damage to oil scal during re-assembly)

Gearbox — intermediate shaft

002667/E C-spanner for sleeve nut

A useful item is a wood block to lock the stand in

the down position. This should be a piece of hard

wood in thick and lin wide, length not less than

4in or more than 4½in. One end should be tapered

to fit against the rubber stand buffer in the engine

unit, the blunt end is fitted against the buffer lug

Engine: Single cylinder two-stroke. Inclined cast-iron

barrel, cowled and cooled by flywheel fan. Die-cast

alloy head. Carburettor mounted on crankcase

induction controlled by rotary valve formed as part

of crankshaft. Decompressor releases into single

exhaust port, cable operated from right handlebar

Piston: Die-cast alloy, flat top. Two plain rings,

Ignition: External HT coil energised by LT coil in

0.4mm (0.015in). HT lead incorporates suppresso:

Sparking plug: Bosch W-240 TI, or Champion L 81

Carburettor: Vespa manufacture (based on Dell 'Orto

Transmission: V-belt from engine to gearbox (within

hub). Variable pulley on engine shaft, ratio

selected automatically according to engine spee

and load; spring-loaded pulley on rear drive shaft

maintains belt tension. Centrifugally-operated fric

tion clutch, 3 shoes, on rear drive shaft, incorp-

orating separate 2-shoe starting clutch for peda

starting engine. Gearbox encloses reduction gears

in oil-bath case, with selector (to free engine for

pedalling machine) operated by cable from left

twist-grip. Chain pedalling gear with freewheel on

rear axle, endless chain tensioned automatically by

Suspension: Front - telescopic forks, one compres-

sion spring in each leg hydraulically damped.

Rear - undamped springs enclosed in telescoping

metal shields, engine unit oscillates on rubber

Brakes: Internal expanding, cable operated from

handlebar levers, 2 shoes in front hub, one shoe

design). Main jet 56. Choke cable operated from

flywheel generator. Fixed advance, points open

20 deg. plus/minus 1 deg. Contact breaker gap

identical, pegged. Ring gap on assembly 0.1-0.25mm,

Bore and stroke: 38.4mm by 43mm.

replace if gap(s) exceed 2.0mm.

spring-loaded jockey sprockets.

Output: 2.2bhp @ 4700rpm.

Capacity: 49.7cc.

Concessionaires: Douglas (Sales & Service) Ltd.,

Kingswood, Bristol.

Telephone: Bristol (0272) 671881

## INFORMATION

THE Vespino is a de-luxe moped, slightly larger 002662/E Clutch carrier, outer needle bearing fitting and about 30lb heavier than the Ciao. Like the latter, the Vespino has an open frame, and the Chaincase - rear drive shaft transmission is similar - enclosed belt drive with 002714/E Oil seal extractor an automatic clutch, and reduction gears in the rear 002650/E Oil seal fitting tool hub. On the Vespino, however, the selector fork 002622/E Oil pilot guide (Used on shaft to prevent which engages or disengages the gears to allow the machine to be pedalled, is controlled by a cable from 002780/E Ball race extractor the left twist-grip. The pedal chain is spring-tensioned 002628/E Ball race fitting tool and enclosed.

The Vespino has motorcycle type telescopic front 002822/E Needle roller bearing fitting tool forks with hydraulic damping, and at the rear, Gearbox - rear wheel axle enclosed springs, undamped, against which the engine- 002653/E Oil seal extractor unit moves on rubber bushes. Tyre size is 21 by 18in. 002647/E Oil seal fitting tool The engine has certain similarities to the Ciao — 002646/E Needle roller bearing fitting tool the same bore and stroke and output, and induction 002692/E Ball race extractor controlled by one crank cheek opening and closing a 002664/E Ball race fitting tool port in the crankcase. Lubrication is by petroil 002643/E Freewheel peg wrench mixture, and the fuel tank, mounted below the frame Steering head and forward of the engine, has a reserve supply. 002692/E Ball race extractor Tank and engine are enclosed by a smooth rounded 002814/E Ball race fitting tool cover, which is hinged to allow re-fuelling - an Front forks over-centre spring holds the cover open or closed.

Both brakes are internal expanding, cable operated, Engine unit and all controls including the choke are on the 002638/E Tubular jig, supports complete unit in vice. handlebars. The latter are part of a shapely alloy casting, incorporating the headlamp and speedometer head, and are not adjustable. The sprung saddle has limited vertical adjustment. The central stand requires minimum effort to operate, and is strong enough to support the machine while the engine is started, if

The rear wheel really is quickly detachable, being held to the overhung hub by four bolts, and as the engine and fuel tank are slung below the frame the centre of gravity is very low. With comparatively large wheels handling and stability are very good.

From a servicing point of view, it is a simple operation (described later) to detach the frame and front wheel, etc. from the engine-unit, leaving the latter supported by the stand and rear wheel; this gives complete accessibility for any work on the unit. It should be noted that the steering head bearings are not adjustable; they are pressed into the head with a spacing tube between them, and the steering 'column' is in fact a long bolt which locks the upper and lower fork crowns against the races. There is one left-hand thread only on the machine - the left

# Renewal of parts

All moving parts liable to wear are separately enewable, and in line with Vespa practice, a worn big-end or worn crankshafts can only be renewed by a complete crankshaft assembly. All paper or Hallite washers, the copper/asbestos exhaust pipe gasket, all oil seals, O-rings and circlins should be renewed as a matter of course once disturbed.

Spare parts list

This publication illustrates and lists all parts, and a very complete Users Handbook is also available. There is no workshop service manual, and therefore this service sheet aims to provide dismantling and re-assembly instructions which are as complete as

# **Workshop Service Tools**

The tools available are listed here in groups, to show readily the parts of the machine to which they

Drive side crankshaft 002713/E Oil seal extractor 002639/E Oil seal fitting tool 002668/E Ball race extractor 002640/E Ball race fitting tool

Flywheel generator 002633/E Flywheel holding tool

002609/E Flywheel extractor

002632/E Clutch holding tool

002661/E Clutch carrier, inner oil

(2 pieces)

(2 pieces)

tool (2 pieces)

Tyres: Front and rear - 21 by 18 in. Generator side crankcase Tyre pressures: Front 24 lb/sq in. Rear 28½ lb/sq in 002642/E Oil seal fitting tool Lighting: Direct from LT coil in 4-pole flywheel 002810/E Roller bearing, outer race extractor generator, output 6V 28W. Headlamp 6V 25/25W 002641/E Roller bearing outer race fitting tool twin filament bulb, rear 6V 3W, controlled by 002813/E Roller bearing, extractor for inner race (off

switch on right handlebar. Lubrication: Engine - petrol mixture 2 per cent 002637/E Roller bearing, fitting tool for inner race by volume, oil SAE 30 or two-stroke self-mixing. (on to shaft - 3 pieces)

See users handbook for exact proportions of individual makes and types of oil. Gearbox - SAE 90, fill to level of filler plug with machine upright. Front forks - 12cc in each leg, see users hand-

book for recommended makes and grades. Fuel tank: Capacity 5.8 pts, including 1.2 pts reserve, supply controlled by 3-position tap. Consumption: 190 mpg.

002659/E Clutch carrier, inner needle bearing fitting Range: 125 miles. Max. speed: 25 mph.

# **DETACHING ENGINE-UNIT**

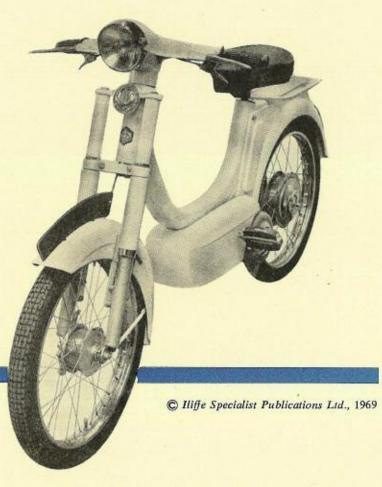
or any work on the crankshaft, as with the engine- by removing the necessary parts. unit in position there is not sufficient clearance to lift the cylinder head and barrel.

002660/E Clutch carrier, outer oil seal fitting tool

But note that any work on the transmission, pedal on its stand, and lock this by fitting the wood-

This operation must be done for decarbonisation, if desired without removing the engine-unit, merely

Detaching operation: Start by putting the machine chain, and reduction gearbox can be done easily block described in the last paragraph of "Workshop



the rear wheel - at least two of the four bolts On the nearside, undo the three screws holding

should be tightened.

the selector fork cable from its lever, and replace from the tap.

may be removed completely, if desired, by unhook- the way, to avoid possible damage.

Disconnect the decompressor cable from the valve, rear wheel.

Service Tools." Next remove the rear wheel, detach and turn off the petrol tap and remove the pipe

the air filter to the carburettor, leaving the filter Next detach the rear brake cable, and pull this to hang on its pipe. Slacken the carburettor clamp and the selector cable free. Lift the engine cover screw, and slide the instrument from the inlet pipe to expose the electrical junction block (the cover - it is best to tie the instrument securely out of

ing its spring and sliding the pivot rod out of the Finally remove the lower bolt of the rear spring locating slots), and disconnect the black and yellow unit, then undo one nut on the main engine-unit wires emerging from the frame, also the white pivot and support the frame as the bolt is knocked earth wire secured under the bracket of the junction- out. The frame and front wheel can now be lifted away, leaving the engine-unit on the stand and

## DECARBONISATION

Remove the plastic belt cover (held by two quarter- warm the piston (with a cloth dipped in hot water turn fasteners) and undo the nut holding the silencer and wrung out) to allow the gudgeon pin to be bracket to the chaincase. Next undo the two nuts pushed out towards the flywheel with a suitable holding the exhaust pipe flange to the barrel, there rod. The little end bearing is a renewable plain is a shakeproof washer under each nut, and a copper/ bush. asbestos washer behind the flange.

Remove the sparking plug, and then the cooling cowl, held by four screws. Undo the four cylinder tions. Take care to replace the piston with the head nuts, each of which has a Bevelite "wavy" arrow on the crown pointing downwards (toward the spring washer under it - the decompressor lever exhaust). Remember also to fit the loose air deflector must be depressed to allow a box spanner to reach plate to the barrel before refitting the latter. one nut. Lift off the head, there is no gasket for The decompressor valve should not require disthe joint. Slide off the barrel, taking care to support mantling until a considerable mileage has been the piston and not to distort the four long bolts - covered - a splitpin through the valve stem locks there is a paper washer below the barrel, and a loose the threaded spring collar and spring. But check air deflector alongside it.

sarily removed), and it is possible to clean the ex- unit, make sure the brake and selector cables are haust port thoroughly without fear of scratching the not trapped under the front end of the mudguard they must lie along the top of the chaincase, outside

To remove the piston, remove both circlips, then the guard,

that the release passage between valve and exhaust Note: It is desirable always to remove the barrel, port is clear. as the rings may then be examined (but not neces-Finally, when refitting the frame to the engine

If attention to the crankshaft and/or bearings is the vice (using clams on the jaws) by placing the stand necessary, the procedure is as follows. pivot lug and the buffer lug (both on the lower edge Detach the engine-unit as already described, then of the chaincase, between the vice jaws).

remove the exhaust pipe and silencer (first paragraph of "Decarbonisation"). The cylinder head and barrel should be left in situ until a later stage. With the barrel removed, two of the chaincase cover-Flywheel generator. Use tool 002633/E to hold plate bolts previously trapped will be free to come the flywheel, with its arm resting against the pedal spindle, whilst the nut is undone - there is a spring Position the conrod at TDC and place the wedge washer beneath it. Now use tool 002609/E to pull the flywheel off its taper. Mark one lug of the stator plate and the housing, near a screw, to ensure correct replacement, then undo the three screws with spring washers and remove the stator plate - the wires must be eased through the grommet at the back of shaft may be tapped lightly with a hide mallet -

flywheel to retain magnetism. Belt drive. To lock the engine pulley, whilst the nut is undone, place a flat metal bar, about 4in long, between one of the slots in the rear flange and the lug of the cover fastener; there is a shakeproof and a plain washer behind the nut. Next, insert a broad screwdriver between the two halves of the rear pulley, and spread them against the spring pressure - this will allow enough slack in the belt for the engine pulley to be removed. Remove the key and the thrust washer behind it.

Use tool 002632/E to hold the clutch whilst its retaining nut is undone, there is a shakeproof washer behind the nut, then pull the clutch housing from the shaft. Remove the key and the thrust washer behind, this allows the rear pulley to be removed.

Pedal chain. Remove both pedals by knocking out the cotter-pins. The plate covering the chaincase is held by three bolts (at the back, near the rear drive shaft) and fourteen nuts. Of the latter, one held the silencer and will be loose, and three others hold the wiring junction-block and the coil bracket. Remove all these, and lift off the cover-plate, Behind it on the pedal shaft is a loose white nylon sealing washer, and on the engine shaft is a long spacer tube, within the crankcase oil seal - remove both

Unhook the forward end of the spring which tensions the jockey sprocket assembly, and remove this from its pivot pin.

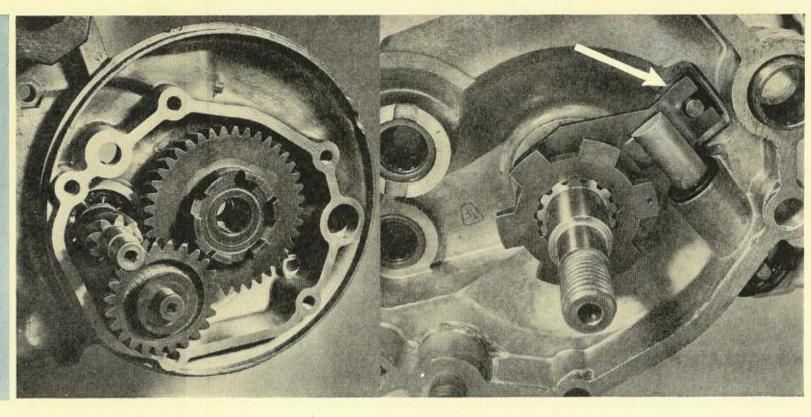
Use tool 002643/E to unscrew the freewheel from the rear axle, and after removing this, pull the pedal shaft (and chain) from its bushes. Unbolt the rear wheel.

Removing crankcase. It will now be found convenient to have the unit on the bench, but first the stand must be removed. Turn the unit upside down, pull out the stand wedge, lever the longer end of the stand spring free, remove the split-pin in the stand pivot and pull this out. If tool 002638/E is available, grip this in the vice and fasten the unit to it. Alternatively the unit may be gripped direct in

DISMANTLING ENGINE

Remove the cylinder head, barrel and piston using procedure detailed under "Decarbonisation".

part of tool 002637/E (which comprises three items) between the crank cheeks. Undo five bolts with plain washers holding the crankcase to the chaincase - a paper washer seals the joint, and the crankcase is located on a spigot. To free it the end of the engine the housing. Place the stator plate complete into the do not do this unless wedge 002637/E is in position



the dogs facing the sliding dog.

and damage the seal.

or paraffin.

Tighten up the five bolts a little at a time and the plate, their positions being-four lin long at the diametrically, to pull the crankcase squarely on to front at 12, 2, 4 and 6 o'clock (two already fitted before barrel was replaced), the longest is 13in and Finally tap the flywheel shaft lightly with a hide fits directly below the crankshaft, and the remaining mallet to centralise the assembly in the crankcase, nine are 1 is in long.

c) After the cover-plate is in position, fit a thrust washer to the crankshaft before the key and the

d) Slide the rear pulley carefully on to the drive shaft, to avoid damage to the internal oil seals, then fit the thrust washer and key for the clutch housing

Re-assembly—transmission. Follow the dismantling e) The clutch housing cannot be fitted unless the sequence in reverse, noting particularly the following: two small starting shoes are compressed against a) Before replacing the chaincase cover-plate, slide their springs - do this with a thumb and forefinger the spacer tube on to the crankshaft, pushing it right through two of the holes. Once it has been offered home into the oil seal, and fit the white nylon up, insert a screwdriver through the holes to comwasher, small diameter outwards, to the pedal shaft. press the shoes a little more, at the same time pressb) The chaincase cover-plate is secured by seven- ing the housing on to its key and against the shoulder teen bolts, all with plain and spring washers. The on the shaft.

three shortest, sin long, fit at the back at 12, 9 and f) After the pulley nuts have been tightened, spread 6 o'clock and thread into the alloy case; the remainthe rear pulley with a screwdriver to allow the belt ing fourteen all face outward and have nuts to secure to be looped over the front pulley.

## GEARBOX

within the rear hub) can easily be done with the off its pivot pin. engine-unit in position — it is not necessary to The short intermediate shaft has a thrust washer at remove the unit. The sequence of operations is given each end — one of these may be found stuck to the

or the crankpin may be distorted.

located by a circlip).

shaft enters.

the spigot on the chaincase.

sult Vespa Service on this point.

Removing crankshaft. With a hide mallet, tap the

flywheel shaft until it is free of the bearing. Lay the

crankcase flywheel side down on the bench, and turn

the crankshaft until the big-end is about 5° before

TDC. Hold the conrod to maintain this position,

with the other hand lift the crankshaft, at the same

time tilting it so that larger crank cheek (the inlet

valve rotor) comes close to the crankcase mouth.

As the shaft is tilted, the end of the flywheel shaft

will just clear the bearing and the complete assembly

can then be lifted out through the open side of the

Renewal of bearings. A worn big-end, and/or worn

crankshaft(s) will necessitate a complete replace-

ment assembly. But all bearings and oil seals are

renewable, using the tools listed earlier for removal

and fitting. (Note that the drive side ball bearing is

If either or both crankshaft bearings require re-

newal, examine also the induction crank cheek and

the face of the port with which it mates. Any wear

here would affect performance, but the worn port

area can sometimes be built up and refaced - con-

Re-assembly-crankshaft. Make sure the rollers in

the flywheel side bearing are not tilted, before re-

inserting the assembly into the crankcase, then enter

the shaft into the bearing - it should not require

more than firm hand pressure to seat right home.

Fit wedge 002637/E to crank cheeks, and offer up

the drive side shaft to its bearing - turn the shaft

remove wedge and check that it turns freely.

the barrel and deflector plate are fitted.

Remainder of the engine assembly involves re-

fitting the components in reverse order of the dis-

two chaincase bolts (lin long) are in position before

mantling sequence. In particular, make sure that

to ensure that the oil seal is not displaced as the

advisable to lock this with the wooden block). Re- (in the chaincase) by a small circlip outside the bear move plastic belt cover, then silencer and exhaust ing, the shaft must be tapped to remove it after the Next remove the front and rear belt pulleys, follow-

section on "Dismantling Engine". Undo the fourteen nuts and three bolts holding located by circlips, and have oil seals outside them. the chaincase cover-plate and pull the plate away from the case until it clears the end of the rear needle roller bearing, in the gearbox casing, with

drive shaft, when it can be allowed to hang down an oil seal. from the pedal shaft.

the sprocket assembly, then unscrew the freewheel blind housings. using tool 002643/F

cable from its lever, circlip which hold the shoe on its pivot, and remove case, it is retained by a circlip and has an O-ring the shoe. Next undo the nut holding the brake oil seal. lever to the camshaft, and push the shaft right out Re-assembly. The selector fork pivots on a curved from its housing.

Removing gearbox. Place a tray under the gearbox to catch the oil which will run out, then undo the facing up (the dimple takes the thrust of the selector five bolts with spring washers which hold the gear- lever), and fit the sliding dog to the fork, with the case. Tap the end of the rear axle with a hide mallet and support the gearbox as pointing up, and lower the box with fork assembly it comes free, turning it so that it is held open over the axle, turning this so that the splines en-

Dismantling gears. On the rear axle, the large pinion can be lifted off, below it is the sliding dog with a collar surrounded by the selector fork, and next to this is the spring which seats in a collar against the hub bearing. When the sliding dog is

Any work on the reduction gears (in the gearbox freed from its splines, the selector fork can be lifted

inner face of the bearing in the chaincase casting. Preliminary work. Place machine on stand (it is The drive shaft is located endwise in its bearing circlip has been removed.

Renewal of bearings. There are two ball bearings ing the instructions headed "Belt Drive" in the in the chain case, supporting the outer ends of the drive shaft and rear axle, and these bearings are The hub end of the rear axle runs in a large

The intermediate shaft and the inner end of the Unhook the jockey sprocket spring and remove drive shaft, run in small needle roller bearings in Extractors and fitting tools for all these bearings

Unbolt the rear wheel and disconnect the selector and oil seals are listed in the Workshop Service Rear brake. Unhook the shoe spring, remove the The selector fork spindle runs directly in the alloy

> spring-steel plate on a pin. Fit the plate concave side downwards, then assemble the fork with the dimple spring and seating collar. Lay hub on the bench, axle

(Below) Main engine components are seen here—on the right, the crankshaft is shown in the EXACT position for removal from or re-entry into the crankcase. each slider.

if so it may be left in position). Dismantling fork legs. Lift off the upper dust

covers, each has a chrome ring with a rubber washer the lower fork crown (brake - right, speedo-left) insert (in which the cover seats) at its lower end, Hold the assembly in position on the steering column above the lower fork crown. Slacken the clamp bolts in the lower fork crown washer and nut are put on, and then position the and slide each leg clear, this action may displace stanchions so that the chrome filler bolts can be

the rubber sealing ring at the top of each leg. (this may be stuck to the top of the spring); then of the drive cable. lift off the spring, and then remove the felt washer Refit the mudguard, and push the speedo gearand plain steel washer in the top recess of the sleeve box on to the wheel spindle with the felt washer

using tool 002667/E (C-spanner). The stanchion can bounce the handlebars up and down a few times now be withdrawn from the slider, bringing with it - this will settle the fork stanchions in the fork the sleeve nut and the two bushes. Renewal of parts. The parts most likely to require and the lower clamp bolts, in that order. 

rubber O-ring in an internal groove, and there is a to the operating lever.

gage. Fit the intermediate shaft, with a thrust washer a hide mallet to push the axle through the bearing. on each end, then fit the large pinion to the axle, with Fit the five bolts and tighten a little at a time

and diametrically, to pull the box up squarely to If the drive shaft has been removed, tool 002622/E, its seating. When all bolts are tight, turn the hub oil seal pilot guide, must be fitted on before the to check that the gears are meshing freely. Fill the gearbox with fresh SAE 90 oil using a shaft is pushed through the bearing - if this tool force-feed can — the filler plug, just below the axle, is not used, the shoulder on the shaft will displace is also the level plug.

Re-asembly of the remaining components is Now fit the gearbox assembly to the chain-case, turning the hub to mesh the gears as the case is straightforward, and special points have already been pushed home - the hub may require a few taps with noted in the section "Dismantling Engine".

#### TRANSMISSION

The design and working of the variable pulley slides on an oil-impregnated bronze bush which must (on engine shaft), rear pulley and automatic clutch never be washed in petrol or paraffin. This flange and starting clutch (on drive shaft) are similar to moves against a spring, which seats in a cup washer the same components used on the Ciao, but of course retained by a circlip. the dimensions are different on the Vespino.

Automatic clutch. Each of the three shoes has a Variable pulley. The working of this component small friction pad and presure spring in a transverse was described in Trader Service Sheet no. 4-3, blind hole in the shoe, exerting sideways pressure to dealing with the Ciao. Note especially that if disprevent rattle and jerky engagement. If the shoes mantled, the bronze bush for the movable flange is are removed (after detaching the three tension oil-impregnated and must never be washed in petrol springs) take care to stop the pads and springs jumping out.

Clutch carrier and rear pulley. The carrier runs Starting clutch. The two shoes have integral on two needle roller bearings, each with an oil seal, and Workshop Service Tools are listed to re- springs, and on top of them is a white nylon thrust move and replace these. The movable pulley flange washer with cutouts which register on the pivot pins.

# FRONT HUB AND BRAKE

This is of conventional design. The brake plate felt washer between it and the cone-locknut and a carries two shoes, and is locked against the offside thin plain washer outside it. Some of the components cone by a nut. On the nearside the speedometer (shoes, spindle, hub shell) are interchangeable with drive gearbox is a push fit on the spindle, there is the Ciao.

# TELESCOPIC FRONT FORKS

Each fork leg is based on a long tubular stanchion rubber ring on the stanchion, within the sleeve nut. ("guide tube" in the Parts List) which is held to The upper bearing has a lip, which is gripped the upper fork crown by a bolt which is also the when the sleeve nut is tightened. oil filler plug, and is held in the lower fork crown 
The lower bearing is retained by two circlips by a clamp bolt. Below the lower fork crown is a which seat in grooves in the stanchion - the top spring with dust cover, and the spring is compressed of the bearing is recessed so that it surrounds the by a slider with lugs to take the wheel spindle. Each upper circlip, and it is important that a new bearing slider works on white metal bushes and is retained is fitted the right way up. Above this lower bearing by a chromed sleeve nut. Each leg contains 120cc an O-ring is located in a third groove. of oil which lubricates the slider bushes and provides Re-assembly. On to each stanchion fit the lower two-way hydraulic damping. (See p.22 of the Parts bush (see para. above), then the O-ring, then slide on

front brake cable by removing the clamp bolt and with oil, insert into the slider, and tighten the sleeve plate, and pull cable free from the adjuster. Undo nut. the spindle nuts and remove the wheel. Place a box under the fuel tank to support the machine. each stanchion, fit the shouldered rubber washer to Unscrew the speedo gearbox from its cable. Place a tray under each leg and remove the drain each stanchion assembly in turn to the lower fork

bolts in the upper fork crown which secure the legs. assembly. On top of the lower crown fit on each Next undo the steering column nut (under the lower stanchion the spacer washer, chrome washer with rubfork crown), this has a shakeproof washer and an ber insert and the upper dust cover. inverted cup washer. The complete fork assembly can now be moved clear of the machine, but before top of each stanchion (around the threaded oil further work on them, remove the plain steel dust- filler hole) and use a smear of grease to stick the cover washer which protects the bottom steering plain steel dust-cover washer to the underside of head race (it may be stuck to the race with grease, the bottom head race.

From each leg, lift off the spacer collar and spring each stanchion. Now tighten the steering column nut,

of any oil not yet drained out. Dismantling fork sliders. Grip the wheel spindle and tighten the spindle nuts.

and O-rings. But if the forks have been neglected refit to the fork sliders. Remove the upper chrome and/or misused, other parts as well may require to filler bolts, and pour 120cc of oil into each leg -

the upper bush, the rubber washer and the sleeve Removing front wheel and mudguard. Disconnect nut with internal O-ring and seal. Smear the bushes

the top of each spring, and the spring cover. Fit plug in each slider. While the oil is draining, re- crown - the offside slider has a peg below the move the front mudguard, held by three bolts to mudguard fixings, for the brake plate. Pull each stanchion through the crown as far as is possible Removing fork assembly. Undo the two chrome and tighten the clamp bolts enough to hold the

Check that the rubber seal is positioned on the

Offer up the fork assembly to the head, threading the brake and speedo cables through the slots in bolt whilst the inverted cup washer, shakeproof threaded through the upper crown into the top of cover, inside which is a shouldered rubber washer and screw the speedo gearbox on to the lower end

behind it and a thin plain outside. Refit the wheel Now invert each leg over the oil tray, to get rid to the forks, making sure that the slot in the brake plate arm engages with the lug on the fork slider,

lug in the vice, and undo the chrome sleeve nuts Remove the box from under the fuel tank, and crowns. Then tighten the upper chrome filler bolts

see p. 31 of Users Handbook for recommended The sleeve nut contains a lipped oil seal and a makes and grades. Lastly, refit the front brake cable

#### HANDLEBARS AND STEERING HEAD The handlebars consist basically of a cast alloy two tubular extensions on which the control levers

shell providing mounting points for the headlamp and twist-grips are mounted. The shell encloses unit, lighting switch, speedometer head, and for completely all control cables and electrical wiring,

and is secured to an upward extension of the top under the fuel tank to support the machine. Unscrew fork crown by a transverse clamp bolt which threads the speedo gearbox from the drive cable. assembly are shown on p. 20 of the Parts List.

would provide access to the interior of the shell, the lower head bearing. and complete removal would not be necessary.

undoing the clamp bolts on the cam levers; next the through the slots on each side. choke, by undoing three screws holding the air When all cables are free, the crown and steering filter and then freeing the cable from the choke column bolt may be lifted away from the head. slide; lastly, the decompressor, by depressing the Steering head bearings. As noted earlier, these

lever on the cylinder head. Detach the lamp front, held by two screws, then tube, with a long spacer tube between them. They hind the reflector. Undo the screw holding the speedo the Workshop Service Tools listed. give slack in the drive cable and push this up through reverse order of dismantling. the steering head until the knurled nut below the Undo two screws holding the horn to the top follows.

fork crown, and disconnect the wires, which should be pushed free of the securing clip.

all wires from their terminals.

handlebar casting), which is the cable stop for the in the crown extension. throttle and selector controls. This gives enough Lower crown - speedo drive cable through the the twist-grip sleeves.

lever, a plain washer below, and right-hand lever, filler bolts followed by the clamp bolts. spring and plain washers above, a flat friction plate Now offer up the headlamp shell, feeding all from the levers.

levers to the main lever housings, then free the tighten the clamp bolt. nipples from the levers.

handlebar shell, then undo the clamp bolt completely and the levers, etc. refitted in the reverse order of (catching the square nut as it drops from its slot), and lift the shell. Hold it above the steering head lamp front. Electrical connections are given in the whilst the cables and wires are pulled one by one "Electrical" section. through the base of the shell, to allow it to be Lastly refit the front wheel and speedo gearbox, completely removed.

plates clamped by a shouldered bolt and nut.

spindle nuts and remove the wheel, placing a box cable.

into a captive square nut. All the components of the Undo the two chrome filler bolts in the top fork crown which hold the fork stanchions, then undo If work on the steering head bearings is necessary, the steering column nut (below the lower fork crown) the handlebar assembly must be completely removed; which has a shakeproof and an inverted cup washer this is a lengthy process because all control cables behind it. Slide the fork assembly downwards from and electrical wires must be disconnected, and this the machine, taking care to keep it upright so that is described below. But to replace a broken cable oil cannot run out of the fork legs, Remove the or electrical wire, removal of the headlamp unit plain dust-cover washer, which may be stuck to

Next, push the speedo cable down through its Dismantling process. Start by disconnecting the slot in the upward extension of the top fork crown. following cables: first, front and rear brake, by Life the crown, and pull out the cables one by one

are non-adjustable, and are pressed into the head

disconnect the wires from the junction block be- can be removed, and new parts refitted, by using head to the casting, then slacken the nearside front Re-assembly. It is necessary to work carefully and wheel spindle nut and turn the speedo gearbox to methodically, fitting the parts and cables, etc., in the

It is important that the cables and wiring harness speedo head can be undone, and lift out the speedo are passed correctly through the slots in the top and lower fork crowns, and this is best done as

Top crown - hold it above the steering head and through the left slot, fit the rear brake, choke and Remove the light switch by first undoing the gear selector cables, through the right slot fit the screw holding the moving toggle, this allows the front brake, decompressor and throttle cables and switch case to be lifted off, and then undo one the wiring harness. Then lower the crown into posi screw in the centre of the wiring block. Disconnect tion on the head, pulling the cables through the slots. Drop in the steering column bolt, and then Undo two bolts holding the bracket (inside the push the speedo drive cable up through the slot

slack in the cables for the nipples to be freed from left slot, front brake cable through the right. Offer up the crown and fork assembly to the head, fit Slacken the locknuts and unscrew the pivot-pins the plain dust-cover washer above the crown, the of the two brake levers, then withdraw the levers inverted cup washer and shakeproof washer and carefully from their housings, catching the friction nut below, and tighten the nut. Fit the chrome filler washers which surround the pivot - these are: left- bolt through the crown into the stanchions, slacken hand lever, a plain and spring washer above the the clamp bolts in the lower crown, then tighten the

for the throttle twist-grip below. Free the nipples the cables and wires up through so that they project vertically through the speedo head apertures. Lower Remove the screw holding choke and decompressor the shell into position, insert the square nut and

The cables and wires can now be fitted one by one Now pull all cables and wires carefully into the into their correct positions to reach their controls, dismantling. The last part to be refitted is the head-

and re-connect the front and rear brake cables, the Dismantling head bearings. Undo the wheel choke cable and air filter, and the decompressor

## ELECTRICAL

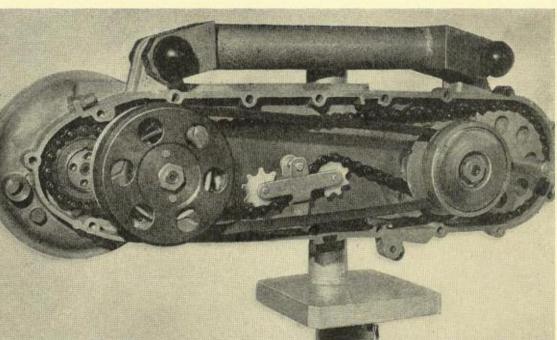
Essential information and a wiring diagram/layout terminal numbers with the numbers used as a key are given on pp. 15-16 of the Users Handbook, and to wiring colours in the wiring diagram referred illustrated instructions for setting the contact breaker to above).

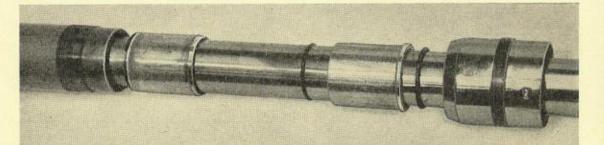
gap will be found on pp. 24-25 of the same publica- Headlamp connections: Main beam - mauve or purple, dipped beam - brown, earth - white. All the component parts of the lamps, switch and Horn connections: Blue to one terminal, two yelflywheel generator are available separately for re- lows to the other. The rear light wire is red.

Junction block (on engine) connections: Black from newal, and are shown on p. 28 of the Parts List. harness to black from HT coil, yellow from harness Handlebar switch connections: Terminal no. 1 red, no. 3 - yellow, no. 4 - blue, no. 6 - brown, to yellow from lighting coil, white to earth under and no. 7 - mauve or purple. (Do not confuse these clip bolt.

CONTROL CABLES The six control cables are illustrated on p. 26 and the outers share a common part number, to be of the Parts List, with insets showing the types ordered by length. of nipple used. It will be seen that all the cables A table showing correct lengths in inches of all have soldered nipples at each end except the two inners and outers is therefore printed below, to help brake cables which are attached to the brake cam dealers who may have to repair or replace broken

levers by the usual Vespa link, consisting of two cables: The part numbers are listed on p. 27 of the Parts Choke List, and it will be seen that at time of writing the throtle, choke, decompressor and selector cables are Front brake . listed with complete cables and inners but not as outers, also that complete brake cables are not listed Rear brake





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