BULTACO

OWNER'S MANUAL

instrucciones

SHERPA T

250

350

This Owner's Manual covers the following models:

SHERPA T 250 Serial 124

SHERPA T 350 Serial 125

Compañía Española de Motores, S. A. (CEMOTO)

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Sincerely

1974 SHERPA T

Scottish Six Days Trials, European Championships, Championships in England, Spain, France, USA, etc... they speak for themselves of a machine.

But Bultaco demands much from the Sherpa T before offering it to the trials enthusiast. In this model you will appreciate the light and efficient brakes, both when wet and dry, the precise steering, the light and rigid frame, and a smooth and silent engine with a wide power band.

Two words speak for the Sherpa T, «The satisfaction of the exigent».

II. THE LAYOUT

This chapter describes the location, use and minor adjustement of the Sherpa T's operating controls.

A. THE IDENTIFICATION NUMBERS

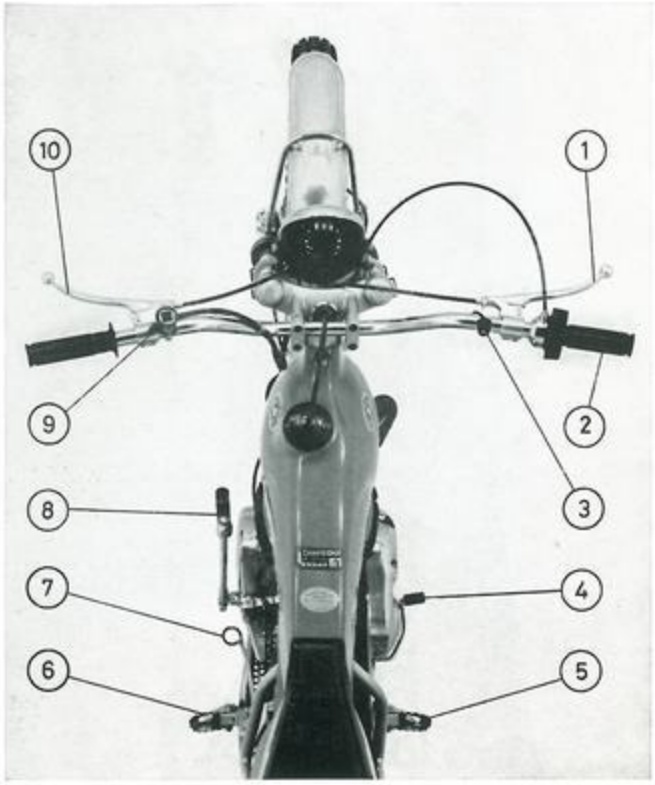
The engine serial-number is stamped on top of the engine-cases, near the rear engine-mount. The frame number is stamped on the steering tube of the frame, just in front of the petrol-tank.

B. OPERATING CONTROLS

When seated astride the machine in the normal riding position, please note the location of the (fig. 1):

1. Front brake lever.
2. Twistgrip.
3. Kill button.
4. Gearshift Pedal.
5. Foot-rest right side.
6. Foot-rest left side.
7. Rear Brake Pedal.
8. Kickstarter.
9. Switchbox.
10. Clutch lever

Fig. 1



C. THE HANDLEBARS

The position of the handlebars is a very individual preference. Each rider should adjust the handlebars so that he may sit as comfortably as possible. More important yet, however, is to ensure that the handlebars are adjusted to

Fig. 2

Fig. 2 bis

Martin Lampkin in 10th SAN ANTONIO TRIAL

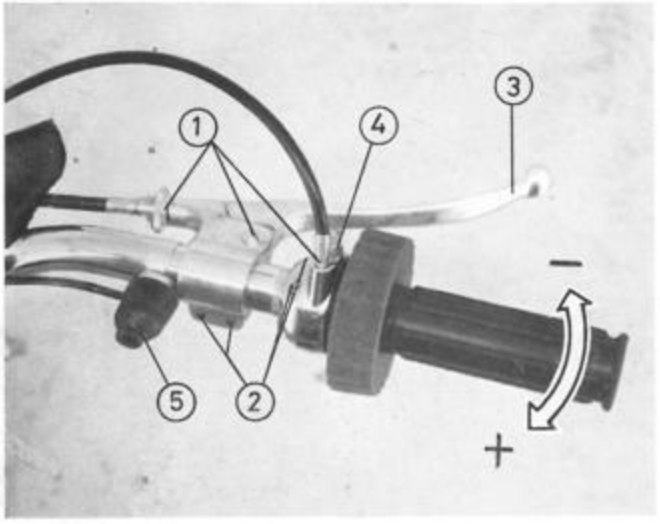


Fig. 3

2. Fixing screws. — 3. The front brake lever. — 4. Adjusting hand-pressure slotted screw with a locknut. — 5. Kill button.

permit confortable and sure control of the motorcycle when standing on the foot pegs, as this is the best position for successfully negotiating the though sections.

To adjust the handlebar position, loosen the four screws with 5 mm. «Allen» wrench. Position the handlebars to your satisfaction, and tighten the nuts.

D. THE TWISTGRIP

The right handlebar grip is the throttle, or twistgrip. Two screw adjust the twistgrip to handlebars. If you wish to change the position of the twistgrip, loosen the slotted screw clockwise (cw) with a screwdriver.

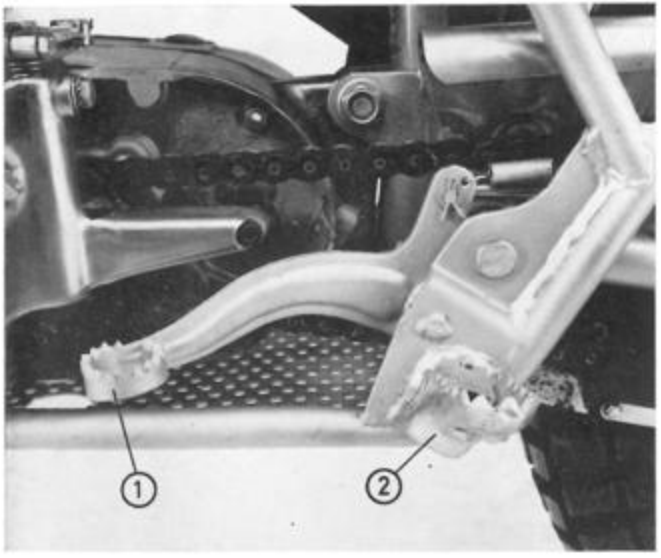


Fig. 4

1. Rear Brake Pedal. — 2. Folding Foot-rest.

E. THE CLUTCH LEVER

The lever next to the left handlebar-grip operates the clutch. You should position the clutch lever in the following manner. Sit on saddle and extend the fingers of your left hand. Curl your fingers over the clutch lever. Your hand wrist should be in a straight line with your forearm. If the are not in a straight line, reposition the handlebar lever.

F. THE FRONT BRAKE LEVER

The handlebar lever next to the twistgrip operates the front brake. Position the front brake lever as the clutch lever

G. THE REAR BRAKE PEDAL

The rear brake pedal is located in front of the footpeg. The travel of the pedal is adjustable.

H. THE GAS-TAP

The gas-tap is located ad the bottom of the petrol-tank on the left side of the motorcycle. It controls the flow of fuel to the carbureter.

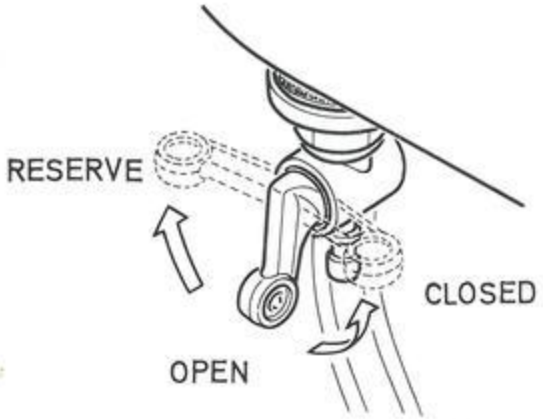
When the lever is pointing straight down, the gas is turned on, and you will be able to use all but 1/4 gallon of the fuel in the 1 Imp. gallon petrol-tank.

When the lever is pointing toward the down of the motorcycle, and you can see the letter «R» you will be able to use all of the in the petrol-tank.

You should normally ride with the gas-tap lever pointing front. Then, should you run low on fuel, turn the gas-tap lever to «R», and stop at the next filling station for fuel.

Always turn the gas-tap lever to the «C» position whenever you stop the engine.

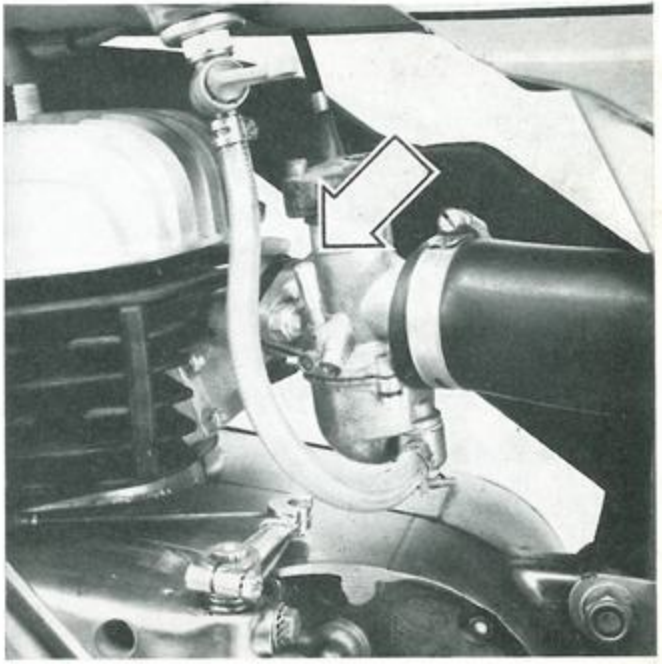
Fig. 5



J. THE CARBURETER TICKLER

The tickler is a short vertical rod on the left side of the carbureter. After turning on the gas-tap, depress the tickler for several seconds, until the first few drops of fuel overflow the float bowl. This refills the float bowl so that you can start the engine. You need to use the ticker if the engine is still warm from previous running.

Fig. 6



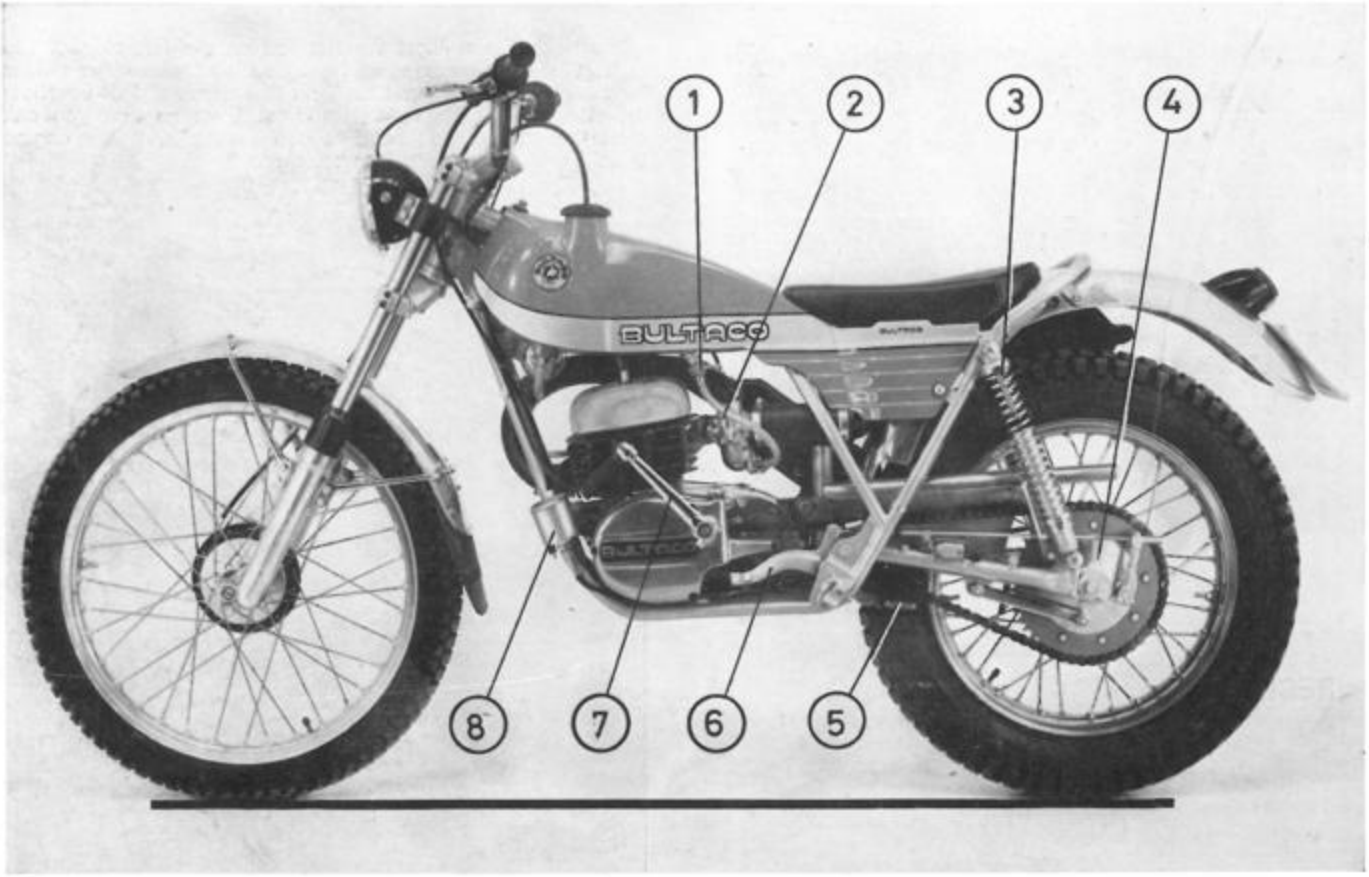


Fig. 7

1. Gas-Tap. — 2. Carbureter Tickler. — 3. Rear Shock Absorbers. — 4. Rear Brake. — 5. Chain Tensioner. — 6. Rear Brake Pedal. 7. Kickstarter. — 8. Speedometer.

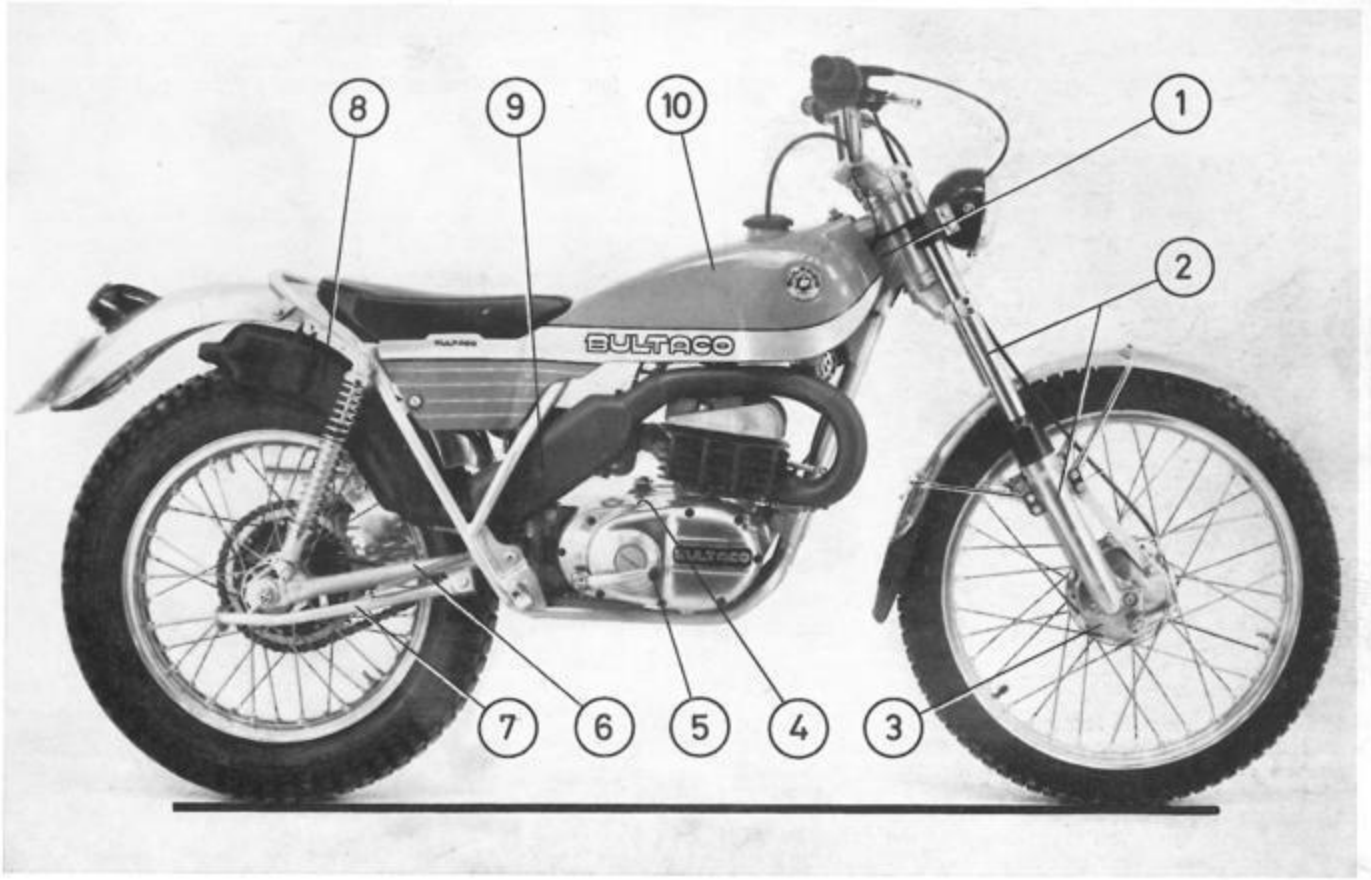
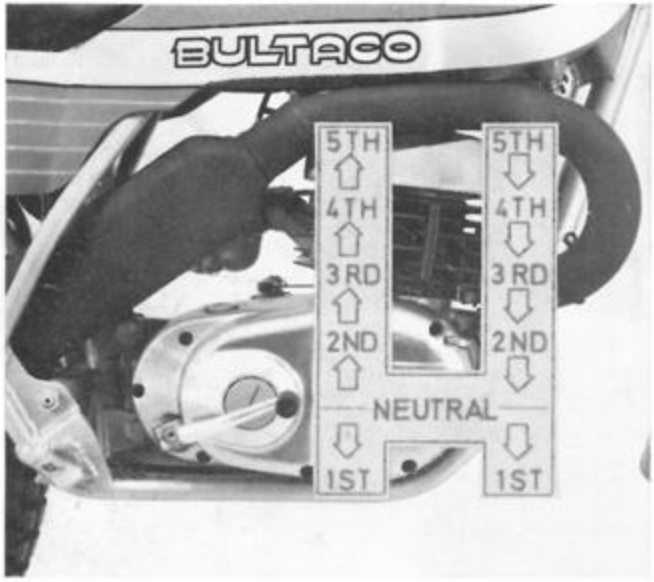


Fig. 8

1. Frame Number. — 2. Front Forks. — 3. Front Brake. — 4. Engine Number. — 5. Gearshift Pedal. — 6. Swinging Arm. — 7. Sidestand. — 8. Silencer Insert. — 9. Silencer. — 10. Gas-Tank & Seat.

K. THE GEARSHIFT PEDAL

Fig. 9



The gearshift pedal is located in front of the right footpeg The Sherpa T has five forward speeds, and neutral. The gearshift can change only to the next highest or next lowest gear at one time. To shift to the next highest gear, you push up on the gearshift pedal unti it stops. To shift to the next lowest gear, you press down on the gearshift pedal until it stops. From first gear, you can only shift up. From fifth gear, you can only shift down to fourth. Neutral is located between first gear and second gear. Gearshifting will be described in more detail in a later chapter.

L. THE KICK-STARTER

The kick-starter is atached to the left side of the engine. It operates in a clockwise direction. To use the kick-starter. fold out the footbar that normally point toward the front of the engine.

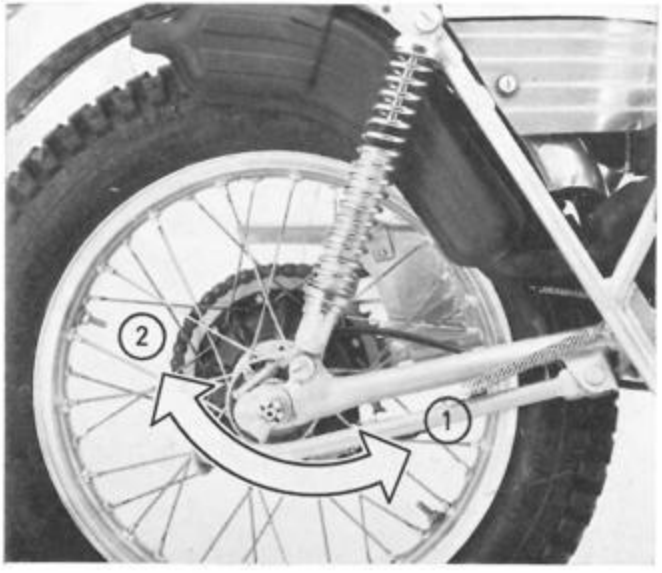
Fig. 10

M. THE REAR SHOCK-ABSORBERS

The rear shock-absorbers are adjustable. At the bottom of the shock, a peg rides in one of three notches on a rotatable ring. The first, or highest hotch should be used by a lighweight rider on good pavement. For heavier riders, or rough terrain, use lower notches on the ring.

You can very the setting of the shock-absorber by lifting up on the coil spring with your left hand, and rotating the notcher ring with your right hand. Always adjust both shocks no the same setting.

Fig. 11

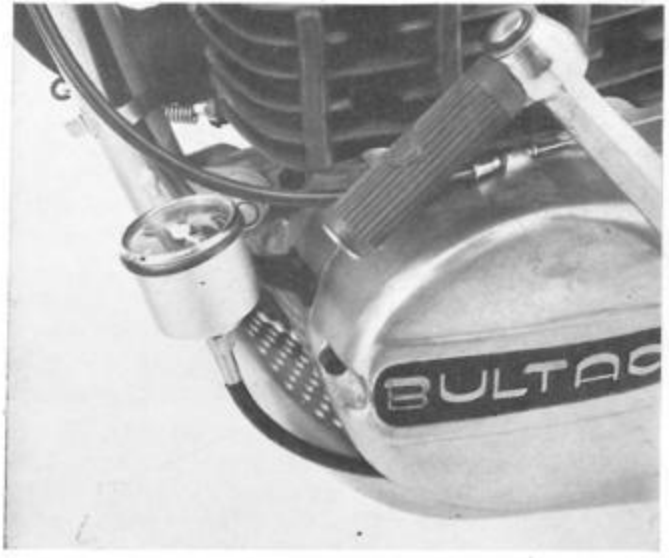


1. Soft. — 2. Firm.

N. THE SPEEDOMETER

The Sherpa T is equipped with a speedometer and an odometer.. Both are calibrated in miles.

Fig. 12



P. THE SIDESTAND

The sidestand is located on the lower right hand side of the rear frame tube.

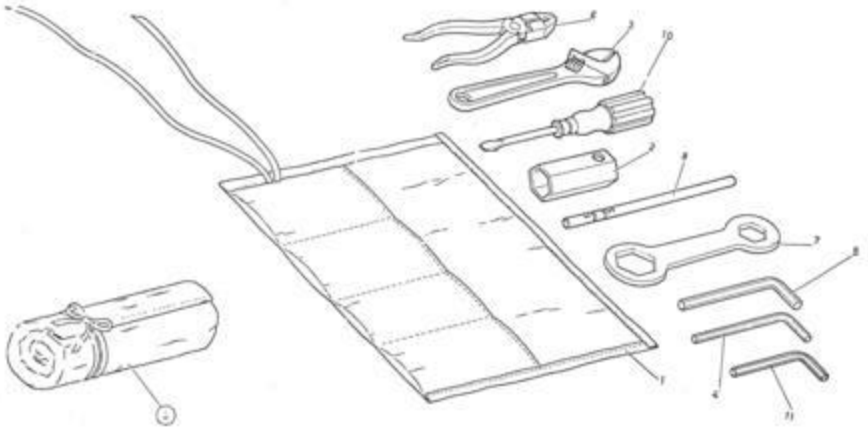
Remember the sidestand is very light. It was made to support motorcycle only, **without** rider.

Q. THE TOOL KIT

The motorcycle is provided with a compact set of tools (9). The Tool Kit is stored in a waist bag wich is supplied with the motorcycle.

The Kit consist of pliers (6), and adjustable wrench (3), a screwdriver (10), sparkplug wrench (2), a combination dipstick-handle (8), a 22/32 mm. wrench (7), a 5 mm. Allen wrench (4), a 6 mm. wrench (5) and a 4 mm. wrench (11).

Fig. 12 bis



For performing the normal maintenance, e recommend that you buy open-end metric-wrenches in 6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 19 and 22 mm. sizes. If you have a 3/8" drive socket-wrench, you may also wish to buy metric sockets in 10, 14, and 19 mm. sizes. The 19 mm. socket is specially handdy for tigtening engine-mount nuts and bolts.

If you wish to set the ignition timing, you will need the Bultaco timing light, vernier gauge, and metric feeler gauge.

If you are an experienced mechanic, and you wish to be able to perform any maintenance that your motorcycle might require through the years, your Bultaco dealer can obtain for you the complete range of Bultaco special tools, and the service manual.

III. PREPARATION

This chapter tells how to mix the fuel, and how to make a few simples checks before taking your first ride on the Sherpa T.

A. FUEL MIXTURES

The Sherpa T gest its engine lubrication from oil mixed the gasoline. Never run the motorcycle on straight gasoline, even for short distances. Always use high-test gasoline, of at least 90 octane. Do not use additives such as nitro, benzene, acetone, etc.

The are two general types of oil that you can mix with the gasoline: regular motor oil and two-Cycle oil. It is better not to swith around among the various types, you should select one brand of oil end continue to use it.

1. **Regular Motor Oil, SAE 40.** This is the standard type of oil used in automobiles. You can buy it a filling stations. Mix this oil with the gasoline at 5 %, or 20 parts of gasoline to 1 part of oil. It works out to 6 1/2 ounces, or 200 cc. of oil per gallon of gas.

Pour the oil and the gasoline into a clean five-gallon gas-can, and shake the can to slosh the liquids for several minutes, until they are mixed thoroughly.

If you are using a mixture of regular motor oil and gasoline in your petrol-tank, and you have not ridden the machine during the preceeding week, wigle the handlebars from side to side for a few minutes, to re-mitx the fuel before starting the engine.

2. **Two-Cycle Oil.** Two-cycle oil is made for use in lawn-mowers, outboard motors, etc. It is available at many filling stations, harware stores, and sporting-goods stores. It works out to 5 ounces, or 150 cc. of oil per gallon of gas.

You should use a gas-can for mixing the two-cycle oil and the gasoline. Once mixed this type of oil is not likely to settle out in your petrol-tank.

DO NOT GUESS AT THE AMOUNT OF OIL TO USE. Do not make rough estimates, using solft-drink botties to measure out the oil. Buy a graduated cylinder, or a measuring-cup, and use it to get the right amount o foir into the gasoline.

3. **Fuel Mixture Chart.** The Sherpa T holds 1. Imp. gallon of fuel (4.5 lts.). Use the chart to determine how much oil to mix with the gasoline.

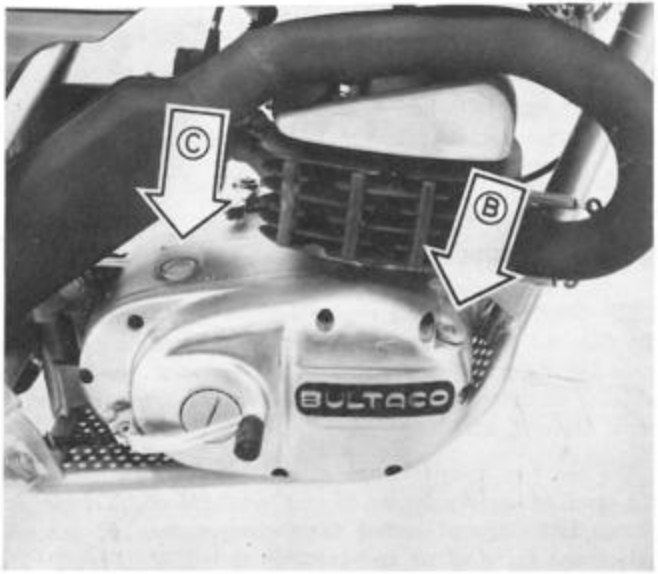
U.S. Gallons of Gasoline	Regular Motor Oil SAE 40 at 5 %		Regular Two-Cycle Oil at 4 %	
	Oz	cc	Oz	cc
.1	.6	18	.5	15
.2	1.3	39	1.1	33
.3	1.9	57	1.6	48
.4	2.6	78	2.1	63
.5	3.2	96	2.6	78
.6	3.9	117	3.2	96
.7	4.5	135	3.7	111
.8	5.2	156	4.2	126
.9	5.8	174	4.8	144
1.0	6.4	192	5.3	159
1.1	7.0	210	5.8	174
1.2	7.7	231	6.4	192
1.3	8.3	249	6.9	207
1.4	9.0	270	7.4	222
1.5	9.6	288	7.9	237
1.6	10.3	309	8.5	255
1.7	10.9	327	9.0	270
1.8	11.6	348	9.5	285
1.9	12.2	366	10.6	303
2.0	12.8	384	11.1	318
2.1	13.5	405		333
2.2	14.1	423	11.6	348
2.3	14.8	444	12.1	363
2.4	15.4	462	12.6	378
2.5	16.0	480	13.1	393
2.6	16.7	501	13.7	411
2.7	17.3	519	14.2	426
2.8	17.9	537	14.7	441

B. PRIMARY CASE

The primary case, on the right side of the engine houses the clutch and primary-drive chain. You should drain the lubricant from the primary case and refill it.

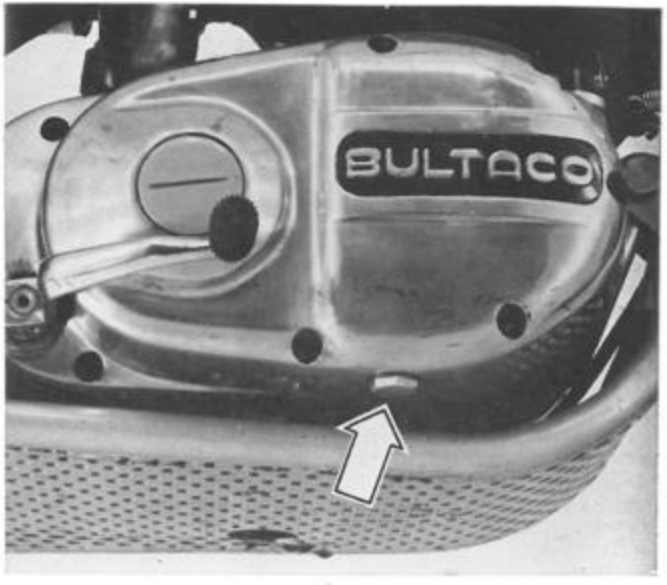
The primary-case drain-plug is located at the bottom of the primary case. With the motorcycle on its stand position a pan beneath the drain plug. Remove the plug with a 10 mm. wrench. Allow the lubricant to drain into the pan. When the primary case is empty, replace the drain plug and tighten it well.

Fig. 13



The primary-case filler-plug is located atop the primary case. Remove the filler plug with a screwdriver. Using a funnel or a graduated cylinder, pour in 250 cc. of SAE 30 motor oil. Replace the filler plug, and wipe away any spilled oil. Do not overtighten the filler plug, because its gasket is made of soft rubber.

Fig. 14

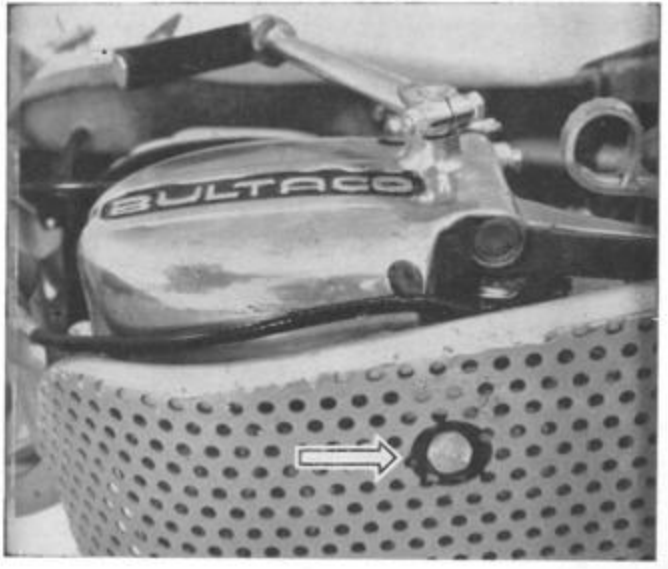


C. GEARBOX

The gearbox is located inside the engine cases behind the engine proper. The gearbox should contain 600 cc. of SAE 90 motorcycle-gearbox lubricant or SAE 90 automobile hypoid-lubricant. You should check the level of the lubricant in the gearbox before taking your first ride.

The gearbox filler-plug is located on top the enginecases, near the carbureter. Remove the filler plug with a coin or a stub scredriver. If necessary, add lubricant to bring the lubricant level up to the groove. Replace the filler plug.

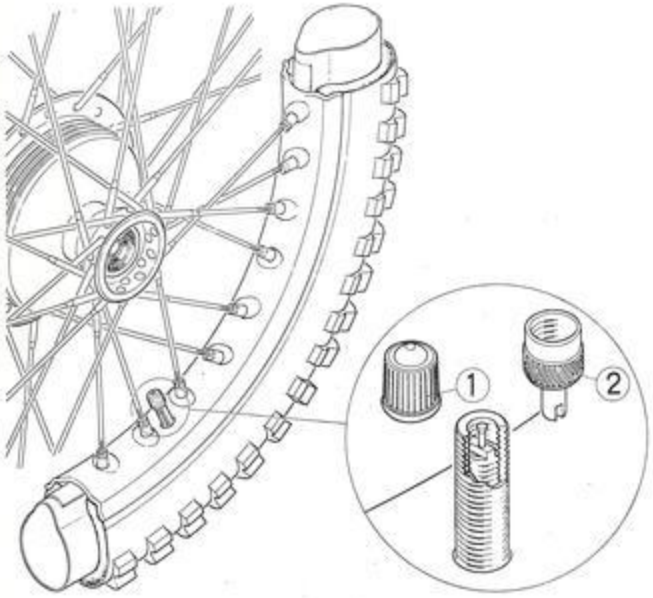
Fig. 15



D. TYRE PRESSURES

Tyre pressures will affect the handling of any motorcycle. Since good handling is one of the Sherpa T's outstanding res, you should make certain that the tyres are inflated properly. Use valve caps on the valve stems. Check the tyre pressures frequently, with a good-quality pressure-gauge.

Fig. 16



1. Plastic cap. — 2. Special cap with key.

SUGGESTED TYRE PRESSURES FOR DIFFERENT TERRAIN

TYRE PRESSURE	FRON T	REAR
FOR TRIALS	5 lbs/sq"	4 lbs/sq"
FOR TRAILS	8 »	6 »
FOR PAVEMENT	14 »	12 »

E. NUTS & BOLTS

Fit the 22 mm. wrench to the front-axle nut, and fit the dipstick in the hole drilled in the other end of the axle. Check to make certain that the front axle nut it tight. In the same manner check the rear axle nut.

Check the handlebars for tightness. Test the handlebar control the make certain that their mounts are tight. The controls themselves should have some play on their mounts.

Check the other nuts and bolts for tightness. Do not tighten the cylinder-head nuts or the adjusting-screws on the carbureter.

Note: If you are a person of unusual strengh, do not enter into a contests of wills with the nuts and bolts on the motorcycle. The nuts and bolts are made of steel suitable for the purpose, but nuts and bolts do not have un limited strength. Use discretion when tightening them.

IV. RIDING

This chapter tells about the running-in period. It also tells how to start the engine, how to put the motorcycle in motion, how to shift gears, and how to stop.

Il you are not experienced in trail riding, get an experienced trails rider to show you how to get the most out of your Sherpa T.

A. RUNNING-SPEEDS

The running-in period consist of the first 900 miles of operation. During the run-in period, do not exceed the speeds listed below. Afterwards, increase your speeds progressively.

	1st gear	2nd	3rd	4th	5th
1. First 300 Miles.	10 mph	14 mph	18 mph	29 mph	40 mph
2. Next 600 Miles.	13 mph	17 mph	21 mph	38 mph	49 mph

B. STARTING THE ENGINE

Before starting the engine in the morning, note the following instructions:

1st Pull the clutch lever to the end.

2nd Move the kickstarter crank three of four times.

3rd Leave the clutch lever at its normal position, and start the engine normally. Starting the engine and engaging 1st gear should be done without violence.

Under normal conditions the engine should be started in the following manner:

1. Chech fuel lever.

2. Turn the gas-tap on with the lever pointing straight down.

3. Tickle the carbureter, until a few drops of fuel overflow the float bowl.

4. Put the gearshift lever in neutral, beetween 1st gear and 2nd gear.

5. Hold the motorcycle in a upright position. Rotate the twistgrip about 1/4 of its travel, and hold it there.

6. Place your right foot on the kickstarter foot-bar. Kick downward sharply. When your foot strikes the footpeg. hold the kickstarter there until you are certain that the engine is, or is not going to fire. If the engine does not start on the first kick, allow the kickstarter to return to its normal position, and kick again.

7. When the engine is running, use enough throttle to keep it running. Do not rev the engine hard however when it is cold or when the gearbox is in neutral.

C. STARTING OFF

With the engine running sit the saddle of the Sherpa T. Place your right foot, on the footpeg. With your left hand pull the clutch lever to the handlebar, and hold it there. With your right foot, press down on the gearshift lever to engage first gear.

Open your left hand slowly and smoothly to let out the clutch. As the clutch begins to engage, freed more throttle to avoid stalling the engine.

When the motorcycle is moving at several miles-per-hour, put both feet on the footpegs, and steer with the handlebars and your body weight. At speeds above 10 mph you will steer primarily with your body weight, leaning the machine toward the direction you wish to take.

D. BRAKING

To stop the machine, pull the clutch and apply both brakes gently. By using the brakes gently for a while, you will run them in properly, and you will become familiar with their operation.

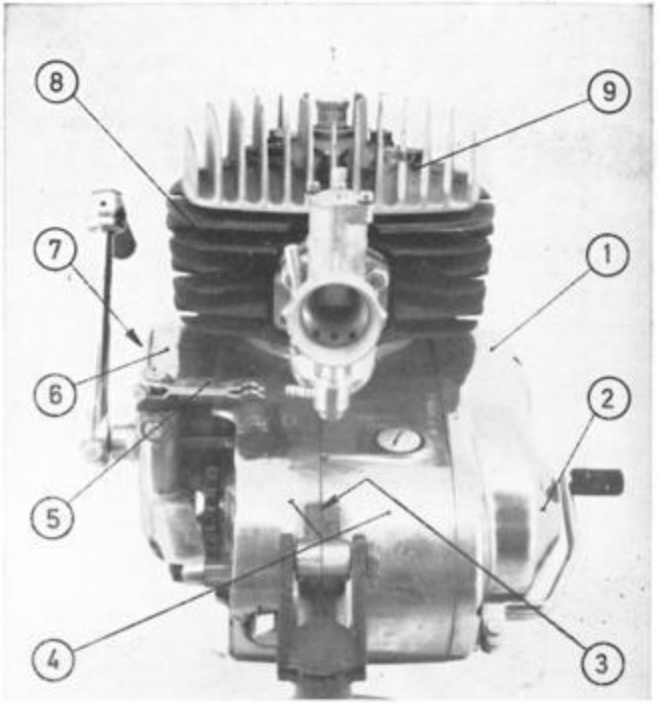
On dirt, the rear brake will slow you the best; use the front brake sparingly. Stooping or dirt takes longer tham stoopping on pavement.

Never use either brake hard enough to lock up the wheel.

V. MAJOR COMPONENTS OF THE MACHINE

This chapter gives a brief description of the major components of the Sherpa T. Later chapters give detailer instructions for lubrication and maintenance of the components.

Fig. 17

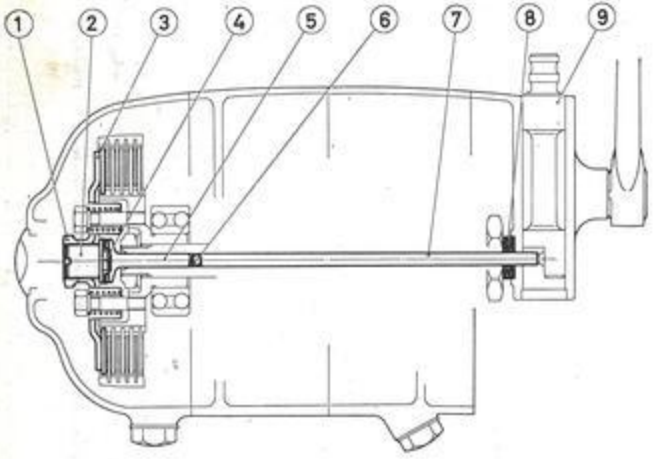


1. Primary Case. — 2. Clutch. — 3. Gearbox. — 4. Engine Cases. — 5. Clutch Linkage. — 6. Magneto Case. — 7. Magneto Flywheel. — 8. Cylinder. — 9. Cylinder-head.

The Sherpa T 250/350 has a single-cylinder, two-cycle engine, with a displacement of 244.29/326.03 cc.; a bore of 72/83.2 mm and a stroke of 60 mm.

The great advantage of the two-cycle engine is that it is very, very simple after the manufacturer has figured out the complicated port-designs, cylinder head shapes, piston and rings desings, and material-specifications to build an engine that is powerful as well as reliable. There are few moving parts, because the engine has no valves or valve-train components. The Sherpa T engine is tuned to deliver a great deal of power at low engine speeds, for good performance on difficult terrain.

Fig. 18



1. Clutch adjusting screw nut. — 2. Clutch rod adjusting screw. — 3. Clutch plate and disc. — 4. Ball-race. — 5. Clutch rod elongation. — 6. Steel-ball. — 7. Clutch rod. — 8. Protection washer. — 9. Clutch operating shaft assembly.

Barring unusual circumstances, the Sherpa T engine will give troubefree operation if the ignition-timing is correctly adjusted; a sparkplug of the right heat-range is used; and of the carbureter is properly adjusted for the climatic conditions in your region. If you will work with your dealer to see that these requirement are satisfied, you will recelve maximum pleasure from riding your Sherpa T.

B. THE CLUTCH

The clutch cable rotates a shaft with lever situated on the left side of the engine. The shaft with lever pushes against a long rod. On the other of the engine, the rod presses against the outer clutch-plate, allowing one set of clutch plates to disengage thmselves from the other set of clutch plates. This disconnects the power train between the engine and the gearbox.

C. THE FRAME

The Sherpa T single-loop frame was specially designed for the Sherpa T. It combines lighness with rigidity. Each frame is handligned to provide precise steering. The frame is welded, because we feel that this is the strongest, safest way to make frames.

D. THE GEARBOX

The Sherpa T has a five-speed constant-mesh gearbox. Because the gears are continually meshed shifting is smooth and fast. A new drum-tyre selector replaces the traditional camplate. This new shifting-drum is much more rugged than a camplate.

The gearbox is very robust and has been tested in numerous trials with very satisfactory results. The ratios are matched to the power curve of the engine. First gear is very low; second and third are also low. Fourth is spaced out o fit. Fifth is way up there, for fast highway riding. The gearing is very good for both on and off the road riding.

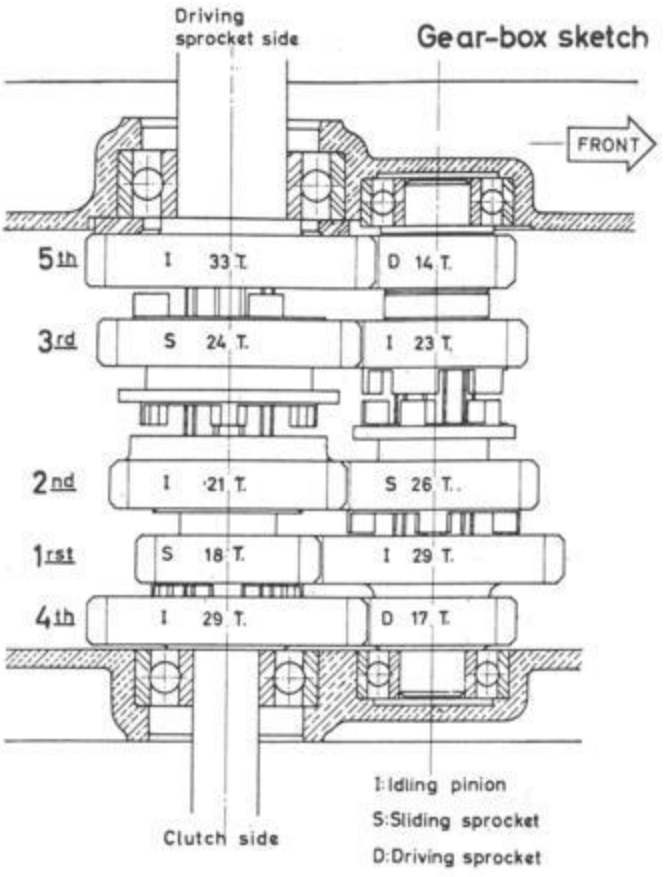


Fig. 19

E. THE STEERING AND SUSPENSION

The angle at which the front forks are attached to the frame determines, largely, whether the motorcycle will steer

Fig. 20

1. The drain screw. — 2. The filler plug.

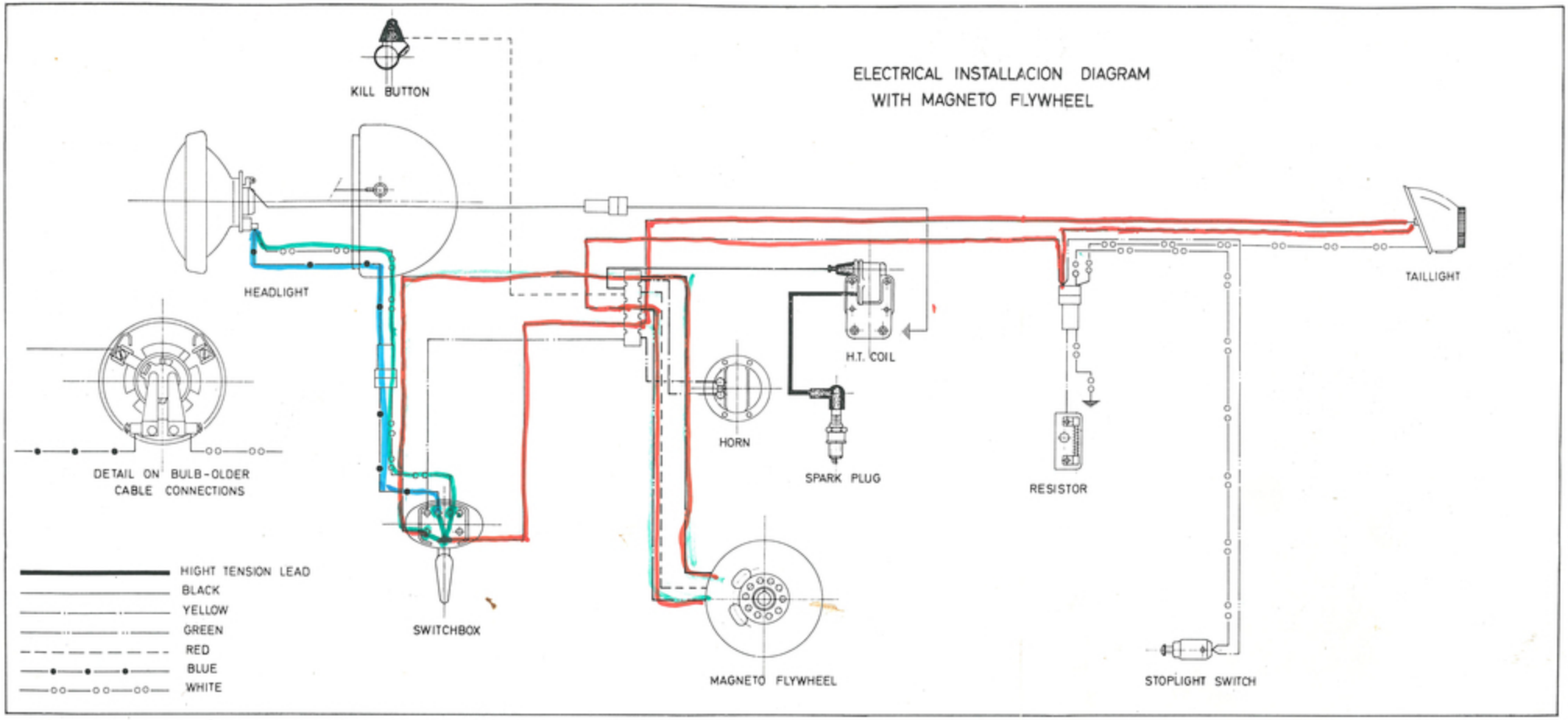

ELECTRICAL INSTALLACION DIAGRAM
WITH MAGNETO FLYWHEEL
KILL BUTTON
HEADLIGHT
TAILLIGHT
H.T. COIL
HORN
SPARK PLUG
RESISTOR
DETAIL ON BULB-OLDER
CABLE CONNECTIONS
SWITCHBOX
MAGNETO FLYWHEEL
STOPLIGHT SWITCH
HIGHT TENSION LEAD
BLACK
YELLOW
GREEN
RED
BLUE
WHITE

Fig. 21 bis

quickly, slowly, or even sloggishy. The Alpina fork-angle is good for all-round use. The steering is stable enough for fast riding on dirt roads and high-ways.

The front forks are of telescopic-hydraulic construction. They provide 6 1/2" of travel. The three-way adjustable rear shocks provide 3-15/16" of travel. The Sherpa T steers a path acvross tricky obstacles.

F. THE WHEELS AND BRAKES

The wheel hubs are machined from light alloy, for minimum unsprung weight. The light-alloy rims are the strongest rims available on the market. The machine is fitted with internal-expanding, leading-shoe brakes.

G. ELECTRICS

The Sherpa T does not require a battery. A flywheel on the left side of the engine contains cast-in magnets.

The ignition coil, located just below the magneto flywheel, generates current to operate the sparkplug. Current flows from the ignition coil to the contact-breaker points, then to the high-tension coil, and finayll to the sparkplug.

The lighting coil, located next to the ignition coill, generates AC current to power the 6-volt-headlight and the tail light of the optional electrical installation.

1. Lights for Electrical Installation

a) **The Switchbox.**

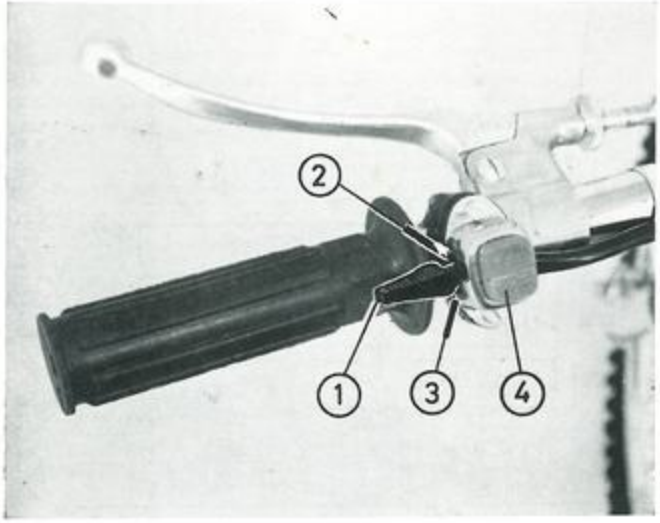
The switchbox shold be mounted on the left side handlebar. Place the switchbox so that it can be reacher quiskly und easily with your left hand. The illustration shows how to use the switchbox.

b) **The Headlight.**

The headlight has a bayonet bulb 35/35 W-6V. To adjust the headlight beam follow these instructions:

At night, on flat ground or pavement, position the motorcycle so that it is perpendicular to a wall 30 feet away measure the distance), with the sidestand retracted, start the engine, and turn on the low headlight-beam. The beam

Fig. 21

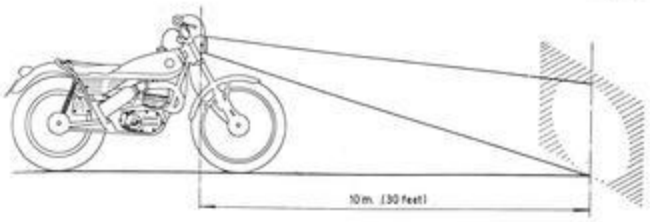


1. Lights off. — 2 and 3. Lights on. — 4. Horn button.

is oval, and the bottom of the beam should just touch the bottom of the wall. If the bottom of the beam is too high, or too low, you should reposition the headlight unit.

To adjust the position of the headlight unit, loosen the two 14 mm mounting-bolts. Tilt the headlight unit up or down until the bottom of the beam just touches the base of the wall. Then tigthen the mounting bolts.

Fig. 22



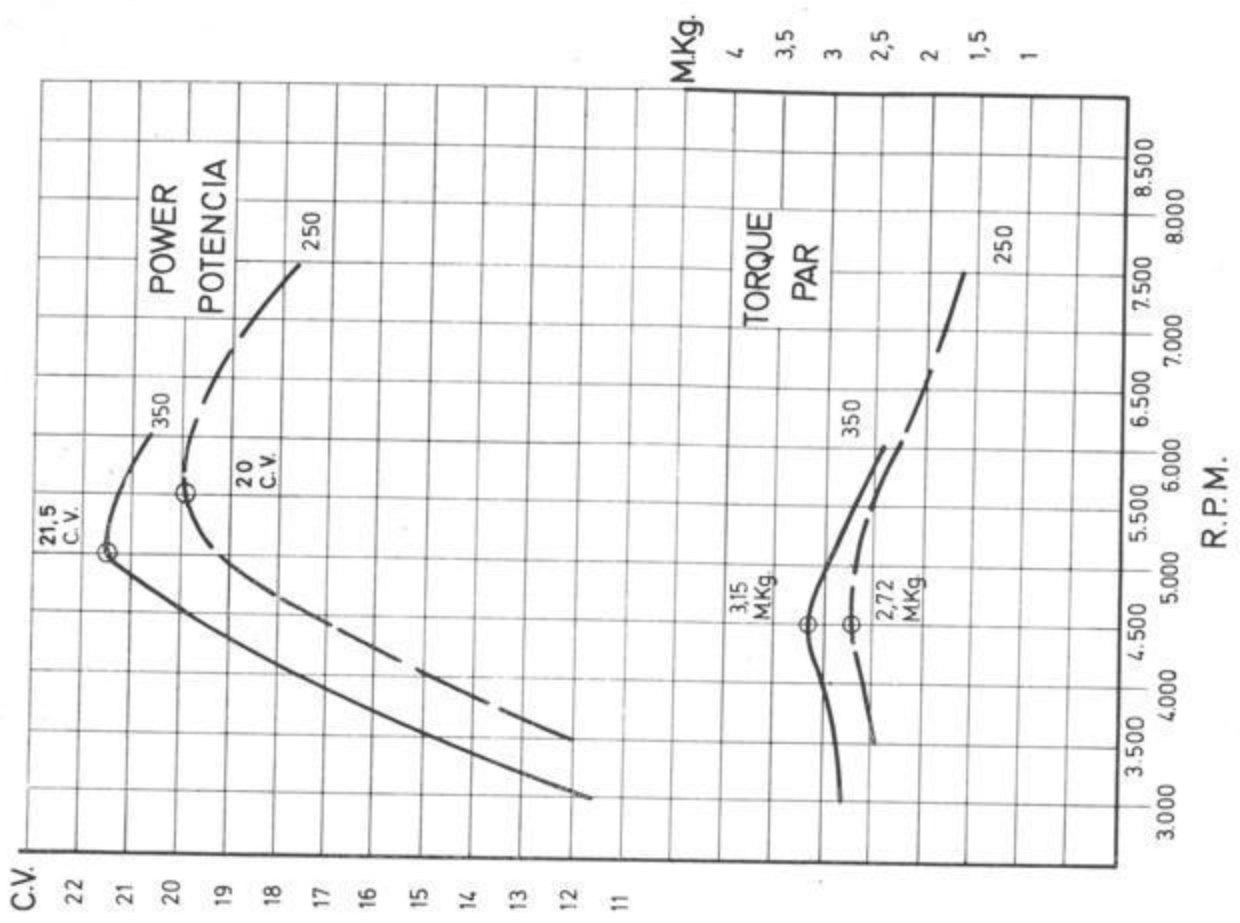
To change the headlight bulb, remove the screw bene the headlight rim. Remove the rim and headlight assembly from the headlight unit. Rotate the bulb-holder and remove it from the hadlight assembly. Remove the bulb and install a new one. Reassemble the headlight unit in the reverse order.

c) The Taillight.

The Tail has a two bulbs. For taillight has a dia. 10 mm × lenght 38 mm 4.5 w/6 v. ulb. For stoplight has a dia. 22 mm 18 w/12 v. bulb.

To change the light bulbs follow these instructions. Rotate the taillight lens ccw and remove it from thhe tail light assembly. With your fingers, slightly spread, the two copper bulb holdres for remove the taillight or press and rotate ccw for remove the staplight. Replace its with a new one. Replace the tail light lens.

VI. TORQUE AND ROWER CURVE



LUBRICATION AND MAINTENANCE

VII. SCHEDULED LUBRICATION

The Sherpa T does not reuire much lubrication however, the required lubrication should be provided most of it you can do yourself.

A. LUBRICATION BEFORE AND AFTER EACH EVENT

1, **Rear Chain.** Use a motorcycle-chain lubricant, available at motorcycle shops. We recomend a penetrating lube that evaporates quickly, leaving a film of heavy grease inside the chain rollers. To lubricate the rear chain, prop the motorcycle so that the rear wheel is off the ground. Apply the lubricant to the top side of the lower chain-run, pust a head of the rear sprocket.

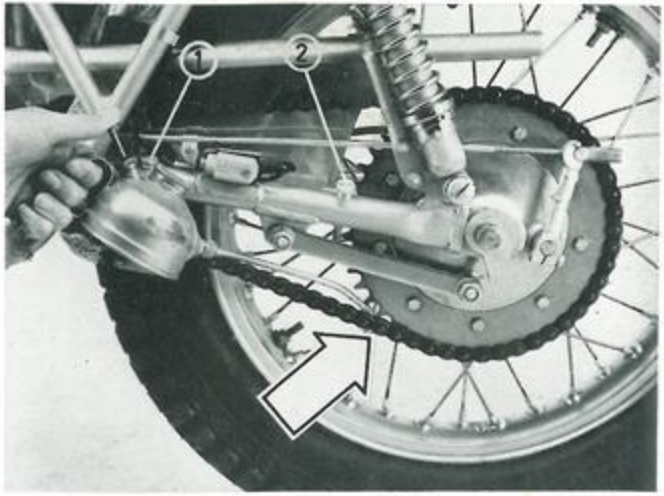


Fig. 23

1. Filler plug. — 2. Pass valve.

Rotate the rear wheel slowly as you apply the lubricant. Make certain that the lubricant is applied to the inside and outside of both sides of each chain link.

Recent models have an oil tank incorporated on the right side of the swinging arm which lubricates the chain while the machine is running, through an adjustable pass valve. The capacity of this tank is 130 cc. SAE 40.

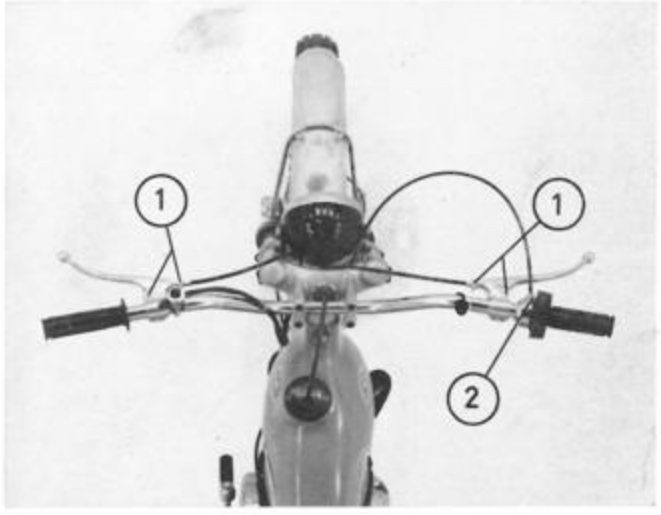
However, in case of much rain and mud the best protection of the secondary chain is obtained by using «Synthetic grease type BARBATIA 4 (Shell), GRIPPA 40 S (Castrol), or SUPER GRASS 801 (Bardahl).

2. **Handlebar Clutch Lever.** Use good-quality SAE 10 motor oil or all purpose oil. Work a few drops into the clutch-cable fitting and the pivot of the lever, and oil the exposed part of the inner cable.

3. **Handlebar Brake Lever.** Use good-quality SAE 10 motor oil or all-purpose oil. Work a few drops into the brake-cable fitting and the pivot of the lever, and oil the exposed portion off the inner cable.

4. **Twistgrip.** Use good-quality SAE 10 motor oil, or all purpose oil. Pull the outher throttle-cable out of the twistgrip, exposing a short section of the inne cable. Run oil dow the inner cable.

Fig. 24



1 and 2. Grease.

B. LUBRICATION BEFORE AND AFTER TRIAL

1. **Primary Case.** Use 300 cc of SAE 5 motorcycle primary-case lubricant or SAE 10 motor oil (CASTROL ZZ). Drain the primary case and fill it with fresh lubricant, as described in Chapter III, «Preuaration».

2. **Gearbox.** Use 500 cc of SAE 90 motorcycle-gearbox lubrication, or SAE 90 automobile differential lubricant (CASTROL ST). Drain the gearbox and fill it with fresh lubricant, as described in Chapter III, «Preparation».

3. **Magneto Felt Wiper Pad.** Use distributor-cam lubricant, available from car dealers auto-parts houses. The felt wiper pad is located behind the magneto flywheel (Fig. 47, pag. 46). To lubricate it, remove the 10 mm k0ickstarter-lever nut and bolt. Remove the kickstarter lever.

Remove the four 5 mm Allen screws from the magneto case the bottom screw is located behind the clutch-cable clamp. Remove the magneto case from the engine. Shift the gearbox to neutral. Remove the sparkplug.

Rotate the magneto flywheel CCW until the first hole in the face of the flywheel is at the bottom of the flywheel Behind the top edge of this hole, you will be able to see the felt pad. With your little finger or a spatula, work distributor-cam lubricant into the felt pad.

Reassemble the magneto case and thighten the clamp-screws. Attach the kickstarter lever and install the sparkplug.

Note: If at any time you dealer removes the magneto flywheel to adjust or remove the contact-breaker point's ask him to lubricate the felt wiper pad at the same time.

4. **Twistgrip.** Use multi-purpose grease. To grease the twistgrip, remove the two screws that clamp the twistgrip guides to the handlebar. Remove the twistgrip assembly from the handlebar.

Lift of the plain guide and wat its inner groove with grease. Pull down the guide that houses the throttle cable, and coat its groove with grease.

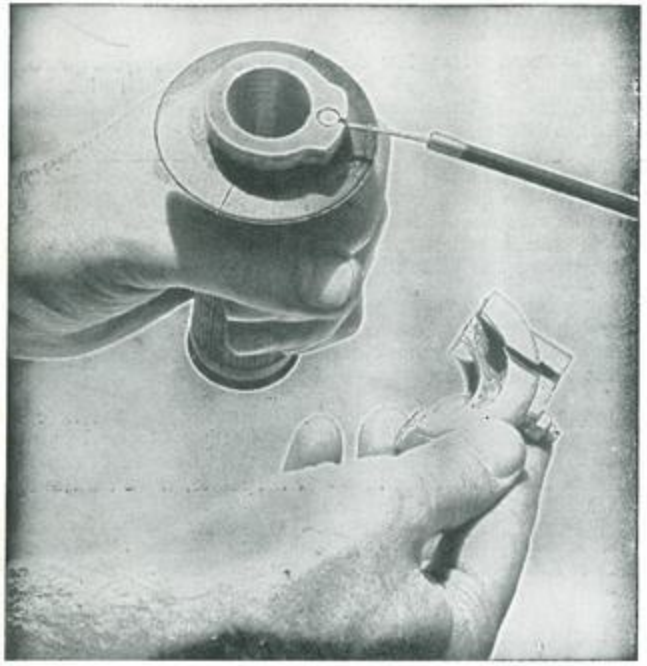


Fig. 25

Reassemble the guides on the twistgrip. Slide the twistgrip assembly onto the handlebar until the end of the twistgrip rubber is just free of the end of the handlebar. Fit the two screws to the twistgrip guides and tighten them, checking to see that the twisgrip guides and tighten them, checking to see that the twistgrip is still free to rotate smoothly.

5. **Front Brake.** Use brake-cam grease, high temperature grease. Remove the front wheel from the motorcycle (for details, see the chapter «Detailed Maintenance Procedures»). Remove the brake backing-plate from the wheel hub, being careful not to touch the brake linings or the brake drum with your hands. Spread a thin layer of brake-cam grease or high temperatura grease on the cams that operate the brake shoes.

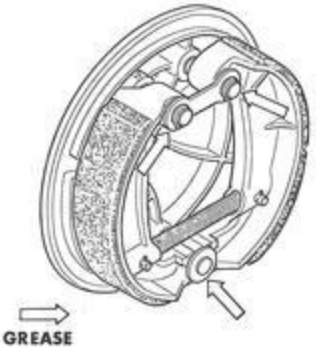


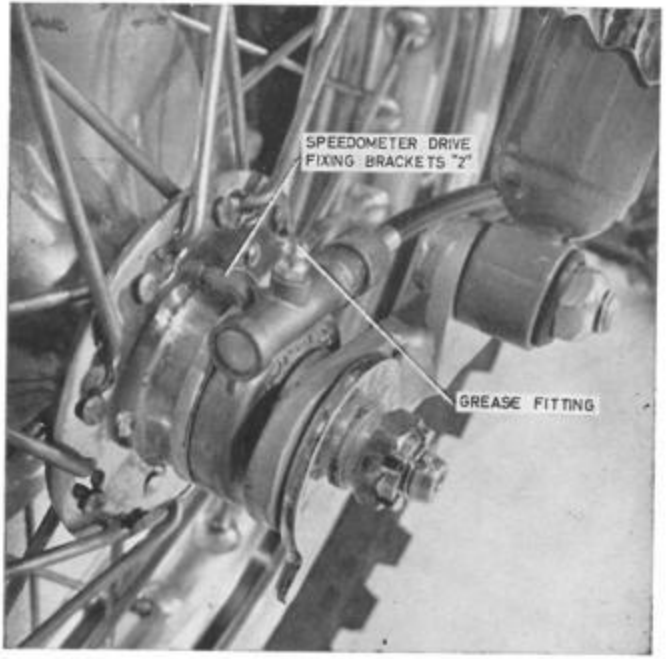
Fig. 26

While the brake-cable is disconnected, remove the inner brake-cable and coat it with motorcycle-chain lubricant. Reassemble the brake cable.

Reassemble the front wheel and reassemble it in the motorcycle. Use multi-purpose grease sparingly to grease the brake-cable clamp.

6. **Rear Brake.** Use brake-cam grease, or high-temperature grease. Remove the rear wheel from the motorcycle. Remove the brake. Locking-plate, and grease the brake cams. To remove brake rod refer to page 57. Reassemble the rear wheel and mount it in the motorcycle. Be sure that all spares are correctly positioned.

Fig. 27



7. **Clutch Cable.** Loosen the clutch-cable clamp. For details, see the chapter. «Detailed Maintenance Procedures»). Remove the inner clutch-cable from the outer cable. Coat the inner cable with motorcycle-chain lubricant. Reassemble the clutch cable, and attach the clamp.

8. **Throttle Cable.** Remove the throttle cable from the motorcycle. For details, see the chapter «Detailed Maintenance Procedures». Lubricate the throttle cable with SAE 10 motor oil or motorcycle-chain lubricant. Install the throttle cable.

9. **Speedometer Cable.** Use speedometer-cable lubricant, available at car dealer's or auto parts-houses. To lubricate the speedometer cable, unscrew the nut that mounts the speedometer cable to the speedometer assembly.

Pull out the inner cable. Grease it with speedometer-cable lubricant. Replace the inner cable. When it is positioned correccly, you will not be able to rotate it with your fingers. Attatch the cable to the speedometer unit, and reassemble the headlight unit.

C. LUBRICATION AFTER 6 TRIALS

1. **Steering Bearings.** Ask your dealer to grease the steering bearings and adjust the bearing set «lithic grease» type CASTROLEASE LM Castrol), MULTIPURPOSE GREASE 4 (Esso), ALVANA EP2 (Shell) SUPERGREASE 512 (Bardahl) should be used.

2. **Wheel Bearings.** Disassemble the wheel as indicated in the chapter, «Detailed Maintenance Procedures» (page 51). Examine the condition fo the bearings, and use the above mentioned type of grease.

3. **Front Forks.** Use Hydraulic SAE 20. To charge the oil in the front forks, remove the drain-plug screw at the rear, near the bottom, of each fork leg. Apply the front brake and work the forks up and down to force out all of the oil. Replace the drainplus screws.

With a 29 mm. wrench, rotate the filler plug at the top of each fork tube CCW and remove it Pour 170 cc. of oil into the filler hole of each fork tube. Position the filler plugs on top the fork tubes. Install each plug by pressing down on it until its threads engage with the threads in the fork tube. Then rotate plug CW, and finish tightening it with the 29 mm. wrench.

The machine leaves the factory with SAE 20. However, in cold weather we would advise you to use a thinner oil. See Table on page 31.

Fig. 28

Fig. 29

4. TABLE SHOWING EQUIVALENCES OF OILS FOR THE SHOCK-ABSORBERS

MAKE	GRADUATION				
	SAE 5	SAE 10	SAE 20	SAE 30	SAE 40
ESSO	TERESSO 43	TERESSO 47	TERESSO 52	TERESSO 65	TERESSO 85
SHELL	TELLUS 21	TELLUS 27	TELLUS 33	TELLUS 41	TELLUS 69
BARDAHL	161/3		161/6	161/9	161/12
REPESA (For Spain)	REPSOL ARIES 40	REPSOL ARIES LIGERO	REPSOL ARIES MEDIO	REPSOL ARIES 700	REPSOL ARIES 800

5. TABLE OF EQUIVALENT LUBRICANTS

BRANDS	TYPES AND SYMBOLS							
	SAE 10	SAE 20	SAE 30	SAE 40		SAE 140	GREASES	
	△	□	▽	<>	Mix with gasoline	⬡	○ (2)	● (3)
ESSO		ESSOLUBLE 20 W	ESSOLUBLE 30 W	CASTROL XL 20 W 40	ESSOLUBLE 40 W	HIPOID 140	MULTIPURPOSE GREASE H	
SHELL	CARNEA 21 CLAVUS 17	TALPA 20	TALPA 30	TALPA 40	SHELL SUPER TWO STROKE	DENTAX 140	ALVANIA-EP2	BARBATIA 4
BARDAHL		HOME AND OFFICE	HOME AND OFFICE	ESSOLUBLE 40 W	BARDAHL VBA (1)	BARDAHL 451/SF	SUPER GRASS 512 BARDAHL	SUPER GRASS 801 BARDAHL
CASTROL	CASTROL 10 W	CASTROLITE 10 W 30	CASTROLITE 10 W 30		CASTROL XL 20 W 20	HIPOID 140	CASTROLEASE L M	GRIPPA 40 S
FINA					FINAMIX-3			

(1) Proportion in normal use: 4 % (25:1) (2) Lithic types (3) Synthetic types.

VIII. DETAILED MAINTENANCE PROCEDURES

Your Bultaco Dealer has the necessary tools and experience for maintaining your Sherpa T satisfactorily. Howe we list here some of the more common maintenance procedures, for those riders who are experienced at maintaining motorcycle, and who have proper tools.

A. SPARKPLUG

1. **Installing a New Sparkplug.** Before installing a new sparkplug, tighten the nut at the top of the sparkplug with a pair of pliers, so that it cannot comme loose. Use a gapping tool to set the clearance between the electrodes at 0.19". Check to see that the sparkplug has a copper gasket.

Screw the sparkplug fingertight into the cylinder head. Then use a sparkplug wrench to tighten the plug until you have begin to compress the copper gasket.

Install the sparkplug cap. If the cap does not snap into the wire clamp inside the cap until it will grasp the sparkplug tightly. Force the high-tension wire into the cap to make certain that there is still a good electrical connection.

2. **Heat-Range.** As a general rule we recommend using sparkplugs of the following heat-range.

Brand of Sparkplug

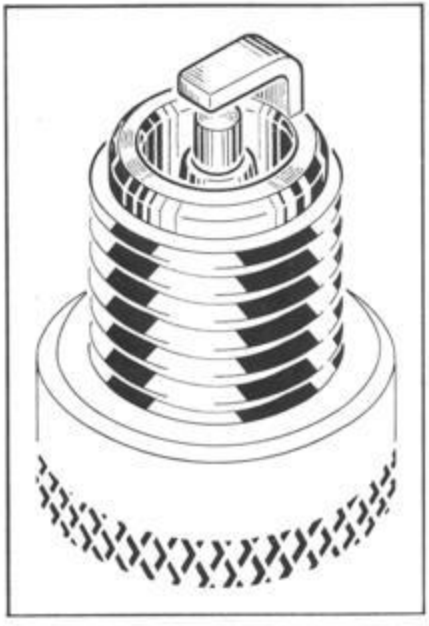
KLG	LODGE	BOSCH	FIRESTONE	CHAMPION
FE 30	CLNY	W 145-T2	F-18-L	UN12Y
FE 50	CLNH			

Unfortunately, there are no hard and fast rules regading the heat-range to use because many factors —incluiding type of gasoline, gasoline-oil ratio air density, carbureter, and the heat-range of the spargplug— affect the amount of heat developed in the combustion chamber.

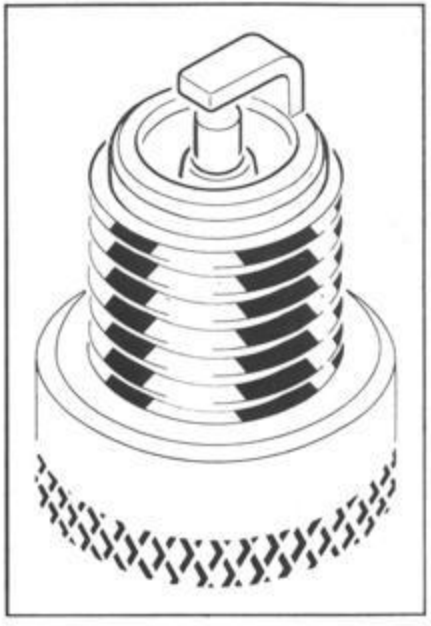
The heat range of the sparkplug and the adjustment of the carbureter are related. A sparkplug of the right heat-range in relation to the carburetion will generally have brown or medium-grey electrodes. The procelain that surrouds the bottom of the sparkplug will generally be dark-brown or black, and dry or only slightly-moist. However, a few brands of sparkplugs will give different readings when the heat-range is correct.

A sparkplug that is too hot in relations to the carburetion will generally have white or light-grey electrodes. The porcelain surrounding the centre electrode will be light-grey or white. Sometimes, even the bottom edge of the sparkplug will be light-grey of white. A sparkplug with these colour generally indicates that the heat-range of the plug is too hot, or that the carburetion is too lean. Under these conditions, the engine will overheat. Under extreme conditions of overheating, piston seizure can occur. On the sparkplug will attract small or large quantities of metallic salts and become partially or completely short-circuited, or «wiskered».

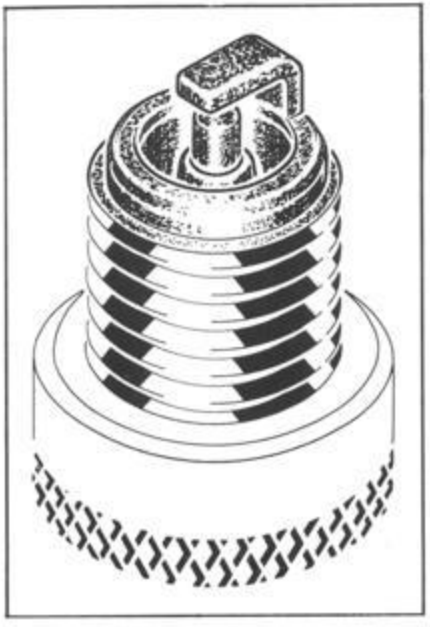
A sparkplug that is too cold in relation to the carbureter will be black with carbon, and oily. In such a case, the heat-range of the sparkplug is too cold, or the carbureter is too



GOOD Fig. 30



TOO HOT Fig. 31



TOO COLD Fig. 32

rich. The engine may be hard to start, and it will run poorly at high rpm.

3. **Checking the Heat-Range relative to the Carburetion.** When you have throttle half-open, the carburetion needle regulates the flow of fuel. when you have the throttle wide-open, the carbureter main-jet regulates the flow of fuel.

To check whether or not the sparkplug and the carburetion are correct for you geographical loction, you will need to take sparplug readings at half throttle and at full-throttle. Il one of the readings is good, and the other is poor, you will need to adjust the carburetion. If both readings show that the sparkplug is too hot or too cold you will need to install a sparkplug of a different heat-range.

To take a sparkplug reading, ride the motorcycle with the throttle half-open (the twistgrip rotated halfway to its full-on clutch, and a the same instant, close the trottle fully. Hold in the clutch, and coast to a stop. Remove the sparkplug and check its coloration to see whether it is too hot, satisfactory, or too cold. Install the sparkplug in the engine.

To take the second sparkplug reading, ride the motorcycle for several hundred yards in fourth gear with the throttle wide-open. Again pull the clutch, close the throttle fully and coast to a stop. Remove the sparkplug and take another reading.

If both of the sparkplug readings show the right colours, the sparkplug heat-range and the carbureter are correct for your climatic conditions.

If the mid-throttle reading showed that plug was too hot or too cold, but the full-throttle reading showed the right colour; you will need to adjust the positioning of the carbureter needle. For detalls, see the section on carbureter maintenance.

If the mid-throttle readings showed the right colour, but the full throttle reading showed that the plug was too hot or too cold, you will need to use a different-size main-jet in the carbureter. For details, see the section on carbureter maintenance.

If both sparkplug readings showed that the plug was too hot, fit sparkplug of the next-colder heat-range and take another set of plug readings. If the second set of readings show that the sparkplug is still too hot, you may be able to correct the condition with a still-colder sparkplug. Or you may need to reposition the carbureter needle and change the main jet. Or the reading may be an indication of an air leak in the carbureter or elsewhere.

If both initial sparkplug readings showed that the plug was too cold, fit a sparkplug of the next-hotter heat-range, and take another set of readings. If the sparkplug is still too cold, fit a warmer sparkplug. Or, you may need to reposition the needle an changed the main jet. Or the reading may be and indication that the sparkplug is not getting enaugh electrical energy.

If you have any doubt as to the correct colour-reading of the brand of sparkplug that you are using, have your dealer make the readings or recommend a particular sparkplug for you to use. Once the correct heat-range or sparkplug has been determined, it wit remain correct as long you do not alter carbureter, and the climatic condition do not vary widely.

Note: During the first few hundred miles of riding, it is better if the mixture is too rich, because a new engine tends to run hotter. And it is ALWAYS better to have the mixture a little bit too rich than a little bit too lean.

B: THE CARBURETER

The carbureteer is examined at the factory before fitting it on the motorcycle, and afterwards it is carefully tested on each machine. Do not change its adjustment, as this might very easily cause damage.

However, possible variations of climate and height might requiere a slight change, and in this case ew recommend you to let a Bultaco dealer carry out the adjuslment.

Although a carbureter is quite complicated, many riders want to know more about its peculiarities and details, and for them we include an explored drawing, which shows the following parts:

1. Tickler.
2. Petrol feed filter.
4. Banjo nut.
5. Carbureter protector rubber.
6. Sable adjusted locking
7. Cable adjuster.
8. Idle screw.
9. Air screw.
10. Mixing chamber cover.
11. Chamber cover fixing screw.
12. Slide.
13. Needle saling clip.
14. Needle.
15. Float Chamber fix screw.
16. Carbureter Float.
17. Main jet.
18. Pilot jet.

1. **Cleaning the Air-Cleaner Element.** To clean the air-cleaner element, you will need to remove the saddle (fig. 34).

A wire retainer-spring holds the metal screen in position on top of the air cleaner. Hold one of the bent ends of the springs in position with your hand or with a pair of pliers.

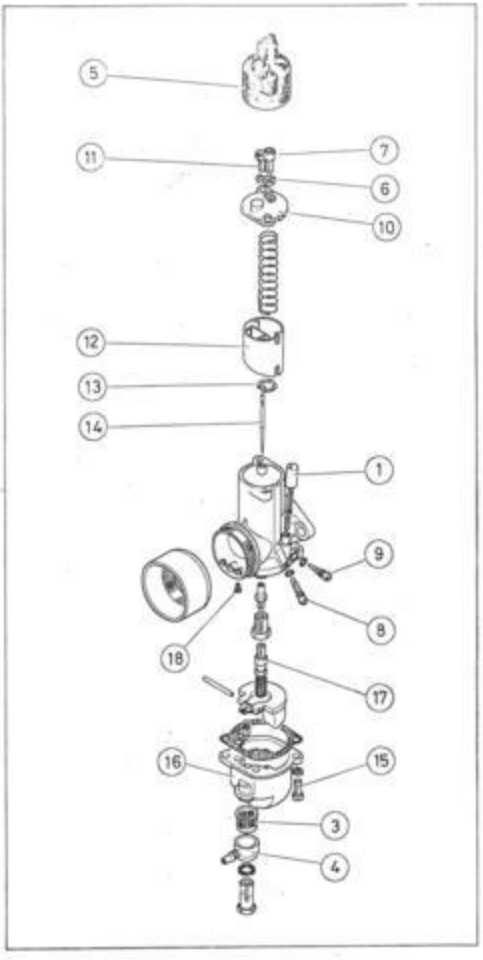


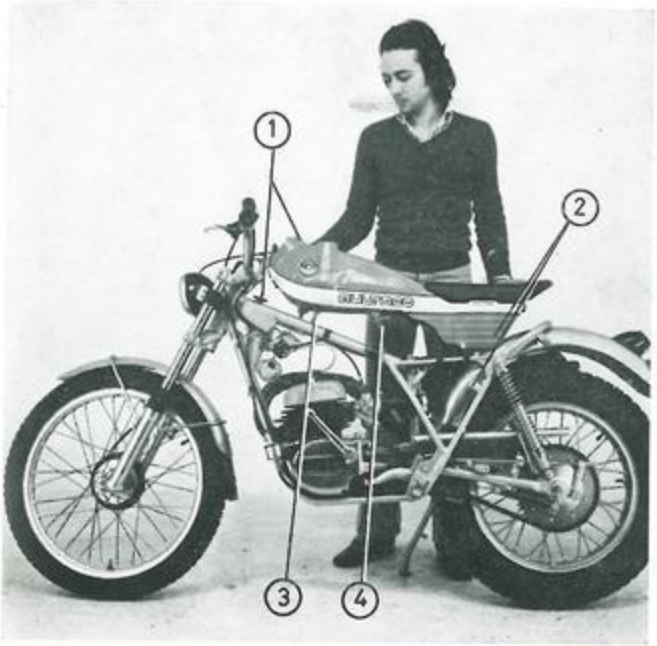
Fig. 33

Grasp the other end of the spring with a pair of pliers. Force the spring and remove if from the air cleaner.

Remove the nylon filter-element. Remove the metal-screen. Wash the filter-element and the screen in gasoline, and dry them with compresed air.

Wipe the air-cleaner unit dry with a rag, and then cost the insides with multi-purpose grease. Insert the bottom metal-screen and the nylon filter-element. Coat the top of

Fig. 34



1. Front Fixing. — 2. Rear Fixing. — 3. Equalazing tube. — 4. Fuel-line.

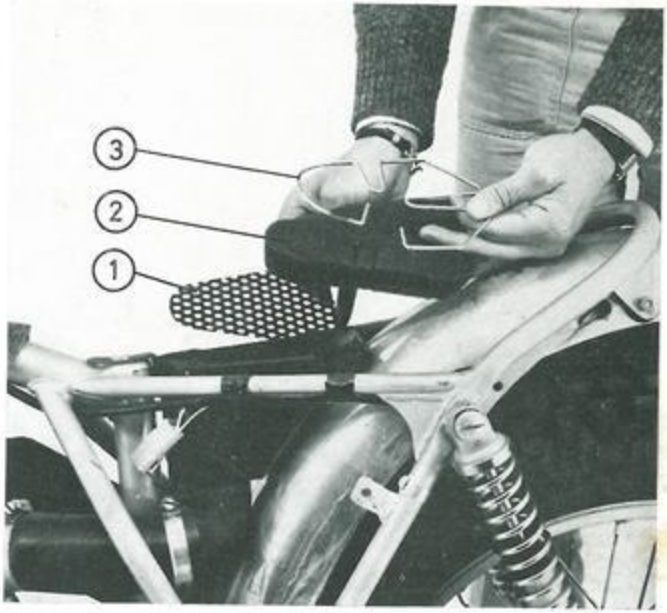


Fig. 35

1. Metal-screen. — 2. Nylon Filter element. — 3. Spring.

the element wtih spray-type chainlubricant that will not clag the pores. Inscrit the top metal-screen. Fit one end of the wire spring to its groove in the air cleaner. With a pair of pliers, compress the spring and fit it to the lodgging of the air-cleaner unit. Position the saddle. Install the four washers and 10 mm. nuts.

2. **Cleaning the Carbureter Fuel-Filter.** Remove the 13 mm. bolt that attaches the fuel-line fitting to the carbureter. Remove the fuel-line fitting. Remove the filter screen (3, Fig. 36). Wash the screen in gasoline. Reassemble the carbureter.

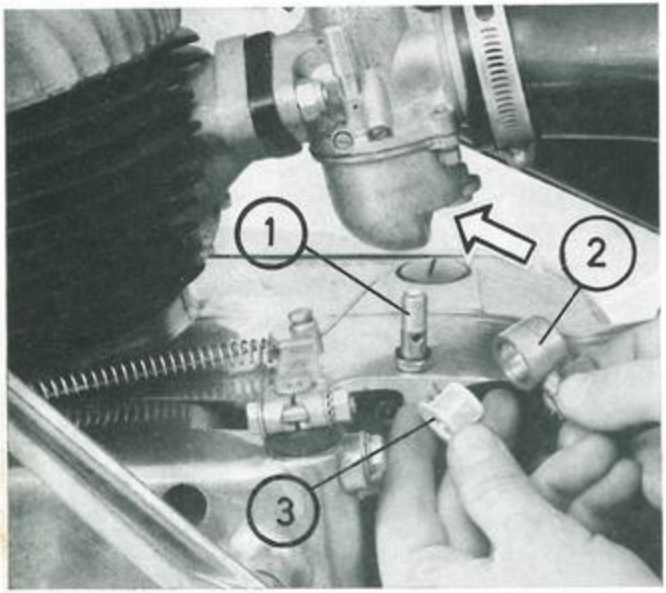
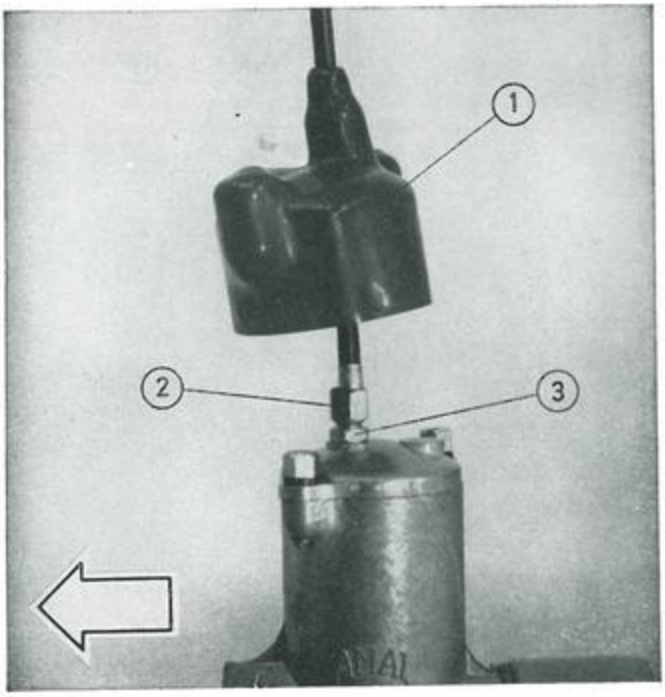


Fig. 36

1. 13 mm. bolt. — 2. Petrol feed hanjo. — 3. Filter screen.

3. **Adjusting the Play in the Throttle Cable.** If, at idle, the engine runs faster when you turn the handlebar to the right, the throttle cable is too tight. If the engine hesitates when you want to accelerate strongly from idle, the throttle cable is too loose. You can adjust the play in the throttle ble with the cable adjuster located atop the carbureter.

To adjust the play the throttle cable, pull up the dubber dust-cover (5, Fig. 33) to expose the cable adjuster (7, Fig. 33). Loosen the locknut)6, Fig. 33) at the base of the adjuster, by rotating it CCW. To increase the play in the throttle cable, rotate the adjuster CW to retract in into its mount. To tighten the throttle cable and decrease he play rotate the adjuster CCW to extend it from its mount. When the adjuster is positioned satisfactorily, tighten the locknut and pull the rubber dust-cover don over the adjuster.



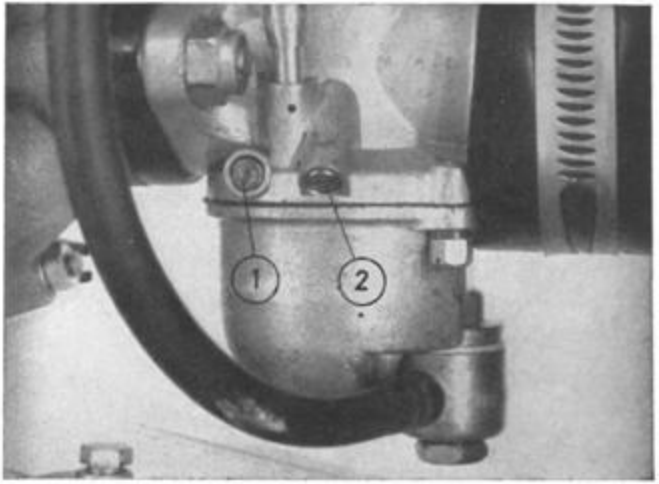
1. Protector rubber. — 2. Cable adjusted. — 3. Locknut. Fig. 37

4. **Adjusting the Idle.** The engine should idle fast enough so that you can shigt smoothly from neutral to fist gear.

The idle adjuster (2, Fig. 38) is a spring-loaded screw that points toward the ground on the left side of thee carbureter. To decreasse the idle speed, rotate screw CCW with a screwdriver. To increase the speed of the engine at idle, rotate the screw CW.

If the engine dies eaily at the idle speed you have selected, the idle mixture may be too rich or too lean. Above and to the right of the idle screw, near the intake manifold, is the spring-loaded low-speed air-screw (2, Fig. 38). It regulates the mixture at idle.

Fig. 38



1. Air Screw. — 2. Idie Screw.

To adjust the mixture at idle, first make certain that the air-screws is at its normal setting. Rotate the screw CW until it bottom, and then back it aff 3/4 turn. If the machine does not idle well at this setting, and has a fairly-loud, uneven «bonk» sound, rotate the air screw CW until the engine dies because the mixture is too rich. Bach off the screw one turn, and start the engine again. Now count the turns as you rotate the screw CCW until the engine dies because the mixture is too lean. Add the first turn of the screw to the number of turns between the two extremes, and then rotate the screw CW half the distance between the extremes.

If the engine steill refuses to idle, the fuel passages or the pilot jet may have become clogged, and it would be well to have your realer dissasemble the carbureter and clean it throroughly.

5. **Changing the Needle Position.** If, when you took the sparkplug reading at mid-throttle, the sparplug was too hot or too cold, and you did not correct the condition by using a sparkplug of a diffferent heat-range, you will need to reposition the needle.

If you have a dubber cover on the top part of the carbureter, remove it. Remove the two screws from top of the carbureter. Lift off the carbureter-top and pull out the slide.

The needle (14, Fig. 33) is attached to the slide (12, Fig. 33) my means of a spring clip (13, Fig. 33). There are three grooves in the needle. Note the groove to which the clip is presently attached. Remove the clip and remove the needle.

It the sparkplug reading at mid-throttle showed that the sparkplug was too hot, then mixture is too lean. To richen the mixture, raise the position of the needle in the slide by mounting the clip in the next-lowerd groove of the needle.

If the sparkplug was too cold, the mixture was too rich. Lean the mixture by mounting the clip in the next-higher groove of the needle, to lower the needle in the slide.

Fit the slide to the carbureter, with the large oval cutout in the bottom of the slide facing the air cleaner. Fit the top to the carbureter, with the tongue in the top mated to on the carbureter and tighten the two screws. Tighten the air-hose clamp-screw.

6. **Changing the Main Jet.** If, when you took the sparkplug reading at full throttle, the reading was too rich or too lean, and you did not correct the condition by changing the heat-range of the sparkplug, you will need to use a different main jet.

The main jet (17, Fig. 33) is situated inside the float chamber (16, Fig. 33) so, in order to change the main jet, you should dismount the carbureter form the motorcycle and then remove the bottom part of it and separate the float chamber. The main jet is now visible. Select a 8 mm wrench, and rotate the main jet CCW to remove it from the carbureter. The main jet normally supplied in the Sherpa T 250/350 is a number 150.

If the sparkplug reading at full throttle showed that the plug was too hot, then mixture is too lean, and you will need to fit a larger main jet. To richen the mixture, fit the next-largest main-jet, a number 160. Reassemble the carbureter and take another sparkplug reading. If necessary, go up to a numbre 170.

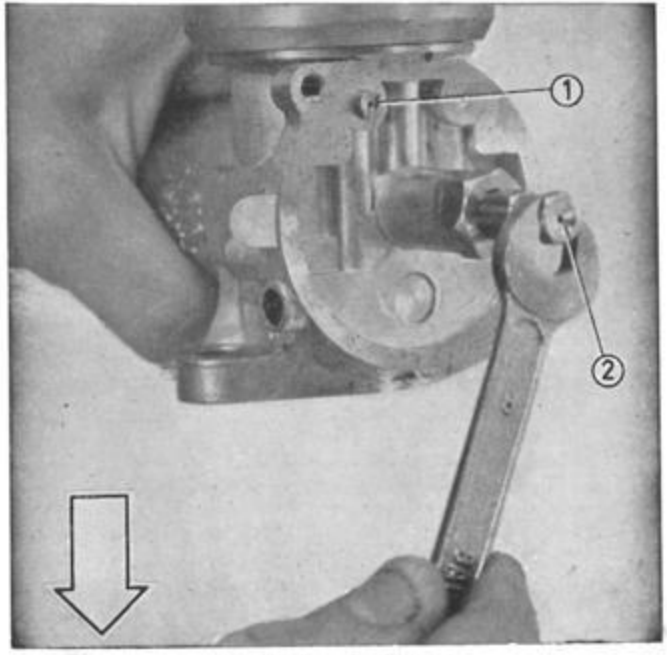
If the initial reading showed that the sparkplug was too cold, then the mixture is too rich, and you will need to fit a smaller main-jet. Install a number 140 main-jet, and take another sparkplug reading. Is necessary, go to a number 130 main-jet.

Remember that during the run-in period, you want the mixture to be too rich, and that it is ALWAYS metter to have the mixture a little bit too rich than a little bit too lean.

7. **Changing a Throttle Cable.** To change the throttle cable, remove the top part (10, Fig. 33) of the carbureter and the slide (12, Fig. 33). Note the position of the spring-clip in the grooves of the throttle-cable fitting from the slide, and remove the cable from carbureter assembly.

Remove the twistgrip assembly from the handlebar. Remove the plain gu de from the twistgrip assembly. Pull down the other guide. Align the inner cable with the slot in the guide, and remove the cable from the guide. Remove the cable fitting from the twistgrip. Remove the trottle cable from the motorcycle.

Fig. 39

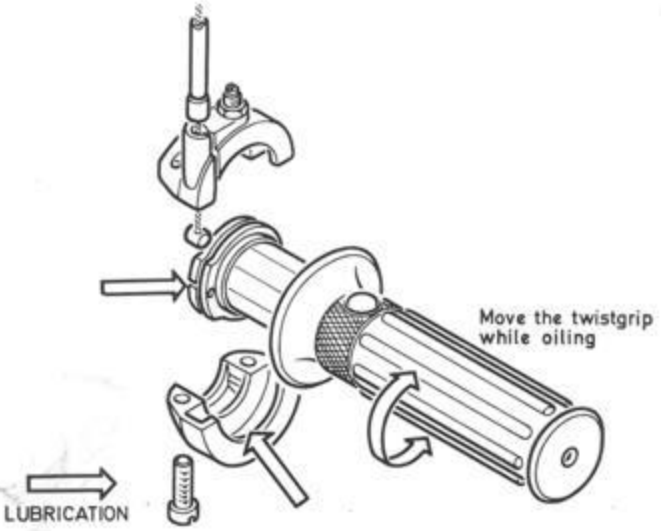


1. Pilot-jet. — 2. Main-jet.

Lubricate a new throttle cable. Insert the end of the cable with the smaller fitting between the front of the petrol-tank and the frame on the right side of the motorcycle. Feed the cable through until the fitting emerges near the cylinder head of the engine.

Mount the larger fitting at the other end of the cable to the twistgrip. Then fit the inner cable to the slot in the twistgrip guide, and position the twistgrip in the guide. Fit the other guide to the twistgrip. Install the twistgrip assembly on the handlebars. Make certain that the throttle cable doesn't have any sharp bends, and that it can't get caught inside the front-brake lever.

Fig. 40



Retract the cable adjuster in the top of the carbureter. Thread the cable through the top of the carbureter and the spring, and hook the cable into its slot in the slide. Attach the needle and to spring clip, positioning the clip in the same groove of the nearle as when you removed it. Reassemble the carbureter.

Check the rotation of the twistgrip, to make certain that it works smoothly and that the cable it not piched between the gas tank and the game. If necessary, use the cable adjuster to loosen or tighten the cable so that the engine does not speed up when you turn the handlebars to the right.

8. **Cleaning the Gas Tank.** Remove the fuel line from the gas tap. Remove the front fixation of the gas tank with a 13 mm wrench. Being careful not to damage the saddle, lift the read of the gas tank, and remove it frfom the motorcycle.

Unscrew the filler cap, pour gasoline into the petrol-tank, and replace the filler cap. Swirl the gasoline vigorously in the petrol-tank. Remove the filler cap, and pour out the gasoline. If the gasoline contains hediment, pour in fresh gasoline and repeat the proces. Continue until the gasoline that you pour of the petrol-tank contains no sediment.

With a 14 mm wrench, rotate the gas tap CCW and remove it from the petrol-tank. At the top of the tap is a fuel filter; clean it in gasoline. Inspect the gasket, and the gasket surface on the tap and the gas tank. If the gasket is worn or uneven, discard it and fit a ne... one. If alther gasket surfface is irregular, smooth it carefully with a blunt screwdriver, removing any dirt or lumpy paint-particles. If, when you mount the gas tap, it is able to turn too gas, ad a second gasked.

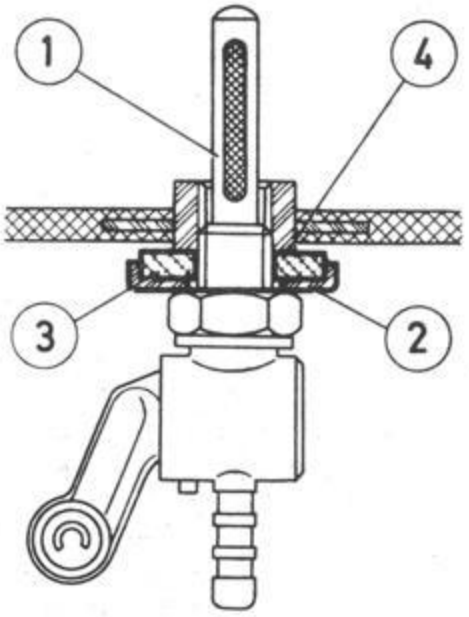


Fig. 41

1. Filter. — 2. Washer housing. — 3. Rubber washer. — 4. Surfaces very regular.

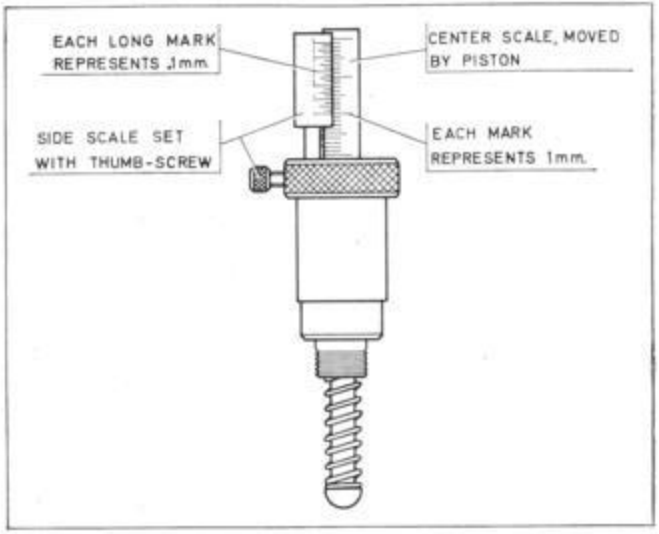
Position the petrol-tank on the frame. Mount the 13 mm chromed nut, tightening it only until it has started to compress its rubber gasket. Fit the fuel line to the fuel tap.

★

C. IGNITION TIMING

In order for the Sherpa T to run properly, the ignition must always be set si that the contact-breaker points open when the piston it between 3.1-3.3 mm for Sherpa T 250 and 2.8-3. mm for Sherpa T 350. Before Top Dead Centre (BTDC).

Fig. 42

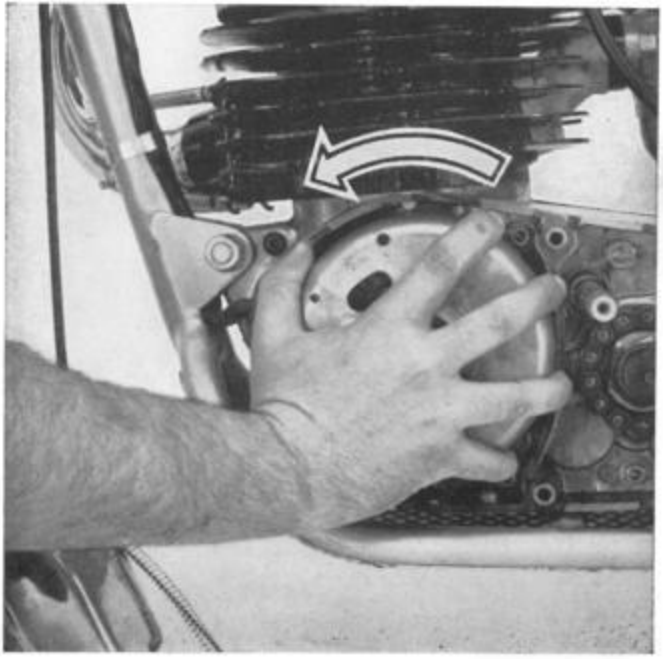


To adjust the timing, remove the 10 mm nut and the bolt from the kickstarter lever. Remove the kickstarter lever. Remove the four 5 mm Allen screws from the magneto case, and remove the magneto case. Remove the sparkplug Shift the gearbox into neutral.

Srew the Bultaco vernier-gauge. Part number 132.974, into the sparkplug hole. Rotate the magneto flywheel CCW until the centre scale on the vernier gauge is at its highest point. At that position, the piston it a Top Dead Centre (TDC).

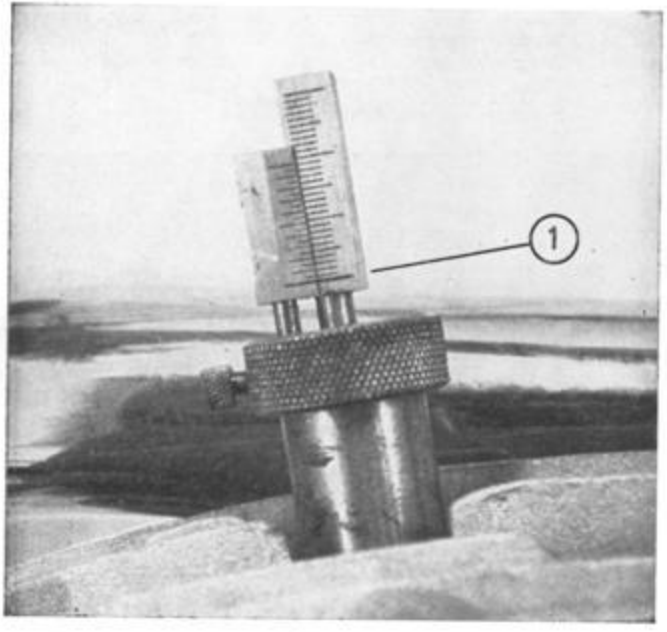
Leave the piston positioned exactly at TDC. Loosen the thumbscrew that positions the side scale of the vernier gauge. Move the side scale up or down until the bottom mark engraved on the side scale is exactly aligned with the bottom mark on the centre scale. Tighten the thumbscrew.

Fig. 43



Loosen the clamp positioning the electrical wires beneath the magneto flywheel. Pull back the plastic insulator to expose the connection between the red wire and the black wire.

Fig. 44



1. The gauge adjuster woth the piston at TDC.

Plug the Bultaco timing-light, Part number 132.071, into a 110 volt wall socket. Flip the swith to «SI»; the bulb will burn. Insert the banana plugs of the two test-wires into their sockets on the timing light. Touch the alligator clips together; the bulb will stop burning.

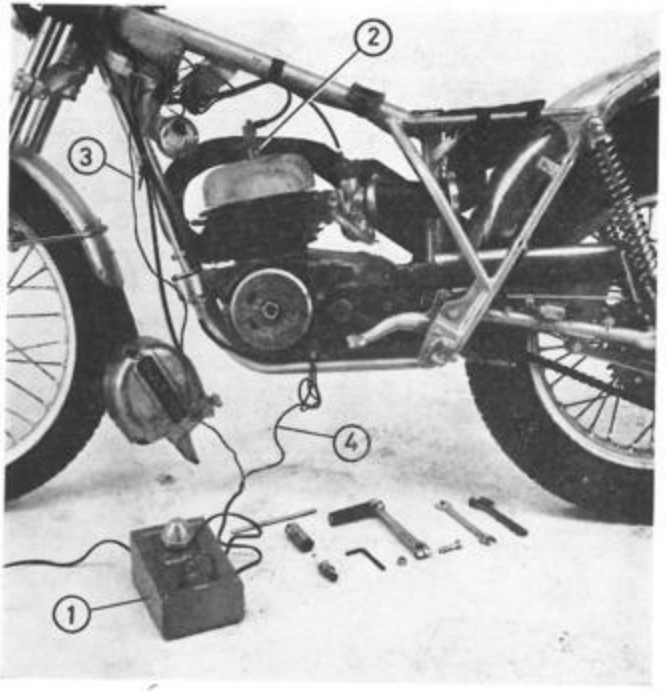


Fig. 43

1. Timing-light. — 2. Vernier gauge. — 3. To coil (Black). — 4. To Hearth (Frame).

Attach one of the alligator clips to the bare connection between the red wire and the black wire, being careful to see that the alligator clip cannot touch the engine case.

Attach the other alligator clipto the Hearth (Frame).

Rotate the magneto flywheel CCW. Never rotate the flywheel in the opposite direction while timing the engine, or you will get false readings.

Watch the vernier gauge as you rotate the magneto flywheel. The centre scale will move downward. Then it will stop for a hile. Finally, it ill begin to move upward. At this point, rotate the magneto flywheel very slowly, and watch timing light. At the instant when the light begins to burn, stop the rotation of the magneto flywheel. You have found the exact point at which the contact-breaker points are opening; now you must read the vernier gauge to find out how far the piston is bellow (or above) Top Dead Centre.

The centre scale of the vernier gauge is graduated in 1-mm increments. Read the number of marks on the centre scale between its bottom mark («0») and the bottom mark on the side scale to get the whole number —in milimeters— of ignition timing. For example if two marks on the centre scale lie between the bottom mark on the centre scale and the cottom mark on the side scale, then the ignition timing is 2 mm BTDC.

The side scale of the vernier gauge is graduated so that you reed the longer marks as 1 mm increments. If the bottom mark on the side scale was not exactly aligned with a mark on the centre scale when the light came on, there will be a decimal fraction.

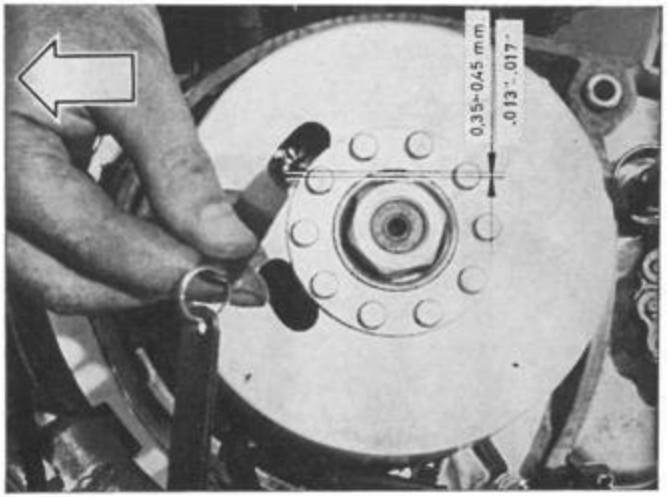
To read the decimal fraction of the ignition timing, count the number of long marks on the side scale above the bottom mark («0»), up to the firse long mark that is most nearly aligned with a mark on the centre scale. Thus, on the side scale, if the fifth long mark up from the bottom mark were aligned with a mark on the centre scale, you would read «.9 mm». Combining this readings with the reading from the centre scales, you would find that the ignition timing is 2.9 mm BTDC. The points would be opening when the piston, travelling upward, was 2.8 mm below its highest point (TDC). But the points should be opening earlier, when the piston is somewhere between 2.8 and 3. mm BTDC, so the timing is late, or retarded. The engine is loosing power. Should the timing become still further retarded, the engine will get sick.

If you increase the gap between the contact-breaker points, they will open sooner, and advance the timing, but you should not exceel the maximum-allowable gap of .45 mm.

Rotate the magneto flywheel until the points are visible behind the second hole in the face of the flywheel. At this position, the points are at their widest opening. Insert a feeler gauge between the points. If they are not at their maximum of .45 mm you can proceded to adjust them and advance the timing.

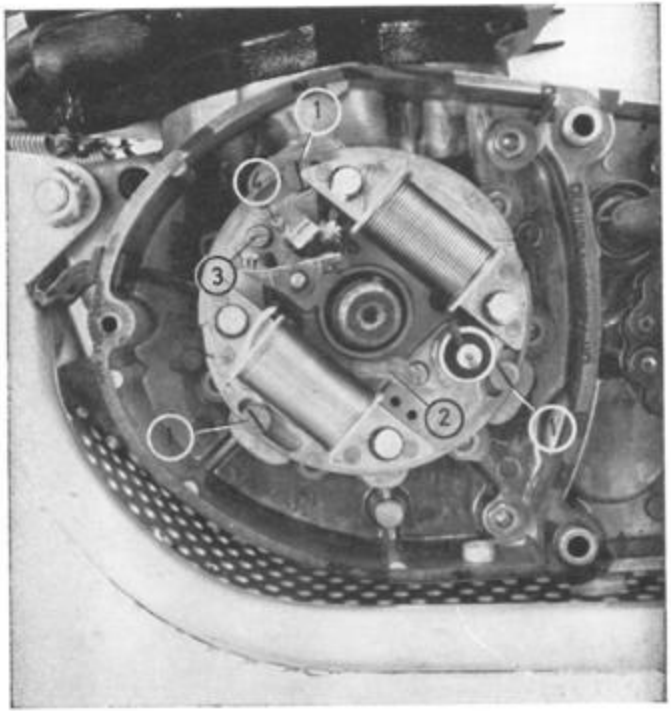
Above the points are two adjusting-screws. The large one, on the left, locks the points in place. Loosen it slightly. The smaller screw on the right is an eccentric that varies the

Fig. 46



points-gap. Turn the small screw CW just enough to take up the slack, and then a tiny bit more. Normally, this will increase the gas slightly and advance the timing considerably occasionally, you will find and eccentric that works in the opposite direction). Now tighten the large screw on the left.

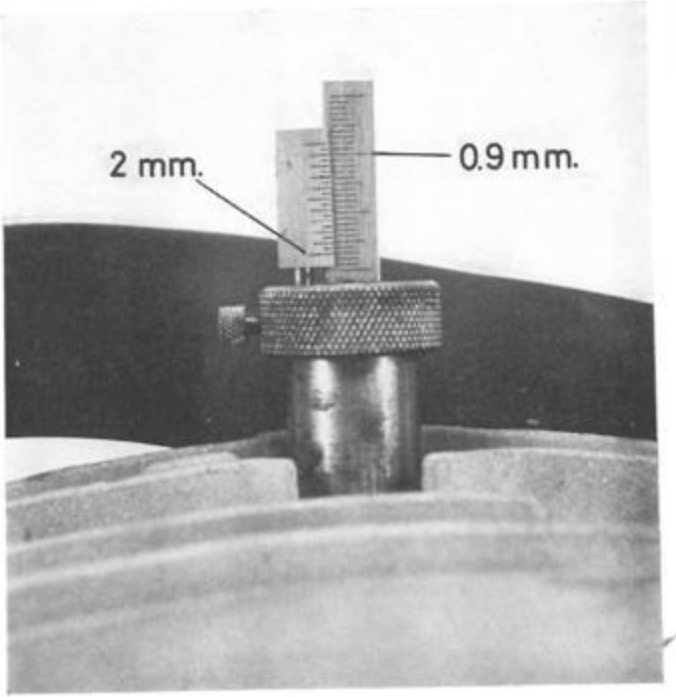
Fig. 47



1. Magneto back plate fixing screw. — 2. Felt wiper Pad. — 3. Contact Breaker fixing screw — 4. Contact Breaker adjusting screw.

Again check the timing with the vernier gauge and the timing light. If necessary, adjust the point-gap again, and recheck the timin. Repeat the process until the timing light

Fig. 48



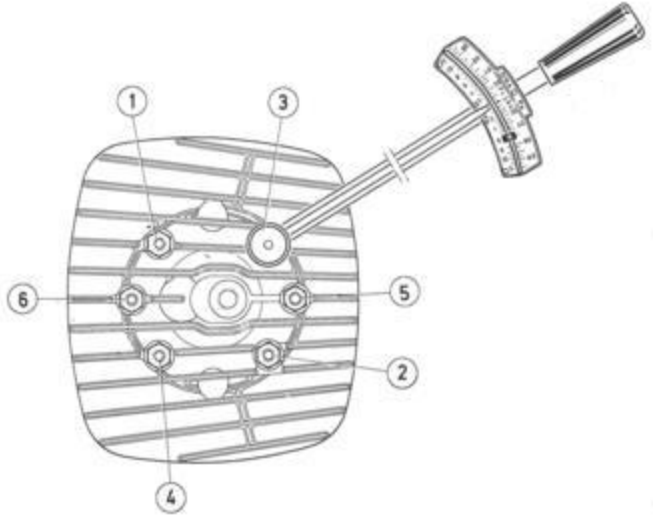
shows that the points are opening somewhere between 2.8 mm and 3. mm BTDC. This usually requieres ithree of four attempts. When the ignition timing is correct, check to see that the points-gap is still within tolerance.

When you have completed the adjustment, remove the alligator clips from the engine. Slide the plastic insulator back over the conection between the red wire and the black wire. Arrange the wires behind the clamp, and tighten the clamp. Install the magneto case and the kickstarter lever. Remove the vernier gauge and install the sparkplug.

D. THE COMBUSTION CHAMBER

Do not attempt to remove the cylinder head if you do not have the proper torque wrench. Do not use a torque wrench that reads higher than 15 ft/lbs. If you use the wrong torque

Fig. 49



wrench, or if you try to guess at the torque readings you run the strong risk of tightening the cylinder-head nuts unevenly, which can cause piston seizure. The Bultaco torque wrench is Part number 132.063.

Notice the drawing of the cylinder head. The narrow end of the heaod faces the rear of the engine. Notice the number assigned to each cylinder-head nut. Loosen the nuts one-half turn each, in the following order: 1, 2, 3, 4, 5 and 6. Repeat the proces three more times, until each nut has been loosened two turns. Remove nut number 1. With a sharp scribe, mark «1» on the side. Do the same with numbers 3, 4, 5 and 6. Remove the cylinder head, being careful not to allow any of the flat washers to fall down into the engine.

Find a screwdriver that has a blade with dull edges and rounded corners. If you do not have one, make one with a file or grinder, se the dull screwdriver to scrape carbon deposits gently from the cylinder head. If the head has deposits of hard carbon, clip off the carbon in small fiakes. Be careful to avoid gouging the soft alloy. When you have finished scraping carbon, wash the head throroughly in gasoline of other suitable solvent.

To clean the top of the piston, use the kickstarter lever to bring the piston up to Dead Centre Scrape the top of the piston gently with the dull screwdriver, and blow the loose carbon out of the cylinder.

To clean the ports in the cylinder liner, use the kickstarter lever to bring the piston down to its lowest point. Use the screwdriver to remove any carbon deposits that might have built up around the edges of the ports. Bring the piston slowly back to Top Dead Centre and blow away the loose carbon.

Inspect the mating surfaces of the cylinder and the head. If any sharp ridges have been gouged up on either surface, or if either surface is dirty, smooth it carefully with the dull screwdriver. Do no use a gasket or sealing compound between the cylinder and the head.

Position the head on the cylinder, with the narrow portion or the head facing the rear of the engine. Put the flat washers on the cylinder-head studs. Start the cylinder-head nut marked «1» on the stud marked «1» in the drawing similary mount nuts No. 2, 3, 4, 5 and 6, until each is fingertight.

Use the torque wrench with a 14 mm. socket to torque each nut to 2 ft/lbs. in the following sequence: 1, 2, 3, 4, 5 and 6. Repeat the sequence, tightening each nut 2 ft/lbs. each time

around, until the cylinder-head nuts have been torqued to 11 ft/lbs. nuts No. 5 and 6. Nuts No. 1, 2, 3 and 4 should be torqued to 14 ft/lbs.

E. THE CLUTCH

There should be some play in the clutch linkage. You should be able to pull handlebar lever until there is a gap of 3/16" between the top edge of the lever and the top edge of its mount before you encounter resistance. If there is no play in the clutch mechanism, the clutch may be able to slip while the motorcycle is moving; this is hard on the clutch.

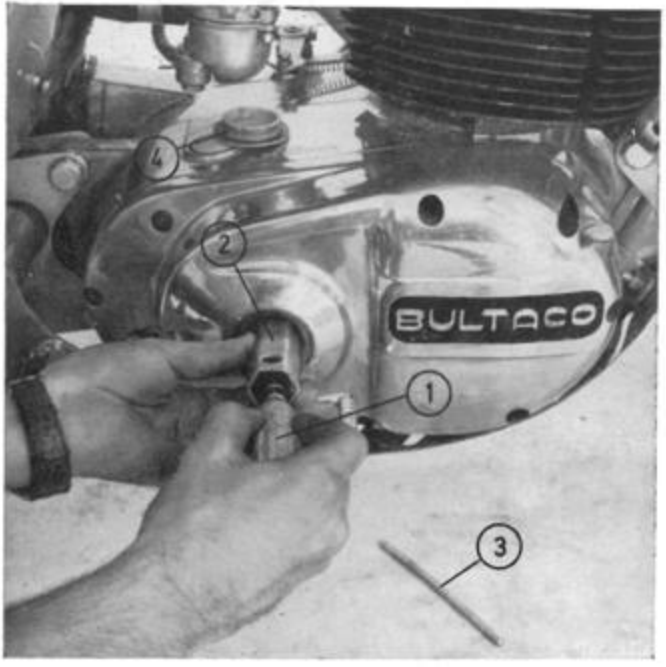
It there is too much play in the clutch linkage, the clutch may not be disengaging all the way when you pull the lever; this can cause the clutch to drag which may be damaging to the gearbox.

You cant adjust the play in the clutch linkage with the cable adjuster on the handlebar-lever mount. If here is no more adjustment available there, you can adjust the operating shaft.

1. **Using the Cable Adjuster.** To increase the amount of play in the clutch linkage, rotate the serrated wheel on the handlebar mount so that the adjuster is retracted for enougt into the mount to give the necessary amount of play.

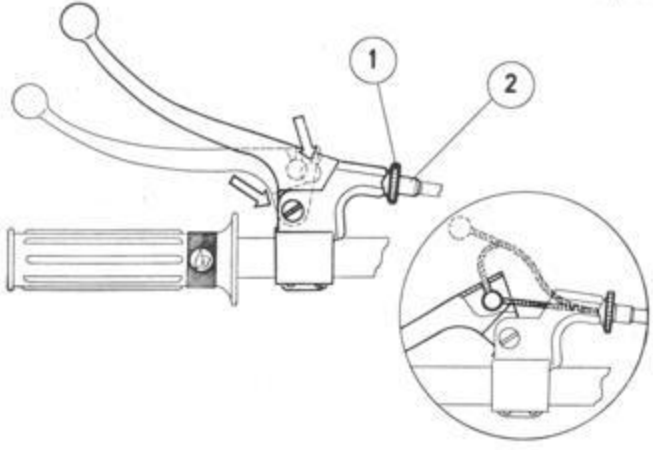
To decrease the amount of play, rotate the wheel so that the adjusted is extended from the mount.

Fig. 50



1. Screwdriver. — 2. Sparkplug wrench.

Fig. 51



1. Serrated wheel. — 2. Adjuster.

2. **Adjusting the Clutch Operating Shaft Assembly.** If the cable adjuster is extended all the way, and there is still too much play in the clutch cable, adjust the clutch tod adjusting screw inside the clutch case.

Before adjusting the Clutch Operating Shaft Assembly, retract the cable adjuster into the handlebar mount. With a large, screwdriver, remove the adjusting screw cap from the side of the clutch case. Insert the sparkplug wrench into the case, and loosen the clutch adjusting screw nut by rotating it CCW. Insert the screwdriver into the case, and rotate the clutch rod adjusting screw CW until it bottoms. Then rotate the clutch rod adjusting screw CCW a half-turn. Tigthen the clutch adjusting screw nut and check to see that the position of the clutch rod adjusting screw has not changed very much. Adjust the cable adjuster to get the correct amount of play at the handlebar lever.

Pull the handlebar clutch-lever several times while watching the travel of the clutch cable clamp housing above the magneto case. If the clamp housing bottoms against the magneto case before the lever reaches the handlebar, you will need to reposition the clamp on the clutch cable. Loosen the clamp bolt with a 6 mm. wrench. Pull the clamp about 1/2" toward the end of the cable. Tighten the clamp bolt. Adjust the clutch operating shaft assembly in the same manner before to take up the slack. Adjust the cable adjuster.

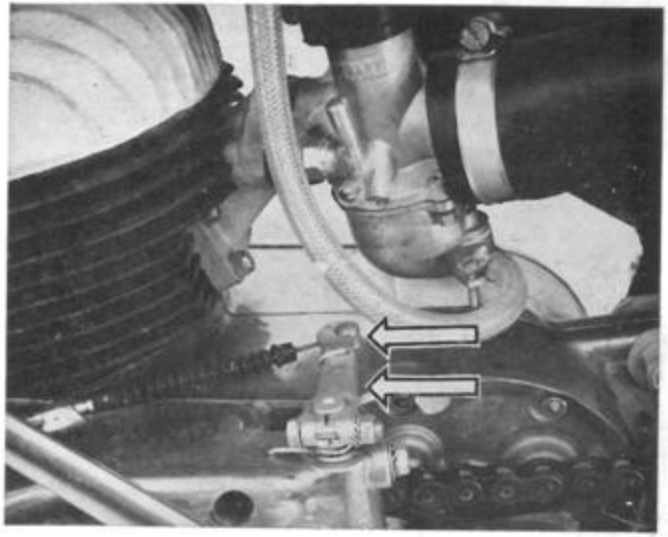


Fig. 52

3. **Installing a New Clutch Cable.** If the clutch cable becames worn of kinked, you will need to replace it with a new one. To remove the clutch cable, loosen the camp bolt above the magneto case. Pull the cable out of the cable clamp. Pull the clutch handlebar-lever to the handlebar. Grasp the exposed inner-cable and bend it around until it is aligned it the slot in the handlebar lever. Remove the cable from the motorcycle.

Lubricate a new inner-cable with motorcycle-chain lubricant. Thread the cable through the handlebar cable-adjuster and the handlebar mount. Aling tha inner cable with the slot in the handlebar lever, and install the cablle fitting. Fit the outer cable. Tread the cable through the retainers on the front downtube of the frame, so that the cable does not make any sharp bends. Thread the inner cable through the outer-cable stop above the magneto case.

Position the cable clamp in the housing connected to the clutch operating shaft assembly. Thread the clutch cable through the cable clamp. With a pair of pliers gently graps the end of the cable and pull it downward until the cable clamp is positioned about 1" from the outer-cable stop. Pull the cable up behind the cable clamp to hold the clamp in place, and tighten the cable-clamp bolt with a 6 mm. wrench. If necessary, adjust the amount of play in the cable adjuster and the clutch rod adjusting screw.

Note: If the clutch is slipping even through the cable is adjusted correctly, the clutch springs may need adjustment or replacement. Your dealer can make thesse adjustments.

F. THE FRONT FORKS

1. **The Filler Plugs.** If oil is leaking out of the top of either of the fork tubes, the check-valve in the filler plug is not seating properly. Remove the filler plug with a 20 mm. wrench. Remove the small screw from the top of the plug. Turn the plug upside down, and remove the spring and the ball-bearing. Clean the plug, the spring, and the ball in gasoline, and reassemble them.

2. **Rigidity of the front fork.** If the front fork and steering has a tendency of bending —particulary after several falls— you should follow thease instructions to obtain the original rigidity:

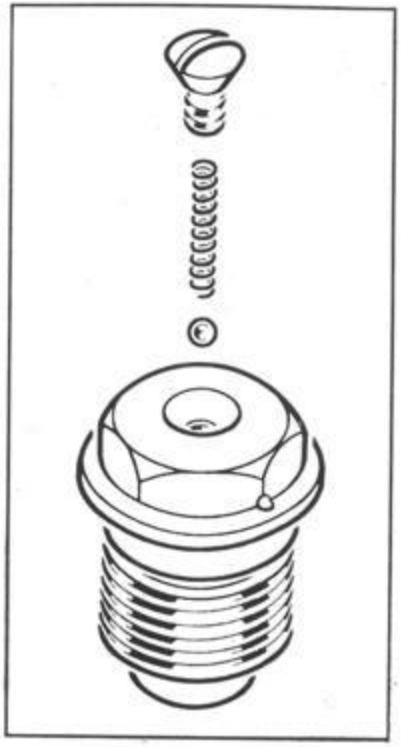
1. Loosen the fixation of the lower bracket to the stanchions on both sides.

2. Centre the fork, by pressing on the handlebars.

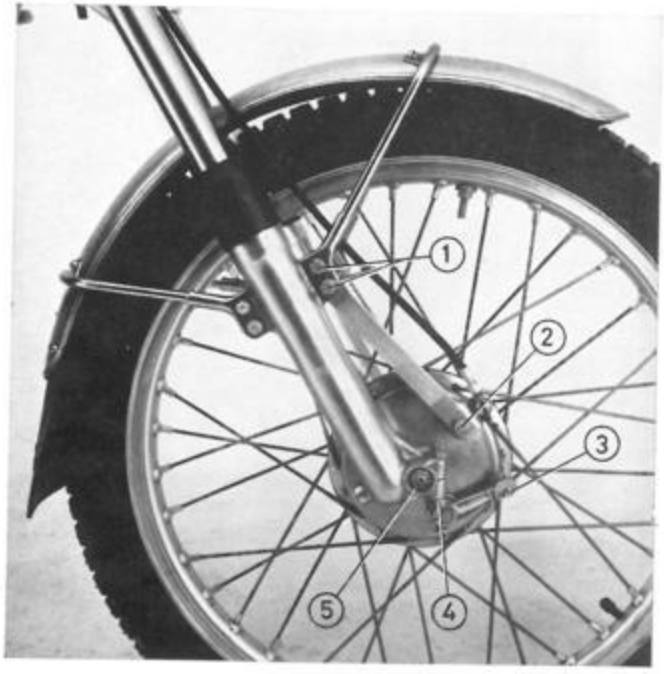
3. Tighten hard the two plugs with a 29 mm. wrench to pull the cones of the stanchions into the top braket.

4. Tighten hard the fixation of the lower bracket to the stanchions on both sides.

Fig. 53



G. THE FRONT WHEEL



1 and 5. Loosen. — 2, 3 and 4. Dismounting. Fig. 54

1. **Checking the Spoke Tension.** To check for correct spoke tension, wiggle each spoke gently. If the spoke nippel at the rim is able to move, the spokes is too loose. One or two loose spokes will do no harm. If several spokes on each side of the rim are loose, however, have your dealer adjust them.

2. **Removing the Front Wheel.** Eupport the frame so that the front wheel is off the ground. Loosen the front-brake cable-clamp and remove the brake cable from it. Loosen the two 10 mm. nuts and bolts that clamp the anchor plate to the right fork-leg. Remove the 14 mm. anchor-plate nut from the brake backing-plate. Remove the anchor plate from the backing plate.

Loosen the four 10 mm. axle-clamp nuts and boltls. With the dipstick and the 22 mm. wrench, remove the axle nut. Remove the axle from the left side of the amchine. Remove the front wheel from the motorcycle. Remove the brake backing-plate.

To reassemble fit the brake backing-plate to the front wheel. Position the wheel between the front forks, with the backing plate on the right side. Fit the anchor plate to the stud on the backing plate. Insert the front axle from the left side of the wheel.

On the front axle, mount the flatwaher, the lockwasher, and the axle nut. Tighten the nut slighly. Tighten the four 10 mm. axle-clamp nuts and bolts. Now tighten the axle nut securely. Mount the anchor-plate nut on the backing-plate and tighten it. Tighten the two 10 mm. anchor-plae nuts and bolts on the right fork-leg.

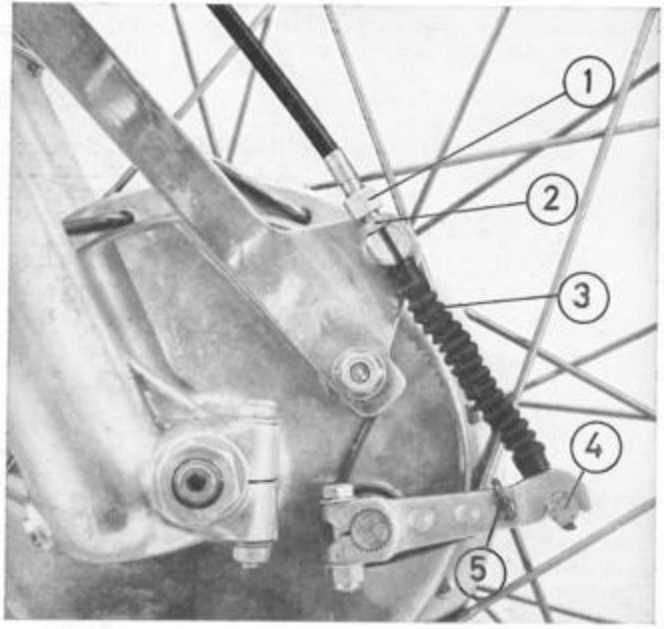
Fit the spring to hte inner brake-cable. Position the cable in the slot in the brake arm. Fit the cable clamp to the cable, and tighten it in its old position on the cable, as indicated by bend in the cable.

H. THE FRONT BRAKE

The rider with average-size hands will want the front brake to be locked tight when the brake lever is about halfway in toward the handlebar. If there is less travel, you lose some of the fine control of braking. Riders with very small hands may want the handlebar lever to come closer to the handlebar before the front wheel is locked, for greater laverage. You can adjust the travel of the handlebar lever with the cable adjuster. You will need to vary the positioning of the cable clamp. If this does not give you enough adjustment (after the motorcycle has many miles on it), you can vary the positioning of the brake arm on the backing plate.

1. **Using the Cable Adjuster.** To increase the travel of the handlebar lever before the front brake is locked, rotate the serrated wheel on the handlebar mount so that the adjuster is retracted for enough into the mount to give you the desired amount of increased lever-travel. If you wish to decrease the travel if the front-brake lever, rotate the serrated wheel so that the adjuster is extended from the handlebar mount.

Fig. 55



1. Cable adjuster. — 2. Cable adjuster locking nut. — 3. Protector rubber. — 4. Cable end. — 5. Spring.

Prop the motorclycle so that the front wheel is of the ground. Spin the front wheel and make certain that the brake is not dragging. If the brake is dragging, rotate the serrated wheel to retract the cable adjuster into its mount until the brake no longer drags.

2. **Adjusting the Cable Clamp.** If the cable adjuster is extended all the way, and the handlebar lever still has too much travel, you will need to reposition the cable clamp on the brake cable. Retract the cable adjuster into the handlebar mount. Loosen the cable-clamp bolt with a 6 mm. wrench, and grasp the cable-clamp with a pair of pliers. With another pair of pliers, grasp the end of the cable and position the clamp higher on the cable. With the clamp about an inch higher on the cable, pull the end of the cable up behing the cable clamp to hold the clamp in position. Release the pliers from the cable clamp, and tighten the cable-clamp bolth with a 6 mm. wrench. Adjust the cable adjuster to get the exact amount of handlebar-lever travel that you desire. Creck to make certain that the brake is not dragging.

3. **Adjusting the Brake Arm.** If the cable has been repositioned, and the handlebar lever still has too much travel, you will need to reposition the brake arm. Retract the cable adjuster. Loosen the cable-clamp bolt and remove the cable.

Remove the 10 mm. locknut from the clamp-bolt on the brake arm at the backing plate. Remove the arm from its splined shaft. Holding the arm just above the shaft rotate the arm about 30 degrees CCW from its old position. Fit the arm, to its splined shaft and mount the 10 mm. locknut. Position the cable clamp. If necessary adjust the cable adjuster. Check to make certain that the brake is not dragging.

4. **Changing a Front-Brake Cable.** Loosen the cable clamp, and remove the inner brake-cable from it. At the handlebar lever, bend the cable around until you can remove the cable-fitting from the lever. Remove the outer cable from the motorcycle. Remove the inner cable from the motorcycle.

Coat the new inner-cable with motorcycle-chain lubricant. Thread the inner cable through the cable adjuster and the handlebar mount. Insert the cable fitting into the handlebar lever. Fit the outer cable to the inner cable. Position the

1. Old position. — 2. New position. Fig. 56

cable along the right fork-leg, and thread the inner-cable through the outer-cable stop. Put the brake spring on the cable, and fit the cable to the brake arm. Install the cable clam. Position it, and tighten the cable-clamp bolt. If necessary, adjust the cable adjuster. Make certain that the brake is not dragging. Make certain that there are no sharp bends in the brake cable.

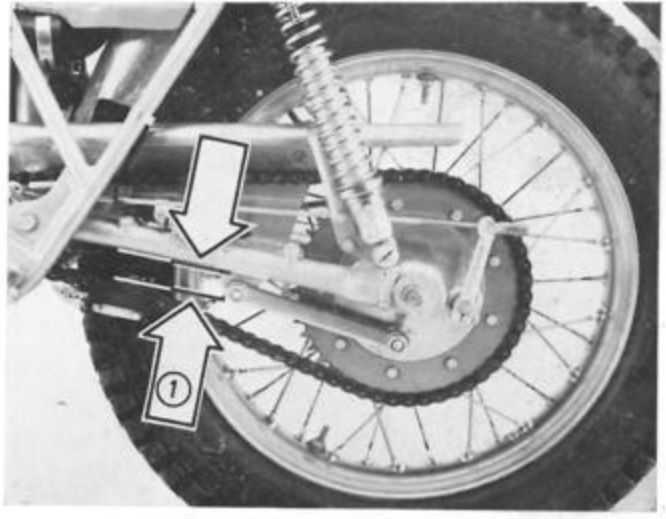
5. **Cleaning the Brake Linings.** Remove the front wheel from the motorcycle. Remove the brake backing-plate from the wheel.

Inspect the brake linings, being careful no to touch them with your fingers. The linings should be clean and dry. They should show even ear. The surfaces should be slightly rough.

If at anñ point the linings are thinner than 1/16", have your dealer replace them with new ones. If the linings are deeply and unevenly worn, have your dealer replace them with new ones and machine the brake drum if necessary. If the linings are damp with any substance other than water, have them replaced with new ones.

If the linings are shiny or glazed, roughen them with a medium-cut file. Use gentle, even strokes of the file to cut the gaze, and follow the contour of the lining.

Fig. 57



1. When play is over ½" adjust rear chain.

Clean the backing-plate and the lining with compressed, air, if necessary, lubricate the brake cams lightly with brake-cam grease or high-temperature grease, making certain that none of the grease gets on the linings.

Fit the backing-plate to them front wheel. Install the front wheel in the motorcycle.

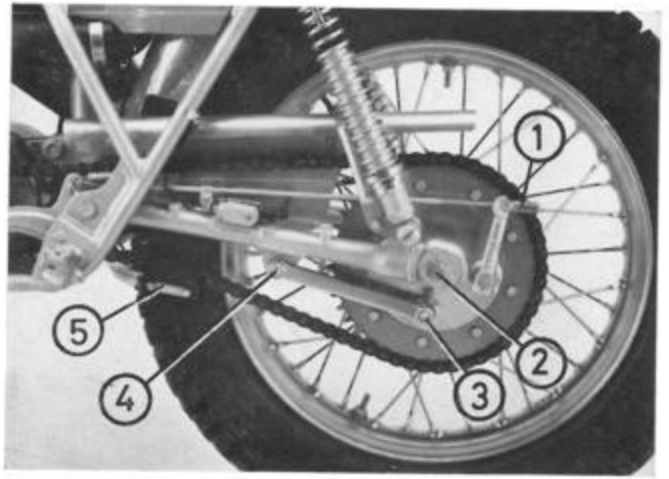
J. THE REAR CHAIN

1. **Tensioning the Chain.** Prop up the frame so that the rear wheel is off the ground. With the gearbox in neutral, rotate the rear wheel until you find the tightest point in the lower run of the rear chain. When play is over 1/2" adjust rear chain.

On the left side of the rear wheel, loosen the 14 mm. nut that clamps the anchor plate to the brake backing plate. Also loosen the 14 mm. nut at the other end of the anchor plate. Count the number of threads on the brake-rod protruding from the brake-rod nut. Rotate the brake-rod nut CCW to loosen the brake linkage. With the 22 mm. wrench and the dipstick, loose the axle nut.

Two rear-wheel adjusting-cams are fitted to the rear axle. If the rear chain is too loose, rotate the left-side adjusting-cam CCW the distance of one mak on the cam (from the left side of the motorcycle), rotate the right-side cam the

Fig. 58



2, 3 and 4. Loosen. — 1. New Regulation. — 5. Chain Tensionar.

Fig. 59

distance of one mark CW (from the right side of the motorcycle), if you were directly behind the motorcycle, both coms would rotate in the same direction.

Check the chain tension, and if the chain is still too loose rotate both cams another mark. If you always rotate both cams the same amount, the rear wheel will stay aligned. Continue to check chain tension and to rotate the cams until you have obtained the correct tension.

If the rear chain is too tight, rotate left-side adjusting-cam CW the distance of one mark, and rotate the right-side cam CCW one mark. If necessary, tap the cams gently with a mallet to seat them against their flanges on the swinging arm. Check the chain tension. Continue to check the chain tension and rotate the cams until you have obtained the correct tension.

Fig. 60

Tighten the axle nut securely. Tighten the nuts at both end of the anchor plate. Rotate the brake-rod nut CW and return it to its previous position.

2. **Cleaning the Chain.** Prop up the frame so that the rear wheel is off the ground, and shift the gearbox to neutral. Loosen the nuts at both ends of the anchor plate. Loosen the brake-rod nut. Loosen the rear-axle nut. Rotate both adjusting cams to their minimum tension positions. Tap the cam gently with a mallet to seat them against their flanges on the swinging arm.

Locate the master ling. Rotate the rear wheel until the master link is positioned so that you can get at it. Press the jaw of a pair pliers against the master link so that one jaw bears agains a leg of the spring clip, and the other free of the stud nearest the open end of the clip. Remove link. Remove the stud plate and separate the chain. Rotate the clip discard it. Remove the outer plate of the master the rear wheel to remove the chain from the sprockets.

Inmerse the chain in a pan of gasoline. Scrub the rollers and both sides of the links with a bristle brush. When the chain is clean, immerse it in a pan of hot grease, and stir the chain around to get grease into all of the rollers. Remove the chain, and allow it to cool.

Fit the chain to both sprokets. Connect the ends of the chain with the master-link stud-plate. Fit the outer plate. Position a new spring clip with the closed end nearest the direction of chain travel. If the master link is in the lower chain-run, the closed end faces the rear wheel. If the master link is in the upper chain-run, the closed end of the clip faces the countershaft sprocket. Fit the clip to the stud nearest the closed end of the clip. Use pliers to force the clip over the other stud. Tension the chain Tighten the anchor-plate nuts and the axle nut. Reposition the brake-rod nut.

3. **Changing the Chain.** When the old chain has become so worn that it has permanent kinks, or the rollers have a great deal of stretch, remove the chain and replace it with a new one. As a general rule, a new rear-chain will strech rapidly for a short while, so that you will need to re-tension it several times. After that, it will stretch more gradually.

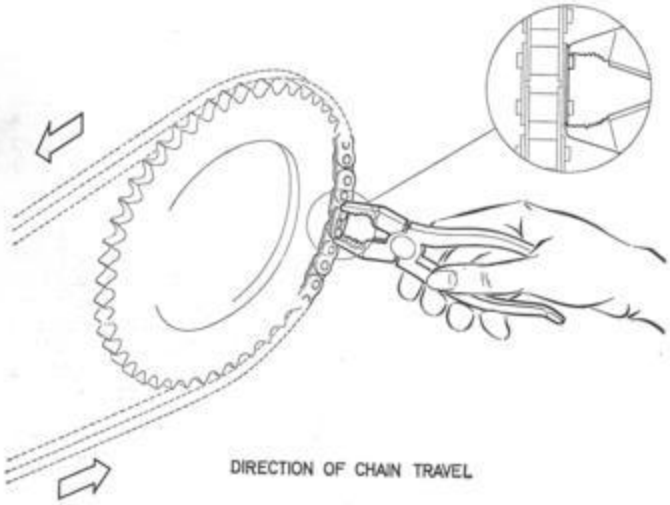


Fig. 61

K. THE REAR WHEEL

1. **Checking the Spoke Tension.** Check the spoke tension, in the same manner as for the front wheel. If necessary, have the dealer adjust the tension of the spokes.

2. **Removing the Rear Wheel.** Support the motorcycle so that the rear wheel is off the ground. Remove the brake-rod nut. Press down on the rear-brake pedal, and remove the brake-rod from the brake arm. Remove the 14 mm anchor-plate nut from the backing-plate stud. Loosen the 14 mm nut at the other end of anchor plate, and remove the anchor plate from the backing plate. Remove the rear chain. Remove the rear-axle nut and the washers. Remove the rear axle. Remove the rear wheel from the motorcycle. Remove the backing plate from the rear wheel.

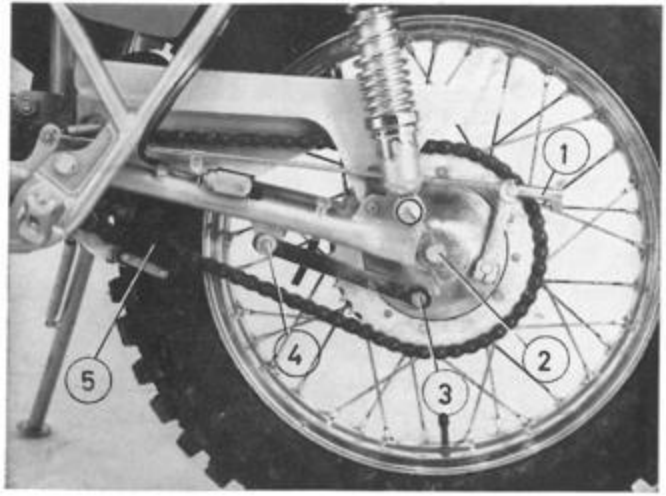


Fig. 62
1, 2 and 3. Remove. — 4. Loosen. — 5. Chain Tensioner.

To install the rear wheel, fit the backing-plate to the wheel hub. Position the wheel between the forks of the swinging arm, with the rear sproket facing left. Position the spacer between the right side of the wheel and the swinging arm,

in line with the axle holes. Fit one of the adjusting cams to the axle and insert the axle from the left. On the right side of the wheel, mount the other adjusting-cam, the lock washer, the flatwaher, and the axle nut.

Fit the anchor-plate to ist stud on the backing plate, but do not mount the nut. Tighten the axle nut sligtly. Mount the rear chain. Mount the spring on the brake rod. Fit the brake-rod nut loosely on the end of the brake-rod.

Tension the rear chain. Tighten the axle nut securely. Mount the 14 mm nut on the backing-plate anchor-plate stud. Tighten the nuts at both ends of the anchor plate. Position the brake-rod nut at its original setting.

L. THE REAR BRAKE

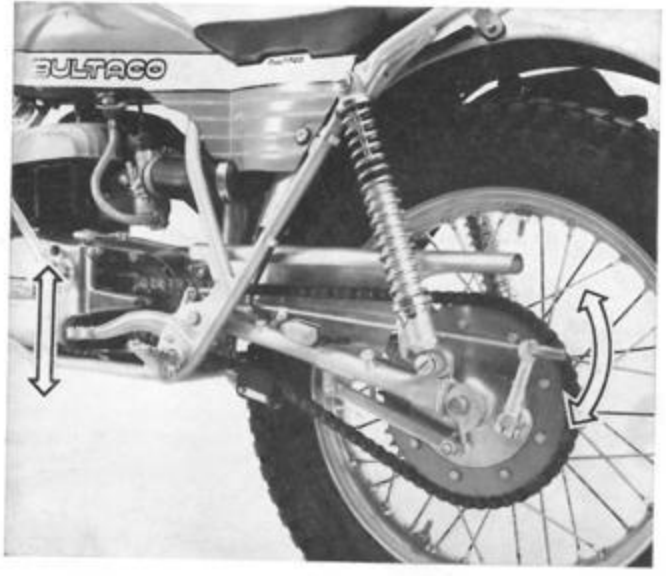
The rear brake should be locked after the rear-brake pedal has travelled about 2". To adjust the pedal travel, use the brake-rod nut. If you cannot get enough adjustment with the nut, you will need to reposition the brake arm on the backing-plate.

1. **Using the Brake-Rod Nut.** Prop the motorcycle so the rear wheel is off the ground. Shift the gearbox to neutral. Rotate the brake-rod nut SW and spin the rear wheel until the brake begings to bind. Rotate the brake-rod nut one turn CCW, and test the action of the brake pedal.

2. **Adjusting the Brake Arm.** If the motorcycle has many miles on it, and you cannot get a satisfactory adjustment with the brake-nut, you will need to reposition the brake arm. Remove the brake-rod nut. Remove the brake-rod from the brake arm. Remove the 10 mm locknut from the brake arm. Remove the brake arm from its splined shaft. Holding the arm just above the shaft, rotate arm about 30 degrees CW from its old position, and mount it on the splined shaft. Mount the 10 mm locknut. Fit the brake rod and position the brake-rod nut.

3. **Cleaning the Brake Linings.** Remove the rear wheel from the motorcycle. Remove the brake backing-plate. Inspect the brake linings in the same manner as for the front brake. If necessary, roughen the linings, or have them replaced. Clean the backing-plate with compressed air. Lubricate the cam lightly with brake-cam grease or high-temperature grease. Reassemble the rear wheel.

Fig. 63



IX. TROUBLESHOOTING

If the engine stops, or fails to start, use the following checklist in the order given, to identify the problem.

1. The gas tap may be in the closed position or it may no have been turned to «reserve» if the fuel supply is low.
2. The petrol tank may be emptly.
3. The sparkplug cap may have come off, or it may be loose on the sparkplug.
4. The sparkplug may be oiled, or it may be whiskered, or it may have a short that is difficult to see. Try a new sparkplug.
5. There may be no spark. Fit the sparkplug cap to the new sparkplug, and lay the sparkplug on the cylinder head with the metal base of the plug grounded to the head. With the gearbox in neutral, use the kickstarter to see if you're getting a blue spark.
6. The fuel line or the fuel-filter may have become clogged with sediment.

If you are unable to locate of to overcome the difficulty, check with your dealer. If the engine runs, but does not run properly, check with your dealer.

X. CLEANING THE MACHINE

The Sherpa T is a handsome machine when it is clean. The lines are not complicated, so you can clean the machine quickly and easily.

1. **Washing.** Cover the end of the exhaust pipe with a plastic bag. Hold the bag in place with a large rubber-band. Stuff plastic bags beneath the front of the saddle, to block the air-cleaner intake. Apply Gunk, or a similar cleaner, by spraying or with a painbrush. Use it sparingly on painted surfaces, and keep it of the saddle and the brake backing-plates. Hose the machine with water, bein careful to avoid directing the stream against the backing plates, or beneath the saddle from the front. Wipe off the machine with a clean, soft rag, and remove all traces of the solvent from painted surfaces.

2. **Waxing.** Use a silicone-base wax. Apply the wax with a soft, clean cloth, and rub it in well with circular motions. Use another, softf, clean cloth to polish the surface to a high luster.

Do not use a wire brush, or abrasives such as emery cloth, to clean or polish the chrome surfaces or the spokes.

XI. PREPARING THE MACHINE FOR STORAGE

If you wish to store the machine for several months, first clean it carefully. Then coat the chrome-plating and other metal surfaces with a light film of oil.

Empty the petrol-tank. Drain the carbureter. Remove the drain plugs and drain the primary case and the gearbox. Plug the drain holes with clean cloths.

Remove the sparkplug and pour 10 cc of SAE 30 oil into the sparkplug hole. Use the kickstarter to move the piston up and down a fefw times. Stop the piston at Top Dead Centre. Plug the sparkplug hole with a clean dry cloth.

Prop up the motorcycle so that the tyres do not suppor its weight. Let some of the air out the tyres. Cover the motorcycle with a plastic cover that reaches down to the ground.

XII. DETAILED SPECIFICATIONS

A. ENGINE

	350	250
1. Number of cylinders	1	1
2. Type of engine	Two-cycle	Two-cycle
3. Bore	83.2 mm	72 mm
4. Stroke	60 mm	60 mm
5. Displacement	326.03 cc	244,29 cc
6. Compression ratio	9:1	9:1
7. Bhp @ rpm	20 @ 5500	21.5 @ 5500

B. CARBURETER

1. Brand	AMAL
2. Manufacturers description	627
3. Diameter of mixing chamber	27 mm
4. Slide	3.5
5. Needle	U-2nd pos.
6. Needle jet	106
7. Main jet	150
8. Pilot jet	20

C. INTERNAL GEARING

1. Engine sprocket	16 T
2. Clutch sprocket	38 T
3. Primary-drive ratio	2.375 revs of the crankshaft for each rev of the gearbox mainshaft
4. Countershaft sprocket	11
5. Rear sprocket	46
6. Rear-drive ratio	4.181 revs of the gearbox mainshaft for each revolution of the rear wheel.
7. Total ratio	9.929 revs of the crankshaft for each rev of the rear wheel.

D. GEARBOX

1. 1st gear ratio	0.263:1
2. 2nd gear ratio	0.342:1
3. 3rd gear ratio	0.442:1
4. 4th gear ratio	0.723:1
5. 5th gear ratio	1:1
6. Type of lubricant	SAE 90 motorcycle-gearbox lubricant, or SAE 90 automobil hipoid lubricant
7. Quality of lubricant	600 cc (21.117 England fluid ounces)

E. CHAINS

	250	350
1. **Primary Chain**		
a. Brand	Joresa	Joresa
b. Manufacturer's description	Duplex	Simple
c. Pitch	3/8" (9.53 mm)	
d. Diameter o froller	0.2 (5.08 mm)	
e. Distance between faces	0.295" (7.50 mm)	
f. Number of links	52	

2. **Rear Chain**		
a. Brand	Joresa	
b. Manufacturer's description	ESPECIAL 55	
c. Pitch	5/8"	(15.875 mm)
d. Diameter of roller	0.4"	(10.16 mm)
e. Distance between faces	0.255"	(0.48 mm)

F. CLUTCH

1. Type	Multi plates in oil bath
2. Handlebar-lever free-play	3/16"
3. Type of lubricant	Hydraulic SAE 30
4. Quality of lubricant	300 cc (10.558 England fluid ounces)

G. ELECTRICAL EQUIPMENT

	250	350
1. Type of system	Flywheel magneto	
2. Brand	FEMSA	
3. Generator	VAR41-51	VAR41-52
4. H. T. Coil	BA9-53	
5. Lighting current	40 W	
6. Voltage	6 V	
7. Direction of rotation	CCW	
8. Contact-breaker poinst-gap	.0137" - 0.177" (0.35 - 0.45 mm)	
9. Ignition timing BTDC	.122" - .129" (3.1-3.3 mm)	.110" - .118" (2.8-3 mm)

8. **Light Bulbs**

a. Headlight	35 x 35 w. — 6 v.	
b. Taillight	5 w. — 6 v.	
c. Stoplight	15 w. — 6 v.	

H. SPARKPLUGS

1. Size	0.551"	(14 mm)
2. Reach	3/4"	(19 mm)
	.013 - 0.17"	(0.35 - 0.45 mm)

a. Lodge	CLNY
b. KLK	FE-30
c. Bosch	W145-T30
d. Firestone	F18L
e. Champion	U12Y

I. STEERING

1. Type of bearing	2 sets of ball bearings	
2. Diameter of ball	3/16"	
3. Number of balls/bearing	22	
4. Distance between bearing	5 9/16"	

J. FRONT SUSPENSION

1. Type	Telescopic	
2. Dampening	Hydraulic	
3. Travel	6 1/2"	(165 mm)
4. Type of oil	SAE 10 hydraulic	
	180 cc (6.3 England fluid ounces)	

K. REAR SUSPENSION

1. Type	Swinging arm	
2. Type shock absorbers	3-way adjustable telescopic, with hydraulic dampening	
3. Travel	3 15/16"	(100 mm)

L. WHEELS

1. Front rim	M1 (1.6) x 21"
2. Front tyre	2.75 x 21" Trial
3. Rear rim	WM2 (1.85) x 18"
4. Rear tyre	4.000 x 18" Trial

5. **Front Tyre Pressures**

a. Trial	5 lbs/sq"
b. Trails	8 lbs/sq"
c. Pavement	14 lbs/sq"

6. **Rear Tyre Pressures**

a. Trial	4 lbs/sq"
b. Trails	6 lbs/sq"
c. Pavement	12 lbs/sq"

M. BRAKES

1. Type	Internal expansion: leading-shoe, trailing-shoe	
2. Front brake diameter and width	Ø 125 x 25 mm	
3. Rear brake diameter and width	Ø 140 x 30 mm	

N. GENERAL

1. Gas tank capacity	1 Imp. gallon (4.5 litres)	

3. **Proportion of Oil in Gasoline**

a. Regular SAE 40 motor oil	5 %	
b. Two-cycle oil	4 %	
c. Shell Super 2T	4 %	
4. Wheelbase	51.7"	(1315 mm)
5. Overall lenght	78.9"	(2005 mm)
6. Saddle height above ground	30.7"	(780 mm)
7. Ground clearance	11.6"	(295 mm)
8. Foot-rest height above ground	13.7"	(350 mm)
9. Handlebars, height & width	41.1" x 31.5"	(1040 x 810 mm)
10. Empty weight	199 lbs (90.5 Kgs)	200 lbs (91 Kgs)
	250	350

NOTES

In the rush of modern business it is easly to forget the little courtesies. So please allow us to thank you, and express the hope that this BULTACO will give you every success and great satisfaction.

CEMOTO

Boîte : SAE 90 600cc

Embrayage SAE 30 250cc

Fourche : SAE 20 170cc

Bougie : 9 : Trial 12 : Enduro

- Sabot . Embrayage . Suspension arrière - filtre .
- frein . Selecteur (avec huile chaîne)
- biellettes - Reservoir S/Selle

Entraînement 140