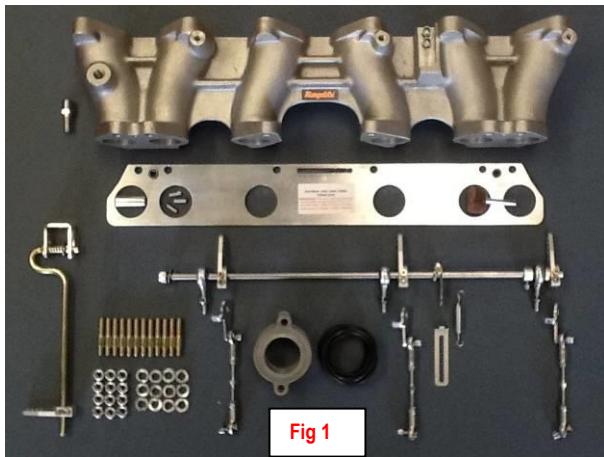


INSTALLATION INSTRUCTIONS

The Datsun 240/260/280 Zs have a particular problem that makes it impossible to produce one standard machined aftermarket Weber or injection manifold casting that will fit accurately the wide range of varying dimensions of the cylinder head inlet ports – see **Template Port Matching** below

Dellorto and other makes of carburetors with identical port and stud centres to Weber, can be fitted. However, the customer will be required to source their own levers which should be fixed to the carburetor at the angle shown in **Fig 8**.

Throttle bodies with Weber pattern flanges are suitable. Jenvey can supply specially made levers to suit Mangoletsi linkage – contact Jenvey direct.



Follow the step by step guide to prepare and pre-assemble the major components of the kit

- Use the template to match manifold to cylinder head.
- Fix throttle linkage cross shaft assembly to manifold – see **Fig 3/4/5**
- Set up the linkage levers on the carburetors ready to be bolted to the manifold later. Make any changes required to the choke and jet sizes.
- Bolt carburetors to manifold, bolt manifold to cylinder head and connect carburetor levers to aluminium billet levers on the cross shaft
- Connect linkage shaft with U bracket to bulkhead support and connect threaded rod and ball joints at both ends.

TEMPLATE PORT MATCHING SYSTEM ONE MANIFOLD FITS ALL HEADS - EXACTLY

Matching one aftermarket performance inlet manifold to the varying port centres in the many different Datsun L6 head castings has always created considerable problems, and requires many hours of work to achieve what is still often a compromise result. Not only do the port centres vary in position and shape, but the stud centre positions also vary. To accommodate this problem, in the standard manifold, the stud holes are drilled oversize by at least 1.0mm. As the manifold has no exact location, this creates a miss-match of up to 1.0mm. If the manifold drops 0.5mm, the top of the head port is shrouded by 0.5mm and the bottom of the port drops below the head port, not only does it blank off the port, but it can also induce turbulence.

The only way that an accurate and repeatable match can be achieved is by dowelling the head and manifold together. This simple and unique template system has enabled us to average out all the inaccuracies of the standard heads into one set of CNC machined port centres, and the studs no longer locate the ports. Therefore one manifold will match every head precisely every time.

Components (Fig 2) :-

- Template
- 5mm drill bit with depth sleeve
- Polishing flapwheel
- 2 x drill jig bushes
- 2 + 1 spare 5mm steel dowels



Clean cylinder head manifold face.

Place template over studs - Lightly tighten nuts on 4 of the top studs. **Face B facing out**

The port centres and shapes of the different Datsun head castings may vary substantially. The opening in the template is 37.0mm. The ports in the Mangoletsi manifold are machined at 35.0mm. Move the template around the head ports to achieve the best centralization of the irregular standard ports to the holes in the Template. This will be a compromise, due to the inaccuracy of the original head ports.

When the best position is obtained, tighten the clamp nuts.

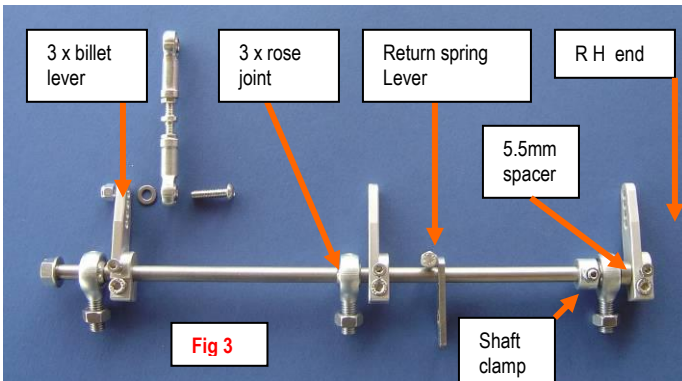
- **Next - drilling the dowel holes in the head.** The drill depth must be accurate to avoid breaking in to water galleries.
Fit 5mm drill bit (supplied) in to the chuck and adjust the depth that it drills into the cylinder head by sliding the steel sleeve (supplied) over the drill bit until the distance from the end of the sleeve to the point of the drill bit is **no more than 9.0mm**.
Drill dowel holes in to head. Ensure all swarf is cleaned out. **Remove template.**
- Insert dowels into head – taper first, leaving some protruding **and bolt the template back on, with Face B facing outwards.**
- Scribe around the inside of the 37.0mm template apertures of all six ports. The diameter of that scribed circle will be approximately 36.5mm. You should aim to open the head port diameters to within 0.5mm of the scribed circle, giving a **35.5mm** head port diameter. This will avoid any chance of an overlap with the inlet manifold and gasket, which would cause a blockage to the air flow. If the standard head ports are so far out, sufficient metal must be removed for there to be a completely clear flow from the manifold ports into the head ports. **Remove template**
- Match head ports by using the flap wheel supplied. Rough out all the six ports first – this will condition the grit for final polishing.
NOTE: If this work is being carried out with the cylinder head still on the engine, ensure that the ports are blocked off further into the cylinder head to stop any swarf reaching the cylinders. Vacuum out at regular intervals, whilst carrying out this procedure.
- Finish final polishing of head ports to match scribed circles (as above)
- Place manifold gasket over the inlet ports on the template (**Face B upwards**), and in line with the holes for the fixing studs in the cylinder head. **Mark the gasket face facing upwards “Face B.”**
- Check that the ports in the gasket do not encroach on the manifold inlet ports, or matching cylinder head ports. If they do, relieve them to give an unhindered air flow. Clamp gasket and template together, drill through the 2 jig bushes and through the gasket with the 5mm drill. Whilst still clamped, check the 5mm dowels will push through the bushes and the newly drilled holes in the gasket – recheck that the gasket position on the dowels still leaves the ports and the 6 x 8mm fixing holes clear.

For bigger head ports than 35mm, the 36.5mm circles give a sighting datum to position them accurately.

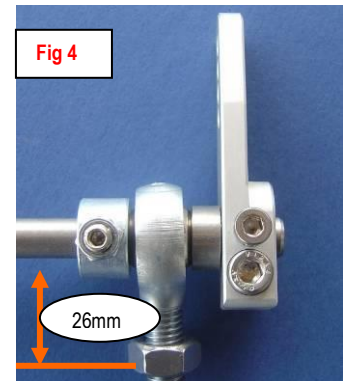
Another advantage of the template system is that, if you already have a big port head, which may not have the same port centres as the Mangoletsi manifold, you can reverse the use of the template and transfer the positions of your enlarged ports to the new inlet manifold, and then open it up to match your head ports.

Always double check that you have the correct letter facing you – basically if you are working on the inlet manifold Face A should be facing you – working on the cylinder head Face B should be facing you – and the heads of the jig bushes should always be on top of the plate facing you.

Fix throttle linkage cross shaft assembly to manifold – see Fig 3/4/5/6/7



The cross shaft assembly is supplied loosely pre-assembled to familiarise you with the final set up. Slide all the levers, rose joints and all other components off the shaft.

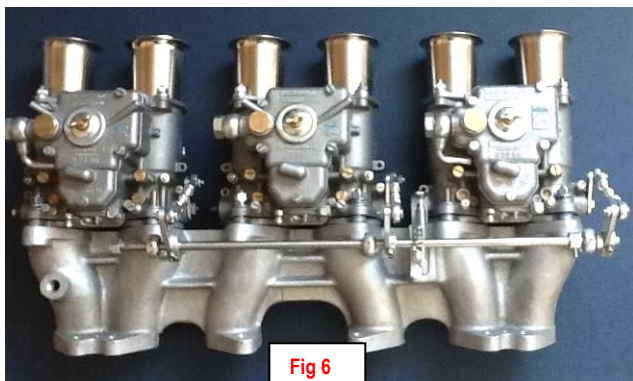


manifold casting where it is spot faced and into which are screwed the rose joints. (see Fig 4) When the correct height is found for the centre line of the cross shaft, and the 8mm staytite nut has locked the rose joint to the casting, (see Fig 7) then bare cross shaft should pass through them smoothly. The easiest way to find the 30mm centre line is to measure 34mm from the casting to the top of the 8mm cross shaft, or 26mm to the underside of the 8mm shaft (Fig 4)



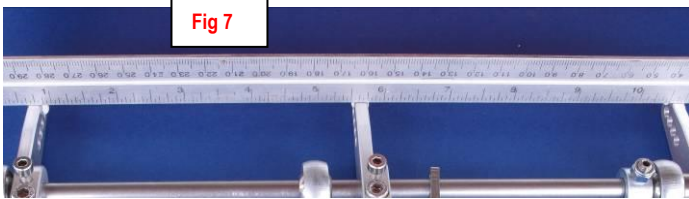
- Whilst keeping the body of one rose joint at 90 degrees to the shaft with a 9mm spanner, tighten the 8mm staytite nut to the casting, with a 13mm spanner. (Fig 5) Repeat with the second rose joint. Recheck that both shaft heights from the casting are correct. If not, withdrawn the shaft from one rose joint, slacken the 8mm nut and wind the rose joint up or down to correct the height. Repeat this procedure with the other rose joint if necessary. It is acceptable to have the rose joint heights within 1mm of each other.

- Withdraw the shaft so that it is only held in one rose joint. Fit the centre rose joint. Wind it up or down as necessary until the shaft passes through it and the 3rd rose joint at the other end. You should be able to rotate the shaft with your fingers freely. If there is still any mis-alignment, causing stiffness, adjust as above. Tighten centre rose joint to the manifold as above and check tightness of the two other rose joints.



- Withdraw the shaft and re-insert starting from the right hand end. (See Fig 3 & 6) First pass shaft through the front of engine rose joint. Slide on shaft clamp, then steel return spring lever and centre billet lever. Push shaft through centre rose joint, and then push on 3rd billet lever. Push shaft through end rose joint.
- The billet levers have to be fixed to the cross shaft all precisely parallel to each other. To ensure that the billet levers open the throttle plates simultaneously, there are 4 accurate holes CNC machined in line on the cross shaft. The billet

levers have a 4mm socket cap screw to locate the lever into the hole on the cross shaft and a 5mm socket cap screw to clamp the lever tight. Starting from the front of the shaft, push on 5.5mm spacer and the front billet lever. Lightly tighten the 4mm socket cap screw on the billet lever into the 1st drilled hole on the shaft to locate it. Ignore the next hole (which is for a different application). Leave the return spring lever slack. Lightly tighten up centre billet lever in 3rd hole, and end lever in 4th hole.



The 3 x 5mm socket cap screws with the captive staytite nut underneath, which clamp the billet levers, should be gently tightened up to remove the slack, just to the point where the levers are beginning to nip the cross shaft.

Ensure that the flats of the 5mm staytite nuts on the lower side of the lever are flat against the machined face of the lever, which you gently tighten them up. Place a steel ruler between holes 1 and 2 from the end on each lever, as illustrated (Fig 7). The ruler should sit flat on the flat faces of all three levers at the same time. You can achieve this by gently nipping up both the 4mm and 5mm socket cap screws on all three of the levers whilst continually checking and adjusting them (by gently pulling into position) until the steel ruler lies flat simultaneously on all 3 levers. Fully tighten the 3 x 5mm socket cap screws. Then remove the 3 x 4mm socket cap screws, which are locating the levers in the 3 drilled holes. Put a very small amount of low strength threadlock on each. Re-fit, carry out a final check with the steel rule, and then fully tighten them

The simultaneous opening and closing of a multi-butterfly set up is fundamental to obtaining a consistent idle speed and a very responsive engine. Without the CNC machined locating holes and very accurate CNC positioning of the locking holes in the aluminium billet levers it is difficult and time consuming to achieve this.

To fit exhaust manifold

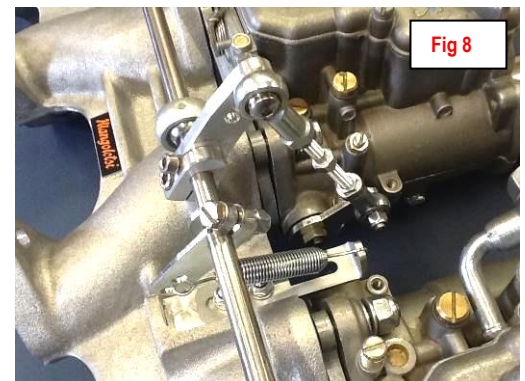
As the inlet manifold gasket is one piece incorporating the exhaust ports, **the combined inlet / exhaust manifold gasket must be fitted to the head first – Face B outwards.** Double check the gasket inlet ports line up with the modified head ports. – **Fit exhaust manifold**

Set up the linkage levers on the carburettors ready to be bolted to the manifold later. Make any changes required to the choke and jet sizes.

Three special throttle levers are supplied for the Weber DCOEs (Fig 8) with a fixed stud, to which the rose joint is bolted. The heavy duty 3mm thick steel lever is usually tight on the flats of the carburettor throttle shaft. Push it on, keep it square and once the threads are exposed, slowly tighten the nut to drive it along the shaft. Leave a small clearance between the lever and the carburettor body.

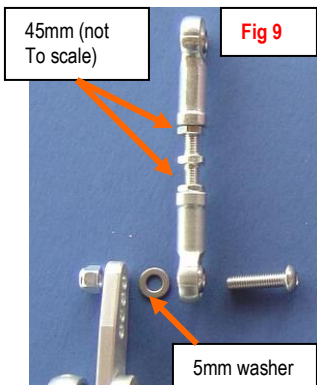
If the levers are too tight on the carburettor shaft – stop - remove the lever and with a very fine Swiss file, take off any burrs on the new lever, both on the flats and the 2 radii at the end of the slots, if necessary. Carry out this procedure until the lever can just be pushed over the carburettor shaft.

When it is sufficiently free, using one of the locknuts, drive the lever slowly along the shaft, but stopping about 1mm from the carburettor body. Take off the nut, push the standard Weber locking tab over the flatted shaft. Re-fit nut on the shaft until it traps the tab washer against the lever. The nut should just be tight against the lever without pushing it further on to the shaft, then turn over the tabs on to the flats of the nuts.



Bolt carburetors to manifold, bolt manifold to cylinder head and connect carburetor levers to aluminium billet levers on the cross shaft

Fix the carburetors to the manifold with studs, O ring blocks, double coil washers, and Nylok nuts. Ensure the washer coils are not over-tightened and have clearance between them to enable the carburetors to move slightly on the studs. Screw servo hoesetail in to manifold with thread sealant – connect servo pipe.



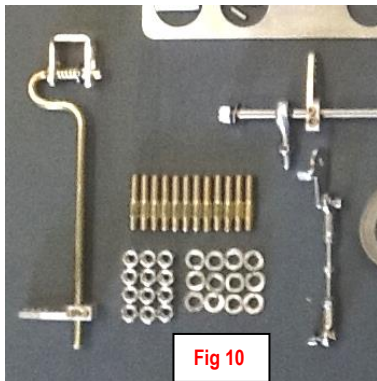
The length between the **rose joint bodies** is pre-set to 45mm, **Fig 9** The rose joints are 5mm LH thread (marked with 2 bars) and 5mm RH thread (marked with 1 bar) The Weber levers have a fixed stud which also incorporates a fixed spacer to keep the rose joint body away from the lever. Fit the rose joint hex bar assemblies to the fixed studs on the Weber levers (**Fig 8**) with the 5mm Staytite nuts, **ensuring that all the rose joints marked with one bar are fitted to the Weber lever.**

When fitting the rose joint assembly to the aluminium levers on the cross shaft, It is essential that one 5mm washer (spare supplied), is fitted between each aluminium lever and the rose joint spherical bush. (See Fig 9). This washer should always be kept in that position, otherwise the rose joint body may foul the lever whilst in operation.

The cross shaft lever end of the rose joint assembly should be bolted through the **outside** hole of the 3 aluminium billet levers.

Fix steel return spring clamp lever on the cross shaft approximately at the angle shown in **Fig 8** It should be in line with the studs below, which hold the sliding spring tensioner. The spring tension will be finalized once the rest of the installation has been completed.

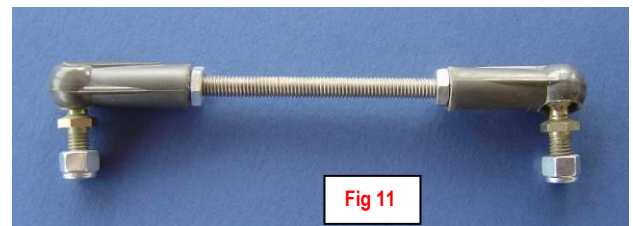
Connecting rod linkage shaft to bulkhead support and connecting U coupling to linkage cross shaft



With the aluminium clamp lever loose on the shaft, push the bar into the bulkhead support bush. Push U shaped coupling (**Fig 10**) over the 2 flats on the threaded end of the cross shaft. Fit washer. Tighten Staytite nut.

As all installations will vary, specific dimensions and angles cannot be given. The objective is to have the aluminium billet lever fixed to the bulkhead bar in the mid position of the arc that it describes when the throttle plates move from fully closed to fully open.

Connect threaded bar with ball joints, or use new ball joints on OE cross bar. (**Fig 11**)



The adjustment options that you have are:-

- **At the bulkhead end** - The choice of holes on the aluminium clamp lever – the closest one to the clamp gives the most throttle pedal travel for the smallest pedal movement. – ie. Very fast opening of the throttle. Progressively slower opening as you move the attachment further out.
- **At the carburettor end** - The pedal travel can be adjusted by moving the attachment to the holes on the 3 cross shaft billet levers closer to the shaft

Final set-up

Carburetors – ensure all three throttle plates close simultaneously by winding back the idle adjusting screws and opening or closing the centres between the rose joint attachments by turning the hex nut on the joining bar – tighten up locknuts. Then balance carburetors.

