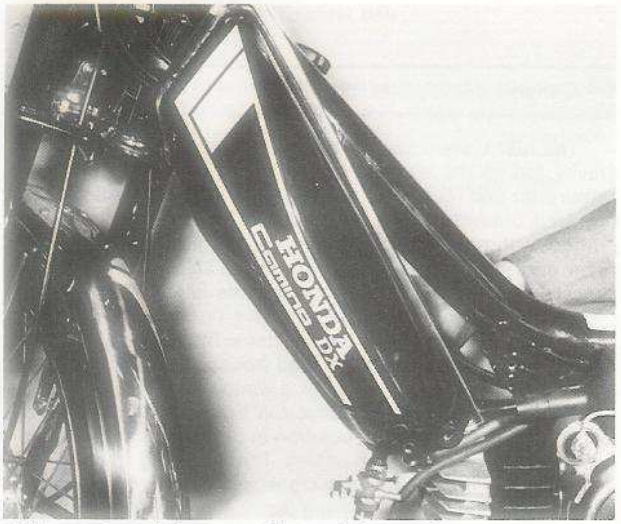


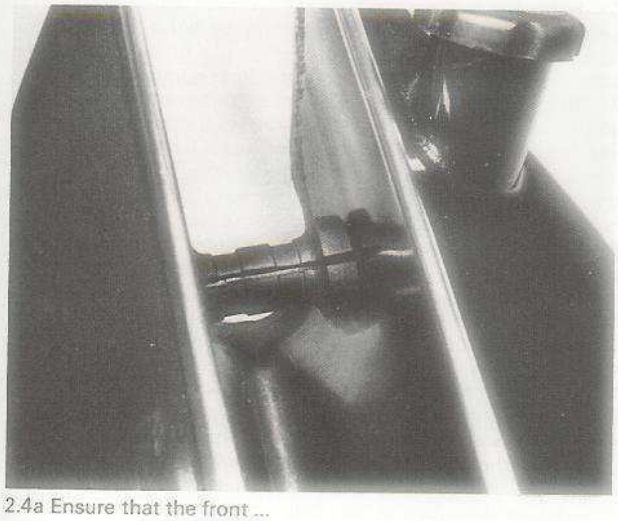
Fig. 2.1 Fuel tank assembly

1 Fuel tap assembly
2 Fuel tank
3 Trim strip
4 Trim clip
5 Trim strip
6 Filler cap
7 Cap measure cup
8 Rubber bush
9 Set washer
10 Fuel hose
11 Clip
12 Tank emblem
13 Bolt
14 Harness clip
15 Washer
16 Mounting bracket

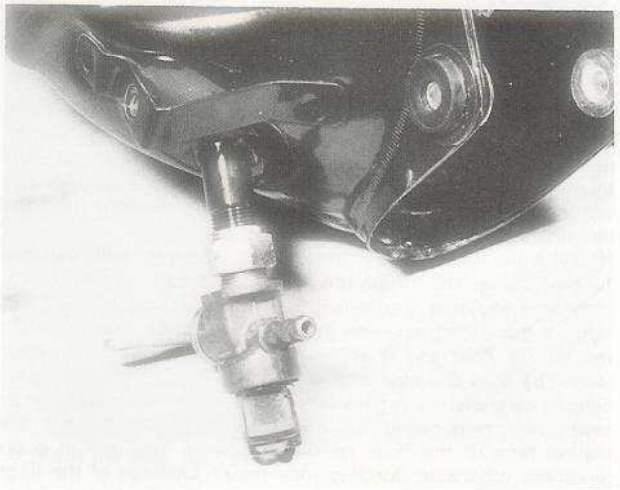
2.3a Remove the fuel tank securing bolts ...



2.3b ... and push the rear of the tank forward



2.4a Ensure that the front ...



2.4b ... and rear tank rubber mountings are correctly positioned

3 Petrol tank: flushing

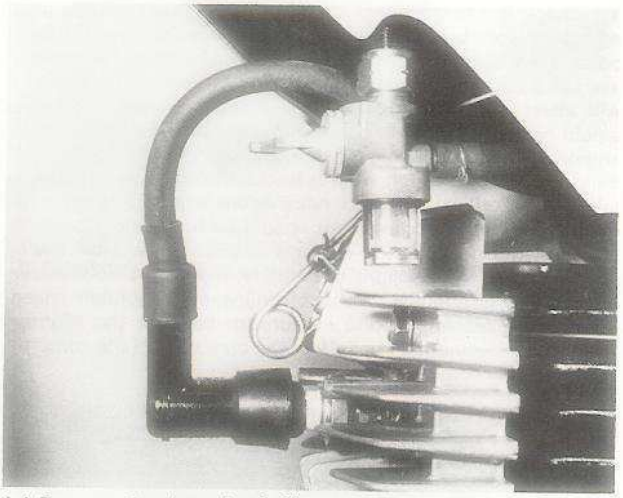
1 The fuel tank may need flushing out occasionally to remove any accumulated debris which inevitably builds up over the years. This is especially true if water has contaminated the fuel, as this can cause persistent and annoying running problems as it gets drawn into the carburettor.
2 Flushing is best done by first removing the tank, as detailed in the preceeding Section, and removing the petrol tap, after having first drained the tank of any contaminated fuel. Any debris or water may now be cleaned out by flushing the tank with clean petrol. Note that this operation must be undertaken outdoors and away from naked flames or lights, otherwise serious personal injury may result from the ignition of the petrol vapour.

4 Petrol tap: filter cleaning

1 To remove the petrol tap filter for cleaning, simply turn the tap lever to the OFF position and remove the clear plastic filter retaining bowl situated at the base of the tap. Great care should be taken when removing the bowl not to overstress and therefore crack the plastic moulding. Ensure the spanner used is a good fit over the hexagon end of the bowl and that only moderate force is used to free the thread.
2 With the filter removed from the bowl, clean it in petrol, using a soft bristle brush to loosen any deposits of rust or paint. The filter must be renewed if it is seen to be damaged.
3 Refitting the filter is a reversal of the removal procedure. Check that the bowl is free of any sediment before inserting the filter; it may be cleaned in the same way as the filter. Take great care not to overtighten the plastic bowl when refitting it to the tap housing.

5 Petrol tap: removal and refitting

1 The petrol tap is a sealed unit and as a result, if leakage occurs no repair is possible. The tap must therefore be removed from the tank and replaced with a new item. Before the tap is removed, however, the tank must be drained of petrol. This is accomplished by turning the tap lever to the OFF position, disconnecting the fuel pipe from the tap and substituting it with a length of pipe that can be run from the tap to a suitable clean container placed beside the machine. Turn the tap on and allow all the petrol to drain into the container.
2 With the substitute fuel pipe removed, remove the tap from the tank by unscrewing the hexagon retaining nut from the tank boss and carefully lowering the tap away from the tank to avoid damage to the tap stack.
3 Refitting the tap is a reversal of the removal procedure. Applying a small amount of petrol resistant sealing compound to the threads of the tank boss will aid sealing. Finally, check the disturbed connections for fuel leaks and rectify if necessary.



4.1 Remove the clear plastic filter retaining bowl

6 Petrol feed pipe: examination

1 The condition of the petrol feed pipe should be checked periodically. It is likely that the pipe will deteriorate with age, and will require renewal should this occur. Look particularly for signs of splitting or cracking where the pipe pushes over the carburettor and fuel tap stubs. If the pipe has taken a set around one or both of the stubs, it will eventually start to leak. This can be rectified by slicing about $\frac{1}{2}$ in off the pipe and refitting it. For obvious reasons, this cannot be done very often, and ultimately it will be necessary to renew the pipe.

Verwijderen, demontage, onderzoeken + montage

7 Carburettor: removal, dismantling, examination and refitting

1 To gain access to the carburettor and reed valve assembly securing nuts and screws, it is necessary to lower the engine and swinging arm assembly away from the frame tube. Full details of this operation and the subsequent removal and refitting of the carburettor are given in the relevant Sections contained in Chapter 1 of this Manual.

2 With the carburettor removed from the inlet stub, remove the two screws that retain the float chamber to the carburettor body and separate the two components, taking care not to damage the O-ring between them. Withdraw the float pivot pin and lift the float and float needle away from the carburettor body. The float chamber and needle valve assembly should be cleaned carefully, noting any foreign matter or water which may have been responsible for erratic running. Check that the

will be obvious on inspection, because the float material is translucent. A damaged float should be renewed.

3 The main jet and nozzle are located in the central tunnel projecting from the base of the carburettor body. They may be

nozzle and any other passageways in the carburettor body (after having first removed the throttle stop screw, blanking screw and pilot screw), preferably using a high pressure air line, or alternatively, a foot pump or similar. As a last resort, a fine *nylon* bristle can be used, but on no account use wire or a pin as this will damage the precision drilling of the jet. Refit the blanking screw.

4 Check the throttle and choke butterfly valve spindle pivot points for wear by pushing the valve back and forth at the pivot point. Wear should not occur until the carburettor has been in use for a considerable period of time, but once it is present it will affect the functioning of the carburettor insomuch as it would not be possible to obtain a regular tickover speed of the engine. Spitting back through the carburettor would also be an indication of this fault. If wear is found, the component must be taken to an official Honda Service Agent who will recommend whether or not the component should be renewed.

5 Refit the throttle stop screw and pilot screw after having checked them for any signs of damage. Make sure both screws are properly cleaned. Note that cleanliness is absolutely essential when reassembling the carburettor because the slightest trace of contamination may affect the operation of the carburettor.

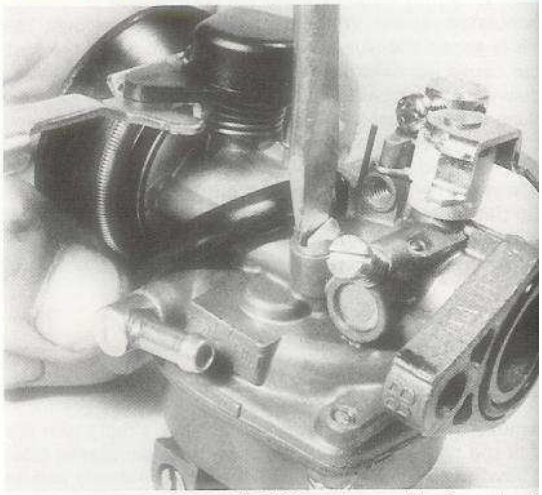
6 Refit the nozzle and screw in th
overtighten the main jet, it need only be
Refit the float, float needle and pivot pi
carburettor body and check that the float

7 Before refitting the float chamber, ren
and check the condition of the O-ring sea
has become hardened or damaged durin
renew the O-ring and refit and tighten th
that the float chamber to carburettor b
correctly located in the float chamber rece
twisted or has become damaged or harder
the float chamber, tightening the two screw
any risk of distortion to the mating face of

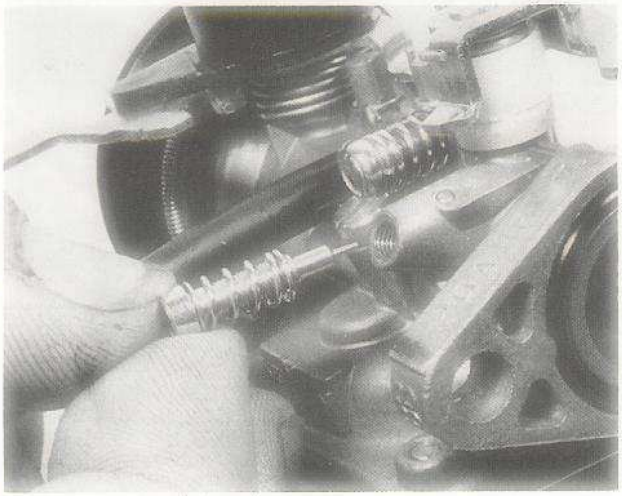
8 Before fitting the carburettor, check that t
located in a groove in the carburettor mou
good condition. After a period of use the ri
harden and compress which will prevent an a
joint. A leak at the flange will cause a weak

in order as described in the following Section.

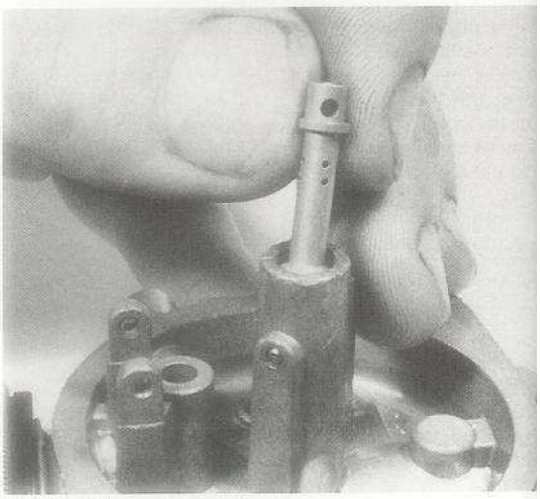
was necessary because of contaminated fuel, remove an
the fuel tank, and clean the filter in the tap. Water can
persistent and erratic running faults, and can form by cond



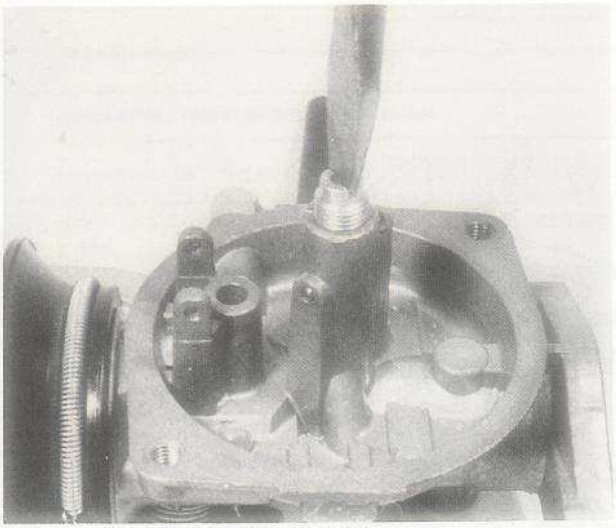
7.3 The blanking screw should be removed before cleani
carburettor passageways



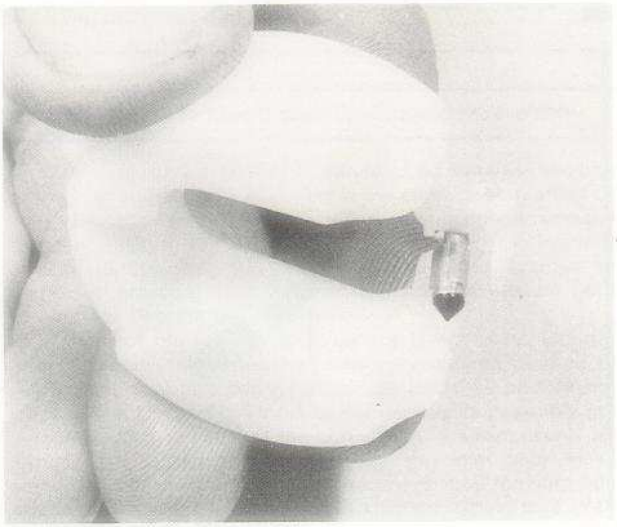
7.5 Refit the pilot (mixture) screw



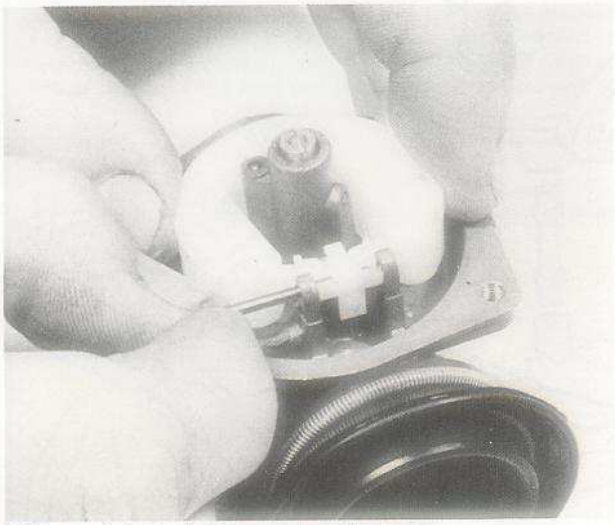
7.6a Refit the main nozzle ...



7.6b ... and fit and tighten the main jet

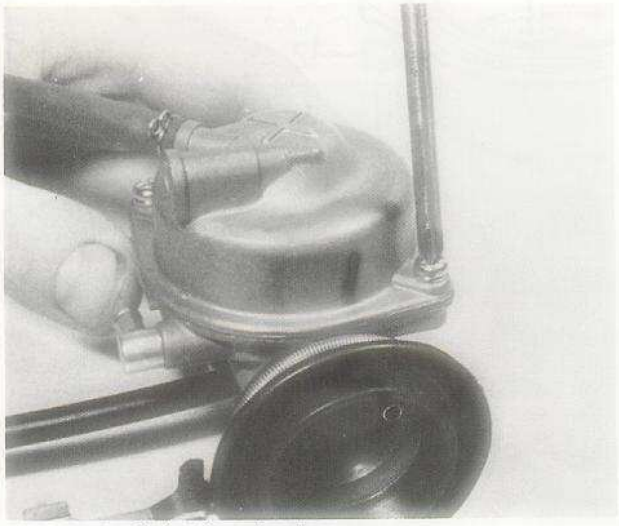


7.6c Refit the float, float needle ...



7.6d ... and pivot pin to the carburettor body

7.7a Check the condition of the sealing ring ...



7.7b ... and refit the float chamber

7.8 Check that the mounting flange O-ring is in good condition

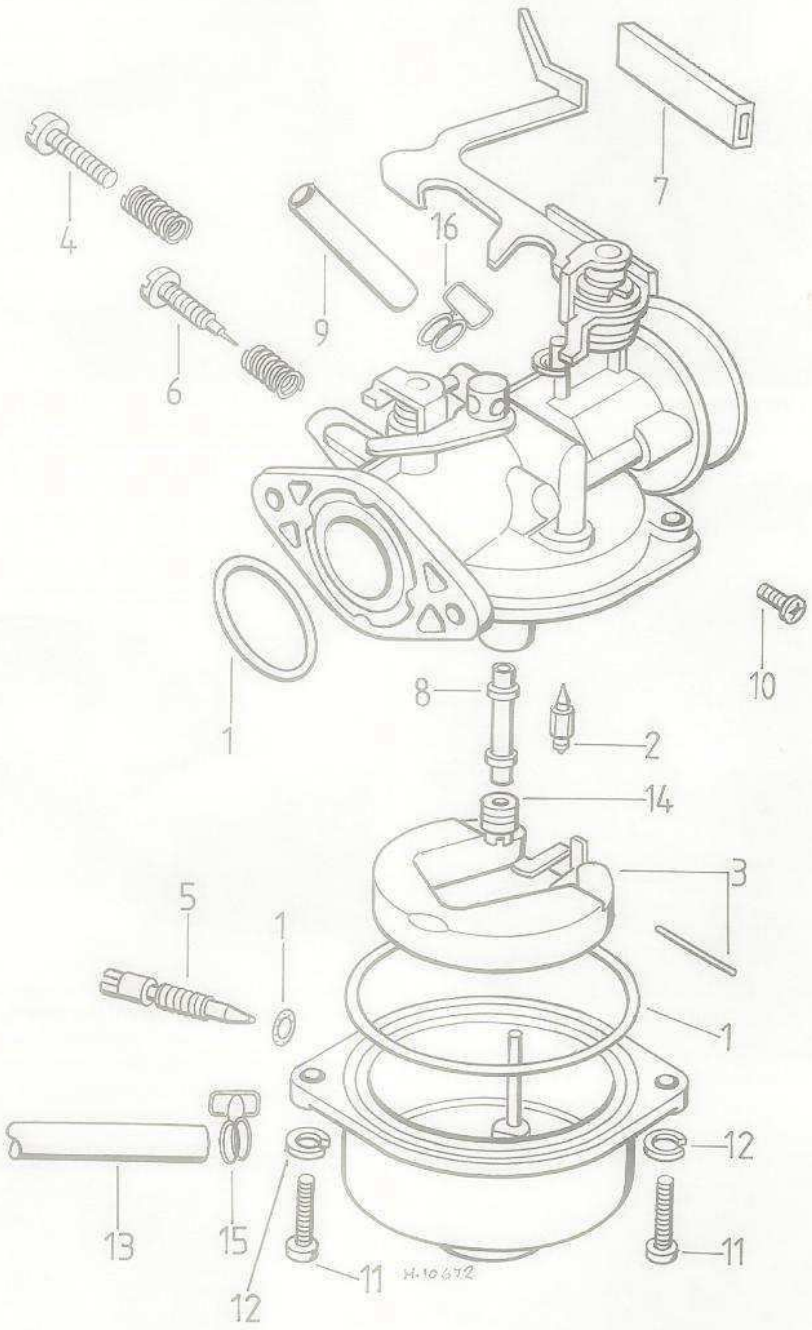


Fig. 2.2 Carburettor

1	Gasket set	5	Drain screw	9	Air vent tube	13	Fuel drain tube
2	Float needle	6	Pilot (mixture) screw	10	Panhead screw	14	Main jet
3	Float assembly	7	Choke lever extension	11	Panhead screw	15	Clip
4	Throttle stop screw	8	Main nozzle	12	Lockwasher	16	Clip

8 Carburettor: settings and adjustment

1 The carburettor fitted to the Honda Camino models is of the fixed jet type, adjustment being confined to alteration of the pilot screw and throttle stop settings to maintain an even tick-over speed.

2 Tickover adjustment should be carried out at regular intervals or if the engine becomes rough at idle. Start the engine and allow it to reach normal working temperature. Using a screwdriver turn the pilot screw until the highest possible tick-over speed is obtained. Experimentation should be made by turning the screw first one way and then the other. When the correct position is reached, reduce the tickover speed by turning the throttle stop screw until the engine is running at about 1800 rpm. Repeat both stages of the operation.

3 If fuel starvation or persistent flooding of the carburettor has been encountered, the float height should be checked. To enable this to be carried out the carburettor should be removed and the float chamber detached as described in the preceding Section. Position the carburettor as shown in the accompanying figure and measure the float height. The distance measured is between the carburettor body flange and the lower surface of the float and should be 10 mm (0.39 in). Unfortunately, no provision is given for adjustment; if the float height is incorrect the float needle or the float unit must be renewed.

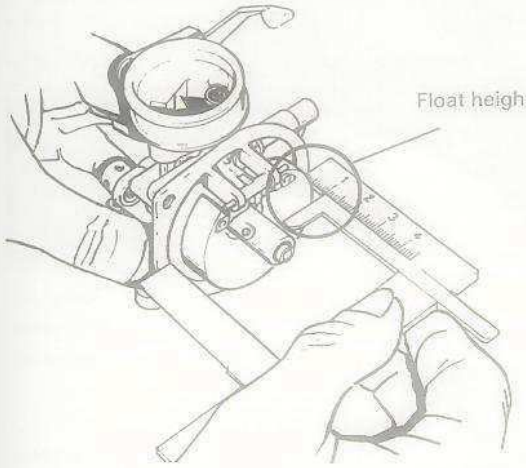


Fig. 2.3 Float height measurement

8.2 The throttle stop adjustment screw

9 Reed valve: removal, examination and reassembly

1 The reed valve assembly is 'sandwiched' between the base of the inlet stub and the inlet port in the crankcase. In effect the reed valve is a flap valve which relies on atmospheric pressure to open it during the induction stroke, allowing the incoming mixture to flow into the crankcase, and close it when the crankcase pressure increases, to help prevent mixture being blown back through the carburettor.

2 Failure of the reed valve in service is not usual, although after a considerable amount of mileage has been covered the valve reeds may lose some springiness and their performance will suffer accordingly. Access to the reed valve assembly may be gained after removal of the carburettor. Slacken evenly and remove the four screws which hold the inlet stub to the crankcase. Lift the stub from position and remove the reed valve assembly. If the valve frame is stuck to the mating face of the stub flange or the inlet port use a thin blade to displace it.

3 Check the condition of the valve reeds and the curved valve stopper plate. Although the reeds and plate can be detached from the frame, to do so is pointless because the parts are not available as separate items. If damage is evident, in the form of cracking or distortion of the assembly, the whole unit must be renewed.

4 The sealing material on each side of the valve frame is bonded in place and cannot be removed. If either seal fails, the application of a good sealing compound on reassembly will postpone the eventual need for replacement of the complete unit.

5 The reed valve assembly and the inlet stud may be refitted by reversing the dismantling procedure. Ensure that the inlet stub flange screws are tightened evenly, in a diagonal sequence, to prevent distortion and subsequent leakage.

10 Air filter: removal, cleaning and refitting

1 The air filter consists of a plastic tray containing an oil impregnated foam filter element. This tray may be withdrawn from the air box situated behind the carburettor mouth by first removing the left-hand transmission cover, releasing the wire tray retaining clip and pulling the tray out. The element should be removed from the tray for cleaning at regular intervals as described in the following paragraph.

2 Carefully withdraw the foam element from the tray, taking care not to tear the foam. The element should be cleaned thoroughly in petrol so that all traces of the oil and accumulated dust are removed. Squeeze out the petrol and then allow the element to dry. Reimpregnate the element with SAE 40 oil. The element should be wet but not dripping **Do not** wring out the element when cleaning or reimpregnating it as this will damage the foam, necessitating element renewal. If the foam has become damaged or has hardened or perished with age it should be renewed as a matter of course.

3 Do not be tempted to run the engine with the air filter removed, or the weak mixture that results will cause engine overheating and seizure.

4 When refitting the element to the tray ensure than 10 mm (0.40 in) of the element is left protruding from the end of the tray. Refitting of the tray to the machine is a reversal of the removal procedure.

11 Exhaust system: cleaning

1 The exhaust system is a one-piece welded unit comprising an exhaust pipe and silencer unit. It should be detached for cleaning if it is evident that restriction is causing a drop in engine performance. This condition is often displayed as an inability of the engine to reach maximum revolutions.

2 To remove the exhaust system, first remove the exhaust

pipe flange to cylinder barrel securing nuts. Undo and withdraw the two silencer box bracket to crankcase securing bolts and allow the system to drop down and away from the machine.

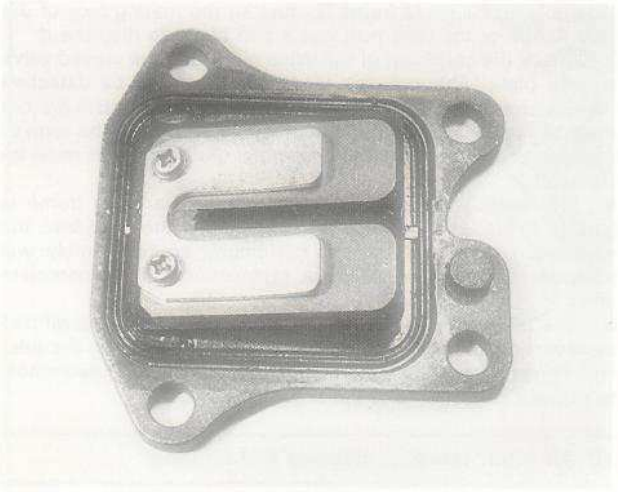
3 The areas most likely to require attention are the exhaust pipe and tailpipe, which will tend to become choked if not kept clear. A two-stroke engine is very susceptible to this fault, which is caused by the oily nature of the exhaust gases. As the sludge builds up back pressure will increase with a resulting fall off in performance.

4 If the build up of carbon and oil is not too great, a wash with a petrol/paraffin mix will probably suffice as the cleaning medium. Otherwise more drastic action will be necessary such as the application of a blowlamp flame to burn away the accumulated deposits.

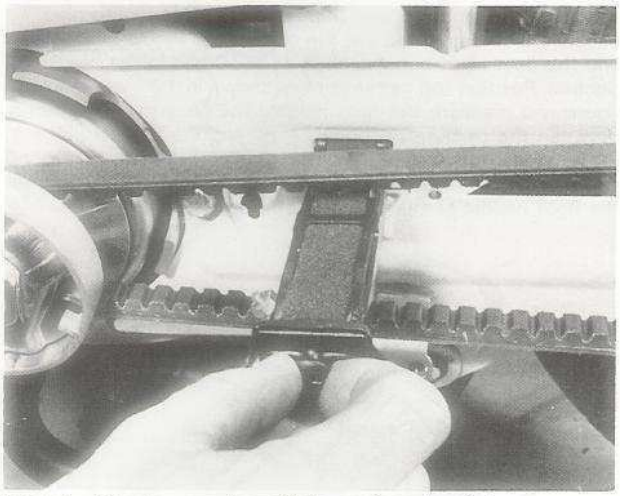
5 Access to the inside of the silencer box is provided by means of a hexagon headed plug situated at the tailpipe end of the box. With the plug removed, a scraper may be inserted into the silencer baffle and any carbon removed. It should be noted that with the silencer box being subject to variations in temperature and the corrosive effects of road salts, the plug will become seized in position unless it is removed at frequent intervals (every 6 months) and the threads smeared with a molybdenum disulphide grease.

6 If the painted finish of the system becomes damaged, it should be attended to quickly, or the system will rapidly become corroded and need renewal. Remove any surface rusting and paint it with a proprietary high-temperature enamel. One of the numerous rust inhibiting fluids may also be used to good effect if rusting has already taken place.

7 Refitting of the exhaust system is a reversal of the removal procedure, noting the information given in Section 35 of Chapter 1.



9.3 Examine the reed valve assembly



10.1 The filter tray may be withdrawn from the air box

11.5 Remove plug for access to inside of silencer box

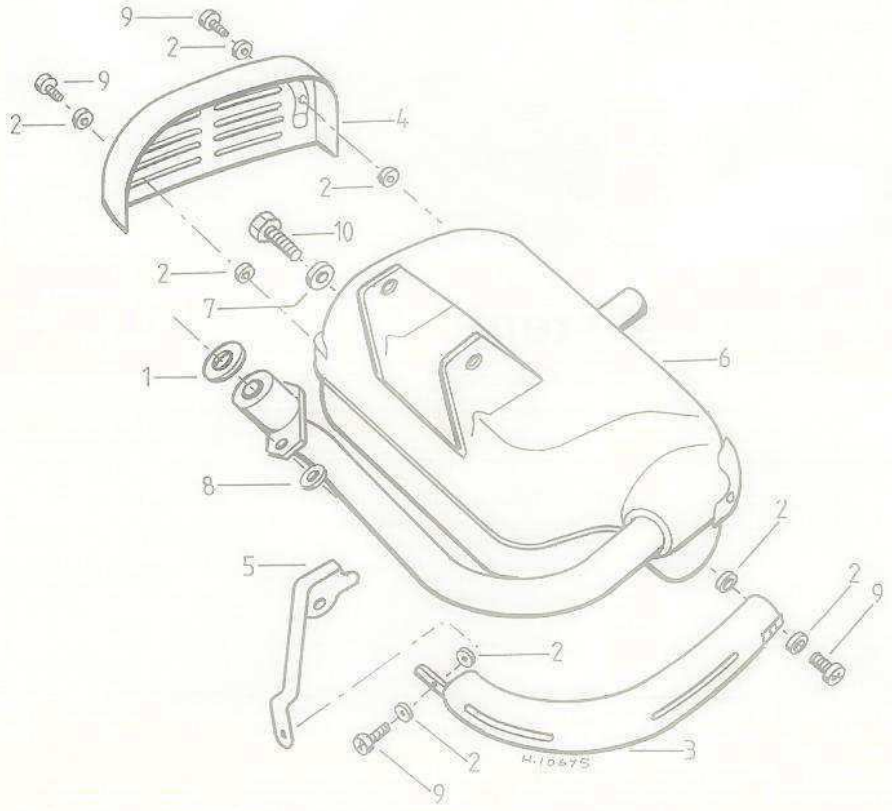


Fig. 2.4 Exhaust system

1 Gasket
2 Gasket
3 Guard (where fitted)
4 Guard (where fitted)
5 Stay (where fitted)
6 Exhaust system
7 Washer
8 Nut
9 Screw/washer
10 Bolt

12 Fault diagnosis: fuel system

Symptom	Cause	Remedy
Excessive fuel consumption	Air cleaner choked or restricted Fuel leaking from carburettor Badly worn or distorted carburettor	Clean or renew element Check all unions and gaskets Renew
Idling speed too high	Throttle stop screw in too far Carburettor top loose	Adjust screw Tighten
Engine sluggish. Does not respond to throttle	Back pressure in silencer	Check and clean if necessary
Engine dies after running for a short while	Dirt or water in carburettor	Remove and clean
General lack of performance	Weak mixture: float needle sticking in seat Air leak at carburettor or leaking crankcase seals	Remove float chamber and check needle seating Check for air leaks or worn seals

13 Fault diagnosis: lubrication system

Symptom	Cause	Remedy
White smoke from exhaust	Too much oil in fuel	Drain and refill with correct mixture.
Engine runs hot and gets sluggish when warm	Too little oil in fuel	See above.

Chapter 3 Ignition system

For information relating to the 1981 on models, see Chapter 7

Contents

Specifications

Ignition system	Flywheel generator with external ignition coil
Contact breaker gap	0.3 – 0.4 mm (0.012 – 0.016 in)
Sparking plug gap	0.6 – 0.7 mm (0.024 – 0.028 in)
Sparking plug type	NGK BP-6HS or NGK BP-5HS

1 General description

The spark necessary to ignite the petrol/air mixture in the combustion chamber is derived from a crankshaft-mounted flywheel generator. A contact breaker assembly, contained in the flywheel generator, determines the exact point at which the spark occurs. As the points separate, the low tension circuit energy is fed to the ignition coil and a high tension voltage is developed in the ignition coil. This passes across the electrodes of the sparking plug, igniting the compressed mixture as it jumps across the air gap between the two electrodes.

The flywheel generator also produces power for the electrical system of the vehicle. This aspect of its function is covered in Chapter 6 of this Manual.

2 Ignition source coil: checking the output

1 If it is suspected that the ignition source coil has failed or that the performance is impaired, the machine should be returned to a Honda Service Agent who will have the correct test equipment and expertise in its use.

2 A visual inspection of the coil may be made after removing the generator cover and the flywheel rotor. First detach the cover which is held by two screws. The rotor is secured by a central nut and is located on the flanged contact breaker cam by three pins which project from the flange. To enable the nut to be loosened the rotor must be prevented from turning; this may be accomplished by using a strap wrench secured around the rotor. After removing the central nut and washer, lift the rotor off the contact breaker cam.

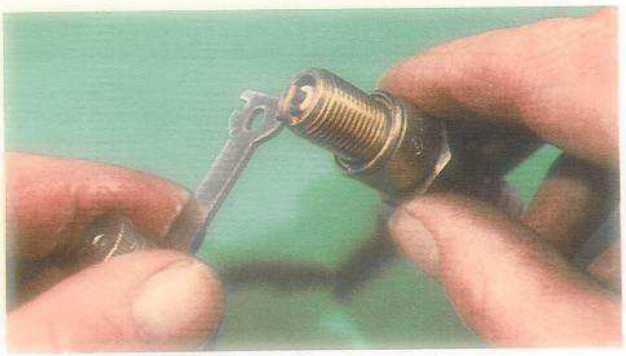
3 Inspect the ignition source coil for obvious signs of damage due to overheating or breakage. Check also that the retaining screws are tight. If damage is evident, the complete stator plate assembly must be renewed; the coils are not available as separate items. The leads which run from the coils and also the connections should be checked for damage and breakage or corrosion. A defective ignition system may well be traced to such a simple fault. Damaged wires may be replaced by new lengths of similar gauge, the connection being made by soldering. Corroded connections may be cleaned using fine emery paper.

3 Contact breaker points: adjustment

1 Remove the flywheel generator cover from the right-hand side of the machine by unscrewing the two retaining screws. Rotate the flywheel until the points are in the fully open position. This can be seen by viewing through one of the cut-outs in the flywheel face. Check that the point faces are not excessively burnt or pitted. If they are, remove and renew the assembly as described in Section 5 of this Chapter.

2 If the contacts are in good condition, measure the gap using a feeler gauge. A 0.35 mm (0.014 in) gauge should be a light sliding fit (the points must be within the range: 0.3-0.4 mm (0.012-0.016 in). Should they require adjustment, slacken the securing screw just enough to permit the fixed contact to be moved, using a small screwdriver. Tighten the securing screw and then recheck the gap. Because no provision is given for adjustment of the ignition timing the point at which firing occurs is dependent on the contact breaker gap. Because of this, if contact breaker adjustment is made, the ignition timing must be checked as a matter of course, to determine whether it is still accurate.

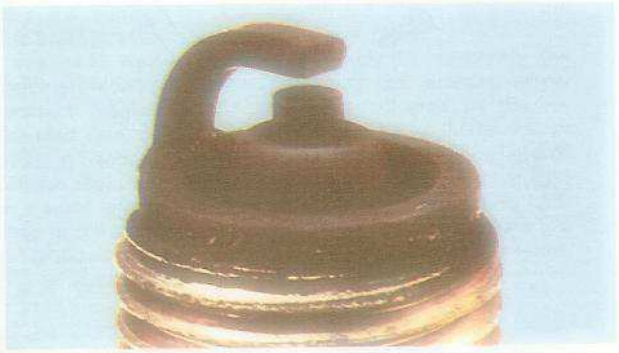
Spark plug maintenance: Checking plug gap with feeler gauges



Altering the plug gap. Note use of correct tool

Spark plug conditions: A brown, tan or grey firing end is indicative of correct engine running conditions and the selection of the appropriate heat rating plug

White deposits have accumulated from excessive amounts of oil in the combustion chamber or through the use of low quality oil. Remove deposits or a hot spot may form



Black sooty deposits indicate an over-rich fuel/air mixture, or a malfunctioning ignition system. If no improvement is obtained, try one grade hotter plug

Wet, oily carbon deposits form an electrical leakage path along the insulator nose, resulting in a misfire. The cause may be a badly worn engine or a malfunctioning ignition system

A blistered white insulator or melted electrode indicates over-advanced ignition timing or a malfunctioning cooling system. If correction does not prove effective, try a colder grade plug

A worn spark plug not only wastes fuel but also overloads the whole ignition system because the increased gap requires higher voltage to initiate the spark. This condition can also affect air pollution

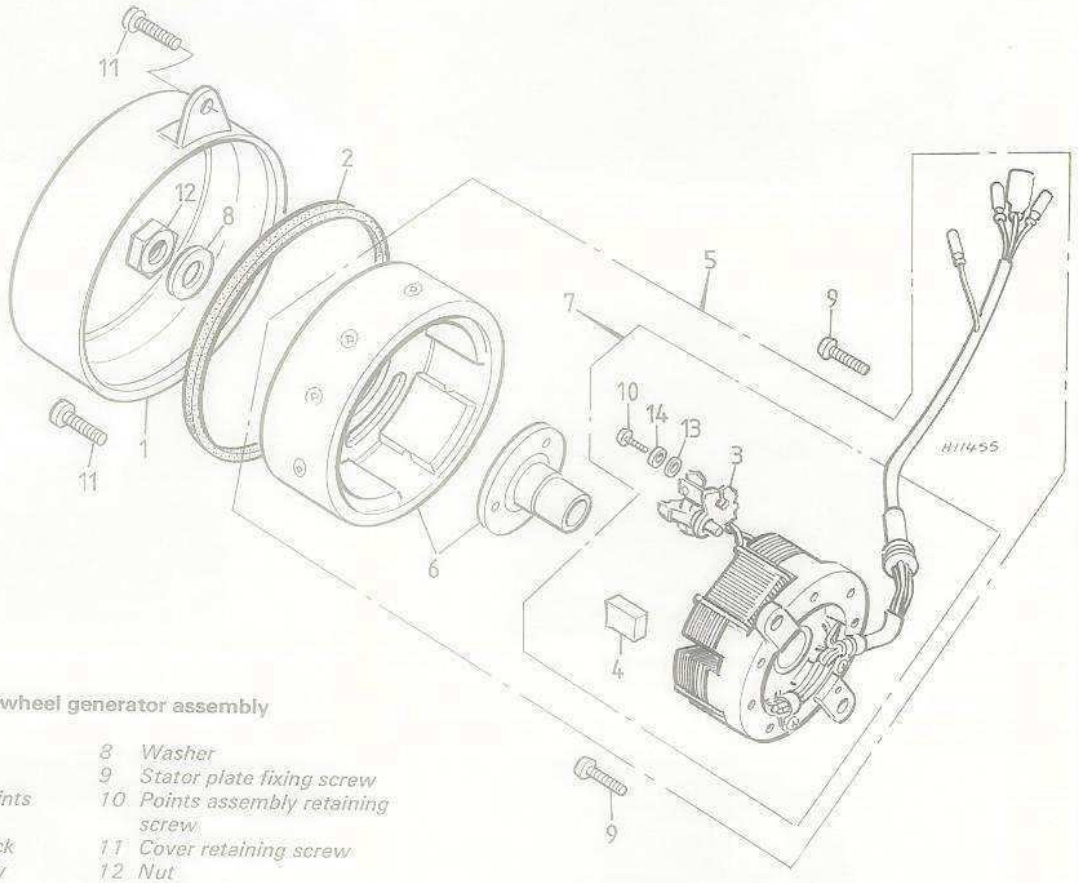
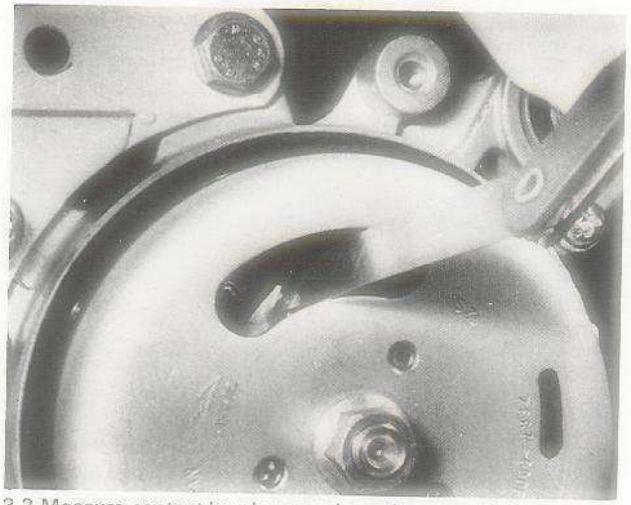


Fig. 3.1 Flywheel generator assembly

1 Generator cover
2 Dust seal
3 Contact breaker points assembly
4 Cam lubricating wick
5 Generator assembly
6 Flywheel rotor and contact breaker cam
7 Stator assembly
8 Washer
9 Stator plate fixing screw
10 Points assembly retaining screw
11 Cover retaining screw
12 Nut
13 Washer (plain)
14 Lockwasher



3.2 Measure contact breaker gap through cut-out in flywheel face

4 Ignition timing: checking and setting

1 The ignition timing should be checked only after the contact breaker gap has been checked and if necessary adjusted, for the reasons given in paragraph 2 of the previous Section. Ignition timing is checked by determining the point at which the contact breaker opens in relation to the position of the piston. To aid this, timing marks are scribed on the periphery of the generator rotor and an index mark in the form of a notch will be found on the periphery of the generator rotor housing in the 3 o'clock position.

2 To verify the exact amount of contact breaker opening, a battery and bulb should be interconnected with the contact breaker and the machine's wiring. Although the illustration shown in the Routine Maintenance Section shows a 6 volt motorcycle battery and 6 volt, 5 watt bulb being used, it was found in practice that a normal torch battery and bulb could be utilised.

3 Trace the leads which run from the generator to their snap connectors and separate the connector of the black/white wire. Connect a battery and bulb as shown in the illustration

accompanying the ignition timing item in the Routine Maintenance Section. When the contact breaker opens the bulb will dim.

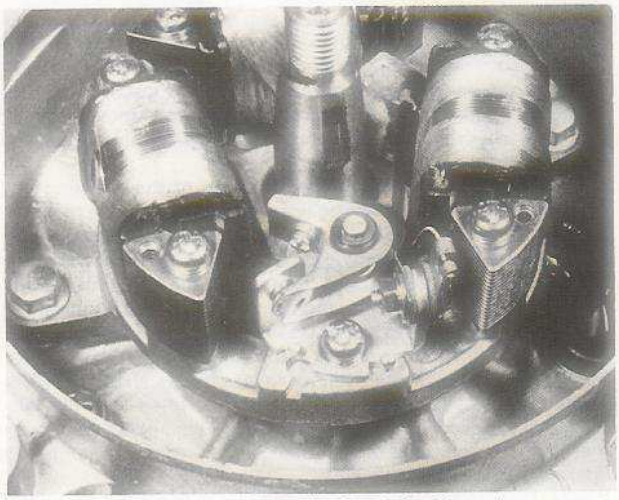
4 Rotate the generator rotor in a clockwise direction until the F mark on the rotor is aligned with the index mark on the housing wall. If the ignition timing is correct the bulb will dim just as the F mark is reached. If the ignition timing is incorrect slacken the contact-breaker gap adjustment screw and adjust the contact breaker so that the bulb dims at the correct point. Retighten the screw. Rotate the rotor until the points are fully open and then check the gap. If the gap is within the specified range of 0.3 – 0.4 mm (0.012 – 0.016 in) all is well. If, however, the gap is outside the range it is evident that the contact breakers have worn to a point where correct ignition timing and correct contact breaker clearance cannot be maintained simultaneously. If this is the case the contact breaker assembly must be renewed.

5 Contact breaker: renewal

1 If on inspection it is found that the contact breaker points are burned or pitted or if the heel of the moving point is worn to the extent that correct ignition timing cannot be maintained, the contact breaker assembly must be renewed. To gain access to the contact breaker the generator cover must be detached and the generator motor removed as described in Section 2 of this Chapter.

2 Having removed the rotor, slacken the small screw and nut which clamp the low tension lead terminal to the contact breaker unit. The terminal may be of the forked type and therefore able to be pulled from position without completely removing the screw. Note the position of the terminal in relation to the insulating washers on the screw; this will aid reassembly. Remove the contact breaker adjustment screw to free the contact breaker assembly from the stator plate.

3 Fit a new contact breaker assembly by reversing the dismantling procedure. Before tightening the retaining screw the contact breaker points should be adjusted to the recommended gap of 0.3 – 0.4 mm (0.012 – 0.016 in) as described in Section 3. Following this the ignition timing should be checked. Before refitting the rotor apply a few drops of light oil or a small amount of grease to the cam lubricating wick attached to the stator plate. Do not over-lubricate as there is a danger of excess lubricant finding its way onto the points faces, causing an ignition failure.



5.2 Disconnect the low tension lead terminal from the contact breaker unit

6 Ignition coil: examination and testing

1 The ignition coil transforms low voltage, provided by the ignition source coil, into the high voltage which is necessary to provide the spark at the sparking plug. The coil is mounted underneath the right-hand plastic transmission cover, midway between the pedal sprocket and the chain tensioner assembly. In normal usage it is unlikely that the coil will fail as it is a sealed unit with no mechanical parts and is well protected from the elements. In the event of ignition problems the coil may be tested using a 6 volt, 10 to 20 watt bulb and three lengths of electrical lead with a 6 volt battery.

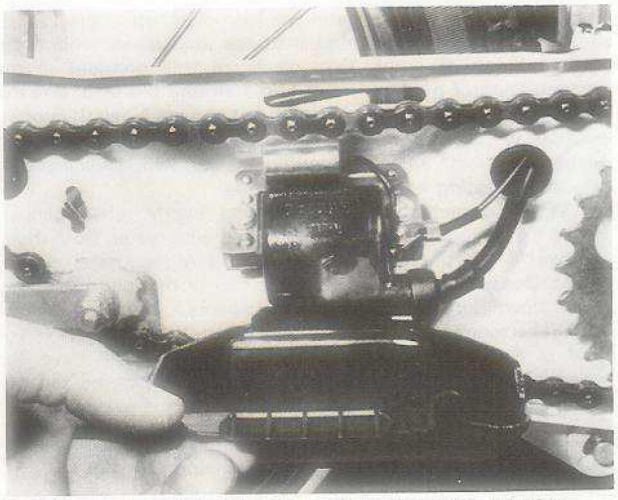
2 Gain access to the coil by removing the transmission cover and disconnect the low tension lead at the bullet connection. Detach the suppressor cap from the sparking plug and unscrew the cap from the HT lead. Refer to the accompanying figure and carry out the four separate tests with the leads connected between the bulb, battery, coil and condenser as shown. Continuity should only be found in the final test (D), when the bulb should light. If any one test fails then the coil is faulty and because the coil is a sealed unit and as such cannot be repaired, the coil, HT lead and condenser must be renewed as a complete unit.

7 Condenser: checking and renewal

1 A condenser is included in the contact breaker circuit to prevent arcing across the contact breaker points, when they separate. The condenser is mounted on the ignition coil, to which it is attached permanently. It is connected to the ignition primary winding circuit.

2 If the engine is difficult to start, or if misfiring occurs, it is possible that the condenser is at fault. Evidence of fault being related to the condenser may sometimes be substantiated if the contact breaker points have eroded quickly or if they have a blackened or burned appearance.

3 If failure of the condenser is suspected, it is suggested that the ignition coil/condenser unit be returned to an auto-electrician or Honda Service Agent who will have the necessary test equipment to determine whether the condenser is at fault. In the event of failure the condenser cannot normally be supplied independently of the ignition coil. An experienced auto-electrician may, however be able to replace the old component with a suitable replacement.



6.2 Remove transmission cover and unclip plastic shield to reveal ignition coil

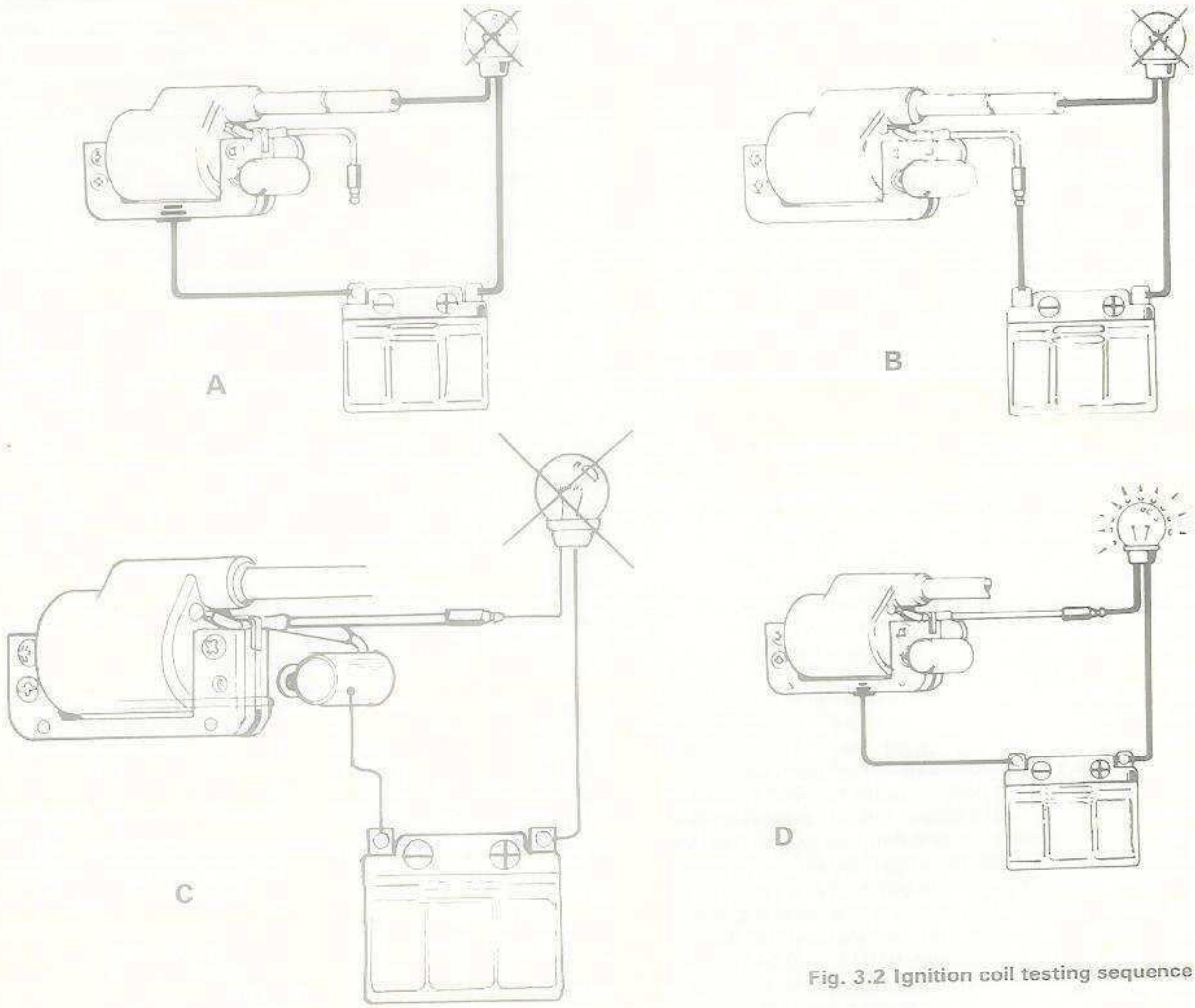


Fig. 3.2 Ignition coil testing sequence

8 High tension (sparking plug) lead: examination

1 Erratic running faults and problems with the engine suddenly cutting out in wet weather can often be attributed to leakage from the high tension lead and sparking plug cap. If this fault is present, it will often be possible to see tiny sparks around the lead and cap at night. One cause of this problem is the accumulation of mud and road grime around the lead, and the first thing to check is that the lead and cap are clean. It is often possible to cure the problem by cleaning the components and sealing them with an aerosol ignition sealer, which will leave an insulating coating on both components.

2 Water dispersant sprays are also highly recommended where the system has become swamped with water. Both these products are easily obtainable at most garages and accessory shops. Occasionally, the suppressor cap or the lead itself may break down internally. If this is suspected, the components should be renewed. It is recommended that the renewal of the lead is entrusted to an auto-electrician who will have the expertise to solder on a new lead without damaging the coil windings.

9 Sparking plug: checking and resetting the gap

1 The sparking plug fitted to the Honda PA 50 models as standard is shown in the Specifications at the beginning of this Chapter. The sparking plug gap should be maintained with the range of 0.6 – 0.7 mm (0.024 – 0.028 in). Certain operatin conditions may indicate a change in sparking plug grade although the type recommended by the manufacturer wi usually give the best, all round service. The use of anythin other than the recommended grade may result in a holed pistor

2 Check the gap between the plug electrodes at the interva recommended in the Routine Maintenance Chapter of thi Manual. To reset the gap, bend the outer electrode to bring closer to the centre electrode and check that the correct feele gauge can be inserted. Never bend the central electrode or th insulator will crack, causing engine damage if the particles fa in whilst the engine is running.

3 With some experience, the condition of the sparking plu electrode and insulator can be used as a reliable guide to engir operating conditions. See accompanying colour photographs

4 Beware of overtightening the sparking plug otherwise the is risk of stripping the threads from the aluminium alloy cylind head. The plug should be sufficiently tight to sit firmly on i sealing washer, and no more. Use a spanner which is a good to prevent the spanner slipping and breaking the insulator.

5 If the threads in the cylinder head strip as a result of ove tightening the sparking plug, it is possible to reclaim the hea by use of a Helicoil thread insert. This is a cheap and convenie method of replacing the threads; most motorcycle deale operate a service of this kind.

6 Make sure that the plug insulating cap is a good fit and h its rubber seal. It should also be kept clean to prevent trackin The cap contains the suppressor that eliminates both radio a television interference.

10 Fault diagnosis: ignition system

Symptom	Cause	Remedy
Engine will not start	No spark at plug	Faulty ignition lead – check connections and insulation. Check plug cap.
	Weak spark at plug	Dirty contact breaker points require renewal. Contact breaker gap has closed up. Reset.
	Faulty HT coil	Renew.
Engine starts, but runs erratically	Intermittent or weak spark	Check condition of sparking plug. If no improvement check whether points are arcing. If so condenser may be faulty.
	Plug lead insulation breaking down	Check for breaks in outer covering, especially near frame.
	Faulty ignition source coil	Have generator checked for correct output.
Engine difficult to start and runs sluggishly. Overheats	Faulty contact breaker points	Check condition of contact breaker and renew if worn.

Chapter 4 Frame and forks

For information relating to the 1981 on models, see Chapter 7

Contents

Specifications

Frame		
Type	Large diameter tubular spine	
Front forks		
Type	Telescopic, undamped	
Spring free length	207 mm (8.073 in)	
Suspension travel	65 mm (2.53 in)	
Rear suspension		
Type	Swinging arm, pivoting on engine mounted rubber bushes and supported by two suspension units	
Suspension units	Undamped coil spring	
Suspension travel	15 mm (0.6 in)	
Torque wrench settings	**lbf ft**	**kgf m**
Steering head top nut	21.7 – 29.0	3.0 – 4.0
Pivot bolt retaining nut	21.7 – 29.0	3.0 – 4.0
Rear suspension unit securing bolts	21.7 – 29.0	3.0 – 4.0

1 General description

The Honda PA 50 models employ a welded tubular steel frame, the engine and rear wheel being supported by pressed steel side members. These side members form a swinging arm for the rear suspension, the pivot shaft of which passes between two lugs cast in the upper engine casings and the frame pivot point. The swinging arm is supported at the rear by two telescopic suspension units.

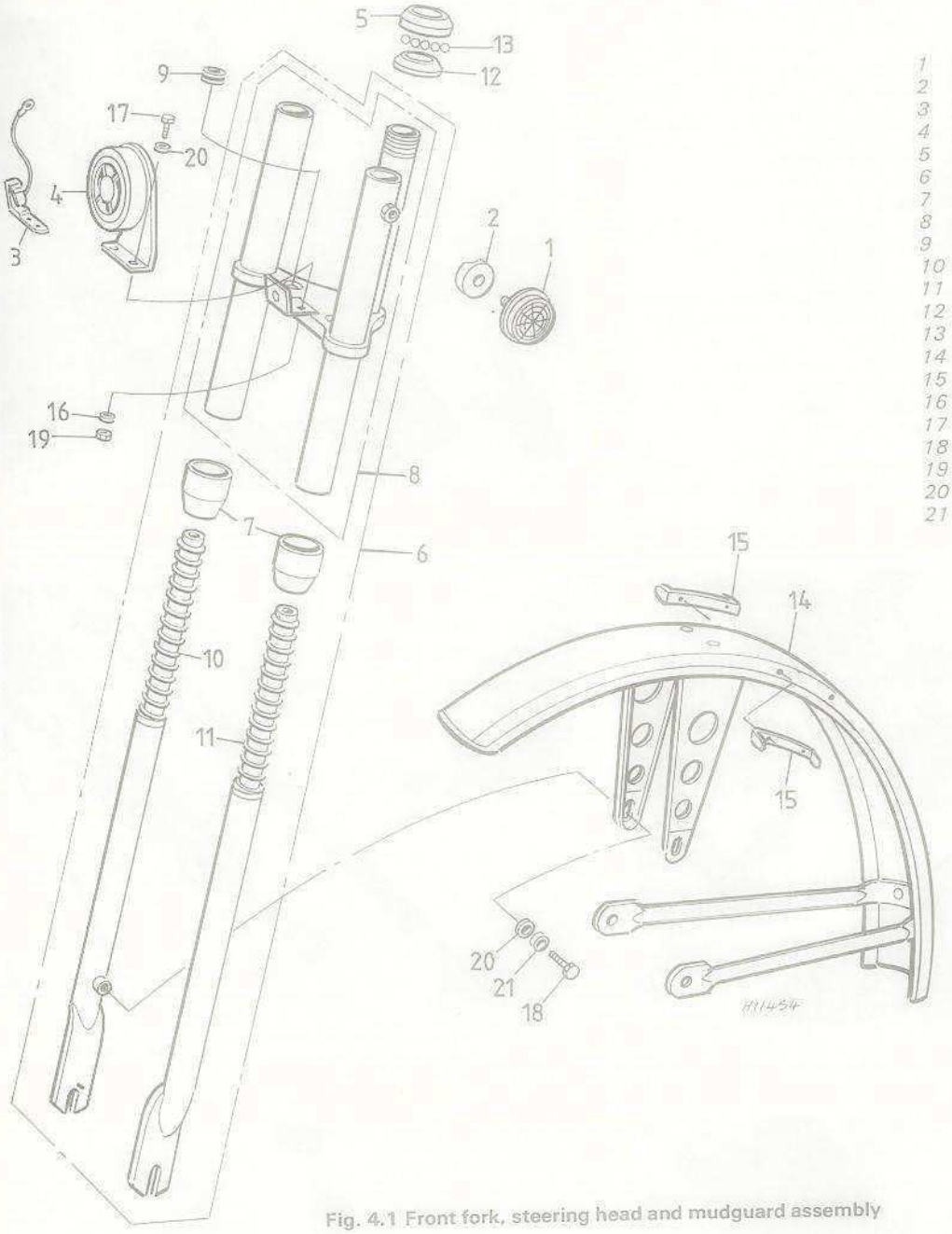
Front suspension is provided by means of a simple telescopic front fork assembly which pivots within the headstock incorporated within the tubular frame. The frame also incorporates mounting points for the single or dual seat assembly and for the fuel tank. Front and rear racks may be fitted, the front rack assembly including a basket.

2 Front fork assembly: general description

1 The front forks consist of an assembly which incorporates the steering stem, the lower fork yoke and the two upper fork tubes as a welded-up unit. The top fork yoke is a separate pressing and is retained to the steering stem by a large domed nut, and to the fork assembly by two fork top bolts.

2 The lower legs or sliders are smaller diameter tubes, adapted at the lower end to accept the wheel spindle and nuts and connected to the fork top bolt by a large compression spring in each leg. Each spring end is threaded to an anchor block, the blocks retaining two rubber balls, which act as buffers, within the spring coil.

3 Unless the machine is extensively damaged in an accident, it will not be necessary to detach the complete fork assembly from the machine. It is normally quite adequate to remove the lower legs and springs, leaving the upper fork tube and steering head assembly in position. If the latter components require attention, it will be noted that they have to be removed together with the steering head bearings. See Section 4 of this Chapter for details.



1 Reflector
2 Reflector base
3 Resistor assembly
4 Horn
5 Bearing cup
6 Fork assembly
7 Dust seal
8 Steering head assembly
9 Grommet
10 Right-hand lower fork leg
11 Left-hand lower fork leg
12 Lower steering cone
13 Ball bearings
14 Front mudguard
15 Cable guard
16 Fan washer
17 Bolt
18 Bolt
19 Nut
20 Plain washer
21 Lockwasher

Fig. 4.1 Front fork, steering head and mudguard assembly

3 Lower fork legs and springs: removal, examination, renovation and refitting

1 Place the machine securely on its centre stand, preferably on a slightly raised surface to make working on the machine more convenient, and remove the front wheel as described in Section 3 of Chapter 5. With the wheel removed, slacken and remove the remaining two mudguard to fork securing bolts and lift the mudguard clear of the forks. Take care not to damage the paintwork or plating during this procedure.

2 Each fork spring is anchored at its upper end by a bolt which passes through the steering head upper yoke and threads into a cylindrical anchor block which itself is threaded into the spring. When each bolt has been removed, the fork legs can be withdrawn downwards.

3 Remove the dust seals from the upper fork tube and inspect them for signs of damage and deterioration. Renew them if they are found to be defective, otherwise road dirt will be allowed to find its way between the moving surfaces of the upper and lower fork tubes and form an abrasive which will cause a rapid acceleration in wear between the two components.

4 Examine the bearing faces of the fork leg for wear after wiping off any surplus grease. Temporarily refit each lower leg in its respective upper tube and feel for play between the two components. A small clearance is normal, but if excessive, the lower leg may require renewal. In extreme cases, the upper tube and yoke assembly may require renewal also, but this is not likely in normal service.

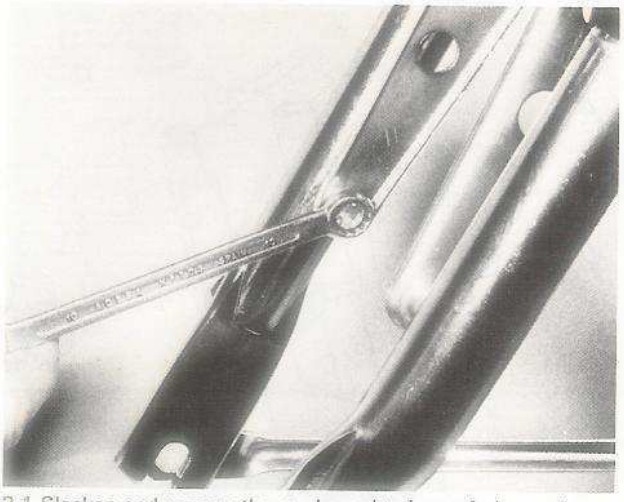
5 Measure each fork spring for length. The correct free length measurement is 207 mm (8.073 in). Check also that both

springs are of the same length. Should the lengths differ or be incorrect, the performance of the forks will be impaired; it is therefore advisable to renew defective springs.

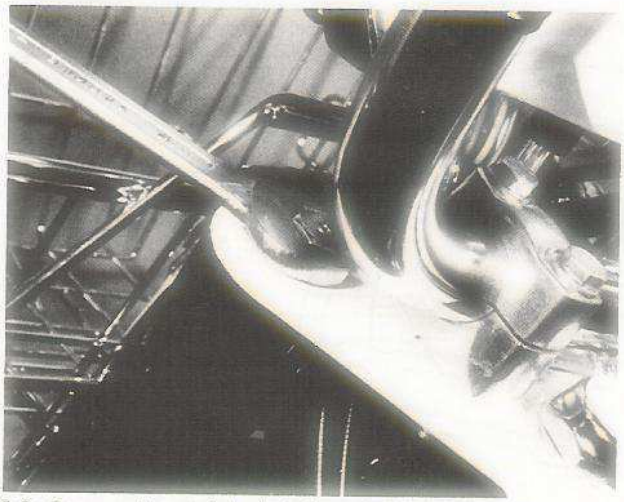
6 To remove the springs from the fork legs, support the fork leg on the work surface so that the roll pin securing the lower spring anchor block to the fork tube may be driven down and out of its hole using a parallel pin punch or similar tool. Remove each anchor block from the spring by clamping the flat end of the block in a vice and using the same punch to unscrew the spring end free of the block thread. Take care to retain the two rubber buffer balls contained within each fork spring. These should be examined for signs of severe deterioration and renewed if thought necessary.

7 The forks should be reassembled in the reverse order of that given for dismantling. Before the fork springs are refitted, they should be coated in heavy grease to prevent them from chattering against the upper tubes in use. Ensure that each spring is firmly screwed to the upper and lower anchor blocks. When refitting the fork leg and spring assembly to the steering head assembly, ensure that the flats on the upper anchor block are so positioned that the block may be located in the upper yoke without the fork leg having to be twisted against the spring to align it for the wheel to be refitted.

8 Refit the mudguard and the front wheel as described in Section 3 of Chapter 5.



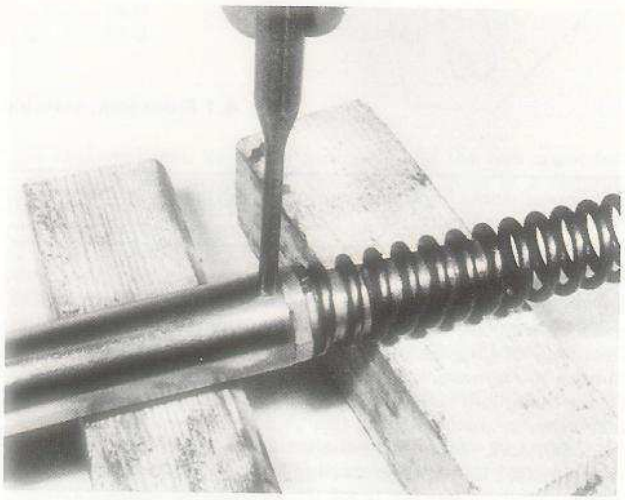
3.1 Slacken and remove the mudguard to lower fork securing bolts



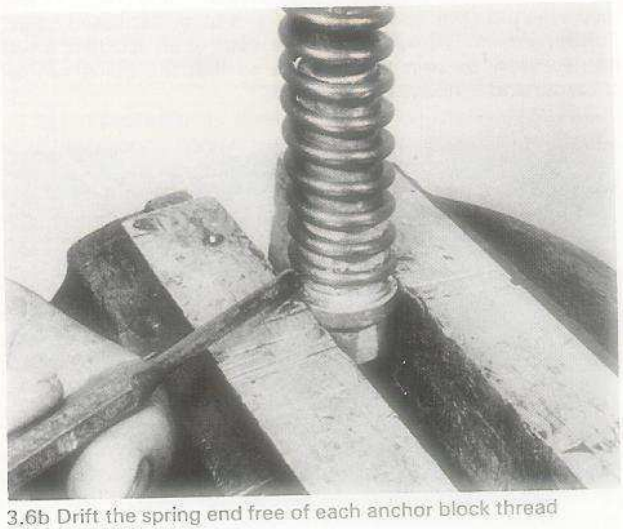
3.2a Remove the retaining bolt from the top of each fork leg ...

3.2b ... and withdraw the lower fork leg assembly downwards

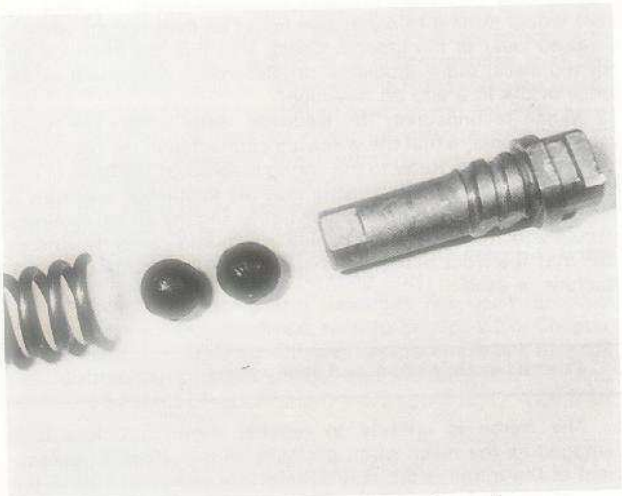
3.3 Remove the dust seals and inspect them for signs of damage or deterioration



3.6a Drive out the roll pin using a parallel pin punch



3.6b Drift the spring end free of each anchor block thread



3.6c Inspect the two rubber buffer balls for signs of severe deterioration

4 Steering head assembly: removal, examination, renovation and refitting

1 As mentioned in Section 2 of this Chapter, the steering head, lower yoke and upper fork tubes form an assembly, thus the steering head is normally dismantled together with the front forks. The handlebar, together with the control levers and switches, is clamped to the fork top yoke.

2 It will be necessary to place the machine on its centre stand and to remove the front wheel and mudguard as described in Section 3 of Chapter 5. To make further dismantling easier, it it also recommended that the fork lower leg assemblies be removed after releasing the top bolts. This will leave a more manageable assembly, in the form of the lower yoke and fork tube assembly, and the top yoke.

3 It will be noted that the headlamp unit and the handlebar assembly must be removed before further dismantling can take place. Note which control cables may be left connected and manoeuvred around the headstock components as they are removed.

4 Slacken and remove the handlebar clamp retaining screws and move the handlebar assembly clear of the headstock. Take care not to strain or kink any of the attached cables. It is best to tie the handlebars in position just to the rear of the headstock, placing some rag over the frame tube to protect the paintwork.

5 Once the headlamp glass/reflector unit has been released from the headlamp shell, the wiring may be disconnected from the terminals on the back of the unit and from the connections within the headlamp shell. Thread the wiring through the hole in the bottom of the shell and clear of the headstock. Note that, before disturbing any wiring connections, it is advisable to mark them clearly so that they may be reconnected in the correct positions. With the speedometer cable detached from the instrument, the headlamp shell and bracket assembly may now be removed from the upper yoke by undoing and removing the two retaining bolts and washers and lifting it clear of the machine. This will also release the upper front carrier fixing points.

6 To gain access to the horn, it is necessary to remove the plastic shield from the front of the upper fork tubes. This may be done, after or before the front rack and basket assembly has been fully detached from its fixing positions, by removing the single retaining screw and unclipping the shield from the two upper retaining spigots. The horn is retained to the lower yoke by two screws, and may be left attached to its wires. If necessary, the wiring may be disconnected to free the unit completely.

7 To release the top yoke, it is necessary to remove the large chromium-plated nut from the top of the steering stem. It is assumed that the two fork top bolts have already been removed. The yoke should lift away very easily, but if reluctant to move, it can be lightly tapped upwards, using a soft-faced mallet.

8 Remove the steering stem nut, supporting the lower yoke and fork tube assembly to prevent the assembly dropping clear of the frame. Remove the upper steering head cone and ball bearings. The steering head assembly may now be lowered clear of the machine. Provision should be made to catch the steel balls from the lower race if they fall free as the yoke is lowered.

9 The various parts should be washed off in clean petrol (gasoline) and given a careful visual examination when dry. Look for pits or scuff marks in the cup and cone bearing surfaces. If these are not smooth and polished in appearance, it will be necessary to renew them. The ball bearings should be renewed as a matter of course if the cups and cones have to be renewed. Other than this, they should be rejected if marked or damaged in any way. If the bearings are in anything other than perfect condition, the steering of the machine will be adversely affected, and for this reason any slightly suspect part demands renewal to ensure that the machine is kept roadworthy.

10 The upper and lower bearing cups may be removed from the headstock by passing a long drift through the inner bore of the headstock and drifting out the defective item from the opposite end. The drift must be moved progressively around the cup to ensure the item leaves the headstock evenly and squarely. The lower cone fits over the steering stem and may be removed by levering it upwards or by using a bearing extractor of suitable type. If difficulty is experienced with either of these operations, the assembly should be entrusted to an official Honda Service Agent who will have the necessary equipment to effect an economical repair. When fitting new items, ensure that they are located squarely in their fitted positions.

11 The steering head assembly is reassembled in the reverse order to that given for dismantling. Ensure that the bearings are generously lubricated with high melting-point grease. The bearings are adjusted for free play by slackening or tightening the steering stem nut. It will be found that the nut can be tightened considerably from the finger-tight position without having any undue effect upon the ease with which the handlebars can be turned. This does mean, however, that a load of several tons is unwittingly applied to the bearings, which will be rapidly destroyed. When setting the nut, it is necessary to remove all discernible play, but no more. The setting of the nut is secured when the chromium plated top nut is fitted and tightened to a torque of 3.0 – 4.0 kgf m (21.7 – 29.0 lbf ft). As

a guide, only very slight pressure should be needed to start the front wheel turning to either side under its own weight when it is raised clear of the ground. Check also that the bearings are not too slack; there should be no discernible movement of the forks, in the fore and aft direction.

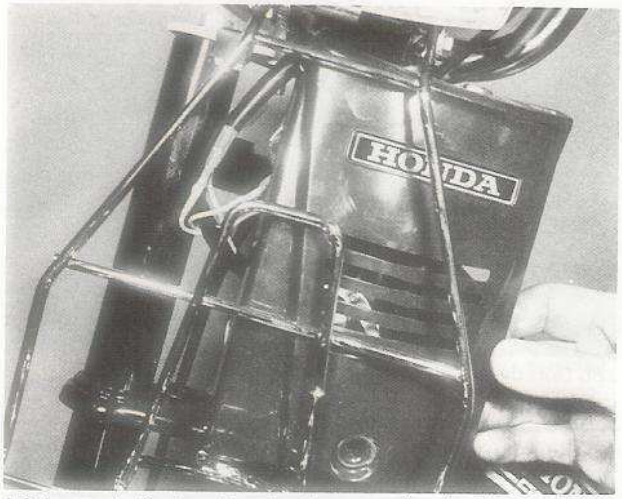
12 When reconnecting the electrical leads within the headlamp shell, ensure that the wires are connected in the previously marked positions. Refer to the wiring diagram at the back of this Manual for more details. Ensure that the handlebar assembly is positioned correctly before finally tightening the clamp retaining screws and that all control cables are routed correctly. Ensure also that the front brake cable is correctly adjusted before the machine is used.

5 Frame: examination and renovation

1 The frame is unlikely to require attention unless it is damaged as the result of an accident. In many cases, replacement of the frame is the only satisfactory course of action, if it is badly out of alignment. Comparatively few frame repair specialists have the necessary mandrels and jigs essential for the accurate re-setting of the frame and, even then, there is no means of assessing to what extent the frame may have been overstressed such that a later fatigue failure may occur.

2 After a machine has covered an extensive mileage, it is advisable to keep a close watch for signs of cracking or splitting at any of the welded joints. Rust can cause weakness at these joints particularly if they are unpainted. Minor repairs can be effected by welding or brazing, depending on the extent of the damage found.

3 A frame out of alignment will cause handling problems and may even promote 'speed wobbles' in a particular speed range. If misalignment is suspected as the result of an accident, it will be necessary to strip the machine so that the frame can be checked, and if needs be, renewed.



4.6 Access to the horn is gained by removing the plastic shield

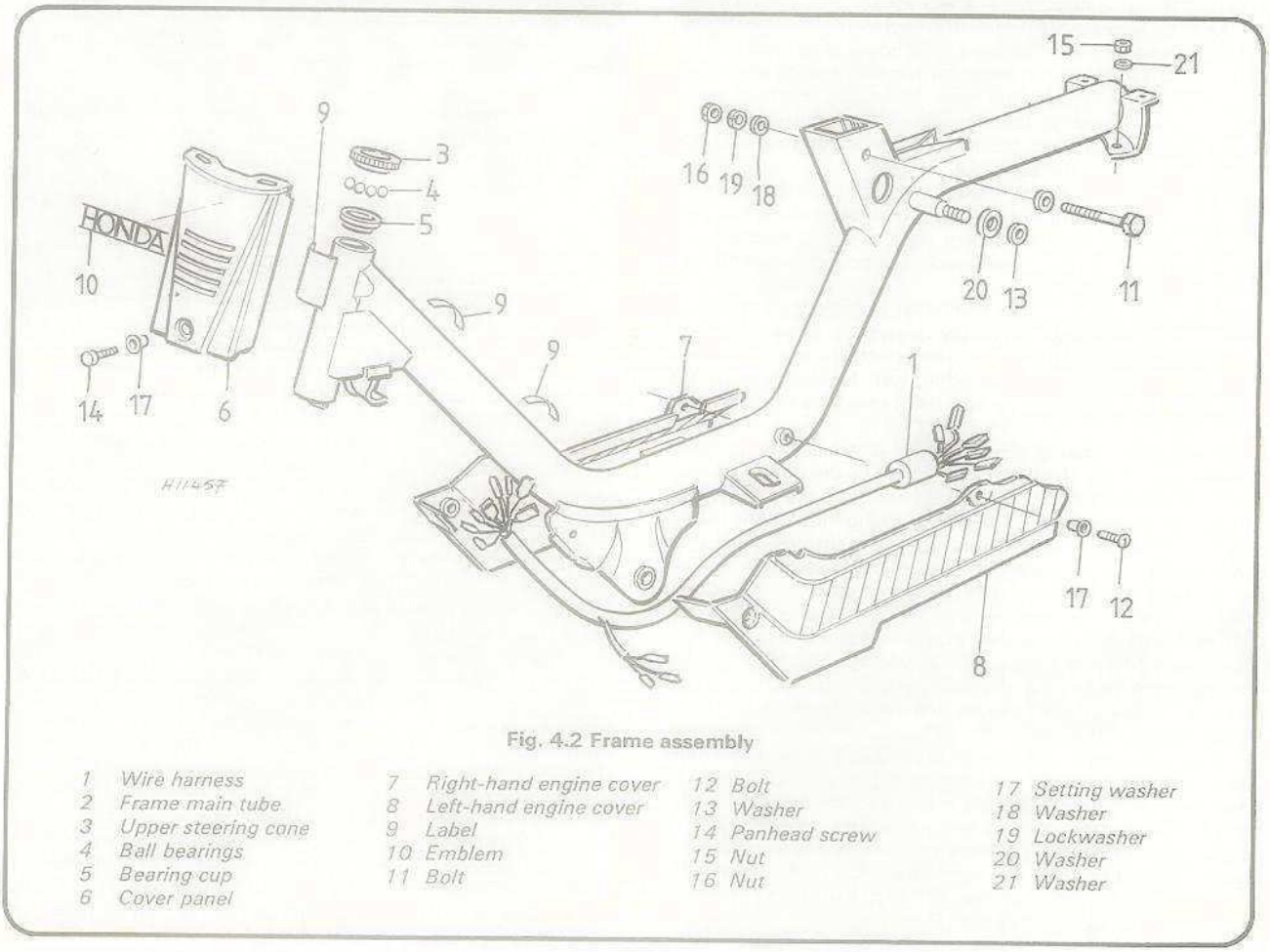


Fig. 4.2 Frame assembly

1 Wire harness
2 Frame main tube
3 Upper steering cone
4 Ball bearings
5 Bearing cup
6 Cover panel
7 Right-hand engine cover
8 Left-hand engine cover
9 Label
10 Emblem
11 Bolt
12 Bolt
13 Washer
14 Panhead screw
15 Nut
16 Nut
17 Setting washer
18 Washer
19 Lockwasher
20 Washer
21 Washer

6 Rear suspension pivot: dismantling, examination, renovation and reassembly

1 Rear suspension is provided by the engine/swinging arm assembly pivoting upon a transverse shaft, supported by bonded rubber bushes contained in lugs projecting from the crankcase. Suspension movement is controlled by two suspension units fitted between the rear of the swinging arm side plates and the main frame tube.

2 In normal service it may be expected that the bonded rubber bushes will have a long life before wear becomes apparent. Should wear occur however, side play will develop and this will eventually give rise to a noticeable twitch, when cornering. It is important that any trace of play is eliminated. Its development is somewhat insidious and can lead to the machine becoming dangerous without the owner realising the problem. Play can be checked by grasping one of the swinging arm side plates towards the rear of the machine and pushing and pulling in a horizontal plane from side to side. Any discernible play indicates the need for further investigation.

3 It is possible to remove the engine/swinging arm assembly from the machine as detailed in Section 4 of Chapter 1, but there is normally no reason for this to be done. Remove the plastic engine and transmission covers to gain access to the pivot shaft assembly. Remove the nut from the end of the pivot bolt and with an assistant supporting the machine, retract the mainstand. Place a support block underneath the exhaust silencer box to prevent the engine from dropping once the pivot bolt is removed and carefully tap the pivot bolt out of position. Note the position of any washers fitted to the bolt so that they may be refitted in the same position.

4 Once the bolt is removed, the machine will be effectively in two parts, anchored only by the rear suspension units. Support the engine with one hand and withdraw the support block with the other. Carefully lower the engine so that the pivot bushes are clear of the frame and in a position where they can be worked on. Make sure that the various cables and leads are not placed under any strain when lowering the engine. Should this happen, raise the engine and disconnect the offending item from the engine. With the engine lowered to a satisfactory position, support the machine and the engine/swinging arm assembly with blocks. It is advisable to retain the help of an assistant throughout this procedure as firm support of the machine is essential.

5 Each pivot bush consists of a rubber cylinder bonded to an external and an internal steel sleeve. The outer sleeve is a tight drive fit in the housing lug and the inner sleeve is trapped by end pressure from the frame mounting bracket, the centre distance piece and the pivot shaft. In service, movement of the suspension is provided by the inherent flexibility of the rubber bush. If side to side play was evident at the rear wheel it is possible that the pivot shaft was not tightened fully, allowing rotational movement between the shaft and the bush inner sleeves. Wear will be evident on the surface of the shaft and by excessive clearance between the shaft and the bushes. Should this be the case, the bushes and the pivot will require renewal.

6 Inspect the bushes for deterioration of the rubber, wear of the inner sleeve or separation between the rubber and either sleeve. If any such fault is evident bush renewal is required.

7 As mentioned above the bushes are a tight drive fit in the housing lugs. When the time comes for renewal it will probably be found that, due to corrosion between the dissimilar metals (aluminium and steel), the already tight bushes have become almost immovable. As a means of removal, attempting to drive the bushes out will probably prove unsuccessful, because the rubber will effectively damp out the driving force, and damage to the lugs may occur. It is suggested that the bushes are drawn from position using a fabricated puller as shown in the accompanying diagram. This can be made from a short length of thick-walled tube, the inside diameter of which is slightly larger than the outside diameter of the bush. If possible use a high tensile bolt and nut, which will be better able to take the stress involved. If it is found that the bushes are reluctant to move, even using this method, it is recommended that the engine/transmission unit be returned to a Honda Service Agent whose expertise can be brought to bear on the problem.

8 The new bushes may be driven in using a tubular drift against the outer sleeve. If this method is used, the opposite side of the housing lug must be well supported. Alternatively, reverse the removal operations using the fabricated puller. Whichever method is adopted, the outer sleeve should be lubricated sparingly, and care must be taken to ensure that the bush remains square with the housing bore.

9 If the engine/swinging arm assembly has been removed from the frame for this operation, refer to Section 37 of Chapter 1 for the refitting procedure. Otherwise reassembly is a reversal of the dismantling procedure. Note that the pivot bolt retaining nut should be torque loaded to 3.0 – 4.0 kgf m (21.7 – 29.0 lbf ft).

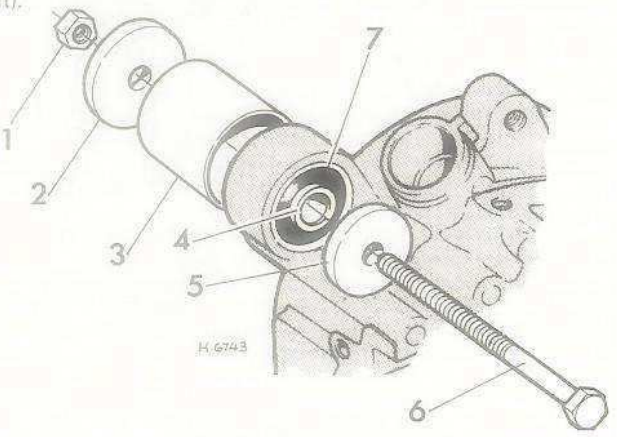


Fig. 4.3 Engine pivot bush removal tool

1 *High tensile nut*
2 *Thick washer*
3 *Pipe*
4 *Bush inner sleeve*
5 *Thick washer*
6 *High tensile bolt*
7 *Bush outer sleeve*

7 Rear suspension units: removal and refitting

1 The suspension units do not require any maintenance and can normally be expected to last the life of the machine. If renewal is required for any reason, it is recommended that they be replaced as a pair. Each unit is retained by a nut and bolt at its lower end and by a stud and nut at the top. Removal and replacement is a simple matter of releasing the mounting nuts and bolts, detaching the old unit and fitting a new one.

8 Centre stand: removal, examination and refitting

1 A centre stand is fitted to support the machine when it is parked. It is connected to lugs on the swinging arm plates by means of a shaft around which it pivots. This shaft is retained by a circlip located in a machined groove at each end of the shaft. A return spring is fitted between the stand and the left-hand swinging arm plate, to retract the stand when it is not in use.

2 Periodically, the pivot shaft should be withdrawn from the stand, by removing one of the end circlips, and lubricated with grease. This is fairly important as its exposed position renders it susceptible to corrosion if left unattended.

3 Be especially careful to check the condition and correct location of the return spring. If this fails, the stand will fall onto the road in use, and may unseat the rider if it catches in a drain cover or similar obstacle.

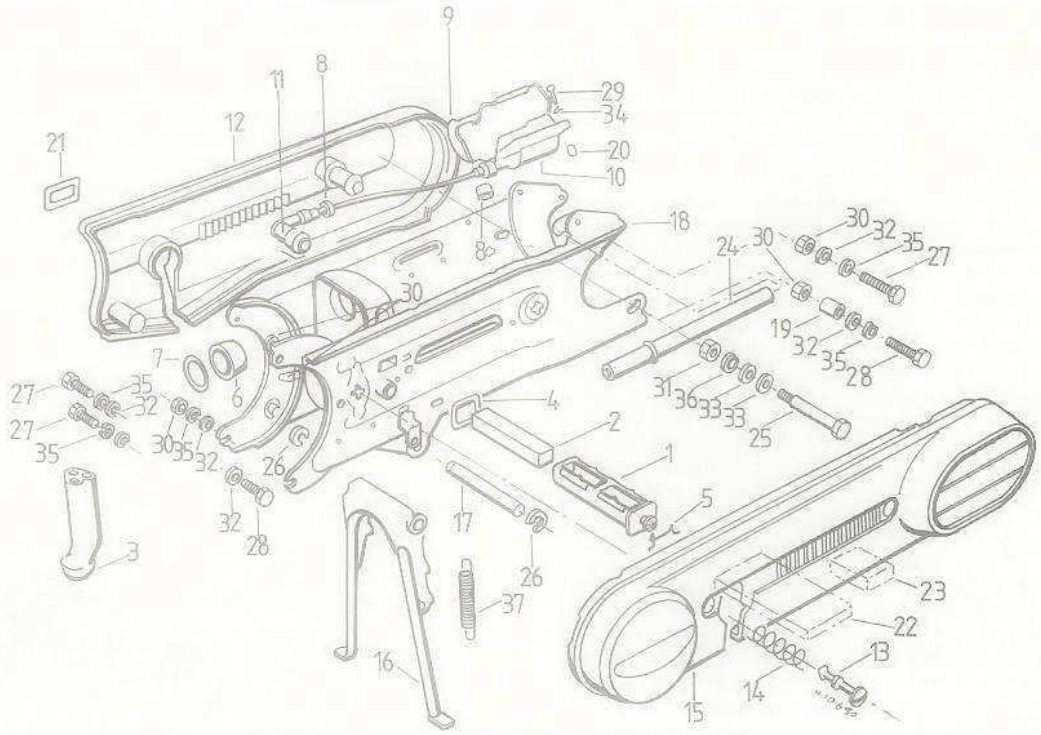
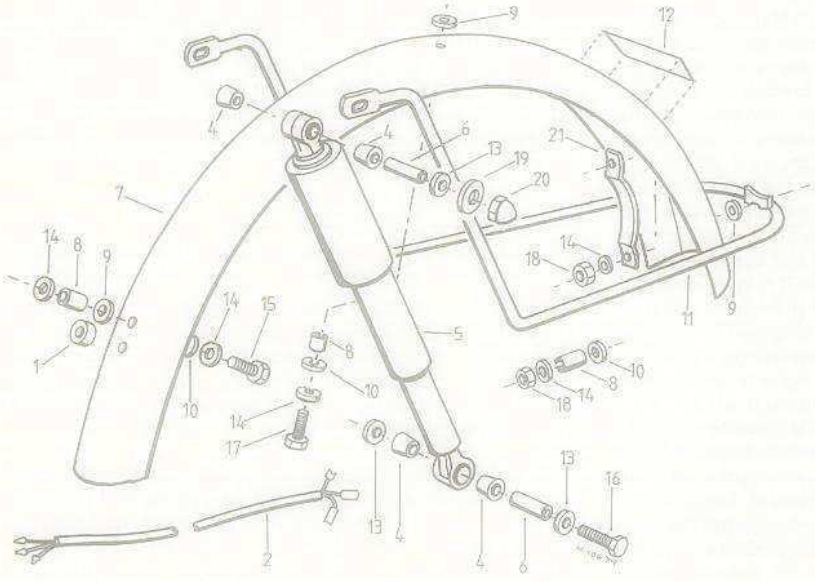


Fig. 4.4 Swinging arm assembly

1 Air cleaner element case
2 Air cleaner element
3 Air cleaner inlet tube
4 Gasket
5 Spring clip
6 Air cleaner connecting tube
7 Connecting band
8 Grommet
9 Ignition coil cover
10 Ignition coil
11 Suppressor cap
12 Right-hand transmission cover
13 Cover fastener pin
14 Spring
15 Left-hand transmission cover
16 Main stand
17 Main stand shaft
18 Swinging arm assembly
19 Spacer collar
20 Spacer collar
21 Warning label
22 Warning label
23 Warning label
24 Hand pump
25 Bolt
26 E-ring
27 Bolt
28 Bolt
29 Panhead screw
30 Nut
31 Nut
32 Plain washer
33 Plain washer
34 Lockwasher
35 Lockwasher
36 Lockwasher
37 Main stand spring



1 Rubber bush
2 Wire harness
3 Plate
4 Rubber bush
5 Suspension unit assembly
6 Collar
7 Mudguard
8 Distance piece
9 Rubber bush
10 Rubber bush
11 Mudguard stay
12 Label
13 Washer
14 Washer
15 Bolt
16 Bolt
17 Bolt
18 Nut
19 Plain washer
20 Dome headed nut
21 Strap

Fig. 4.5 Rear suspension and mudguard assembly

9 Pedals: maintenance and renewal

1 All Honda PA50 models are equipped with bicycle-type pedals as an alternative means of propulsion in the event of engine failure. Although of limited practical value for this purpose, the pedal arrangement ensures that the machine qualifies for special concessions in many countries, and so has been retained mainly for this purpose. The pedals also provide the means of starting the engine, and double as footrests whilst the machine is under way.
2 A pedal crank is attached to each end of a shaft passing through bushes located in the side members of the swinging arm assembly. Each of the cranks is retained by a cotter pin which engages with a flat machined in the end of the shaft. To remove the pedal and crank as an assembly, slacken the cotter pin nut until it is flush with the end of its thread. Tap the threaded end of the pin carefully, taking care not to damage the thread. This should displace the pin sufficiently to allow the nut to be run off and the pin withdrawn. Occasionally, the cotter pin may prove particularly stubborn, and in such instances it will be necessary to sacrifice the pin. Before resorting to punching the pin free, ensure that a new replacement pin is available to facilitate reassembly. On no account can anything other than the correct cotter pin be used to secure the pedal crank.
3 The pedals themselves are of conventional bicycle design, and screwed onto the pedal cranks. Each pedal runs on a sealed bearing on a central pin, and the pin has flats which enable a thin open-ended spanner to be used for removal. Note that the left-hand pedal has a right-hand thread, and the right-hand pedal has a left-hand thread. This should be borne in mind when attempting to remove the pedals from their respective cranks. It will also be appreciated that the pedals and cranks are handed and not interchangeable. Apart from keeping the pedals clean and well greased, no maintenance is possible. If the pedals become worn, they should be renewed.

10 Speedometer head: removal and refitting

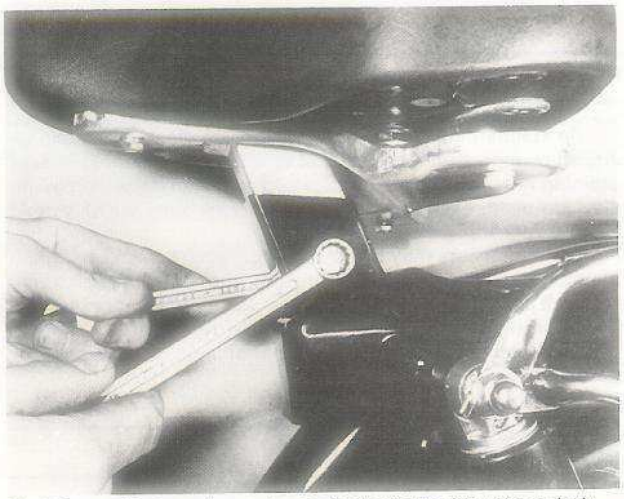
1 Release the headlamp glass/reflector unit retaining clip, situated at a mid-point underneath the lens, and pull the unit out of the headlamp shell, allowing it to hang down on the leads.
2 Disconnect the speedometer cable from the union at the speedometer head by unscrewing the knurled ring. Unscrew and remove the nut retaining the speedometer to the headlamp bracket and push the speedometer up through the hole in the headlamp shell.
3 Apart from defects in either the drive or the drive cable, a speedometer or tachometer that malfunctions is difficult to repair. Fit a new one, or alternatively entrust the repair to a competent instrument repair specialist.

11 Speedometer drive cable: examination and renewal

1 Drive from the speedometer drive gearbox is transmitted to the instrument head by way of a flexible cable. This flexible cable consists of a resilient but torsionally rigid inner cable which runs inside, and is protected by, a reinforced outer cable. This arrangement allows the drive to pass through gentle bends and absorbs the relative movement between the front wheel and the instrument.
2 Although considered to be flexible, it is preferable to ensure that the cable does not pass through acute bends, which would shorten its effective life. The straighter the cable's run, the lower the rate of wear and risk of breakage. The cable should be removed from the machine from time to time, to be checked for wear and lubricated. Each end of the cable is secured by a knurled ring.
3 Unless a cable of sealed construction is used, the inner cable should be withdrawn and both it and the outer cable washed thoroughly in clean petrol (gasoline). Examine the inner cable for kinks which may have been caused by the cable being badly routed. A kink will cause the needle to flicker or waver in use, and can only be cured be renewing the damaged cable. Check the ends of the inner cable. On occasions, the formed ends can become rounded off, and this will mean that there is no consistent drive to the instrument. The cable should also be examined for broken strands. This may be done visually or by passing a piece of rag along the cable's length. The rag will snag on the end of any broken strand. On no account check for broken strands by moving the cable through the fingers or palm of the hand, this could result in the end of a broken strand piercing the skin and causing a very painful injury.
4 Examine the outer cable for damaged or compressed sections before reassembling the cable. The inner should be coated in grease, apart from the last six inches at the upper end, which should be left free of grease to prevent it from working up into the instrument. Any grease can be used although a graphite or molybdenum based type is probably best in this application.
5 If the speedometer ceases to function, suspect a broken cable. Inspection will show whether the inner cable has broken; if so, the inner cable alone can be renewed and reinserted in the outer casing after greasing. Never fit a new inner cable alone if the outer covering is damaged or compressed at any point.
6 On cables having a sealed construction, spin the inner cable to check for resistance. Most cables have a tight spot, but if the resistance is severe and a wavering speedometer has been noted, the cable should be renewed. Lubrication is difficult with this type of cable, but an aerosol chain grease or a silicone-based lubricant can often be introduced using the aerosol's thin extension nozzle.

12 Seat: adjustment, removal and refitting

1 The solo seat fitted to some Honda PA 50 models is mounted on a stem which is retained to the frame by a clamp arrangement. Provision is made for adjusting the height of the saddle to cater for the individual requirements of owners. Adjustment can be carried out after the clamp bolt has been slackened. Position the saddle at the required height, then retighten the clamp bolt.
2 The seat may be removed from the frame by simply withdrawing the clamp bolt and pulling the seat and stem up and away from the frame. Refitting is a reversal of the removal procedure, ensuring the clamp bolt is fully tightened after the necessary adjustment has been carried out.



12.1 Seat adjustment may be carried out after the clamp bolt has been slackened

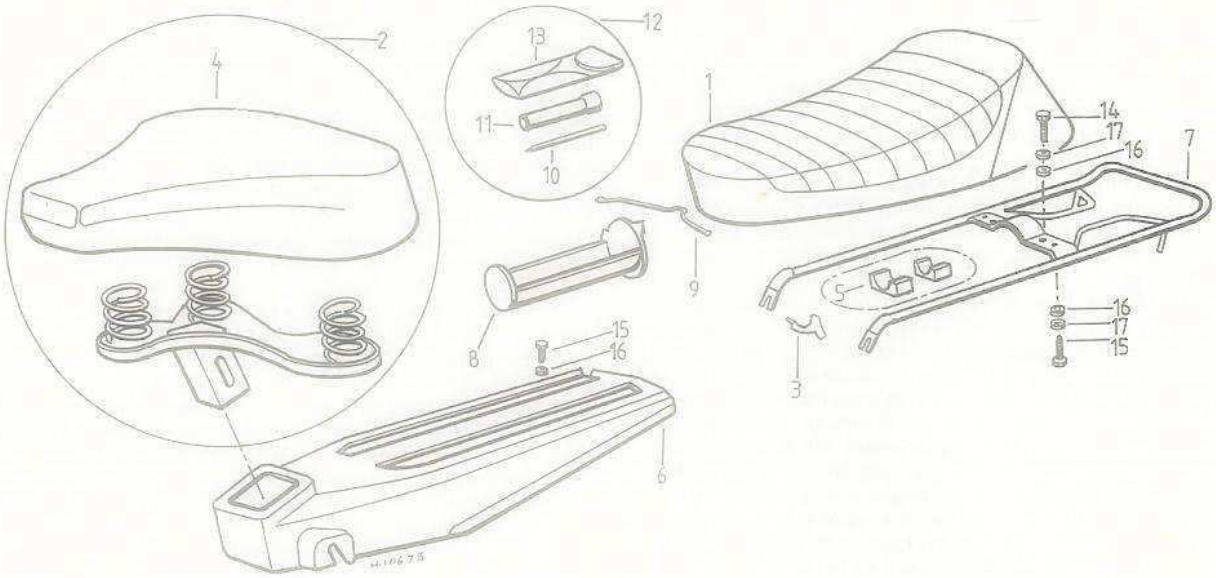


Fig. 4.6 Saddle and rear rack assemblies

1 Bench seat
2 Single saddle assembly
3 Spacer
4 Saddle
5 Rubber supports
6 Carrier
7 Carrier
8 Toolbox
9 Toolbox retaining spring
10 Screwdriver
11 Box spanner
12 Tool set
13 Tool punch
14 Bolt
15 Bolt
16 Plain washer
17 Lockwasher

13 Handlebars: adjustment

1 On standard models the handlebars are clamped by two U-shaped clamps, the lower ends of which are threaded to accept retaining nuts. On Deluxe models two split clamps of aluminium alloy are used, each being secured by two bolts which thread into the fork top yoke.

2 The handlebars may be adjusted for reach by slackening the retaining nuts or bolts and moving the handlebars to the required position. Note that it may then prove necessary to reposition the handlebar controls so that they fall conveniently to hand. After adjustment, ensure that all nuts or bolts are fully tightened.

14 Cleaning the machine: general

1 After removing all surface dirt with a rag or sponge washed frequently in clean water, the machine should be allowed to dry thoroughly. Application of car polish or wax to the cycle parts will give a good finish, particularly if the machine has been neglected for a long period.

2 The plated parts of the machine should require only a wipe with a damp rag. If the plated parts are badly corroded, as may occur during the winter when the roads are salted, it is preferable to use one of the proprietary chrome cleaners. These often have an oily base, which will help to prevent the corrosion from recurring.

3 If the engine parts are particularly oily, use a cleaning compound such as 'Gunk' or 'Jizer'. Apply the compound whilst the parts are dry and work it in with a brush so that it has the opportunity to penetrate the film of grease and oil. Finish off by washing down liberally with plenty of water, taking care that it does not enter the carburettor or the electrics.

4 Whenever possible, the machine should be wiped down after it has been used in the wet, so that it is not garaged under damp conditions which will promote rusting. Remember there is little chance of water entering the control cables and causing stiffness of operation if they are lubricated regularly as recommended in the Routine Maintenance Section.

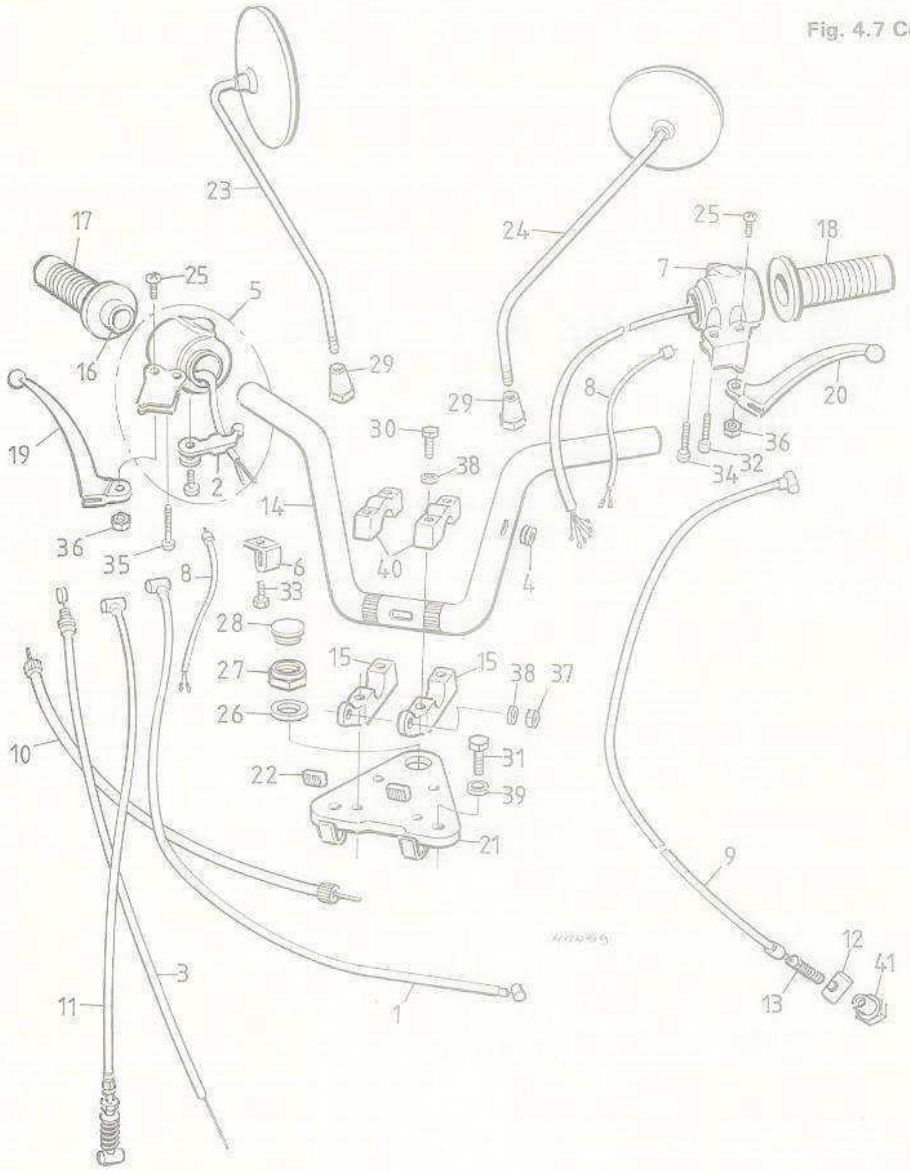


Fig. 4.7 Control cables and handlebar assembly

1 Decompressor control cable
2 Decompressor lever
3 Throttle control cable
4 Grommet
5 Switch assembly (where fitted)
6 Cable stop
7 Switch assembly
8 Stop lamp switch assembly (where fitted)
9 Rear brake control cable
10 Speedometer drive cable
11 Front brake control cable
12 Trunnion (where fitted)
13 Spring (where fitted)
14 Handlebar
15 Lower handlebar retainer
16 Throttle grip pipe
17 Right-hand rubber grip
18 Left-hand rubber grip
19 Right-hand brake lever
20 Left-hand brake lever
21 Upper fork yoke
22 Cap
23 Right-hand mirror
24 Left-hand mirror
25 Pivot screw
26 Plain washer
27 Steering stem nut
28 Cap
29 Locknut
30 Bolt
31 Bolt
32 Panhead screw
33 Panhead screw
34 Panhead screw
35 Panhead screw
36 Nut
37 Nut
38 Plain washer
39 Plain washer
40 Upper handlebar retainer bracket
41 Adjusting nut (where fitted)

15 Fault diagnosis: frame and forks

Symptom	Cause	Remedy
Machine veers to left or right with hands off handlebars	Incorrect wheel alignment	Check and re-align.
	Bent forks	Check and renew.
	Twisted frame	Check and renew.
Machine rolls at low speeds	Overtight steering head bearings	Slacken and re-test.
Machine judders when front brake is applied	Slack steering head bearings	Tighten until all play is taken up.
Machine pitches badly on uneven surfaces	Ineffective forks	Check and renew.
	Ineffective rear suspension units	Check and renew.
Fork action stiff	Fork legs out of alignment	Slacken front wheel spindle nuts. Pump forks several times then tighten spindle nuts.
Machine wanders. Steering imprecise. rear wheel tends to hop	Worn swinging arm pivot	Dismantle and renew bushes and pivot shaft.

Chapter 5 Wheels, brakes and tyres

For information relating to the 1981 on models, see Chapter 7

Contents

Specifications

Wheels	
Type	Steel rim, spoked
Rim run-out	1.0 mm (0.039 in)
Service limit	1.5 mm (0.059 in)
Tyre sizes	
Front	200 – 17 – 2PR
Rear	225 – 17 – 2PR
Tyre pressures	
Front	28 psi (2 kg cm^2)
Rear	36 psi (2.5 kg cm^2)
Brakes	
Type (front and rear)	Single leading shoe, drum
Shoe lining thickness	3.5 mm (0.14 in)
Service limit	2.0 mm (0.08 in)
Brake drum inner diameter	79.9 – 80.1 mm (3.146 – 3.154 in)
Service limit	81 mm (3.16 in)

Torque wrench settings	**lbf ft**	**kgf m**
Front wheel spindle nut	21.7 – 29.0	3.0 – 4.0

1 General description

The wheels fitted to the Honda PA 50 models are both of 17 inch diameter, the front wheel carrying a 2.00 inch section tyre and the rear wheel a 2.25 inch section tyre. Each wheel has a steel rim, laced by wire spokes to an aluminium alloy hub and integral brake drum. The front and rear brakes are of similar design, both being operated by handlebar mounted levers via Bowden cables.

The rear wheel hub also contains the transmission reduction gearbox unit. Because of this the wheel is mounted to the swinging arm by two bolts on either side; each bolt passing through the swinging arm plate and threading into the hub assembly casting.

2 Front wheel: examination and renovation

1 Place the machine on the centre stand so that the front wheel is raised clear of the ground. Spin the wheel and check the rim alignment for run-out. Small irregularities can be corrected by tightening the spokes in the area affected although a certain amount of experience is advisable if over-correction is to be avoided. The run-out limit is 1.5 mm (0.059 in).

2 Any flats in the wheel rim should be evident at the same time. These are much more difficult to remove and in most cases the wheel will need to be rebuilt on a new rim. Apart from the effect on stability, there is greater risk of damage to the tyre bead and walls if the machine is run with a deformed wheel. In an extreme case the tyre can even separate from the rim.

3 Check for loose or broken spokes. Tapping the spokes is the best guide to tension. A loose spoke will produce quite a different sound. Always recheck for run-out by spinning the wheel again.

4 If it is necessary to turn a spoke nipple an excessive amount to restore tension, it is advisable to remove the tyre and tube so that the end of the spoke that now protrudes into the wheel rim can be ground flush. If this precaution is not taken, there is danger of the spoke chafing the inner tube and causing a puncture.

5 Whilst the wheel is being examined, check for any free play or roughness in the wheel bearings. If this is more than just barely perceptible, remove the wheel and check the bearings as described in the relevant Sections of this Chapter.

3 Front wheel: removal and refitting

1 With the machine placed on the centre stand and on level ground, screw the front brake cable adjuster at the handlebar end fully in, after releasing the locknut, and release the cable nipple from the brake drum lever by pushing the lever fully up and carefully levering the nipple out of its retaining slot with a screwdriver.

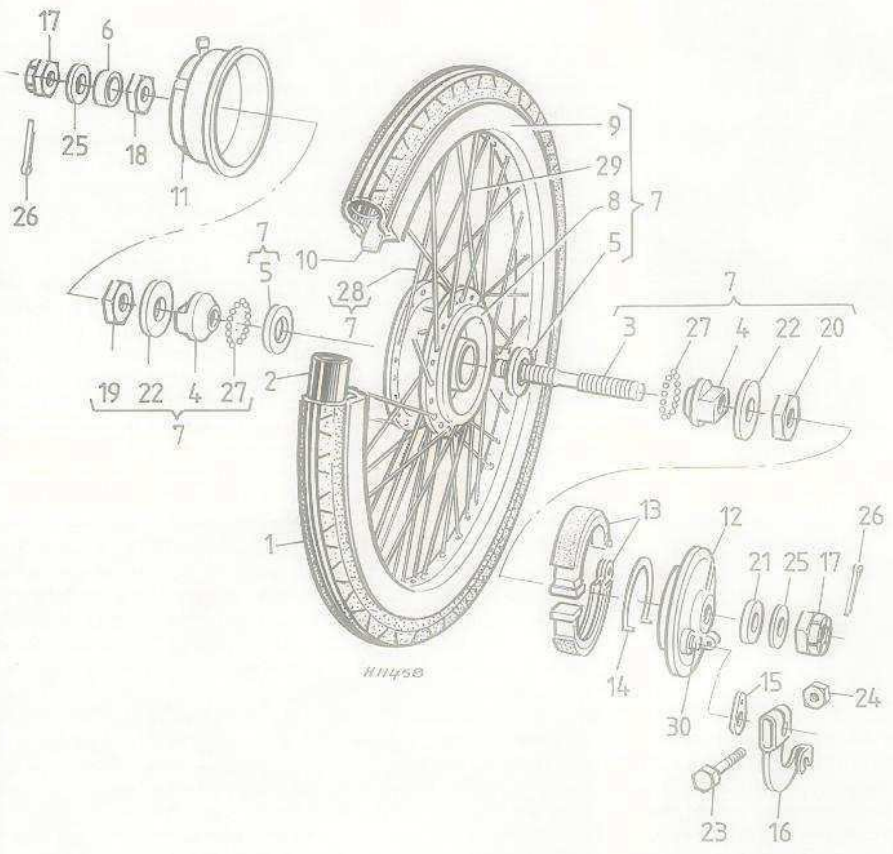
2 Disconnect the speedometer cable from the hub drive connection by unscrewing the retaining cap and pulling the cable out of its locating hole.

3 Remove the nut and washer from both ends of the wheel spindle and pull both mudguard stays off over the ends of the spindle. The wheel may now be pulled down and clear of the fork end slots. Before moving the wheel clear of the machine, ensure the machine is well supported so that it does not topple once the wheel is removed.

4 Refitting of the wheel is a reversal of the removal procedure. Ensure that the peg on the fork leg locates correctly in the slot in the brake plate. If the brake plate is not anchored in this manner, the brake will lock on immediately it is applied, which may well result in a serious accident.

5 Adjust the brake operating cable play by means of the adjuster at the handlebar lever so that there is 15 – 20 mm (0.4 – 0.6 in) of movement at the lever end before the brake begins to bite.

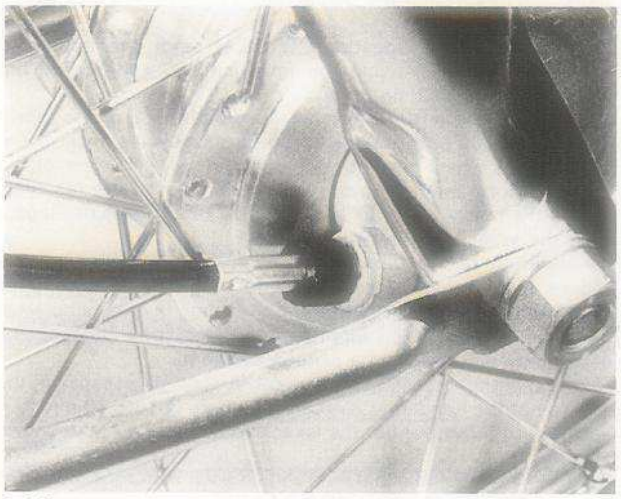
6 The wheel spindle end nuts should each be torque loaded to 3.0 – 4.0 kgf m (21.70 – 29.0 lbf ft).



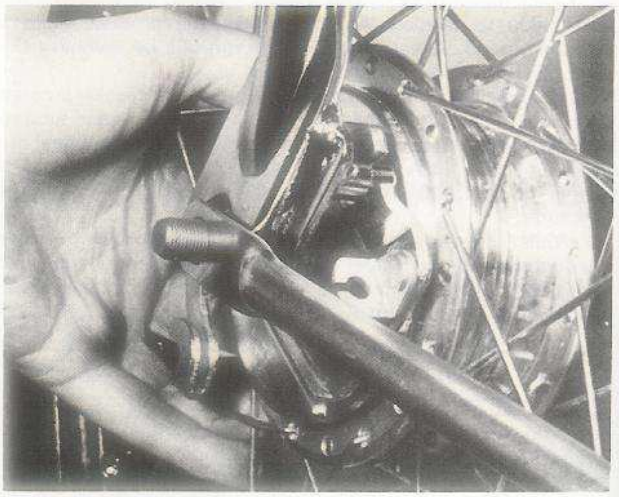
1 Tyre
2 Inner tube
3 Spindle
4 Bearing cone
5 Bearing cup
6 Collar
7 Front wheel assembly
8 Wheel hub
9 Wheel rim
10 Flap
11 Speedometer gearbox assembly
12 Brakeplate
13 Brake shoe
14* Return spring
15 Wear indicator plate (where fitted)
16 Lever
17 Spindle nut
18 Nut
19 Nut
20 Nut
21 Washer
22 Plain washer
23 Bolt
24 Nut
25 Plain washer
26 Split pin
27 Ball bearings
28 Spoke
29 Spoke
30 Brake cam

* Note: Alternative to 2 conventional extension return springs as fitted to rear brake assembly

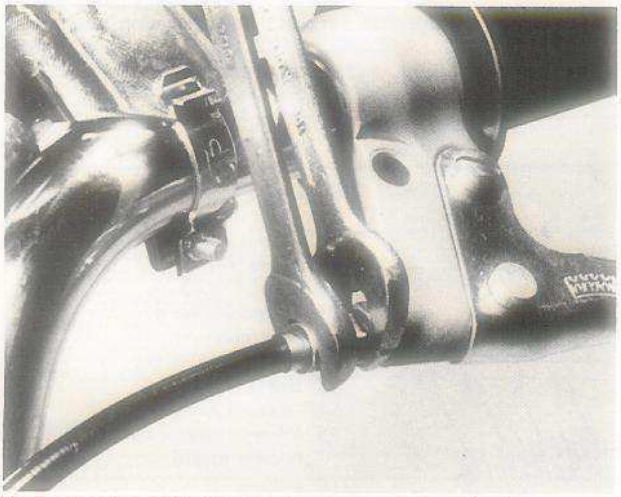
Fig. 5.1 Front wheel and brake assembly



3.2 Unscrew the speedometer cable retaining ring before pulling the cable from its location



3.4 Ensure that the peg on the fork leg locates correctly in the brake plate slot



3.5 Adjust the cable free play by means of the adjuster

4 Front wheel bearings: removal, examination and refitting

1 Access to the wheel bearings is gained when both the brake assembly and speedometer drivegear are removed. The bearings are of the cup and cone type, each wheel containing 22 loose ball bearings. To expose these ball bearings, one of the bearing cones must be held steady by a special thin open-ended spanner whilst the adjacent locknut is loosened and removed from the spindle. The cone may then be also removed from the spindle and the spindle together with the remaining cone and locknut withdrawn from the wheel. If it is found that the special thin spanner cannot be acquired or fabricated, then a large pair of cranked internal circlip pliers may be used to hold the cone.

2 The ball bearings may now be removed from between the retaining ring and cup by easing out each individual ball with a small screwdriver. Place all the ball bearings in a small container and remove all the old grease by partially filling the container with petrol and moving the balls around until all traces of contamination are removed. Place the ball bearings on a piece of clean rag and allow them to dry. Using a piece of clean rag soaked in petrol, remove all traces of old grease from between the cup and retaining plate.

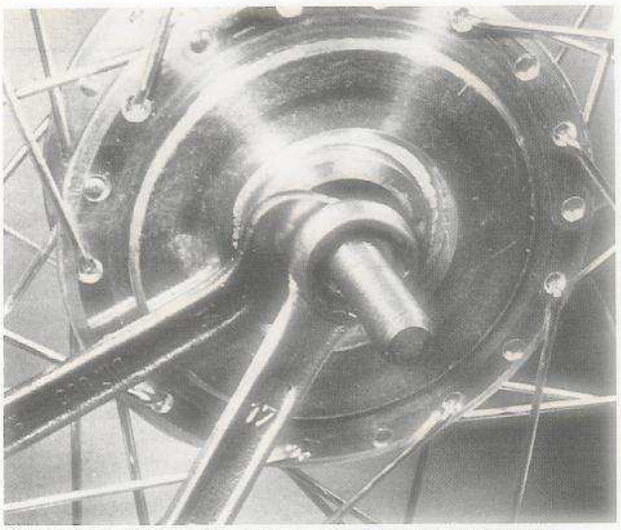
3 Check both sets of cups and cones for wear or discolouration and examine also the loose ball bearings. Ball bearings are cheap and if any show signs of defect, the entire set should be renewed without question. The cups and cones should have a polished appearance in the area of the bearing tracks. New replacements should be fitted if any surface defects are evident.

4 The retaining plates may be removed from the hub by carefully levering them out with the flat of a large screwdriver. Care should be taken when doing this not to distort the plates or damage the alloy surface of the hub. It is best to lever at frequent intervals around the plate rather than in just one position; this will greatly reduce the risk of distortion.

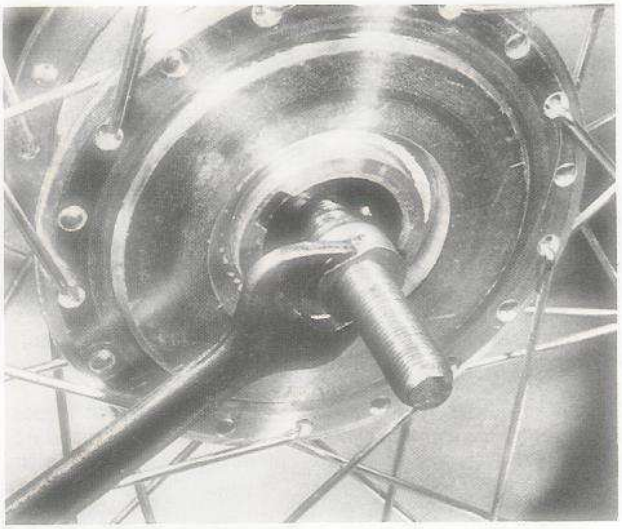
5 The cups are a light drive fit into the hub and can be driven out with a suitable size of drift. When driving the new replacement into position, pressure should be applied only to the outer edge of the cups, to obliviate the risk of distortion or damage. A length of metal tube or socket of the correct diameter is ideal for this purpose. Ensure the cups are driven squarely into the hub. The same tube or socket may be used for refitting the retaining plates, although a great deal of care and patience will be needed to refit these items so that they locate correctly in the hub recesses.

6 Pack the cups with high melting point grease and, using a screwdriver with a small blob of grease on the end with which to retain a ball, fit each ball bearing in turn into the cups. In practice it was found that the balls placed in both cups would stay in position whilst the wheel was moved to a vertical position and the spindle carefully refitted. Alternatively, fit the ball bearings into one side only with the wheel laid flat on the work surface and partially insert the spindle into the hub to retain the balls. Invert the hub, fit the remaining ball bearings into the opposite cup and fully insert the spindle.

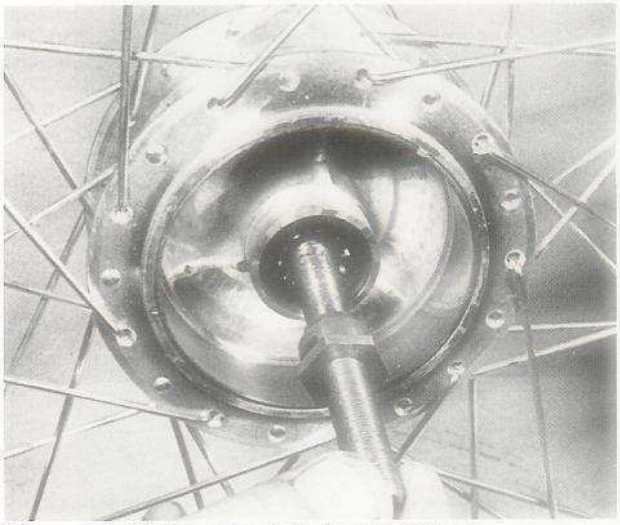
7 Fit the removed cone and locknut and adjust the cone so that the spindle will revolve freely with just the slightest amount of play at the wheel rim. Tighten the locknut and recheck the adjustment. If there is no free play, the bearings will absorb a surprising amount of power and overheat. Too much play will cause imprecise handling when the machine is back on the road.



4.1a A thin open-ended spanner must be used to hold the bearing cone whilst removing the locknut

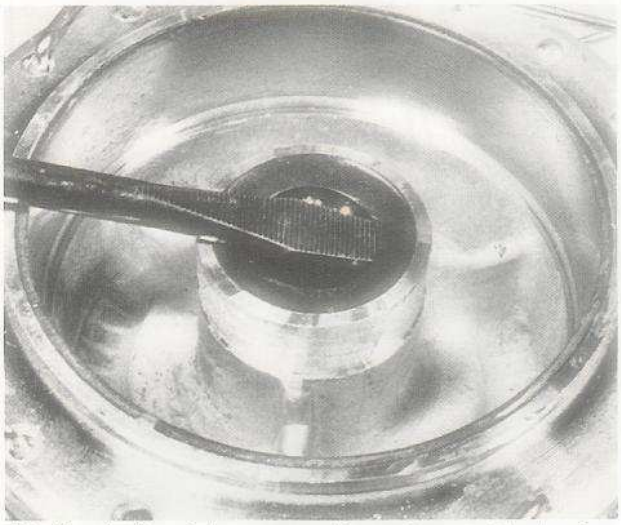


4.1b Remove the bearing cone ...

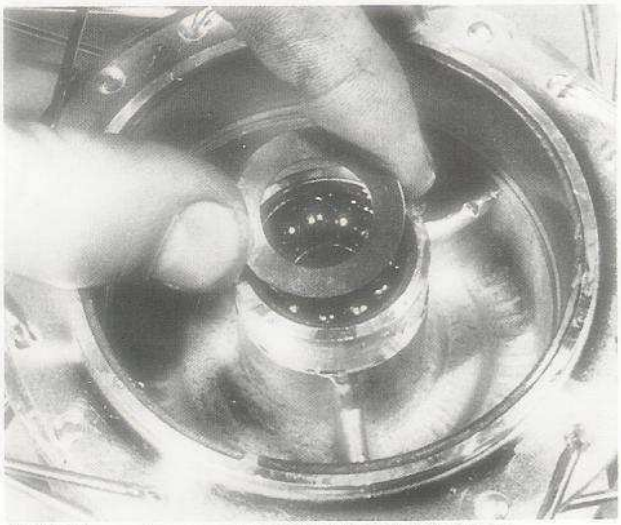


4.1c ... and withdraw the spindle from the wheel

4.2 A small screwdriver may be used to remove each individual ball from behind the retaining ring



4.4a Use the flat of a large screwdriver to lever out the bearing retaining plate



4.4b Take great care not to distort the retaining plate

5 Speedometer drive gearbox: removal, examination and refitting

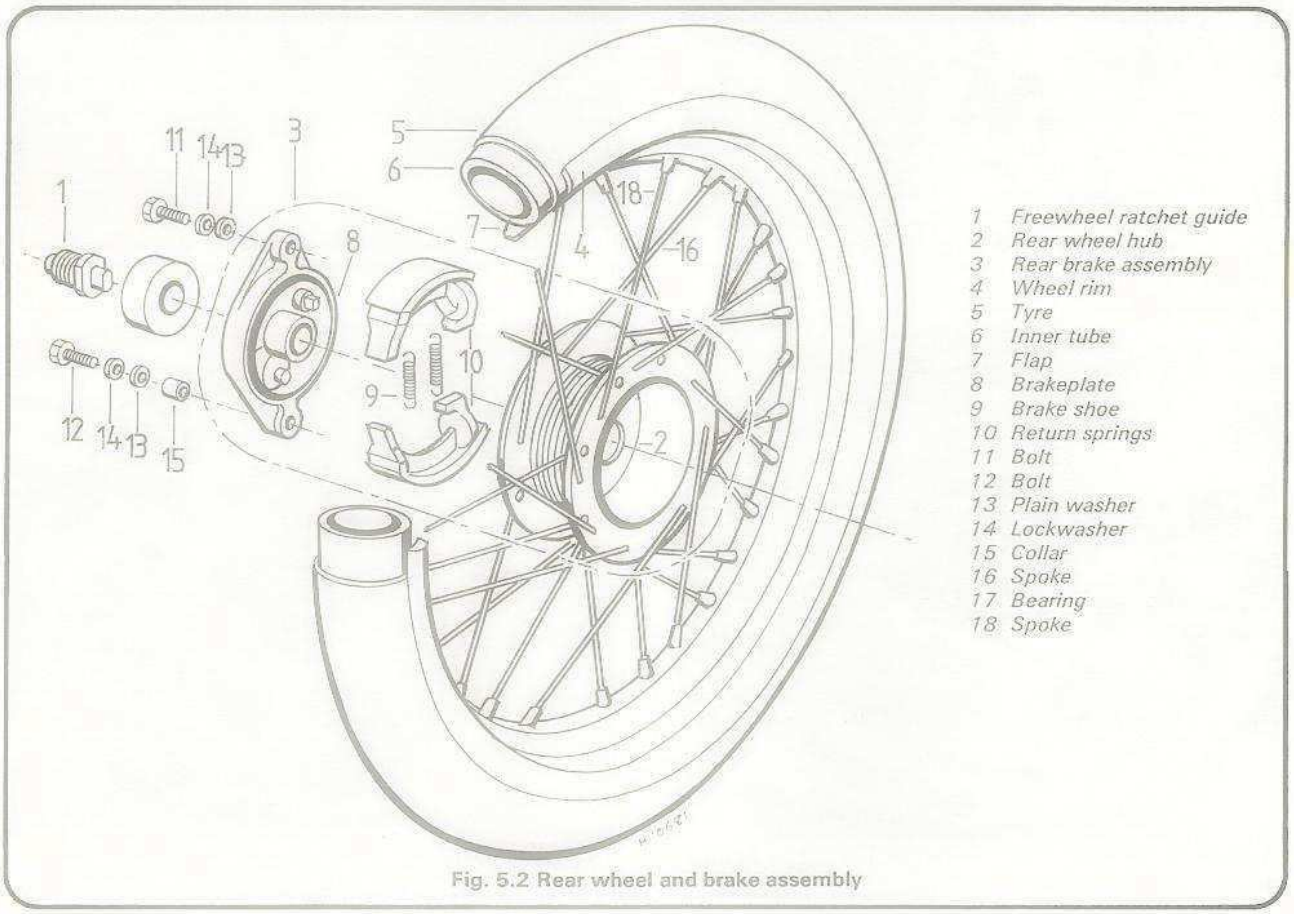
1 The speedometer drive gearbox is a self-contained unit that is fitted between the right-hand side of the front wheel hub assembly and the front fork leg. With the wheel removed from the fork legs and the speedometer cable detached from the gearbox, it is possible to remove the gearbox by simply pulling it away from the hub.
2 The gearbox rarely gives trouble. In the event of damage, it is not possible to effect a satisfactory repair; renewal is the only solution. Lubrication of the unit is not required.
3 When refitting the gearbox, ensure that the unit is positioned correctly with the cable retaining thead facing rearwards and that the spigots of the driveplate locate correctly in the wheel hub slots.

6 Rear wheel: examination and renovation

1 Place the machine on the centre stand, so that the rear wheel is clear of the ground. Check the wheel for rim alignment, damage to the rim or loose or broken spokes, by following the procedure adopted for the front wheel in Section 2 of this Chapter. Before examining the wheel bearings, it is first necessary to detach the chain and drivebelt from the freewheel ratchet and pulley respectively. This is because the loading placed on the bearings by the chain and belt will effectively hide any movement in the bearings. Details of chain and belt removal are contained in Section 4 of Chapter 1.

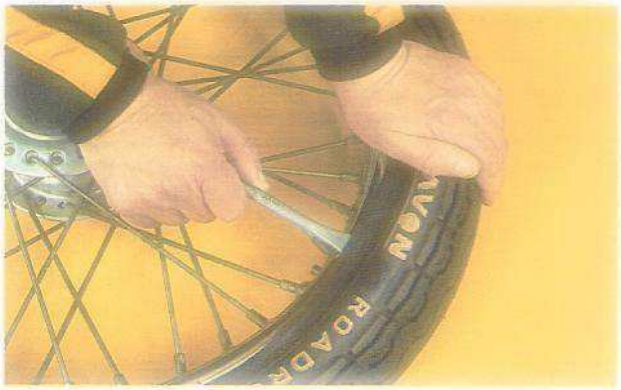
7 Rear wheel: removal and refitting

1 Place the machine on its centre stand and remove the plastic transmission covers. Release the pedal chain tensioner securing bolt and move the tensioner lever down. This will allow enough slack in the chain to enable it to be lifted clear of the rear wheel spocket.
2 Release the rear brake cable from the rear wheel brake operating arm by first screwing fully in the handlebar cable adjuster and then pushing forward on the brake operating arm to allow the nipple to be pulled clear of the arm end.
3 Slacken the wheel to swinging arm securing bolts and move the wheel forward to enable the drive belt to be pulled clear of the wheel reduction gear pulley. Remove the four securing bolts, noting their lengths and the positioning of the spacers, and with the help of an assistant lift the rear of the machine and pull the wheel clear off its attachment points. With the wheel clear of the machine, lower the machine back onto its centre stand. If considered necessary, place some form of support under the swinging arm to steady the machine; a wooden block is ideal.
4 Refitting of the rear wheel is a reversal of the removal procedure. Set the pedal chain tension by pushing up on the rearmost tensioner wheel (using moderate finger pressure) and retightening the securing bolt.
5 To obtain the correct drive belt tension, carry out the method of adjustment described in Section 26 (single speed models) or Section 27 (variable ratio models) of Chapter 1.
6 The brake operating cable play should be adjusted by means of the adjuster at the handlebar lever end to give 15 – 20 mm (0.4 – 0.6 in) of movement at the lever end before the brake begins to bite.



1 Freewheel ratchet guide
2 Rear wheel hub
3 Rear brake assembly
4 Wheel rim
5 Tyre
6 Inner tube
7 Flap
8 Brakeplate
9 Brake shoe
10 Return springs
11 Bolt
12 Bolt
13 Plain washer
14 Lockwasher
15 Collar
16 Spoke
17 Bearing
18 Spoke

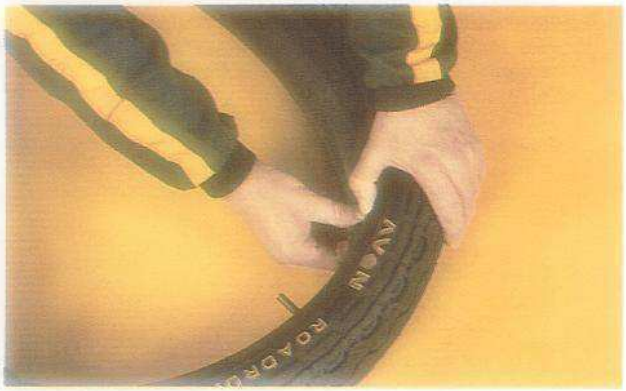
Fig. 5.2 Rear wheel and brake assembly



Tyre removal: Deflate inner tube and insert lever in close proximity to tyre valve

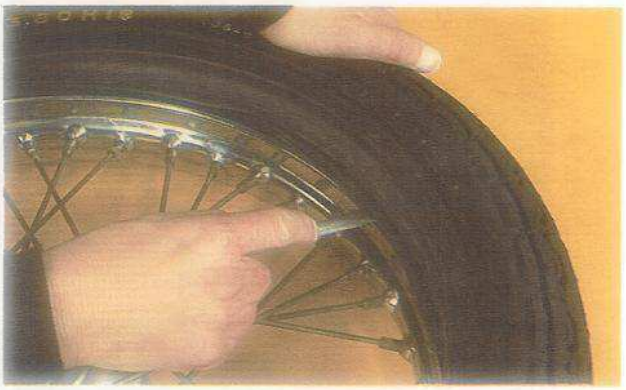
Use two levers to work bead over the edge of rim

When first bead is clear, remove tyre as shown

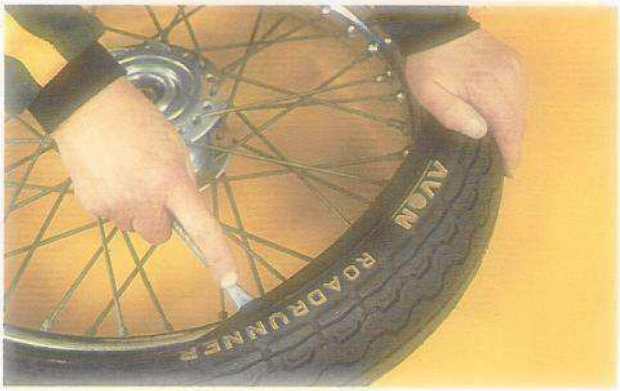


Tyre fitting: Inflate inner tube and insert in tyre

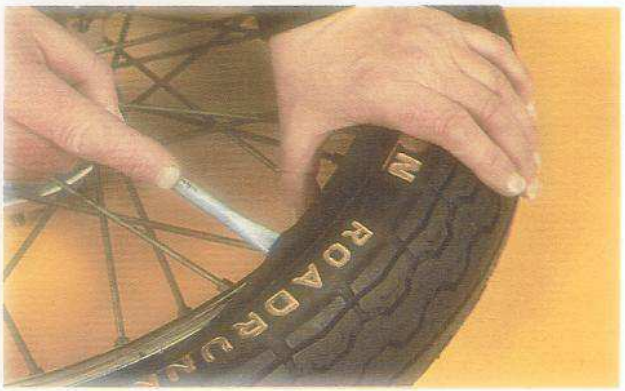
Lay tyre on rim and feed valve through hole in rim



Work first bead over rim, using lever in final section



Use similar technique for second bead, finish at tyre valve position



Push valve and tube up into tyre when fitting final section, to avoid trapping

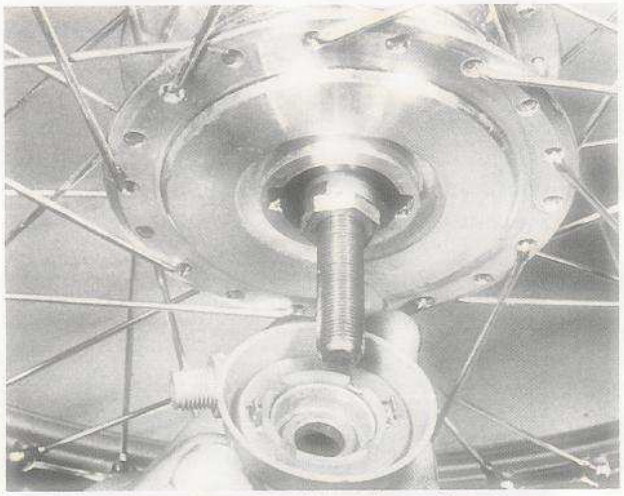
8 Rear wheel bearings: removal, examination and refitting

1 The rear wheel is mounted on and rotates with the splined shaft which projects from the reduction gear assembly fitted into the left-hand recess of the wheel hub. The end of this shaft passes through a bearing of the ball journal type fitted into the brake backplate. As a result the wheel itself is fitted with no bearings.

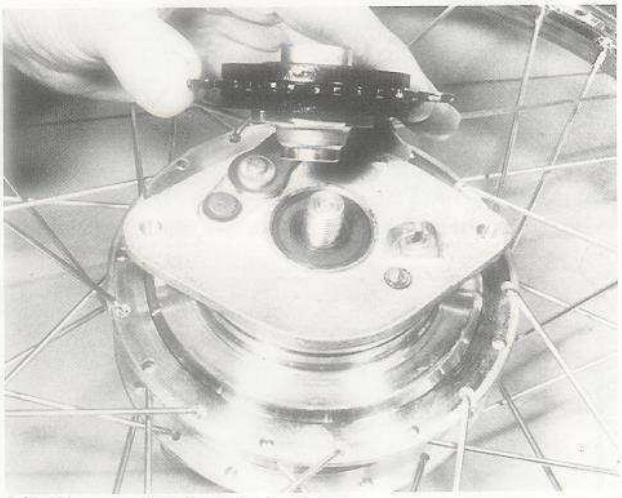
2 If the wheel assembly is found to have play and there is no evidence of looseness between the wheel and splined shaft, then wear in either the shaft bearings or backplate bearing should be suspected. To gain access to these bearings, first remove the rear wheel from the machine (see the preceding Section) and then detach the reduction gear assembly and brake backplate assembly from the wheel hub by unscrewing the freewheel ratchet.

3 Inspect the backplate bearing for signs of roughness or wear. If either are evident, the bearing must be renewed. To remove the bearing, place the backplate on a solid work surface with the shoes uppermost. Support the backplate so that it is raised off the bench to enable the bearing to be driven down and out of its recess. A large socket or piece of tube with a larger internal diameter than that of the overall diameter of the bearing is ideal for supporting the backplate, whereas a socket or piece of tube of the same diameter as that of the bearing is ideal for drifting out the bearing. To fit the new bearing, invert the backplate and support it in a similar manner to that previously stated. Lightly grease the walls of the bearing recess to aid entry of the bearing and carefully drift home the bearing ensuring that it enters the recess squarely.

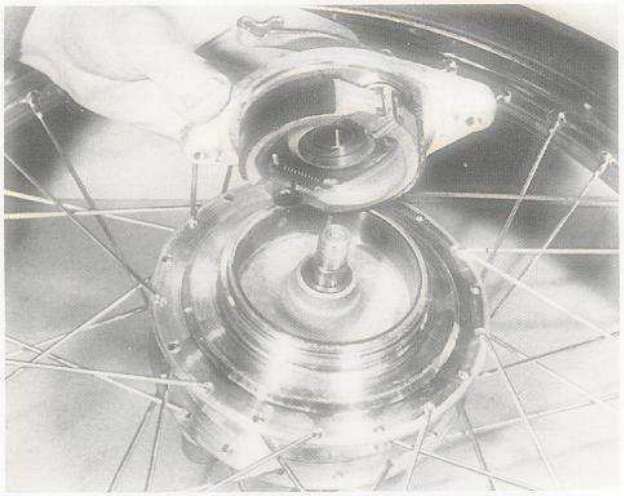
4 If evidence of play is found in the shaft bearings, refer to Section 23 of Chapter 1 for details of inspection of the shaft and bearings for wear and how to gain access to, remove and refit these components. To check for play in the bearings, grasp the casing of the reduction gear assembly firmly in one hand and the end of the splined shaft in the other. Move the end of the shaft from side to side. If any play is felt, renew the bearings.



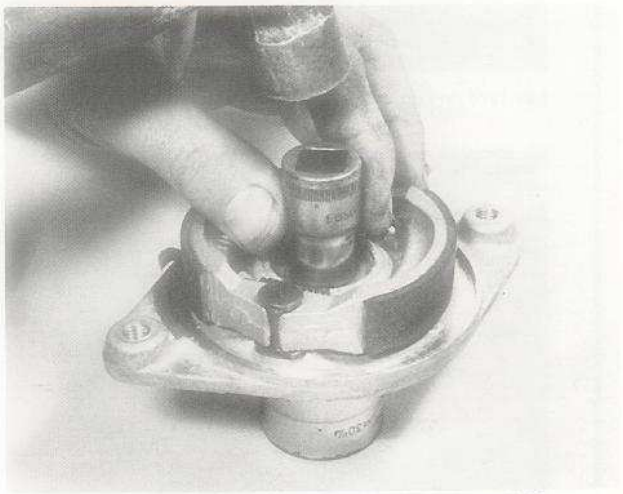
5.3 Ensure the speedometer drive gearbox spigots locate correctly in the wheel hub slots



8.2a Unscrew the freewheel ratchet ...



8.2b ... and withdraw the brake assembly from the wheel hub



8.3 The brake plate should be well supported when driving out a defective bearing

9 Front and rear brakes: examination and renovation

1 With the front wheel removed from the machine, remove the brake backplate complete with the brake shoes by first removing the thick wheel to fork leg spacer from the spindle. Unscrew and remove the thin retaining nut and washer and withdraw the backplate assembly from the hub.

2 With the rear wheel removed from the machine, remove the brake backplate and brake shoe assembly by unscrewing and removing the freewheel ratchet assembly. The backplate may now be withdrawn from the hub and pulled clear of the reduction gearbox shaft.

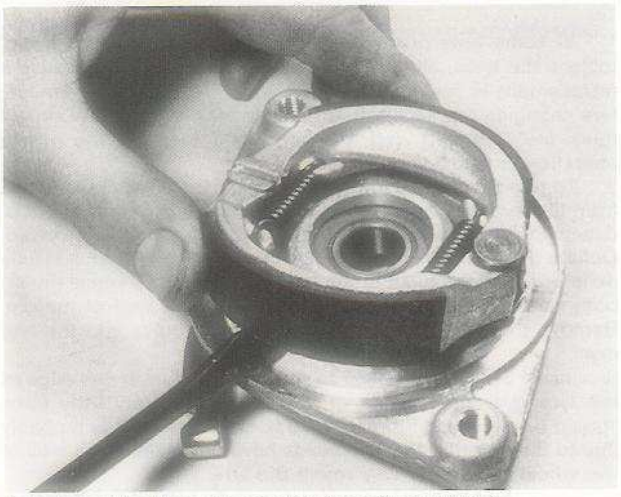
3 Two types of shoe return spring are fitted; the semi-circular type shown in Fig. 5.1 and the two conventional extension return springs shown in Fig. 5.2. Both assemblies are otherwise identical in construction and operation and should be examined as follows. Examine the brake linings for wear. If the linings are wearing thin or are uneven they should be renewed. The minimum allowable thickness is 2 mm (0.078 in). The linings are bonded to the shoes and are not available separately. Check the linings for contamination by oil or grease. Where a lining has become impregnated with lubricant its efficiency will be permanently reduced. Renewal is the only cure.

4 Check the inner surface of the brake drum on which the brake shoes bear. The surface should be smooth and free from score marks or indentations, otherwise reduced braking efficiency will be inevitable. If the internal diameter of the drum exceeds 81 mm (3.16 in) the hub will require renewal. Remove all traces of brake lining dust and wipe with a clean rag soaked in petrol to remove any traces of grease or oil. Note: It is not advisable to clean brake parts with a brush or compressed air, as the asbestos content of the dust is hazardous if inhaled. If the drum inner surface is found to be badly scored and the shoe linings similarly affected, then it is advisable to renew the shoes along with the hub.

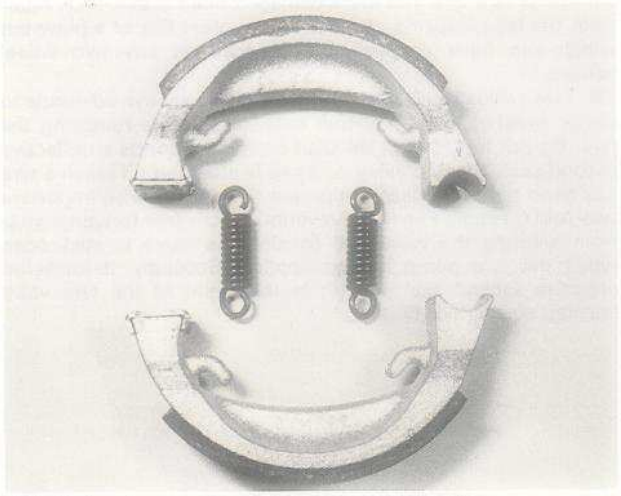
5 To remove the brake shoes along with the conventional return springs from the backplate, place the end of a screwdriver between the middle point of one of the shoes and the backplate and lever the shoe up so that is at 90° to the backplate. Take great care not to damage the alloy surface of the backplate. Repeat this procedure with the other shoe. Both shoes may now be lifted clear of the backplate. On models where the semi-circular type of return spring is fitted, the spring serves also as the shoe retainer. To remove the shoes the spring must be prised from position, using a screwdriver at one end of the spring. It is recommended that eye protection is worn during this operation because the spring can jump free with unexpected force in an unpredictable direction. Having removed the spring, the brake shoes may be lifted off the fulcrum pin.

6 Check that the brake operating cam is working smoothly and that it is free to float by a small amount. Where the operating arm is secured by a nut to the cam the assembly can be dismantled for cleaning and thorough lubrication. If, however, the pivot is riveted, then some means must be devised of forcing grease into the pivot and then working it until the grease has reached all bearing surfaces. If any wear or damage is found, or if the cam is stiff to operate and cannot be freed, the assembly must be renewed. On refitting apply a light smear of grease to the fixed spigot and wipe off all surplus grease when the shoes are in place.

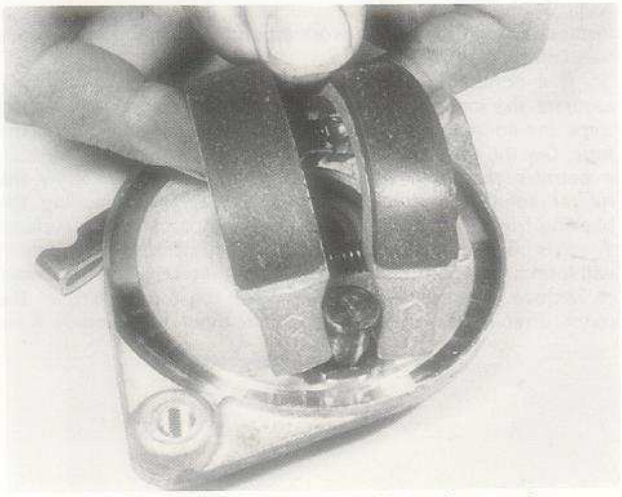
7 Reassemble and refit the brake assembly by reversing the dismantling procedure. Note that the conventional type of return springs should be fitted with the opening in the end hooks facing the backplate. If the springs are seen to be badly corroded and pitted or show signs of weakness, then they should be renewed. It was found in practice that holding the shoes in the V shape ready to fit them onto the backplate and at the same time retaining the return springs, required a little practice and a lot of patience. Once the ends of the shoes were located with the cam and pivot points however, it was easy to snap them into position by pressing downward. On no account



9.5a Lever the brake shoes away from the backplate



9.5b Brake shoes and springs removed from plate



9.7 Hold the shoes in a V shape when fitting them to the backplate

use excessive force, otherwise there is a risk that the shoes may be permanently distorted, or the springs over-stretched. On refitting the brake assembly to the wheel, note that it may be necessary to tap the operating arm pivot up or down on its floating mount to permit the shoes to enter the drum. The shoes will align themselves automatically with the drum on the first application of the brake.

10 Front and rear brakes: adjustment

1 The front and rear brakes are operated via Bowden cable, by the right- and left-hand handlebar levers respectively, each of which is provided with a threaded adjuster in order that brake shoe wear can be compensated for by effectively reducing the length of the operating cable.
2 The levers should be set so that there is 15 – 20 mm (0.4 – 0.6 in) of free play at the handlebar lever end before the brake begins to operate. When setting the brakes, check that the shoes free off completely as any slight binding will have a marked effect on the performance of the machine. On completion of adjustment, ensure that the locknut on the threaded adjuster is fully tightened.

11 Tyres: removal and refitting

1 At some time or other the need will arise to remove and replace the tyres, either as a result of a puncture or because a replacement is required to offset wear. To the inexperienced, tyre changing represents a formidable task, yet if a few simple rules are observed and the technique learned, the whole operation is surprisingly simple.
2 To remove the tyre from either wheel, first detach the wheel from the machine by following the procedure in Sections 3 or 9, depending on whether the front or the rear wheel is involved. Deflate the tyre by removing the valve insert and when it is fully deflated, push the bead of the tyre away from the wheel rim on both sides so that the bead enters the centre well of the rim. Remove the locking cap and push the tyre valve into the tyre itself.
3 Insert a tyre lever close to the valve and lever the edge of the tyre over the outside of the wheel rim. Very little force should be necessary; if resistance is encountered it is probably due to the fact that the tyre beads have not entered the well of the wheel rim all the way round the tyre.
4 Once the tyre has been edged over the wheel rim it is easy to work around the wheel rim so that the tyre is completely free on one side. At this stage, the inner tube can be removed.
5 Working from the other side of the wheel, ease the other edge of the tyre over the outside of the wheel rim that is furthest away. Continue to work around the rim until the tyre is free completely from the rim.
6 If a puncture has necessitated the removal of the tyre, reinflate the inner tube and immerse it in a bowl of water to trace the source of the leak. Mark its position and deflate the tube. Dry the tube and clean the area around the puncture with a petrol-soaked rag. When the surface has dried, apply the rubber solution and allow this to dry before removing the backing from the patch and applying the patch to the surface.
7 It is best to use a patch of the self-vulcanising type, which will form a very permanent repair. Note that it may be necessary to remove a protective covering from the top surface of the patch after it has sealed in position. Inner tubes made from synthetic rubber may require a special type of patch and adhesive, if a satisfactory bond is to be achieved.
8 Before replacing the tyre, check the inside to make sure the agent that caused the puncture is not trapped. Check also the outside of the tyre, particularly the tread area, to make sure nothing is trapped that may cause a further puncture.
9 If the inner tube has been patched on a number of past occasions, or if there is a tear or large hole, it is preferable to discard it and fit a replacement. Sudden deflation may cause an accident.
10 To replace the tyre, inflate the inner tube sufficiently for it to assume a circular shape but only just. Then push it into the tyre so that it is enclosed completely. Lay the tyre on the wheel at an angle and insert the valve through the rim tape and the hole in the wheel rim. Attach the locking cap on the first few threads, sufficient to hold the valve captive in its correct location.
11 Starting at the point furthest from the valve, push the tyre bead over the edge of the wheel rim until it is located in the central well. Continue to work around the tyre in this fashion until the whole of one side of the tyre is on the rim. It may be necessary to use a tyre lever during the final stages.
12 Make sure there is no pull on the tyre valve and again commencing with the area furthest from the valve, ease the other bead of the tyre over the edge of the rim. Finish with the area close to the valve, pushing the valve up into the tyre until the locking cap touches the rim. This will ensure the inner tube is not trapped when the last section of the bead is edged over the rim with a tyre lever.
13 Check that the inner tube is not trapped at any point. Reinflate the inner tube, and check that the tyre is seating correctly around the wheel rim. There should be a thin rib moulded around the wall of the tyre on both sides, which should be equidistant from the wheel rim at all points. If the tyre is unevenly located on the rim, try bouncing the wheel when the tyre is at the recommended pressure. It is probable that one of the beads has not pulled clear of the centre well.
14 Always run the tyres at the recommended pressures and never under or over-inflate. The correct pressures for solo use are given in the Specifications Section of this Chapter.
15 Tyre replacement is aided by dusting the side walls, particularly in the vicinity of the beads, with a liberal coating of French chalk. Washing-up liquid can also be used to good effect, but this has the disadvantage of causing the inner surfaces of the wheel to rust.
16 Never replace the inner tube and tyre without the rim tape in position. If this precaution is overlooked there is a good chance of the ends of the spoke nipples chafing the inner tube and causing a crop of punctures.
17 Never fit a tyre that has a damaged tread or side wall. Apart from the legal aspects, there is a very great risk of a blow-out which can have serious consequences on any two wheel vehicle.
18 Tyre valves rarely give trouble, but it is always advisable to check whether the valve itself is leaking before removing the tyre. Do not forget to fit the dust cap, which forms an effective second seal. The tyre valve dust cap is often left off when a tyre has been replaced, despite the fact that it serves an important two-fold function. Firstly, it prevents dirt or other foreign matter from entering the valve and causing the valve to stick open when the tyre pump is next applied. Secondly, it forms an effective second seal so that in the event of the tyre valve leaking, air will not be lost.

12 Fault diagnosis: wheels, brakes and tyres

Symptom	Cause	Remedy
Handlebars oscillate at low speeds	Buckle or flat in wheel rim, most probably front wheel	Check rim alignment by spinning wheel. Correct by retensioning spokes or by having wheel rebuilt on new rim.
	Tyre not straight on rim	Check tyre alignment.
Machine lacks power and accelerates poorly	Brakes binding	Warm brake drums provide best evidence. Re-adjust brakes.
Brakes grab when applied gently	Ends of brake shoes not chamfered Elliptical brake drum	Chamfer with file. Lightly skim in lathe (specialist attention needed).
Brake pull-off sluggish	Brake cam binding in housing Weak brake shoe springs	Free and grease. Renew if springs not displaced.
Brakes ineffective	Contaminated or glazed linings	Remove and renew or remove glaze as necessary.
Brakes feel spongy	Cable badly routed Stretched brake operating cables	Re-route cable(s) avoiding sharp bends. Renew cables.
Tyre wears more rapidly in middle of tread	Over inflation	Check pressures and run at recommended settings.
Tyres wear rapidly at outer edges of tread.	Under inflation	Ditto.

Chapter 6 Electrical system

For information relating to the 1981 on models, see Chapter 7

Contents

Specifications

	UK model	European models
Bulbs		
Headlamp	6V 18/18W	6V 15W
Tail lamp	6V 4W or 8W	6V 4W
Stop lamp	–	6V 5W
Indicator lamps	–	6V 10W or 21W

1 General description

The Honda PA 50 models are fitted with a 6 volt flywheel generator that supplies current to both the ignition and lighting systems and to the horn.

The generator incorporates three coils, one of which supplies the ignition system. This is the ignition source coil, details of which are given in Chapter 3 along with the rest of the ignition side of the generator. The other two coils supply power to the lighting system and to the horn. The lighting system is controlled by an on/off switch located on top of the headlamp shell and also by a dip/main beam switch located on the left-hand end of the handlebar. The latter switch also contains a push button to operate the horn. The generator supplies AC circuit direct to all system components.

2 Flywheel generator: testing

1 If the power supply to the lighting and horn systems from the generator is thought to be suspect, then a simple resistance test may be carried out on the generator coils to determine their serviceability. A multi-meter set to the resistance function, or an ohmmeter will be required for this test.

2 Trace the output lead from the generator to the four individual snap connectors and separate the green wire and the pink wire. Connect one test probe to the green wire leading to the generator and the other test probe to a suitable earthing point on the engine unit. Continuity should be found; that is, there should be no measurable resistance. A similar check may be carried out on the pink wire. Should non-continuity be found in either of the aforementioned tests, it is evidence of an open circuit in one of the coil windings. Because the coils are not available separately, the replacement cost is high and as such it is strongly recommended that the advice of an expert be sought before consigning the complete stator assembly to the scrap bin.

3 As well as checking the generator coils it should be noted that a gradual reduction in efficiency of the generator can be caused by demagnetisation of the flywheel rotor. Should this be suspected, then the rotor may be removed from the machine and taken to an auto-electrician for professional assessment and, if necessary, re-magnetisation.

4 Before carrying out either of the above checks, ensure that all wiring connections within the relevant systems are free of dirt and corrosion and are properly connected, as any faulty connection may well cause a reduction in power supply from the generator to component.

5 Lighting faults are, more often than not, attributable to areas other than the generator, and these possibilities should be examined before attention is turned to the generator itself. See the following Section for details.

3 Lighting circuit: fault finding

Bulb failure

1 Referring to the appropriate Section in this Chapter, remove the defective bulb and examine it carefully, it is normally possible to establish the nature of the fault by checking the appearance of the bulb. If the element is broken, but appears bright and clean, it is probable that the failure was a result of a mechanical fault; that is, the element has merely fractured due to faulty manufacture and/or vibration. A fused bulb, on the other hand, will have a vastly different appearance. The element will have melted, and in extreme cases will have vapourised and blackened the glass envelope, sometimes to the extent that the glass surface becomes opaque, or even silvered. This type of failure is due to electrical overload, as opposed to vibration damage.

2 It is not uncommon, with direct lighting systems, for the whole complement of bulbs to appear to fail simultaneously. What actually happens is that one of the bulbs breaks or fuses, and this subjects the remainder to a sudden surge of power, and this surge fuses the rest of the bulbs. This type of failure normally occurs at high engine speeds, and for the following reason.

3 The combined rating of the bulbs is chosen at manufacture to match the average output of the generator. In practice, the output varies according to engine speed, and this is why the lights dim at tickover, and brighten progressively as the engine speed rises. At peak revs, the bulbs are at maximum capacity, and it is under these circumstances that one bulb may fuse or break. This passes the extra power to the remaining bulbs, and can set up a chain reaction, fusing the entire complement.

4 It will be seen from the above that any change in the rating of the bulbs will affect the system overall. In particular, the use of a bulb of higher wattage than normal will cause a reduction in light output in the whole system, and should be avoided. The fitting of a bulb of lower wattage will cause the overall light output to rise, but will make the system more prone to failure. To this end, it is important to ensure than any replacement bulb is of the correct rating. In the event of a blown bulb, check the system as described below.

Wiring failure

5 From the beginning it will be noted that the interruption of the circuit by a bulb failure will overload the remainder, and a similar situation will arise if the supply to a bulb is interrupted or if the earth return is erratic. In practice, this condition causes the majority of bulb failures. If bulb failures become persistent, the various wiring connections must be checked very carefully. All terminals and connectors should be cleaned and checked for tightness, not forgetting the earth connections to the frame. The various contact faces in bullet connectors must be kept clean, and should be burnished with abrasive paper to ensure a sound connection is made.

6 Do not omit to check the handlebar switch unit as described in Section 7 of this Chapter. In winter, the system will benefit greatly if protected by one of the numerous silicone-based maintenance sprays, such as WD 40, Plus Gas or similar.

7 Finally, it is a sound precaution to invest in a set of replacement bulbs which should be carried on the machine to cater for emergencies.

4 Headlamp: fitting bulb and adjusting beam height

1 On the later type of headlamp assemblies, access may be gained to the headlamp bulb by releasing the glass/reflector unit retaining clip situated at a mid-point beneath the lens and pulling the unit out of the headlamp shell. The bulb holder may then be pulled out of the recess in the reflector and the bulb removed from the holder. Note that the bulb is so constructed that it may be fitted in one position only.

2 Headlamp adjustment is effected by slackening the two headlamp shell to fork bracket retaining screws and pivoting the unit up or down to obtain the desired setting. Retighten the screws to preserve this setting. This type of headlamp does not produce an enormous amount of light, and some care must be taken to ensure that it is used to its best effect. There is little point in setting the beam too high as most of the light will be scattered and lost.

3 On the earlier type of headlamp assemblies (see Fig. 6.1), access may be gained to the headlamp bulb by removing the two headlamp rim/reflector unit retaining screws which pass through the headlamp shell in the 8 o'clock and 4 o'clock positions. Ease the unit out at the lower edge to free it from the shell.

4 The headlamp bulb holder is a bayonet fit in the recess in the reflector. To release the holder, push it inwards slightly and rotate it to the left. The bulb is a push fit in the reflector and may be lifted out after releasing the holder. Note that the bulb is so constructed that it may be fitted in one position only.

5 Beam height is adjusted by pivoting the complete headlamp unit on its horizontal mounting bolt. The bolt should be slackened slightly to enable adjustment to be completed. Horizontal beam adjustment is provided by a screw which passes through the headlamp rim in the 9 o'clock position. Turning the screw clockwise will move the beam to the left and turning the screw anticlockwise will move the beam to the right.

6 Note that on all types of headlamp assemblies, UK lighting regulations stipulate that the lighting system must be arranged so that the light will not dazzle a person standing in the same horizontal plane as the vehicle at a distance greater than 25 feet from the lamp, whose eye level is not less than 3 feet 6 inches above that plane. It is easy to approximate this setting by placing the machine 25 feet away from a wall, on a level road, and setting the dip beam height so that it is concentrated at the same height as the distance from the centre of the headlamp to the ground.

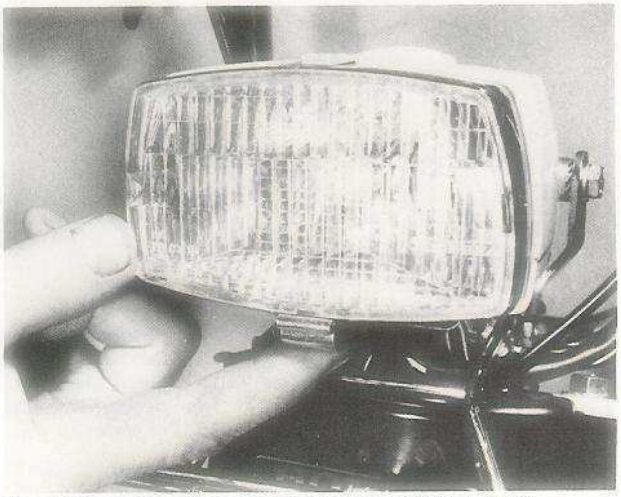
5 Tail lamp: fitting bulb

1 The moulded plastic cover of the rear lamp is retained by two screws. When these screws are removed, the cover can be removed and the bulb exposed.

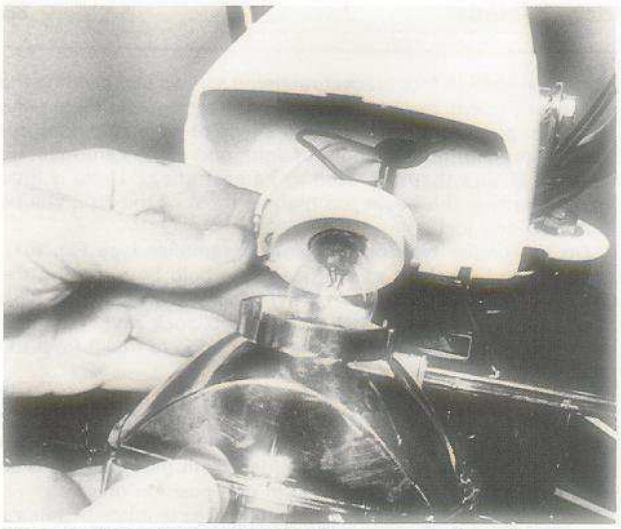
2 The bulb is of the bayonet type and can be removed by pushing it upwards, and turning it anticlockwise. Ensure that the replacement bulb is of the appropriate wattage.

3 Consistent problems with bulbs blowing may be traced to a faulty earth or feed connection. Keep the main connections bright by cleaning with fine emery strip.

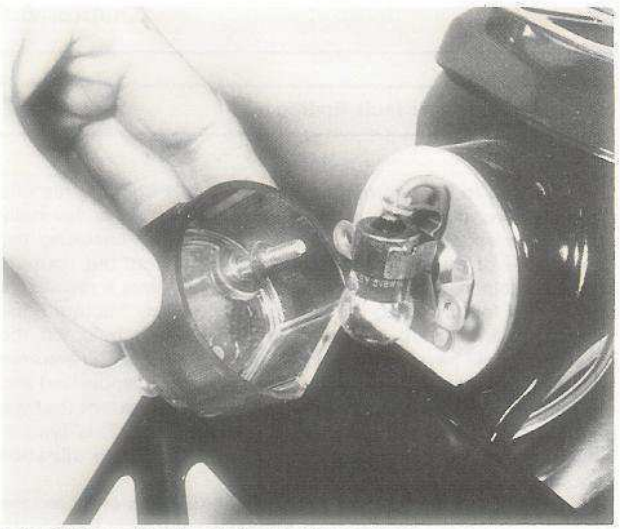
4 Take care not to overtighten the two cover retaining screws when refitting the cover as it is very easy to crack the plastic moulding.



4.1a Release the clip to remove the glass/reflector unit



4.1b Headlamp bulb and holder fit in recess in the reflector



5.1 Tail lamp lens is retained by two screws

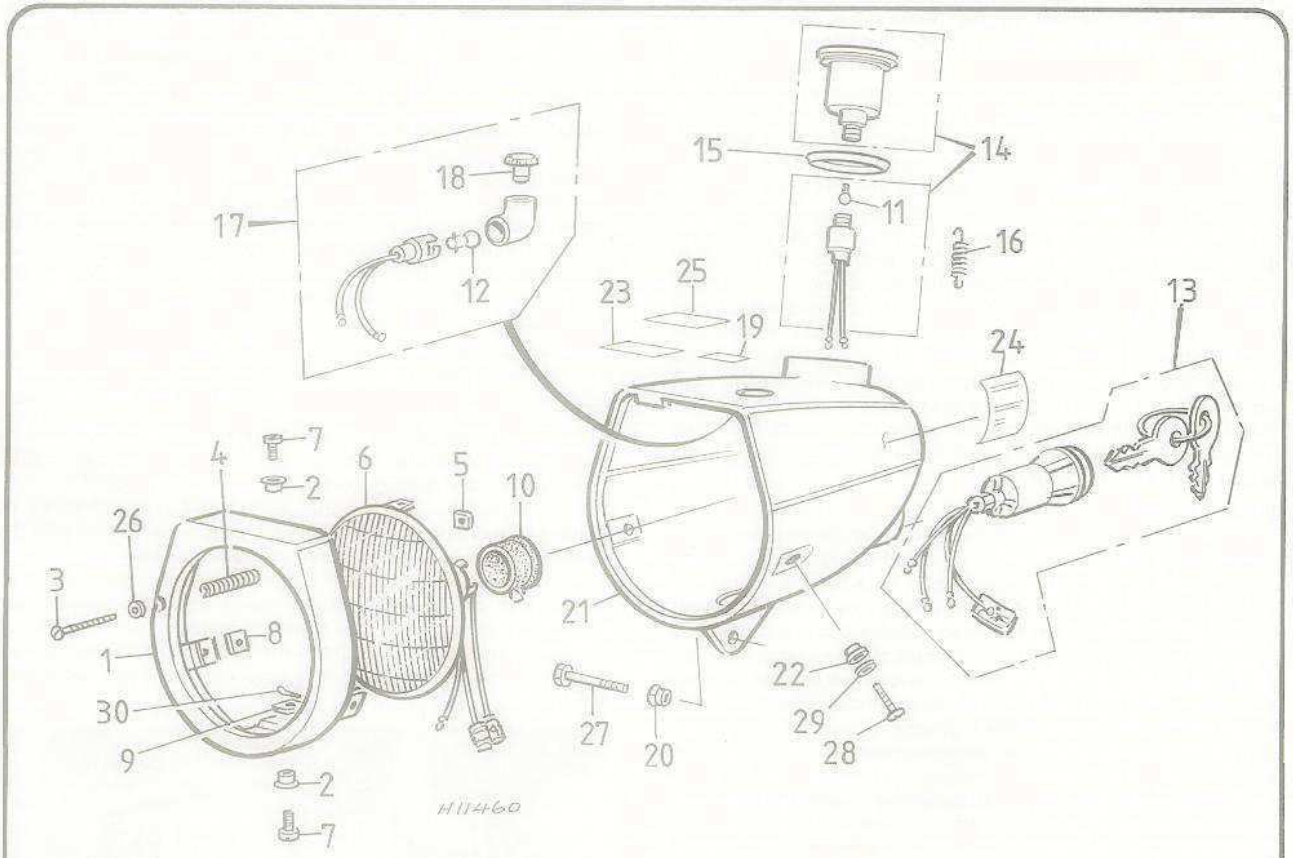


Fig. 6.1 Headlamp assembly – early models

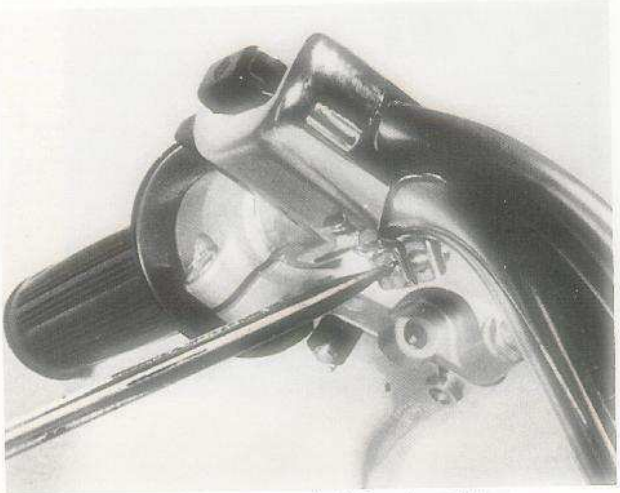
1 Headlamp rim
2 Washer
3 Beam adjuster screw
4 Spring
5 Nut
6 Headlamp glass/reflector unit
7 Screw
8 Collar
9 Nut
10 Rubber cover
11 Speedometer bulb
12 Main beam indicator bulb
13 Switch assembly
14 Speedometer assembly
15 Set plate
16 Spring
17 Pilot light assembly
18 Lens
19 Label
20 Collar
21 Casing
22 Collar
23 Label
24 Label
25 Label
26 Washer
27 Bolt
28 Panhead screw
29 Lockwasher
30 Lockpin

6 Horn: location and testing

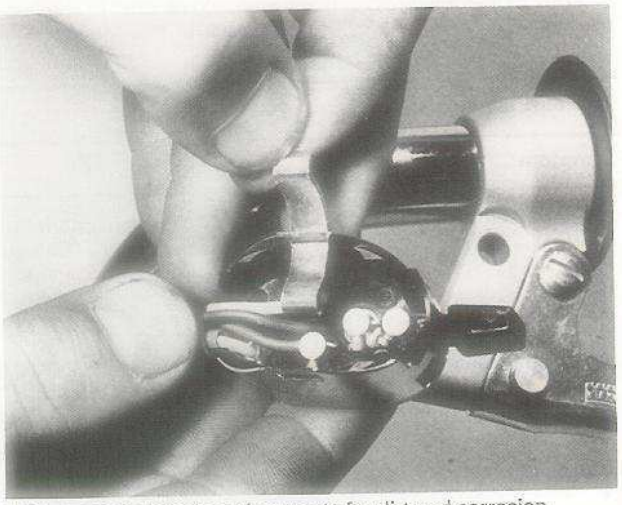
1 The horn is mounted on the lower fork yoke and covered by a plastic shield which fits between the upper fork tubes. It is secured to a bracket by two crosshead screws; the bracket being secured to the lower yoke by two hexagon-headed screws. The electrical connections are remote from the horn.
2 Should the horn fail to operate (with the engine running), the circuit may be checked as follows. Disconnect the leads running to the horn; one from the handlebar switch and the other from its push connection. Connect a 6 volt bulb between the switch terminal and the lead from the generator, using lengths of electrical lead similar to the type used in the wiring system of the machine. Start the engine and operate the horn button. If the bulb lights, it may be assumed that the horn is inoperative, and should be taken to a Honda Service Agent who will be able to confirm this and supply a new unit if required. The horn is a sealed unit, and repair is therefore impracticable.
3 If the bulb fails to light, the fault must lie in either the wiring and connections from the generator or in the handlebar switch and associated wiring. The power supply from the generator may be checked by connecting the 6 volt bulb between the nearest push connection to the generator (green wire) and earth (engine unit or frame). Start the engine. If the bulb lights, the fault is in the handlebar switch or associated wiring.
4 Once the source of the fault has been located, check all connections in either the wiring connections and/or handlebar switch for security and corrosion. Any defective connections should be resoldered and cleaned. Check the length of the wires for any signs of deterioration or rubbing against other components, and renew the wiring if necessary. A check for internally broken electrical wiring may be made using the equipment described in Section 8 of this Chapter.

7 Horn and lighting switch: examination and renovation

1 This switch incorporates a lever which has two positions (dip and main beam) to control the lighting. In addition, a push button is provided by which to operate the horn. The switch assembly is secured to the left-hand end of the handlebar by two mounting clips, which locate in the metal cover, and a single small screw.
2 The main cause of switch failure is dirty or corroded contacts which, if allowed to develop, may ultimately cause intermittent isolation of one or more of the electrical components. This can lead in turn to problems with bulbs fusing at frequent intervals. The best form of maintenance is to keep the contacts covered with petroleum jelly, to exclude moisture. (Do not use grease on electrical contacts). The switch can be cleaned out using a proprietary switch cleaning aerosol spray, if necessary.
3 It is not normally possible to repair a switch if mechanical breakage occurs, and it is recommended that a replacement unit is fitted in this eventually. Although no difficulty should be experienced in obtaining a replacement switch, it is worth noting that most motorcycle dealers and accessory shops stock universal moped switches which are a direct replacement for the standard unit.



7.1 Remove screw to release switch from handlebars



7.2 Inspect terminals and contacts for dirt and corrosion

8 Wiring: examination and testing

1 As mentioned earlier in this Chapter, the most common cause of electrical defects on these machines is a dirty or broken connection or lead, or a poor earth return. To test these areas simply and effectively, some form of test meter or an equivalent device will be required. Whilst few owners are likely to have a multimeter in their possession, a simple circuit test can be made up at low cost, and will prove adequate for most circuit testing jobs.
2 Obtain about one meter each of red and black single electrical cable. A small dry battery will be required, preferably of the flat rectangular type with brass strip terminals, together with a suitable torch bulb. A very useful refinement would be two small crocodile clips, which can be obtained from most electrical component shops and suppliers.

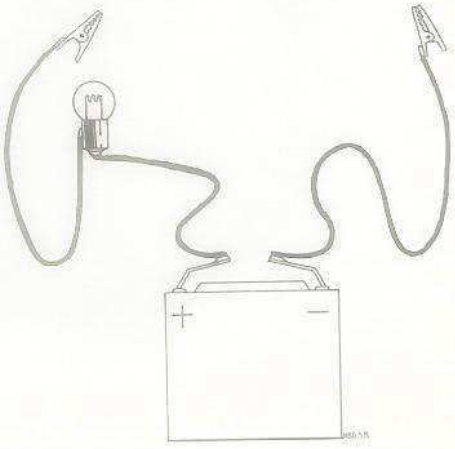


Fig. 6.2 Arrangement for testing wiring

3 Solder the end of the red lead to the battery positive (+) terminal, and the black lead to the negative (-) terminal. One of the leads should then be cut near the battery, and the bulb soldered into the circuit. If crocodile clips are being used, attach one to the end of each lead. If the two clips are now touched together, the bulb will light indicating a completed circuit (See Fig. 6.1).

4 The above arrangement can be used to check continuity of any cable or connection, and by this method an internally broken electrical cable can be identified.

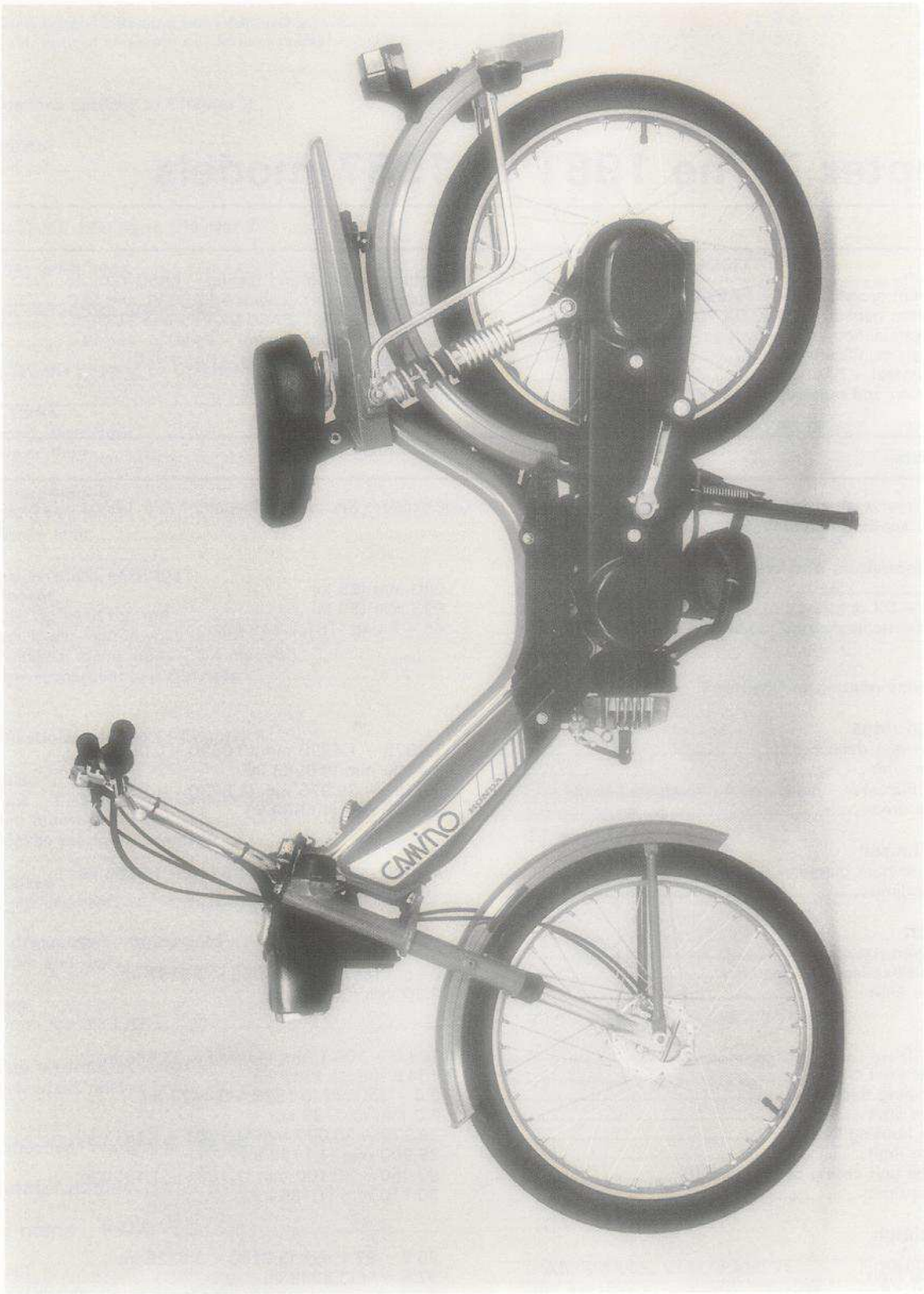
5 This battery/bulb test apparatus should be used in conjunction with the wiring diagram in the back of this Manual. The wiring harness fitted to the machine is colour coded and will correspond with the wiring diagram.

6 Visual inspection will show whether there are any breaks or frayed outer coverings which will give rise to short circuits. Another source of trouble may be the snap connectors and sockets, where the connector has not been pushed fully home in the outer housing.

7 Intermittent short circuits can often be traced to a chafed wire that passes through or is close to a metal component such as a frame member. Avoid tight bends in the lead or situations where a lead can become trapped between casings.

9 Fault diagnosis: electrical system

Symptom	Cause	Remedy
Constantly blowing bulbs	Vibration, intermittent feed or earth connection (filament broken)	Check and clean connections. Tighten any loose fittings. Clean earth connections.
	Bulb wattage(s) too low. (Filament fused, envelope blackened)	Check bulb rating(s) and renew accordingly.
	Switch contacts arcing or damaged	Dismantle switch. Clean or renew.
Lights dim or intermittent	Dirty switch contacts or damaged switch mechanism	Dismantle and rectify, or renew.
	Bulb wattage (or voltage) too high	Check values and renew if incorrect.
	Flywheel demagnetized	Renew flywheel or have it remagnetized.
Complete electrical failure	Flywheel generator leads damaged or broken	Check and rectify.
	Generator coils shorted or broken	Test and renew.



The PA50 VLC model

Chapter 7 The 1981 to 1987 models

Contents

Specifications

Information is given only where it differs from that given in the Specifications Sections of Chapters 1 to 6. Unless otherwise stated, information applies to all models.

Model dimensions and weights

Width	640 mm (25 in)
Height – DX models	993 mm (39 in)
Weight – depending on model and specification	46 – 54 kg (101 – 119 lb)

Specifications relating to Chapter 1

Piston and rings

Second ring thickness	1.4975 – 1.4990 mm (0.0590 – 0.0591 in)
Service limit	1.4300 mm (0.0563 in)
Piston diameter – measured 4 mm above base of skirt	39.955 – 39.975 mm (1.5730 – 1.5738 in)
Service limit	39.850 mm (1.5689 in)

Cylinder barrel

Standard bore diameter	40.000 – 40.020 mm (1.5748 – 1.5756 in)
Service limit	40.050 mm (1.5768 in)

Crankshaft

Maximum runout	0.15 mm (0.0059 in)
Big-end bearing side clearance	0.15 – 0.41 mm (0.0059 – 0.0161 in)
Service limit	0.60 mm (0.0236 in)

Clutch

Drum ID	104.0 – 104.1 mm (4.0945 – 4.0984 in)
Service limit	104.5 mm (4.1142 in)
Shoe lining thickness	3.4 – 3.6 mm (0.1339 – 0.1417 in)
Service limit	2.0 mm (0.0787 in)
Clutch housing boss OD	29.979 – 30.000 mm (1.1803 – 1.1811 in)
Service limit	29.900 mm (1.1772 in)
V-matic unit casing centre bush ID	30.050 – 30.100 mm (1.1831 – 1.1850 in)
Service limit	30.110 mm (1.1854 in)

Starter clutch

Drum ID	96.9 – 97.1 mm (3.8150 – 3.8228 in)
Service limit	97.5 mm (3.8386 in)
Shoe lining thickness	2.9 – 3.1 mm (0.1142 – 0.1221 in)
Service limit	1.5 mm (0.0591 in)

Transmission

Driven pulley spring free length	72.3 mm (2.8465 in)
Service limit	65.1 mm (2.5630 in)

Torque wrench settings

Component	lbf ft	kgf m
Cylinder head bolts	6.5 – 9	0.9 – 1.2
27 mm special retaining nut (V-matic)	20 – 25	2.8 – 3.5
20 mm special retaining nut (driven pulley)	36	5.0

Specifications relating to Chapter 2

Carburettor	
Main jet	78

Specifications relating to Chapter 3

Sparking plug type	NGK BPR6HS or ND W20FPR
HT coil minimum spark gap	6 mm (0.24 in)

Specifications relating to Chapter 4

Front forks	
Spring free length	190.5 –196.5 mm (7.4999 – 7.7362 in)
Service limit	173.0 mm (6.8110 in)
Rear suspension	
Spring free length	226.9 mm (8.9331 in)
Service limit	194.2 mm (7.6457 in)

Torque wrench settings

Component	lbf ft	kgf m
Steering head top nut	18 – 25	2.5 – 3.5
Fork lower leg/top yoke retaining bolts	22 – 29	3.0 – 4.0
Handlebar clamp bolts – DX models	6.5 – 9	0.9 – 1.2
Rear suspension unit cap nuts	29 – 36	4.0 – 5.0

Specifications relating to Chapter 5

Wheels	
Type – PA50 DX VLS Camino Sport	Cast aluminium alloy
Rim maximum runout	2.0 mm (0.08 in)
Spindle maximum warpage	0.1 mm (0.0039 in)
Tyre sizes	
Front and rear	200 x 17 – 2PR
Tyre pressures – tyres cold	
Front and rear	28 – 36 psi (2.0 – 2.5 kg/cm²) depending on load
Brakes	
Drum standard ID	80.0 – 80.2 mm (3.1496 – 3.1575 in)
Torque wrench settings	
Freewheel ratchet guide	43 – 58 lbf ft (6.0 – 8.0 kgf m)

Specifications relating to Chapter 6

Generator output	44W @ 4800 rpm
Fuse rating – PA50 VLC	10A

Bulbs	PA50 DX VLS, VLM	PA50 VL	PA50 VLC
Headlamp	6V, 18/18W	6V, 15/15W	6V, 15/15W
Pilot lamp	6V, 1.5W	N/App	N/App
Tail lamp	6V, 5W	6V, 4W	6V, 4W
Stop lamp	N/App	6V, 10W	6V, 10W
Turn signal lamps	N/App	N/App	6V, 10W
Turn signal and main beam warning lamps	N/App	N/App	N/Av

1 Introduction

The first six Chapters of this Manual describe the Honda Camino models sold in the UK and US from 1976 to 1980, although it should be noted that the UK model PA50 DX VL Camino Deluxe remained on sale until discontinued in February 1984.

This Chapter covers the models sold subsequently in the UK, listing any changes in specification and any significant differences in working procedures. When working on one of these later models, therefore, refer first to this Chapter to note any modifications or alterations, then refer to the relevant part of Chapters 1 to 6. If a task is not mentioned in this Chapter, it will be substantially the same as that described in Chapters 1 to 6.

The models covered in this Chapter are as follows:

PA50 DX VLS Camino Sport – Based on the Deluxe model, this features a round headlamp with separate speedometer, cast alloy wheels, a larger seat and different rear carrier, unshrouded suspension units and brighter paintwork and graphics.

PA50 DX VLM Camino Deluxe Special – Based on the original Deluxe model, this has metallic paintwork, a round headlamp with separate speedometer and unshrouded rear suspension units.

PA50 VL Camino – Altered only in minor detail from the VL model (with variomatic transmission) described in Chapters 1 to 6.

PA50 VLC Camino – Based on the VL model, but with a more comprehensive electrical system, including turn signals powered by a battery.

2 Transmission: modifications – PA50VL and VLC

Variomatic unit (drive pulley assembly)

1 From engine number 1600001 onwards the bulk of the components of the variable ratio drive pulley assembly were modified to reduce noise and to improve belt life.

2 Although working procedures remain unchanged, a careful note should be made of the layout of the various components as shown in the accompanying illustration. Note particularly the differences in the ramp plate and roller weight assemblies when compared with those described in Chapter 1.

Rear pulley assembly

3 From frame number 1311826 onwards a heavily modified rear (driven) pulley assembly was fitted; refer to the accompanying illustration for details. Since the assembly is now secured by a circlip it is even more difficult to dismantle and rebuild safely without the use of special tools. Accordingly the advice given in Chapter 1 applies also to this modified type.

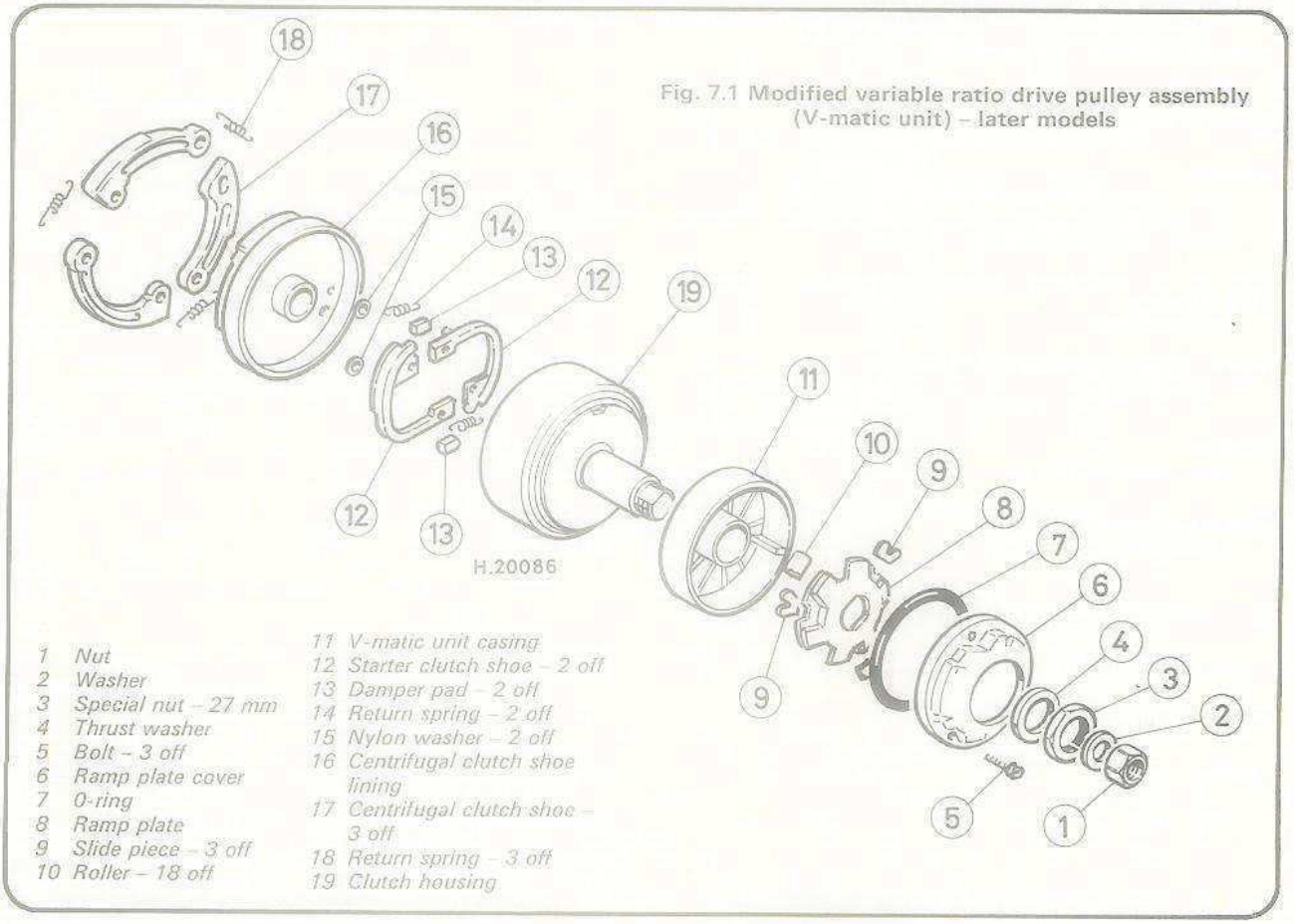


Fig. 7.1 Modified variable ratio drive pulley assembly (V-matic unit) – later models

1 Nut
2 Washer
3 Special nut – 27 mm
4 Thrust washer
5 Bolt – 3 off
6 Ramp plate cover
7 O-ring
8 Ramp plate
9 Slide piece – 3 off
10 Roller – 18 off
11 V-matic unit casing
12 Starter clutch shoe – 2 off
13 Damper pad – 2 off
14 Return spring – 2 off
15 Nylon washer – 2 off
16 Centrifugal clutch shoe lining
17 Centrifugal clutch shoe – 3 off
18 Return spring – 3 off
19 Clutch housing

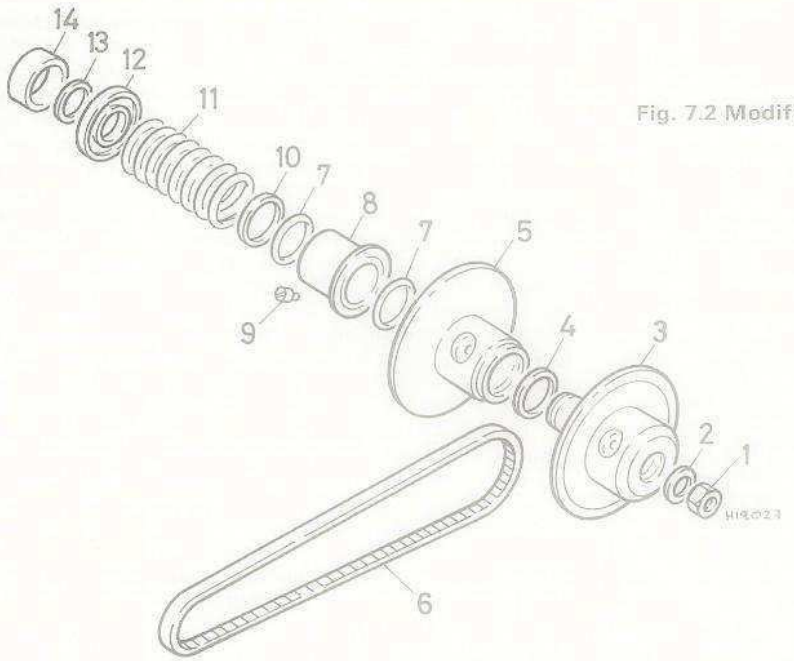


Fig. 7.2 Modified rear pulley assembly – later models

1 Nut
2 Washer
3 Rear pulley outer
4 Oil seal
5 Rear pulley inner
6 Drive belt
7 O-ring – 2 off
8 Seal collar
9 Guide pin – 2 off
10 Oil seal
11 Spring
12 Spring retainer
13 Circlip
14 Oil seal

3 Speedometer: general – PA50 DX VLS and VLM

1 The Camino Sport and Deluxe Special models are fitted with a speedometer assembly which is attached by two self-tapping screws to the headlamp mounting bracket.
2 To dismantle the unit, disconnect the drive cable, unclip the unit from its base and unscrew the nut which secures the instrument to the clamp. The various parts of the assembly can then be separated. Refer to the accompanying illustration for details.
3 In all other respects, the speedometer drive is as described in Chapters 4 and 5.

4 Wheels: examination and renovation – PA50 DX VLS

1 Carefully check the complete wheel for cracks and chipping, particularly at the spoke roots and the edge of the rim. As a general rule a damaged wheel must be renewed as cracks will cause stress points which may lead to sudden failure under heavy load. Small nicks may be radiused carefully with a fine file and emery paper (No 600 – No 1000) to relieve the stress. If there is any doubt as to the condition of a wheel, advice should be sought from a reputable dealer or specialist repairer.
2 Each wheel is covered with a coating of lacquer, to prevent corrosion. If damage occurs to the wheel and the lacquer finish is penetrated, the bared aluminium alloy will soon start to corrode. A whitish grey oxide will form over the damaged area, which in itself is a protective coating. This deposit, however, should be removed carefully as soon as possible and a new protective coating of lacquer applied.
3 Check the lateral runout at the rim by spinning the wheel and placing a fixed pointer close to the rim edge. If the maximum runout is greater than 2.0 mm (0.08 in), the manufacturer recommends that the wheel be renewed. This is, however, a counsel of perfection; a runout somewhat greater than this can probably be accommodated without noticeable effect on steering. No means is available for straightening a warped wheel without resorting to the expense of having the wheel skimmed on both faces. If warpage was caused by impact during an accident, the safest measure is to renew the wheel complete. Worn wheel bearings may cause rim runout. These should be renewed.

1 Top cover
2 Speedometer
3 Damper assembly
4 Retaining plate
5 Nut
6 Lower cover
7 Clamp
8 Bolt – 2 off
9 Washer – 2 off
10 Lock washer – 2 off
11 Screw – 2 off
12 Spring washer – 2 off
13 Drive cable

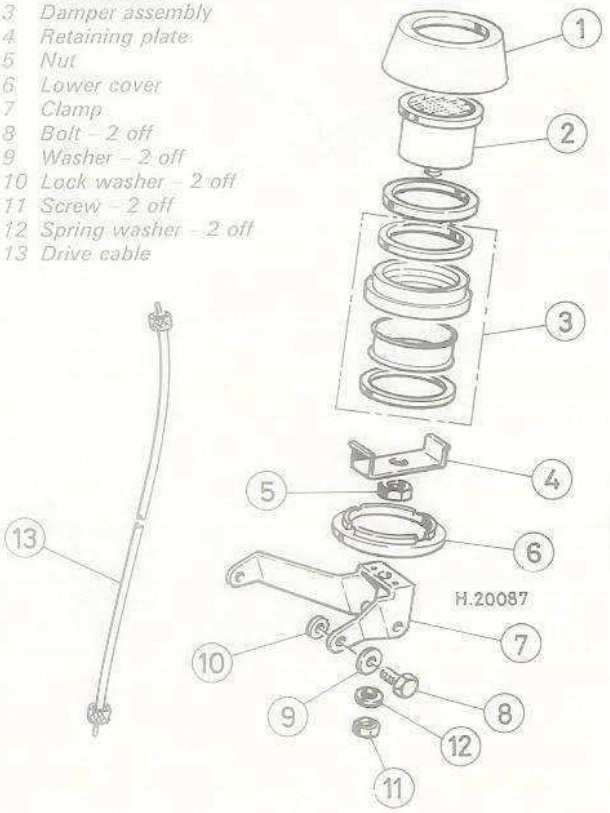


Fig. 7.3 Speedometer assembly – PA50 DX VLS and VLM

5 Front wheel: modifications

PA50 DX VLS Camino Sport

1 Withdraw the wheel from the machine as described in Chapter 5, unscrew the retaining nut and withdraw the wheel spindle, speedometer drive gearbox and brake backplate.
2 Position the wheel on a work surface with its hub well supported by wooden blocks so that enough clearance is left beneath the wheel to drive out the bearing. Ensure the blocks are placed as close to the bearing as possible, to lessen the risk of distortion of the hub casting whilst the bearings are being removed or refitted.
3 Place the end of a long-handled drift against the upper face of the first bearing to be removed and tap the bearing downwards out of the wheel hub. The spacer located between the two bearings may be moved sideways slightly to allow the drift to be positioned against the face of the bearing. Move the drift around the face of the bearing whilst drifting it out of position, so that the bearing leaves the hub squarely.
4 With the one bearing removed, the wheel may be lifted and the spacer withdrawn from the hub. Invert the wheel and remove the second bearing, using a similar procedure.
5 Remove all the old grease from the hub and bearings, giving the latter a final wash in petrol. Check the bearings for signs of play or roughness when they are tuned. If there is any doubt about the condition of a bearing, it should be renewed.
6 If the original bearings are to be refitted, they should be repacked with the recommended grease before being fitted into the hub. New bearings must also be packed with the recommended grease. Ensure that the bearing recesses in the hub are clean and the bearings and recess mating surfaces lightly greased to aid fitting. Check the condition of the hub recesses for evidence of abnormal wear which may have been caused by the outer race of a bearing spinning. If evidence of this is found, and the bearing is a loose fit in the hub, it is best to seek advice from a Honda Service Agent or a competent motorcycle engineer. Alternatively, a proprietary product such as Loctite Bearing Fit may be used to retain the bearing outer race; this will mean, however, that the bearing housing must be cleaned and degreased before the locking compound can be used.
7 With the wheel hub and bearing thus prepared, fit the bearings and central spacer as follows. With the hub again well supported by the wooden blocks, drift the first of the two bearings into position. Use a soft-faced hammer in conjunction with a socket or length of metal tube which has an overall diameter which is slightly less than that of the outer race of the bearing, but which does not bear at any point on the sealed surface or inner race. Note that bearings must always be fitted with their sealed surfaces facing outwards.
8 Carefully drive the bearing into place, ensuring that it remains square to its housing at all times; if it is tilted the bearing must be removed and positioned again. When the bearing is fully in place, turn the wheel over, refit the central spacer and pack the hub cavity no more than ⅔ full with grease. Fit the second bearing in the same way.
9 Refit the remaining components and check for smooth and free wheel rotation before refitting the wheel to the machine.

All other models

10 The remaining models covered in this Chapter all use the same type of wheel as that described in Chapter 5. There are certain minor differences in wheel layout, however, the most significant of which is that the brake backplate is retained by an additional nut. Refer to the accompanying illustration for details.

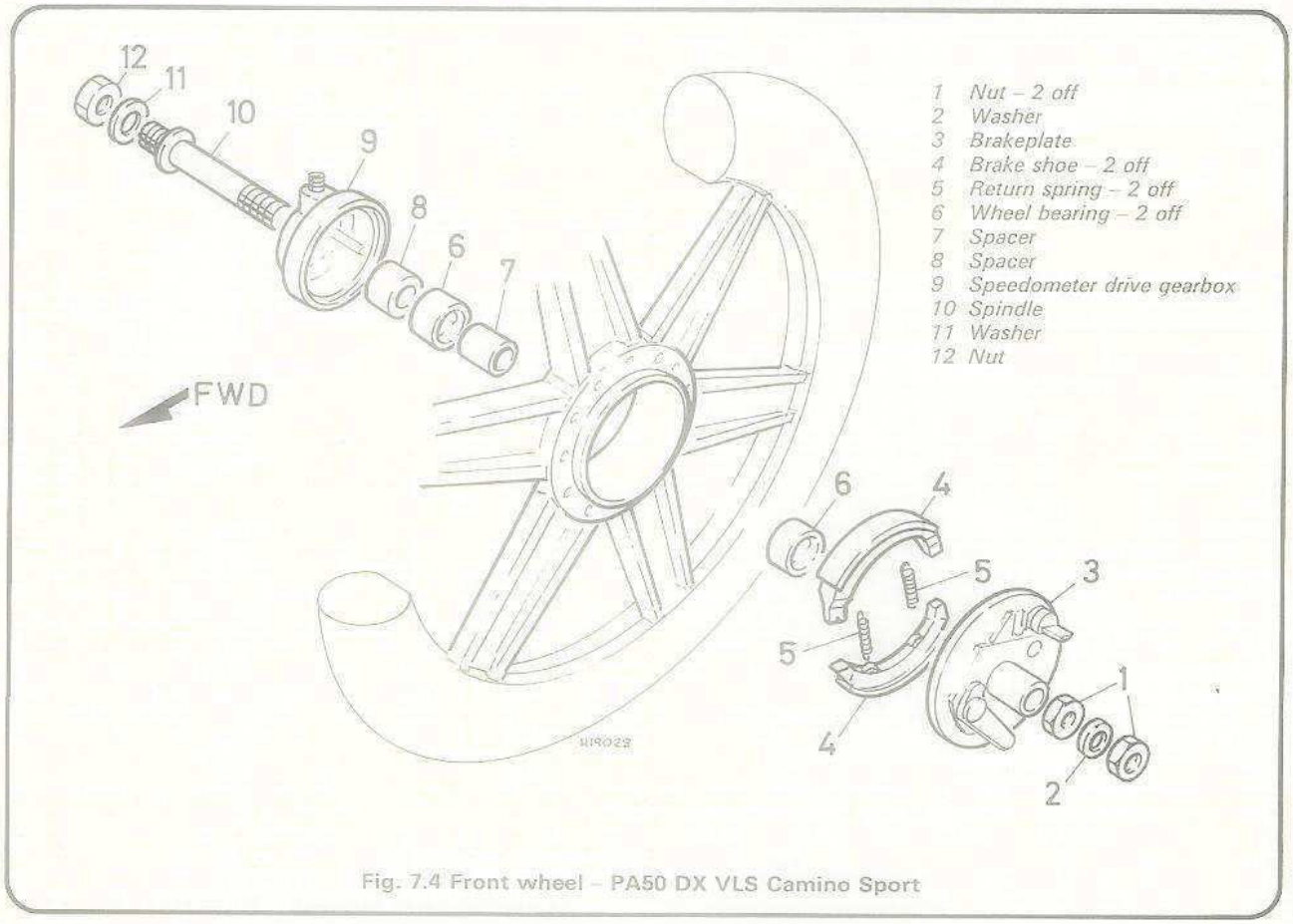


Fig. 7.4 Front wheel – PA50 DX VLS Camino Sport

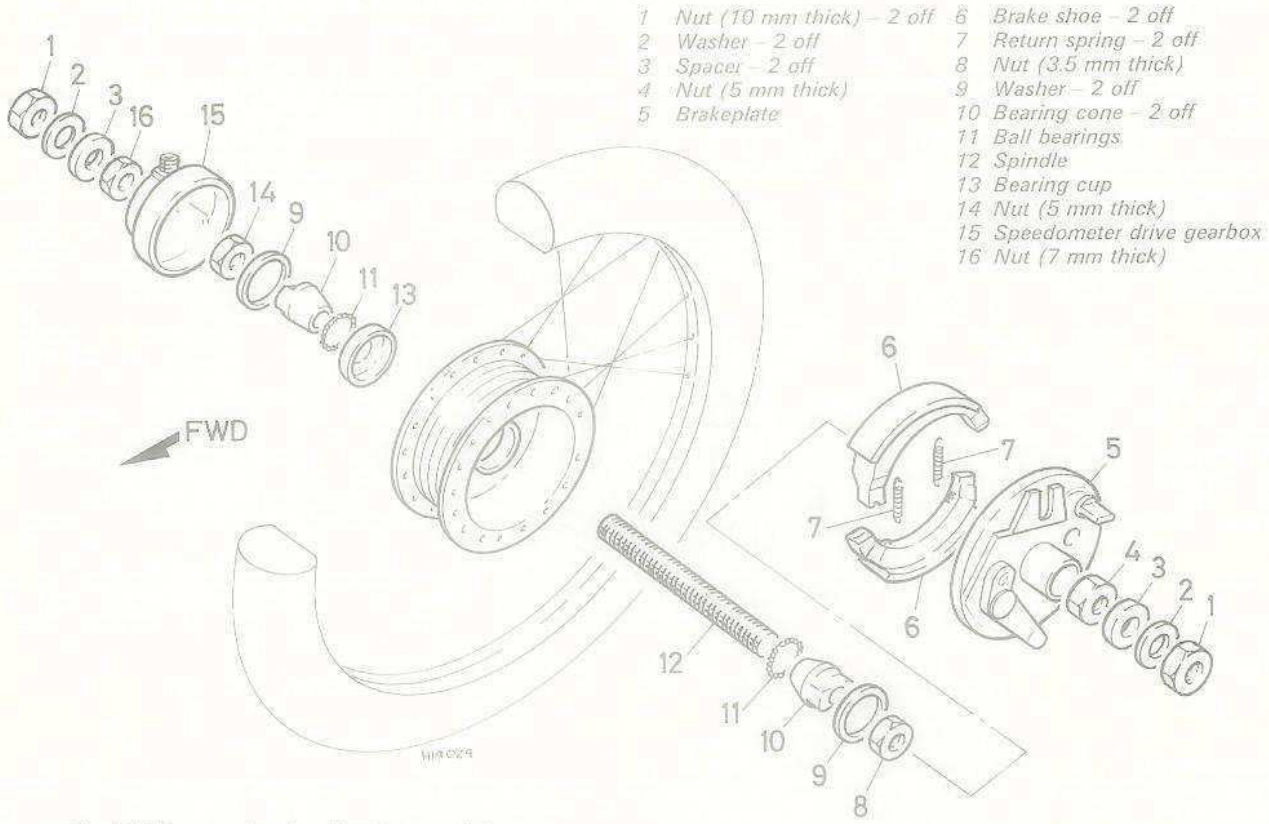


Fig. 7.5 Front wheel – all other models

6 Battery: general – PA50 VLC

Routine maintenance

1 This model is fitted with a battery which is charged via a silicon rectifier from a separate tap off the generator lighting coil. The battery and related components are all housed in a triangular black plastic casing bolted to the rear right-hand side of the frame, underneath the saddle.

2 While the battery electrolyte level can be checked via the aperture in the battery cover, a full examination will require its removal. Remove the single screw which retains the cover, unclip the cover and unhook the battery retaining strap. Disconnect the terminal leads at their block connector, pull off the vent tube and withdraw the battery.

3 The electrolyte level, visible through the translucent casing, must be between the two level marks. If necessary, remove the cell caps and top up to the upper level using only distilled water. Check that the terminals are clean and apply a thin smear of petroleum jelly (not grease) to each to prevent corrosion. On refitting, check that the vent hose is not blocked and that it is correctly routed with no kinks, also that it hangs well below any other component, particularly the stand or exhaust system.

4 Always check that the terminals are tight and that the fuse connections are clean and tight, that the fuse is of the correct rating and in good condition, and that a spare is available on the machine should the need arise.

5 At regular intervals remove the battery and check that there is no pale grey sediment deposited at the bottom of the casing. This is caused by sulphation of the plates as a result of re-charging at too high a rate or as a result of the battery being left discharged for long periods. A good battery should have little or no sediment visible and its plates should be straight and pale grey or brown in colour. If sediment deposits are deep enough to reach the bottom of the plates, or if the plates are buckled and have whitish deposits on them, the battery is faulty and must be renewed. Remember that a poor battery will give rise to a large number of minor electrical faults.

6 If the machine is not in regular use, disconnect the battery and give it a refresher charge every month to six weeks, as described below.

Battery charging

7 When new, the battery is filled with an electrolyte of dilute sulphuric acid having a specific gravity of 1.260 at 20°C (68°F). Subsequent evaporation, which occurs in normal use, can be compensated for by topping up with distilled or demineralised water only. Never use tap water as a substitute and do not add fresh electrolyte unless spillage has occurred.

8 The state of charge of a battery can be checked using a hydrometer.

9 The normal charge rate for a battery is 1/10 of its rated capacity, thus for a 4 ampere hour unit charging should take place at 0.4 amp. Exceeding this figure could cause the battery to overheat, buckling the plates and rendering it useless. Few owners will have access to an expensive current controlled charger, so if a normal domestic charger is used check that after a possible initial peak, the charge rate falls to a safe level. If the battery becomes hot during charging **stop**. Further charging will cause damage. Note that cell caps should be loosened and vents unobstructed during charging to avoid a build-up of pressure and risk of explosion.

10 After charging, top up with distilled water as required, then check the specific gravity and battery voltage. Specific gravity should be above 1.270 and a sound, fully charged battery should produce 6 – 7 volts. If the recharged battery discharges rapidly if left disconnected it is likely that an internal short caused by physical damage or sulphation has occurred. A new battery will be required. A sound item will tend to lose its charge at about 1% per day.

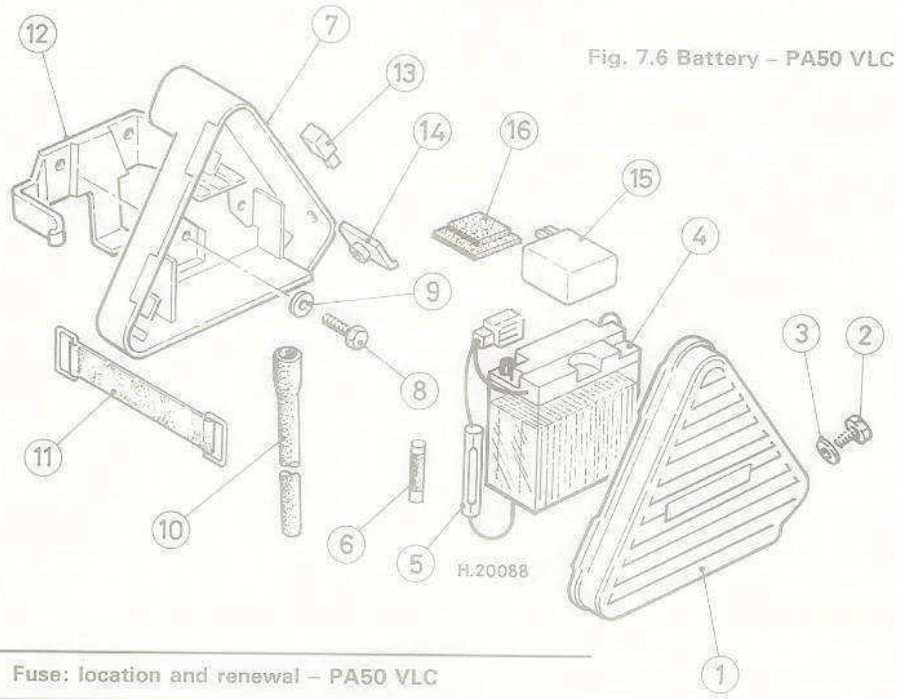


Fig. 7.6 Battery – PA50 VLC

1 Battery cover
2 Bolt
3 Washer
4 Battery
5 Fuse holder
6 Fuse
7 Battery housing
8 Bolt – 2 off
9 Washer – 2 off
10 Breather tube
11 Retaining strap
12 Mounting bracket
13 Rectifier
14 Nut
15 Turn signal relay
16 Damping rubber

7 Fuse: location and renewal – PA50 VLC

1 The turn signal system is protected by a single fuse of 10 amp rating. It is retained in a plastic casing set in the battery positive (+) terminal lead, and is clipped to a holder next to the battery. If the spare fuse is ever used, replace it with one of the correct rating as soon as possible.

2 Before renewing a fuse that has blown, check that no obvious short circuit has occurred, otherwise the replacement fuse will blow immediately it is inserted. It is always wise to check the electrical circuit thoroughly, to trace the fault and eliminate it.

3 When a fuse blows while the machine is running, and no spare is available, a 'get you home' remedy is to remove the blown fuse and wrap it in silver paper before replacing it in the fuse holder. The silver paper will restore the electrical continuity by bridging the broken fuse wire. This expedient should **never** be used if there is evidence of short circuit or other major electrical faults, otherwise more serious damage will be caused. Replace the 'doctored' fuse at the earliest possible opportunity, to restore full circuit protection.

8 Rectifier: location and testing – PA50 VLC

1 The silicon diode rectifier fitted to these machines is a small rectangular black plastic block with two male spade terminals projecting from its underside. It is mounted at the front of the battery carrier. It requires no maintenance at all, save a periodic check that it is clean, and that both it and its connections are securely fastened.

2 The rectifier consists of a small diode which converts the ac output of the flywheel generator into dc to charge the battery. It should be thought of as a one-way valve, that will allow the current to flow in one direction only, thus blocking half of the output wave from the generator.

3 Using a multimeter set to the resistance mode, check for continuity between the two terminals. There should only be continuity in the normal direction of current flow, which may be shown by an arrow on the surface of the unit. If there is continuity in the reverse direction, or if resistance is measured in both directions, the rectifier is faulty and must be renewed. No repair is possible.

9 Voltage regulator: general – PA50 VL and VLC

1 These models are fitted with a 6.5 volt voltage regulator which is mounted next to the horn, under the fork top yoke. The regulator is a sealed metal unit which cannot be repaired and must be renewed if faulty. It requires no maintenance other than a periodic check that its connections and mountings are clean and securely fastened.

2 Unfortunately there is no information available by which the unit can be tested. It is therefore necessary to substitute a new component if the original is suspected of being faulty.

10 Resistor: testing – PA50 DX VLS and VLM

1 There models are fitted with a resistor which is connected into the headlamp dip beam circuit to soak up the surplus current which might otherwise cause the bulb filament to blow.

2 If persistent bulb-blowing is encountered, test the resistor by disconnecting its feed wire and checking for continuity between the wire terminal and a good earth point. If the resistor is in good condition, light resistance (approximately 30 ohms) should be measured. If heavy resistance is measured, or none at all, the resistor is faulty and must be renewed. Repairs are not possible.

3 The resistor is bolted to the underside of the fork top yoke, next to the horn mounting, and requires no maintenance other than a periodic check to ensure that its connection and mountings are clean and securely fastened.

11 Stop lamp circuit: general – PA50 VL and VLC

1 These two later models are fitted with a stop lamp which is powered by a tap from the generator lighting coil and actuated by a switch set in the rear brake cable.

2 In the event of a fault developing, check first the bulb, then work methodically through the circuit until the fault is located.

3 If the fault is due to a damaged or broken wire, this may be repaired as described in Chapter 6. If, however, the switch proves to be faulty, then the complete brake cable must be renewed.

12 Turn signals: fault finding – PA50 VLC

1 The turn signals are triggered by a relay which is a sealed metal unit mounted inside the battery carrier. Apart from the lamps themselves, the only other component in the circuit is the handlebar-mounted switch.
2 No maintenance is required other than to ensure that all lamp mountings and all connections are clean and tight. The switch should be sprayed occasionally with a water-dispersant lubricant such as WD40 to prolong its life.
3 If a fault arises it should be easily cured provided that the problem is approached in a logical manner. For example if the lamps are dim and flash very slowly, if at all, at low speeds but improve as engine speed increases, then it is most likely that the battery is flat. If the lamps fail on one side only, the other continuing to operate correctly, then the switch or wiring to the affected side is at fault. If only one lamp works on one side, then the remaining bulb or the wiring is faulty.
4 When checking any fault in the indicator circuit, first check that the battery is fully charged, that the fuse is serviceable and that the wiring to the relay is in good condition.
5 Next check that all bulbs are of exactly the correct rating and that they are making good contact with their respective holders; carefully clean off all traces of dirt or corrosion to ensure a good metal-to-metal contact. Check also that the lamps are securely fastened to the frame to provide a good earth.
6 Check that the switch contacts are clean and that the switch is working correctly; take care not to lose any springs or contacts if it is dismantled. Check carefully that all related wiring is in good condition, not forgetting the speedometer-mounted warning lamp.
7 If all the above have been checked and found to be in good condition, but the fault persists on both sides, the relay must be assumed to be faulty. Unfortunately repairs are not possible; the unit must be renewed.

13 Switches: general

Although some models employ flat plastic rocker-type switches that are very different in appearance from those described in Chapter 6, the same comments apply with regard to fault-finding, maintenance and repair or renewal.

14 Bulb renewal: general

Headlamp – PA50 DX VLS and VLM
1 The round headlamp unit fitted to the Camino Sport and Camino Deluxe Special models differs only in having the headlamp rim/reflector unit secured to the shell by a single screw at the bottom of the assembly. With the screw removed, the assembly can be withdrawn from the shell; bulb removal and refitting is otherwise as described in Chapter 6.

Stop lamp – PA50 VL and VLC
2 These two models are fitted with a separate bulb in the rear lamp assembly which is illuminated via a switch in the rear brake cable. Bulb removal and refitting is as described in Chapter 6 for the tail lamp bulb.

Turn signals and warning lamps – PA50 VLC
3 Remove the single screw retaining each lens, withdraw the lens then press the bulb in and turn anti-clockwise to release it. Refitting is the reverse of the removal procedure; be careful not to overtighten the retaining screw or the lens may be cracked.
4 The two warning lamps fitted to this model use bayonet fitting (ie press in and twist anticlockwise to release) bulbs set in bulb holders that are pressed into the top of the headlamp shell. Remove the headlamp rim/reflector assembly to gain access to the bulb holders.

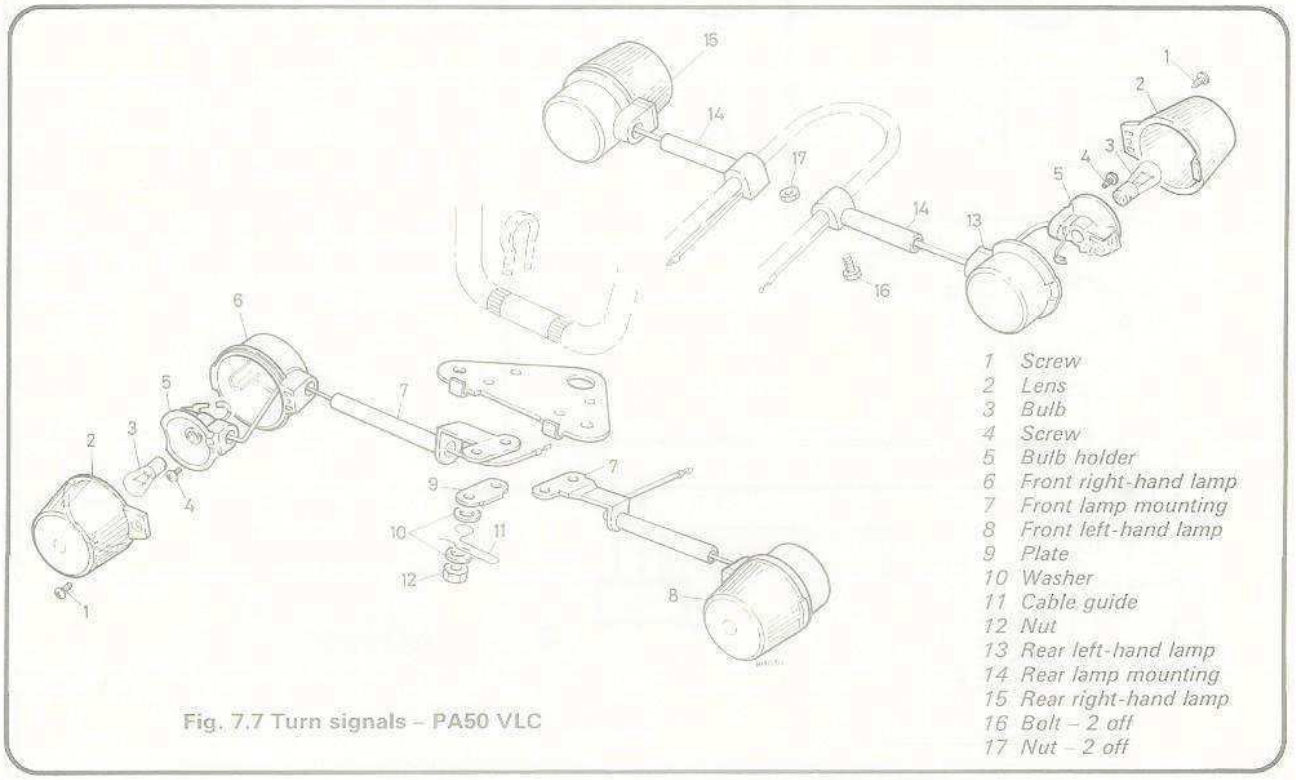
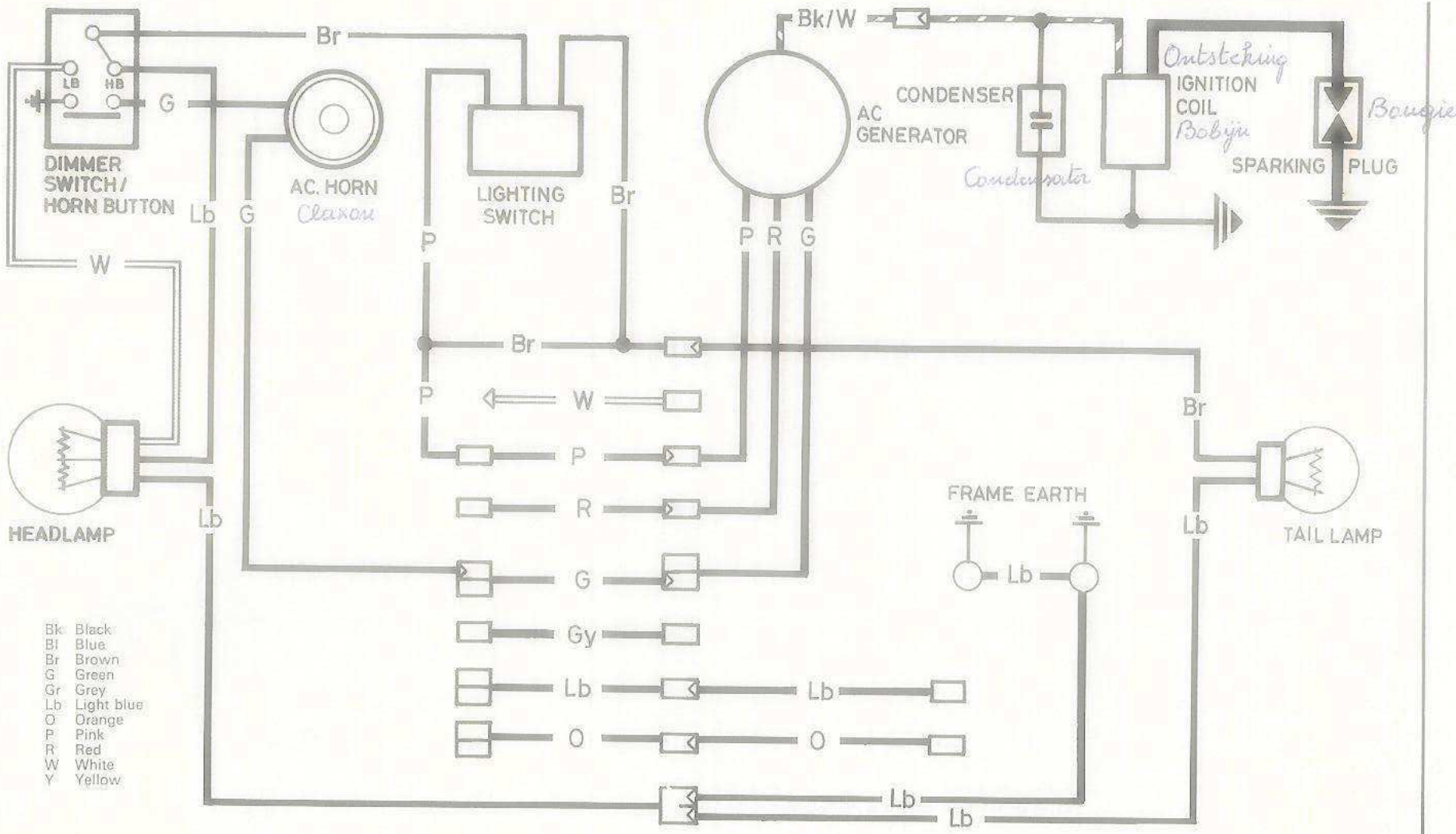
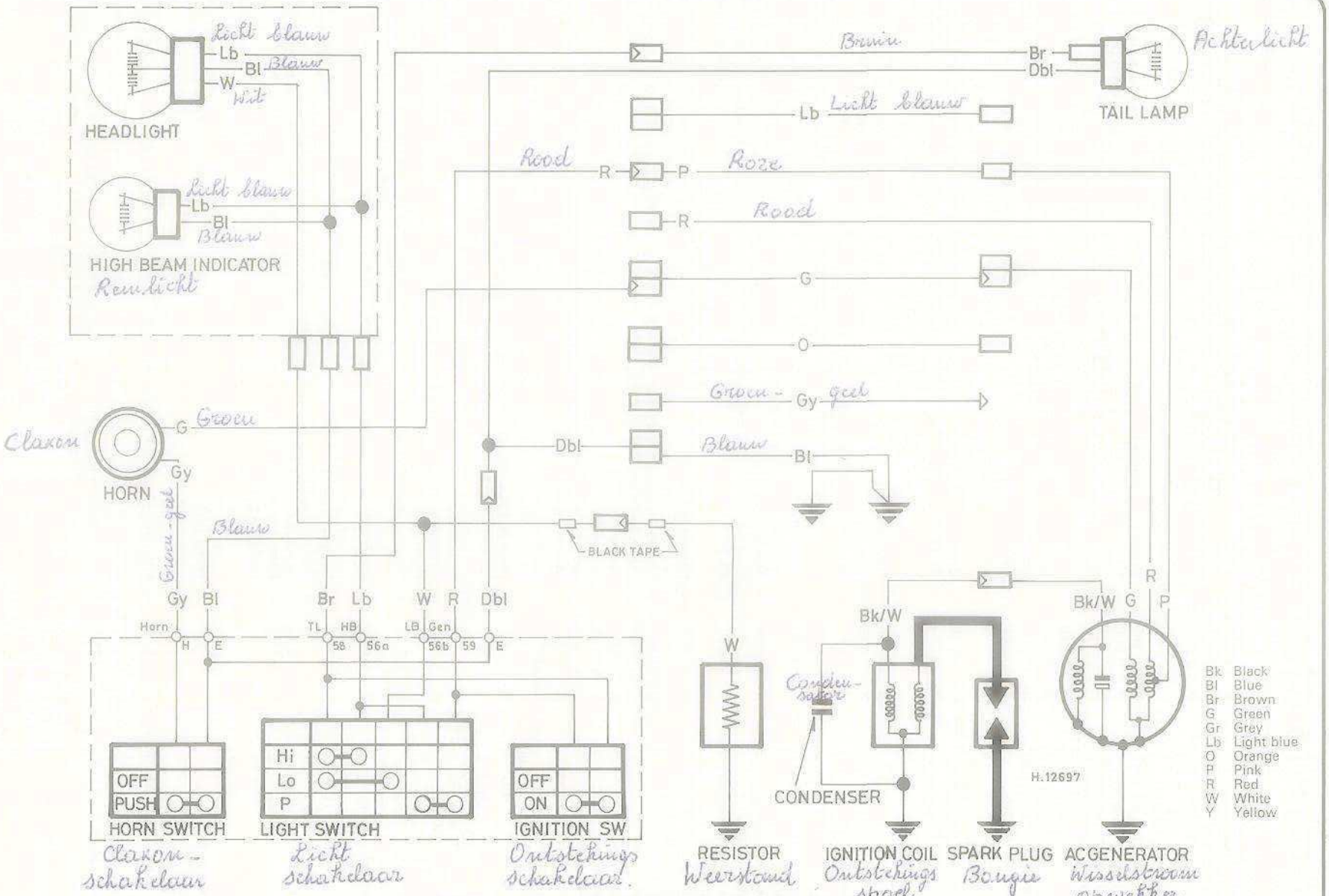


Fig. 7.7 Turn signals – PA50 VLC



Wiring diagram – PA50 L, VL (1976 to 78), DX VL and PA50 I, II models



Wiring diagram – PA50 DX VLM and DX VLS models

Conversion factors

Length (distance)							
Inches (in)	X	25.4	= Millimetres (mm)	X	0.0394	=	Inches (in)
Feet (ft)	X	0.305	= Metres (m)	X	3.281	=	Feet (ft)
Miles	X	1.609	= Kilometres (km)	X	0.621	=	Miles
Volume (capacity)							
Cubic inches (cu in; in³)	X	16.387	= Cubic centimetres (cc; cm³)	X	0.061	=	Cubic inches (cu in; in³)
Imperial pints (Imp pt)	X	0.568	= Litres (l)	X	1.76	=	Imperial pints (Imp pt)
Imperial quarts (Imp qt)	X	1.137	= Litres (l)	X	0.88	=	Imperial quarts (Imp qt)
Imperial quarts (Imp qt)	X	1.201	= US quarts (US qt)	X	0.833	=	Imperial quarts (Imp qt)
US quarts (US qt)	X	0.946	= Litres (l)	X	1.057	=	US quarts (US qt)
Imperial gallons (Imp gal)	X	4.546	= Litres (l)	X	0.22	=	Imperial gallons (Imp gal)
Imperial gallons (Imp gal)	X	1.201	= US gallons (US gal)	X	0.833	=	Imperial gallons (Imp gal)
US gallons (US gal)	X	3.785	= Litres (l)	X	0.264	=	US gallons (US gal)
Mass (weight)							
Ounces (oz)	X	28.35	= Grams (g)	X	0.035	=	Ounces (oz)
Pounds (lb)	X	0.454	= Kilograms (kg)	X	2.205	=	Pounds (lb)
Force							
Ounces-force (ozf; oz)	X	0.278	= Newtons (N)	X	3.6	=	Ounces-force (ozf; oz)
Pounds-force (lbf; lb)	X	4.448	= Newtons (N)	X	0.225	=	Pounds-force (lbf; lb)
Newtons (N)	X	0.1	= Kilograms-force (kgf; kg)	X	9.81	=	Newtons (N)
Pressure							
Pounds-force per square inch (psi; lbf/in²; lb/in²)	X	0.070	= Kilograms-force per square centimetre (kgf/cm²; kg/cm²)	X	14.223	=	Pounds-force per square inch (psi; lbf/in²; lb/in²)
Pounds-force per square inch (psi; lbf/in²; lb/in²)	X	0.068	= Atmospheres (atm)	X	14.696	=	Pounds-force per square inch (psi; lbf/in²; lb/in²)
Pounds-force per square inch (psi; lbf/in²; lb/in²)	X	0.069	= Bars	X	14.5	=	Pounds-force per square inch (psi; lbf/in²; lb/in²)
Pounds-force per square inch (psi; lbf/in²; lb/in²)	X	6.895	= Kilopascals (kPa)	X	0.145	=	Pounds-force per square inch (psi; lbf/in²; lb/in²)
Kilopascals (kPa)	X	0.01	= Kilograms-force per square centimetre (kgf/cm²; kg/cm²)	X	98.1	=	Kilopascals (kPa)
Millibar (mbar)	X	100	= Pascals (Pa)	X	0.01	=	Millibar (mbar)
Millibar (mbar)	X	0.0145	= Pounds-force per square inch (psi; lbf/in²; lb/in²)	X	68.947	=	Millibar (mbar)
Millibar (mbar)	X	0.75	= Millimetres of mercury (mmHg)	X	1.333	=	Millibar (mbar)
Millibar (mbar)	X	1.40	= Inches of water (inH_2O)	X	0.714	=	Millibar (mbar)
Millimetres of mercury (mmHg)	X	1.868	= Inches of water (inH_2O)	X	0.535	=	Millimetres of mercury (mmHg)
Inches of water (inH_2O)	X	27.68	= Pounds-force per square inch (psi, lbf/in², lb/in²)	X	0.036	=	Inches of water (inH_2O)
Torque (moment of force)							
Pounds-force inches (lbf in; lb in)	X	1.152	= Kilograms-force centimetre (kgf cm; kg cm)	X	0.868	=	Pounds-force inches (lbf in; lb in)
Pounds-force inches (lbf in; lb in)	X	0.113	= Newton metres (Nm)	X	8.85	=	Pounds-force inches (lbf in; lb in)
Pounds-force inches (lbf in; lb in)	X	0.083	= Pounds-force feet (lbf ft; lb ft)	X	12	=	Pounds-force inches (lbf in; lb in)
Pounds-force feet (lbf ft; lb ft)	X	0.138	= Kilograms-force metres (kgf m; kg m)	X	7.233	=	Pounds-force feet (lbf ft; lb ft)
Pounds-force feet (lbf ft; lb ft)	X	1.356	= Newton metres (Nm)	X	0.738	=	Pounds-force feet (lbf ft; lb ft)
Newton metres (Nm)	X	0.102	= Kilograms-force metres (kgf m; kg m)	X	9.804	=	Newton metres (Nm)
Power							
Horsepower (hp)	X	745.7	= Watts (W)	X	0.0013	=	Horsepower (hp)
Velocity (speed)							
Miles per hour (miles/hr; mph)	X	1.609	= Kilometres per hour (km/hr; kph)	X	0.621	=	Miles per hour (miles/hr; mph)
*Fuel consumption**							
Miles per gallon, Imperial (mpg)	X	0.354	= Kilometres per litre (km/l)	X	2.825	=	Miles per gallon, Imperial (mpg)
Miles per gallon, US (mpg)	X	0.425	= Kilometres per litre (km/l)	X	2.352	=	Miles per gallon, US (mpg)

Temperature

Degrees Fahrenheit = (°C x 1.8) + 32

Degrees Celsius (Degrees Centigrade; °C) = (°F - 32) x 0.56

**It is common practice to convert from miles per gallon (mpg) to litres/100 kilometres (l/100km), where mpg (Imperial) x l/100 km = 282 and mpg (US) x l/100 km = 235*

English/American terminology

Because this book has been written in England, British English component names, phrases and spellings have been used throughout. American English usage is quite often different and whereas normally no confusion should occur, a list of equivalent terminology is given below.

English	American	English	American
Air filter	Air cleaner	Mudguard	Fender
Alignment (headlamp)	Aim	Number plate	License plate
Allen screw/key	Socket screw/wrench	Output or layshaft	Countershaft
Anticlockwise	Counterclockwise	Panniers	Side cases
Bottom/top gear	Low/high gear	Paraffin	Kerosene
Bottom/top yoke	Bottom/top triple clamp	Petrol	Gasoline
Bush	Bushing	Petrol/fuel tank	Gas tank
Carburettor	Carburetor	Pinking	Pinging
Catch	Latch	Rear suspension unit	Rear shock absorber
Circlip	Snap ring	Rocker cover	Valve cover
Clutch drum	Clutch housing	Selector	Shifter
Dip switch	Dimmer switch	Self-locking pliers	Vise-grips
Disulphide	Disulfide	Side or parking lamp	Parking or auxiliary light
Dynamo	DC generator	Side or prop stand	Kick stand
Earth	Ground	Silencer	Muffler
End float	End play	Spanner	Wrench
Engineer's blue	Machinist's dye	Split pin	Cotter pin
Exhaust pipe	Header	Stanchion	Tube
Fault diagnosis	Trouble shooting	Sulphuric	Sulfuric
Float chamber	Float bowl	Sump	Oil pan
Footrest	Footpeg	Swinging arm	Swingarm
Fuel/petrol tap	Petcock	Tab washer	Lock washer
Gaiter	Boot	Top box	Trunk
Gearbox	Transmission	Two/four stroke	Two/four cycle
Gearchange	Shift	Tyre	Tire
Gudgeon pin	Wrist/piston pin	Valve collar	Valve retainer
Indicator	Turn signal	Valve collets	Valve cotters
Inlet	Intake	Vice	Vise
Input shaft or mainshaft	Mainshaft	Wheel spindle	Axle
Kickstart	Kickstarter	White spirit	Stoddard solvent
Lower leg	Slider	Windscreen	Windshield

Index

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Models covered by this manual

Honda PA50 L Camino. 49cc. UK July 1976 to February 1978
Honda PA50 VL Camino. 49cc. UK July 1976 to November 1978, September 1984 to 1986
Honda PA50 DX VL Camino Deluxe. 49cc. UK June 1978 to February 1984
Honda PA50 DX VLS Camino Sport. 49cc. UK April 1981 to June 1983
Honda PA50 DX VLM Camino Deluxe Special. 49cc. UK February 1982 to February 1984
Honda PA50 VLC Camino. 49cc. May 1986 on
Honda PA50 I and II. 49cc. US 1978 to 1980

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