SCOOTER SERVICE SHEET

1008

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250 c.c. O.H.V. TWIN CYLINDER SCOOTER

ADJUSTMENTS WHICH CAN BE CARRIED OUT WITHOUT EXTENSIVE DISMANTLING

It is essential for the efficient running of the machine that certain checks are carried out periodically, in accordance with the summary of routine maintenance laid down in the instruction manual.

On the left hand side of the machine is a nacelle with a wire mesh grill ; this is held in position by one $\frac{3}{16}$" screw on the right hand side, the left hand side being retained by a small lip behind the valance. Take out the screw and remove by lifting the nacelle from the right hand side.

The circular contact breaker cover can now be seen situated to the right of the clutch operating lever. There is also a large hexagon plug which is the primary drive oil level and filler plug and slightly to the right is a hexagon bolt fitted with a grease nipple to provide a means of greasing the rear drive swinging arm bearing.

Contact Breaker.

The contact breaker gap (A Fig. 4 Service Sheet No. 1004) when fully open should be between ·014" and ·016".

To check the gap take out the two small screws which retain the circular contact breaker cover and turn the engine over carefully until one of the fibre heels is on the peak of the cam, and the points adjacent to this heel are fully open. This can be done either by placing the machine in gear and moving the rear wheel or by gently turning the engine by means of the kick-starter.

If gap A is incorrect when the points are fully open, slacken the small circular nut B which will be seen inside the C shaped coil of the spring, and the fixed contact point can then be moved in or out as necessary. This is the contact point nearest the small condenser. When the gap is correct, retighten the nut inside the C shaped spring and check again, re-adjusting if necessary.

Again turn the engine over until the other set of points is fully open and repeat the operation. When both sets of points have been checked replace the cover by sliding the rubber grommet into the U shaped slot, lift the black and white wire outside the left hand, long hexagon nut, to ensure that it does not foul the cam when the engine is running and replace the contact breaker cover screws.

Ignition Timing.

The normal ignition advance is 5° and the Scooter engine is very sensitive to ignition settings, only the smallest deviation from the correct setting being sufficient to cause overheating and rough running.

The best way to check the timing is to observe the vanes on the cooling fan. These are spaced 11° apart so that half the distance between two vanes is very near to 5°. The full procedure is, firstly, to rotate the engine until the nearside piston is on top dead centre of the compression stroke (i.e., both valves closed). Then turn the engine backwards through 5°, remembering that it is a "backward-running" engine, and the lower set of points (Fig. 4 Service Sheet No. 1004) should then be just breaking.

If the setting is incorrect slacken off the two long hexagon nuts C which secure the contact breaker back plate and rotate the plate until the points are just about to open. Then re-tighten the two hexagons and re-check the adjustment.

Note that turning the plate clockwise advances and anti-clockwise retards the timing. Also remember the importance of the contact breaker gap, for even a slight variation tends to alter the timing. (Opening the points advances the timing ; closing them retards the timing).

A rough check of the timing can be made by observing the position of the hexagon nuts C in the slots in the contact breaker plate. They should be approximately $\frac{1}{16}$" to the left of the centre of the slots and it will be seen that the timing can be roughly set by slackening off the hexagons, with the nearside piston on top dead centre of the compression stroke, ensuring that they are in the approximate centre of the slots and then re-tightening after turning the contact breaker plate approximately $\frac{1}{16}$" to the right.

Clutch.

Should it be necessary at any time to increase the spring tension on the clutch pressure plates, access to the spring nuts can be obtained through the primary drive oil level and filler plug. It should, however, be borne in mind that adjustment of the clutch springs should only be necessary after a very considerable mileage or if clutch slip is occurring, and before any alteration to the spring tension is made ascertain that the clutch cable is correctly adjusted, as indicated by approximately $\frac{1}{4}$" of free movement at the end of the clutch handlebar lever, as in Fig. 22. The inner cable must be quite free and not binding due to frayed wire or other causes.

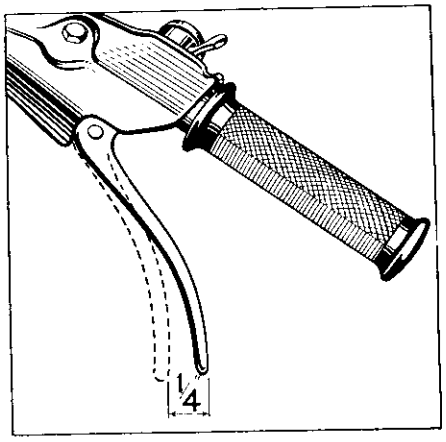


Fig. 22. Clutch control adjustment.

To adjust the clutch springs take out the oil level and filler plug and turn the engine gently until one of the three nuts can be seen through the hole, then with a forked screwdriver screw in the nut very slightly ; say a quarter to half a turn. Revolve the engine again until another nut shows and repeat the operation and again for the third nut, but great care must be taken to ensure that each nut is adjusted exactly the same amount, otherwise the plates will be distorted and clutch drag liable to occur.

Clutch slip can sometimes be detected by means of the kick-starter, for the slip can be felt if the pedal is depressed and the engine fails to turn over. It can also be detected when climbing hills under load by high revving of the engine with loss of pulling power.

Because either clutch slip or clutch drag (failure to free the drive completely) is occurring, do not jump to the conclusion that the clutch springs require adjustment. Instead make sure that the clutch cable itself is quite free in the outer casing and that it is not damaged in any way.

Checking Oil Level in Primary Drive.

This is done by leaning the machine over slightly towards the left hand side, when, if the level is correct, oil will start to run out of the filler plug hole. If the level is low then oil should be added up to the bottom edge of the hole and the plug replaced. For the correct grade of oil refer to the oil recommendation chart in your instruction book.

Adjusting Clutch and Throttle Control Cables.

Adjustment of both these cables may be necessary after a short initial mileage on the machine as outer casings are liable to contract. Adjusters are situated behind the headlamp and in front of the steering column, but do not attempt to carry out adjustment to either cable unless there is a definite need. There should be just perceptible play on the clutch lever when the machine is at rest to ensure that the clutch operates properly. If there is no play on the lever then the clutch is liable to slip when the machine is under load.

The throttle cable should only be adjusted if there is a time lag in the operation of the throttle, as indicated by a delay in response when the twist grip is turned towards the rider.

To carry out adjustment take out the screw below the headlamp rim and lift the headlamp forward and upwards from the bottom, lifting it clear of the lip which retains the top edge. If it is necessary to place the lamp to one side it can be disconnected by twisting the black bakelite retainer anti-clockwise and by taking out the small parking light bulb which is a press fit into the reflector.

The clutch cable adjuster will be seen on the thicker of the two cables which carry adjusters, the thinner one being the throttle cable. If the clutch cable is too slack release the locknut, screw out the adjuster as required and re-tighten the locknut, but take care to see that there is slight movement on the clutch lever. The same procedure is adopted with the throttle cable if play has to be taken up.

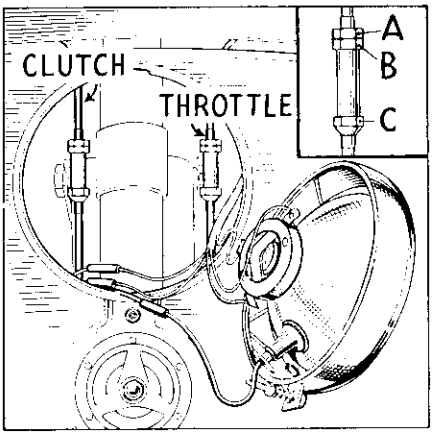


Fig. 23.
Adjusting the Clutch Cable (also Throttle)

If it is necessary to adjust the position of the throttle to provide a better tick-over, then this operation is carried out by means of an adjuster on the carburetter itself. This is described in the next section.

Before replacing the headlamp make sure that the cables are in the centre of the steering tube and not to the side of the steering column.

To replace the headlamp, engage the top edge of the rim over the lip on the front shield, press the lamp well home and screw in the screw at the base of the rim.

Throttle Control.

To adjust the throttle for tick-over, lift the dual seat to gain access to the screw on the right hand side of the carburetter. (14 Fig. 28). By screwing this in clockwise the throttle slide is raised to provide a faster tick-over or lowered to slow down the tick-over speed. The best throttle opening is that which gives an even but not too fast tick-over and is also suitable for starting the engine with the twist grip completely closed against the stop.

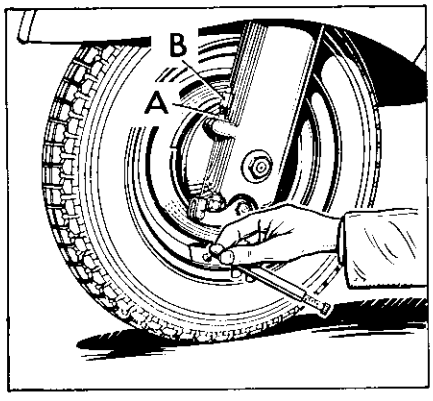


Fig. 24.

Front Brake Cable.

The front brake cable has an adjuster situated on the left hand side of the machine and on the front edge of the fork tubes. (See Fig. 24).

Care should be taken when adjusting to see that the brake does not bind. The handlebar lever should be quite free and should have a free movement of approximately ¼" when measured at the tip of the lever.

To adjust, undo the locknut and screw the adjuster in or out as necessary, bearing in mind that screwing out will take up the slack in the cable and screwing in will provide more slack. Do not omit to re-tighten the locknut after the correct adjustment has been obtained.

Rear Brake.

The rear brake is foot-operated by cable connection and there is an adjuster situated to the rear and underneath the pillion passenger's left hand footboard. (Fig. 25). The adjustment is correct if the brake pedal is approximately 1½" from the footboard when the brake is applied. If the pedal comes too close to the footboard, undo the locknut on the adjuster and screw the adjuster out as necessary. Then re-tighten the locknut, and make certain that the brake is not binding.

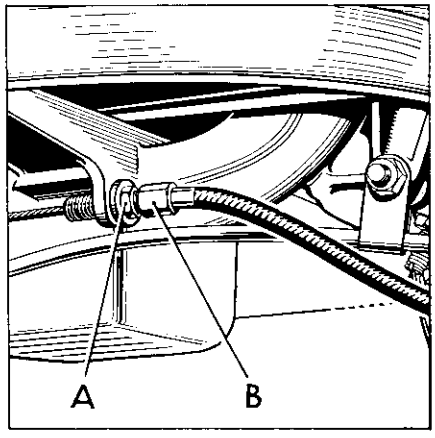


Fig. 25. Rear brake adjustment.

Changing the Wheel.

In the event of a puncture, the wheel affected will have to be removed for the puncture to be repaired, or for the wheel to be changed if a spare wheel is carried. The procedure for removal of the wheel will be described assuming that a spare wheel is carried on the machine.

Release the lightning fastener round the spare wheel cover, take off the two nuts securing the rear carrier and spare wheel and slacken the two bolts securing the rear carrier at each side of the dual seat. Lift up the carrier and take off the spare wheel, then remove the cover and place the spare on the ground next to the wheel to be changed.

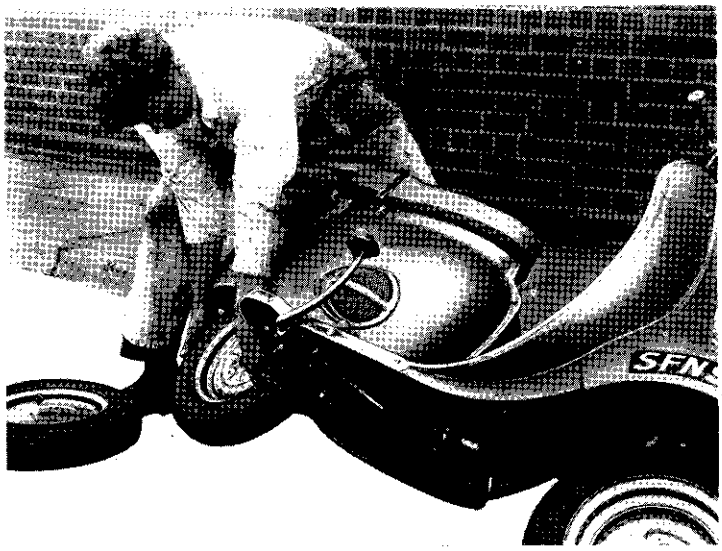


Fig. 26. Changing a wheel.

In the case of the rear wheel, with the machine on the stand, slacken off the three wheel nuts so that they can finally be removed by hand, but do not remove the nuts completely. Now take the machine off the stand and lean it over towards the left hand side so that it is resting on the extreme end of the stand leg. (Fig. 26). This should be done gently to ensure that the machine does not fall over, although it will balance quite easily in this position. Now stand astride the rear of the machine and apply slight pressure so that the rear tyre is raised slightly off the ground. Take off the three wheel nuts and remove the wheel ; pick up the spare wheel, place it in position with the deeper side of the wheel against the rear drive (that is with the valve on the right hand side or uppermost), screw on the three nuts until the counter-sink is gripping the wheel slightly and raise the machine upright. Place it on the stand and securely tighten the three nuts a little at a time. Do not tighten one nut completely since this is liable to tilt the wheel on the stub axle.

Always make sure that the three nuts are securely tightened.

In the case of the front wheel the procedure is the same but do not in any circumstances take the three wheel nuts off completely ; simply slacken them off so that they can be finally removed with the fingers. Again, take the machine off the stand and lean it over towards the left hand side, resting on the edge of the stand leg. Then go round the machine to the right hand side, hold the handlebars and press slightly away so that the front tyre is slightly off the ground and pressure on the wheel is released. Take off the three nuts, pick up the spare wheel and place it in position on the hub, this time with the valve next to the hub or brake drum (that is on the left hand side of the machine), screw on the three nuts, again tightening each one a little at a time and when the wheel is gripped sufficiently to locate it raise the machine upright, place it on the stand and finally tighten the three wheel nuts securely.

Note that the front wheel is fitted with the valve on the left hand side and the rear wheel is fitted with the valve on the right hand side of the machine.

Valve Clearance Adjustment.

This is commonly known as tappet adjustment but the name does not properly apply in the case of the Scooter engine because the adjusting pins are mounted above the valves at the end of the valve rockers, and not on the tappets themselves.

A certain amount of clearance or lost motion in the valve operating mechanism is essential to ensure that the valve heads close properly on their seats and provide a gas-tight joint. The clearance of ·005" for both inlet and exhaust valves is most critical and the Scooter engine is unlikely to run efficiently if there is any deviation from the standard settings.

The procedure for checking and adjusting (which can be carried out with the valances in position) is first to raise the dual seat and then to detach the sparking plug leads by placing the first two fingers of the right hand beneath the plug terminal and pulling upwards with the thumb against the rocker cover. Next remove the two nuts which hold the rocker cover in position, swing the petrol tap support bracket to one side and take off the steel and fibre washers from the two studs. The rocker cover can then be removed but care must be taken or the joint washer may be damaged.

Turn the engine by means of the kick-starter or by rotating the rear wheel with top gear engaged until Valve No. 1 (see diagram) is fully open. Valve No. 4 will then be in the correct position for checking its clearance. Check all the valves in this way in accordance with the table below by means of a ·005" feeler gauge inserted between the end of the valve stem and the adjusting pin on the rocker.

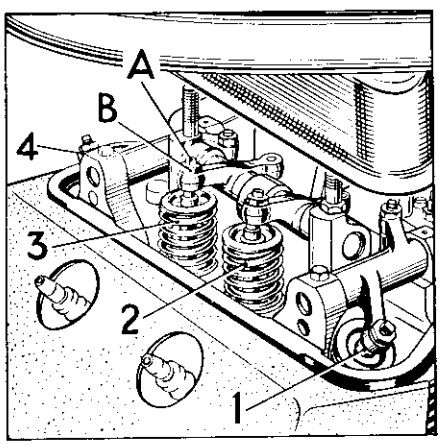


Fig. 27. Tappet adjustment.

How to set the valves for checking clearances.

When No. 1 Valve is fully open check No. 4 Valve.
" " 2 " " " " " " 3 "
" " 3 " " " " " " 2 "
" " 4 " " " " " " 1 "

Note that this operation must be carried out when the engine is cold.

When re-assembling make sure that the washer is in good condition before replacing the cover. Use a new one if in doubt. Carefully locate the cover over the two rocker box studs and press it gently down making sure that the washer has not been misplaced. Place the two fibre washers and then the steel washers in position over the studs, swing the petrol tap support bracket over the left hand side stud and screw on the two $\frac{1}{4}$" nuts.

Both nuts should be tightened a little at a time to ensure that the cover is not distorted and it may also be necessary to support the petrol tap bracket to see that this is not twisted out of position for this will affect the opening and closing of the petrol tap.

Sparking Plugs.

It is essential for the efficient functioning of the engine that the sparking plugs are cleaned periodically at about 5,000 mile intervals and the gap between the plug terminals checked. Cleaning is best carried out by a garage having the proper equipment, the charge for this work being very moderate.

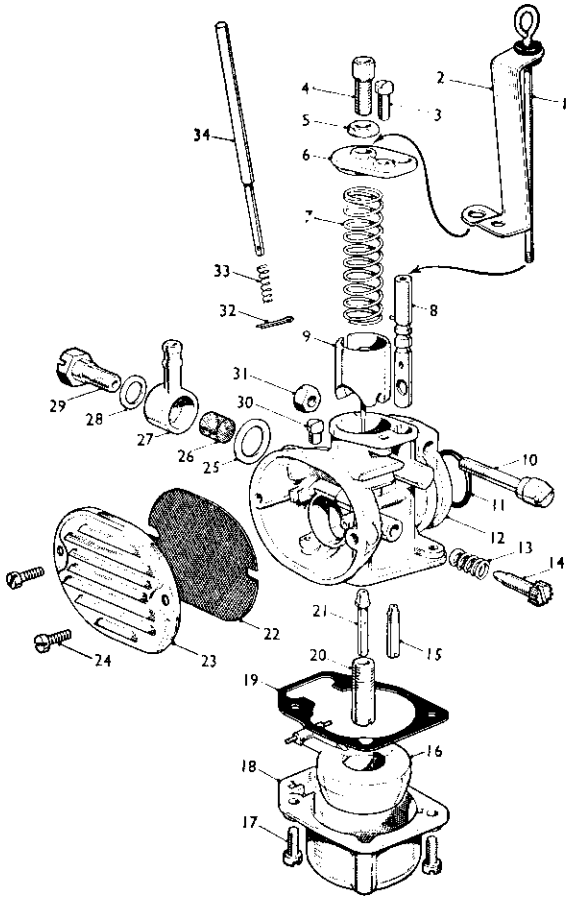
The plug gaps can be checked and reset by the owner-rider, however. To do this remove the plug leads and unscrew the plugs with the spanner provided in the tool kit. When lifting the plugs out be very careful not to drop the joint washers as they will be impossible to retrieve without removing all the valances and the ducting round the engine.

The plug electrodes should be bright black in appearance and not fouled with oil. If they are whitish in appearance it is an indication of weak mixture and the cause of this should be ascertained and be eliminated. In general it can be said that weak mixture can only be caused by a partial stoppage in the carburetter, usually in the main jet. Correct spark plug setting is ·018" ·020" and the setting should always be corrected by bending the outside electrode ; in no circumstances should the centre electrode be moved.

When replacing the plugs see that the copper jointing washers are in position, insert the plug very carefully through the hole in the shroud, screw in with the fingers and finally tighten with the plug spanner. When replacing the high tension leads and plug terminals make sure that the lead from the right hand coil is placed on the right hand side spark plug, and the one from the left hand coil on the left hand side spark plug.

Cleaning the Carburetter.

It is sometimes necessary to dismantle and to clean the carburetter to remove any foreign matter that may have found its way through the two filters, or to remove moisture which is certain to accumulate sooner or later. This is an operation which can be done without removing the valances, though the work will be simplified if it is carried out when the valances have been removed for some other operation.



1. Starter Slide Control Rod.
2. Bracket for Control Rod.
3. Cover Plate Screw.
4. Cable Adjuster.
5. Locknut for Cable Adjuster.
6. Cover Plate.
7. Spring, Main Slide.
8. Starter Slide.
9. Main Slide and Needle.
10. Clamping Screw.
11. "O" Ring.
12. Carburetter Body.
13. Spring, Throttle Adjustment Screw.
14. Throttle Adjustment Screw.
15. Slow-running Jet.
16. Float.
17. Carburetter Bowl Screw (2).
18. Carburetter Bowl.
19. Gasket.
20. Main Jet.
21. Emulsion Tube.
22. Air Intake Gauze.
23. Cover for Air Intake Gauze.
24. Cover Screw (2).
25. Filter Elbow Washer.
26. Filter Gauze.
27. Filter Elbow.
28. Filter Plug Washer.
29. Filter Plug.
30. Plugging Screw.
31. Clamping Screw Nut.
32. Split Pin.
33. Spring for Tickler.
34. Tickler Stem.

Fig. 28. The carburetter.

Assuming that the operation is to be carried out without removing the valances first turn off the petrol at the tap. Remove the nut from the left hand side rocker box stud this being the one which retains the petrol tap bracket. Lift the bracket up and swing it to one side out of the way. Now, with a short screwdriver slacken off the screw (29 Fig. 28) on the left hand side of the carburetter which secures the banjo union on the end of the petrol pipe to the float chamber. Be very careful when lifting the screw out not to lose the fibre washers each side of the banjo union and not to damage or drop the cylindrical gauze filter inside the union.

Place the screw, washers and gauze filter carefully on one side.

Unscrew the two $\frac{1}{4}$" nuts and washers securing the swan neck manifold to the cylinder head and carefully work the carburetter complete with manifold off the studs. It is sometimes considered easier to remove the manifold from the studs and to unscrew the banjo union afterwards but this is a matter of choice.

The carburetter can now be lifted up and out of the engine shields for removal of the float chamber, etc., for cleaning. In normal circumstances it is only necessary to remove the float chamber and possibly the pilot and main jets. (15 and 20, Fig. 28).

Unscrew the two small $\frac{3}{16}$" pins (17, Fig. 28) one on each side of the

float chamber and remove the float chamber complete with the nylon float. Be very careful not to damage the paper gasket which will be found between the float chamber and the body of the carburetter.

The float can now be lifted out and the chamber cleaned thoroughly of any accumulation of water or foreign matter.

If the jets are to be removed, the screwdriver should be in good condition. Never use one which is badly worn and which can slip and possibly shave off a portion of the jet.

Unscrew the jets by means of the screwdriver (they have normal right-hand threads and are therefore unscrewed anti-clockwise), and blow out any foreign matter. Do not in any circumstances use a piece of wire to poke a jet out. The pilot jet (15) is situated at the corner of the body and the main jet (20) in the centre.

Having cleaned the jets they should be replaced, again taking extreme care not to shave a portion of the jet away by allowing the screwdriver to slip since any portion of metal may be jammed in the jet aperture.

If the paper gasket between the float chamber and the body of the carburetter has been damaged, it should be replaced with a new one. Place the gasket in position, see that the nylon float is correctly positioned in the float chamber and replace the chamber, screwing in the two small $\frac{3}{16}$" screws. Make sure that these are tight before replacing the carburetter.

To reconnect the carburetter, place the screw with the small fibre washer against the smaller diameter of the banjo union, insert the cylindrical gauze filter, then place the larger fibre washer in position and screw up on to the float chamber, finally tightening with a screwdriver. Now work the carburetter down into the aperture and gently in position over the two studs. Again, care should be taken to see that the gaskets are in good condition. Replace the two $\frac{1}{4}$" nuts and washers, tightening each one a little at a time so as not to distort the manifold joint face. Replace the petrol tap support bracket over the left hand side rocker box stud and replace the $\frac{1}{4}$" nut.

Rear Chain Adjustment.

The total up and down movement of the rear chain should be $\frac{1}{4}$". This can be checked by taking out the inspection plug situated half-way along the case towards the top.

When adjustment is necessary, slacken the locknut on the stud projecting from the lower edge of the case, and screw the stud in or out as required. Screwing in will tighten the chain and screwing out will slacken it.

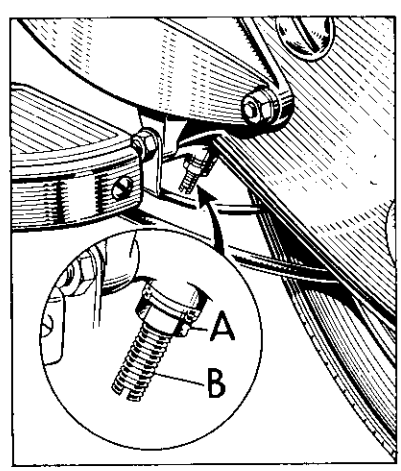


Fig. 29. Rear chain adjuster.

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