

Syncro Gearboxes Puma Bulkhead Gearstick Conversion Kit



Assembly Instructions

Thank you for purchasing your R380 to Puma gearstick conversion. This kit uses a number of standard parts for this conversion. Please check the parts list on the following page, to ensure you have all the necessary parts before starting. Please follow the fitting instructions and pictures carefully. You may want to dry build the kit first before finally assembly.

Kit Parts list

Main Gearstick Billet

Difflock/ High-low Billet

Main Gearstick Selector Shaft

Yoke Bush

2x Replacement Bushes for top of Difflock

Linkage Bar

Difflock Linkage Bar

High-Low Linkage Bar

High-Low Linkage Bar, Lever Replacement

Difflock Linkage Bar, Linkage to Transfer box

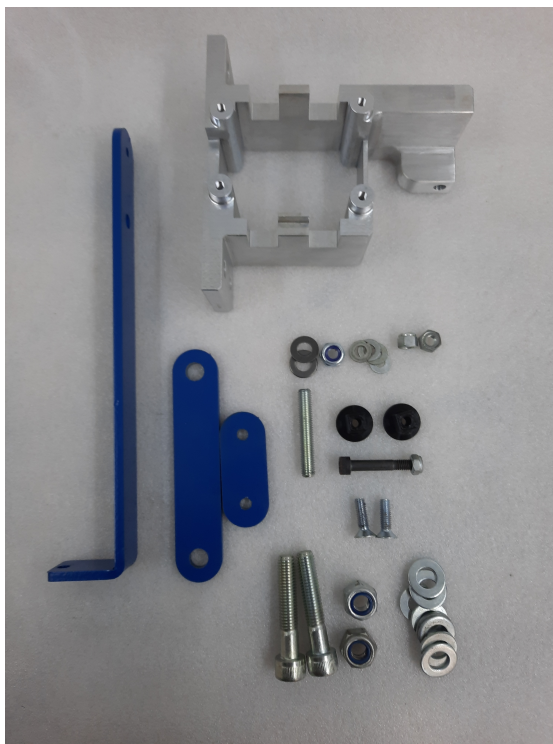
Main Gearstick R380 Lower Selector

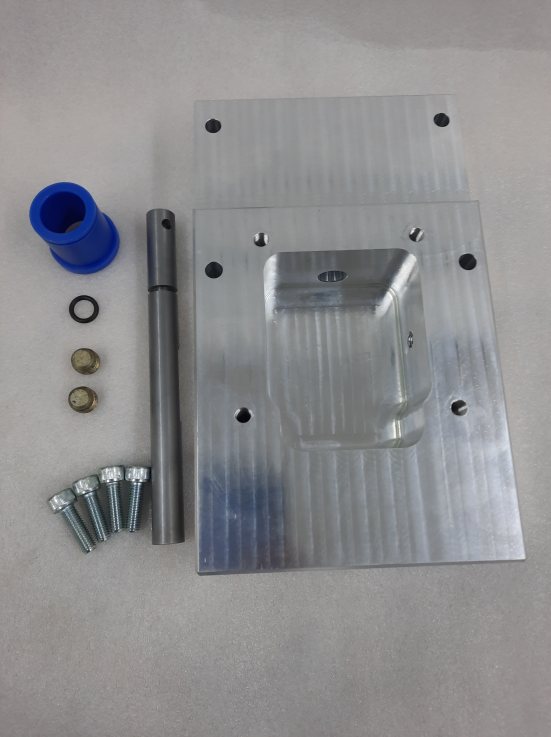
Main Gearstick Puma Top Selector

Clevis pin and clips

All fixings

Kit components may differ from yours slightly*







Standard parts list – Requires customer to source

Puma Difflock/ High-low lever assembly

Selector in Gearbox and Roll Pin

Selector Yoke and Grub Screw

Cir Clip for Bush

Main R380 Gearstick Turret and Gaiter

Puma Tunnel and Gaiter

Both Gearstick Tops

Reverse Stop and Locking Nut

Dowels in the Top of Gearbox





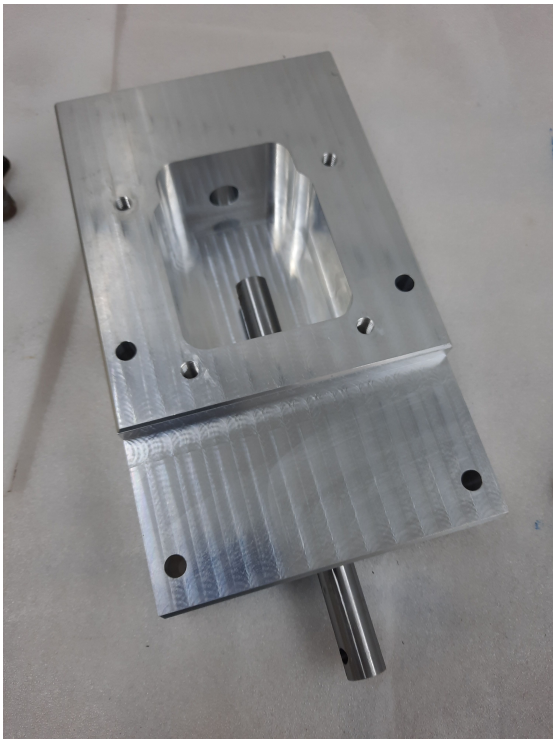
Step 1

Insert the M10 reverse stop stud and locking nut into the in the angled

face on the side of the billet. Push the O ring over the selector shaft into it's groove. Well lubricate the selector shaft with 3in1 oil or an equivalent. Lubricate the end of the hole in the main billet in which the selector shaft fits.

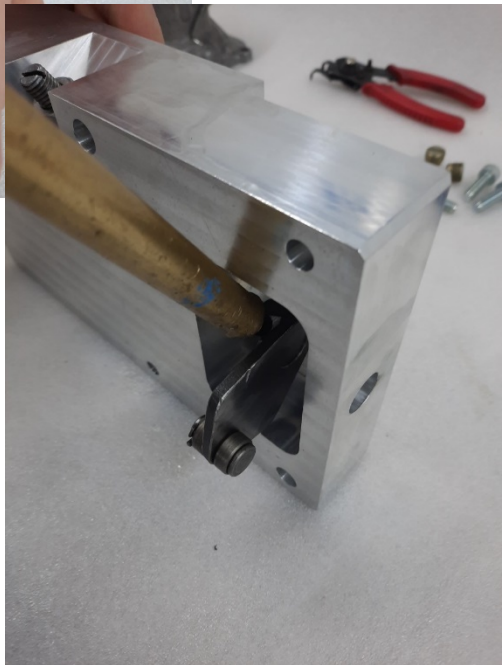
Put the yoke that holds the bush into the top pocket on the main billet. Note its direction. It is backward to standard. Slide the selector shaft into the main billet and through the yoke.





Step 2

Turn the main billet over and slide the gearbox selector onto the end of the shaft in the underside pocket. Using a punch and hammer knock the roll pin through the gearbox selector and selector shaft.

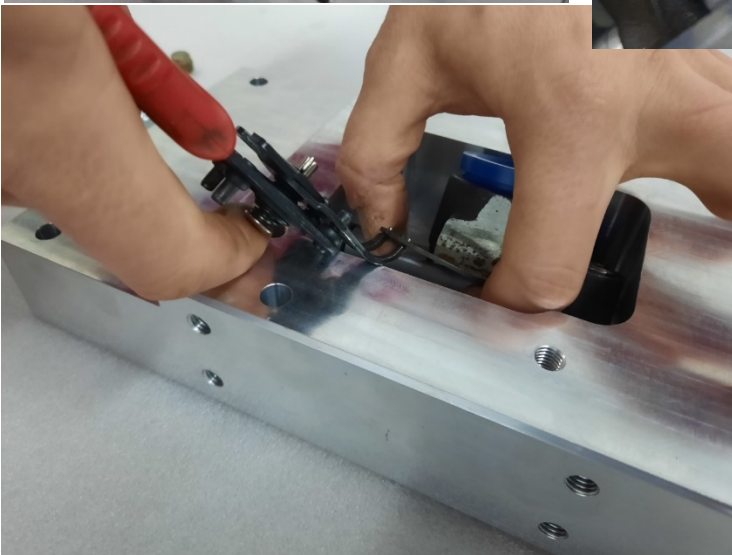
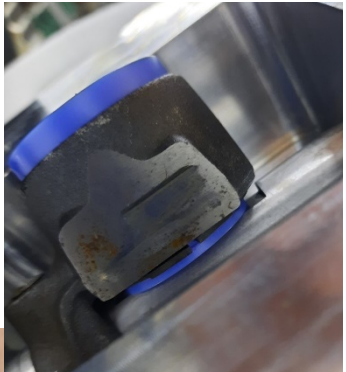
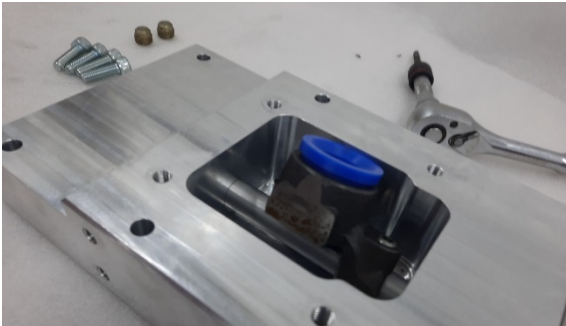


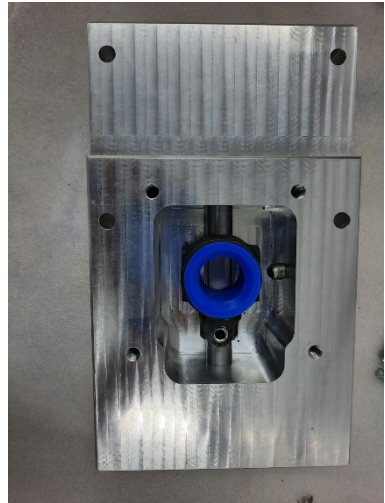
Step 3

Turn the main billet back over the right way up. Line the yoke up with the hole in the selector shaft. Using Loctite, put the grub screw into the yoke and into the selector shaft. Inset the M18 plug into the end of the selector shaft hole to blank off.

Step 4

Push the bush into the yoke but not all the way. Put the Cir clip under the yoke into the machine flat of the selector shaft. Using some small 90-degree Cir Clip plyers, open up the clip and push the bush all the way down. Ensure the clip goes over the outside of the bush before pushing down. Once down make sure that the Cir Clip is sitting into it's groove and the bush is secure. This step is tricky. It may take a few attempts.





Step 5

The main gearstick turret will need slight modification. You will notice the M6 adjustment bolts for the bias spring are different heights. The taller one will need filing or grinding down to the same height as the other. This is to allow enough adjustment on the spring as the turret has been turned around. The marker pen shows the areas that need to be removed.





Step 6

On the turret there is a washer that bolts down to hold the lower pivot into the turret. The top, left hand side, edge of the turret needs to be filed or ground down to the same height. You can go all the way around if you wish to make the top all the same height.



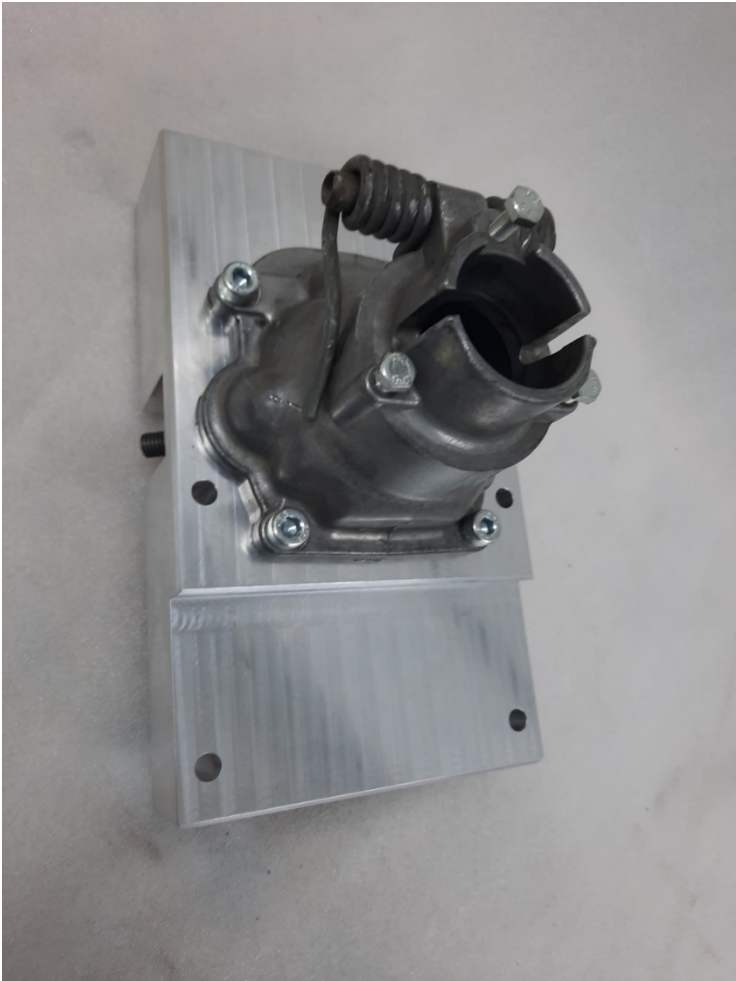


Step 7

Ensure the selector shaft is nice and smooth before going any further and has plenty of lubrication. Fill the bush with grease. Use RTV around the bottom/ mating face of the turret to seal it to the main billet. Once the modifications have been made to the turret it can be bolted to the main billet with 4x M8x25mm fixings and washers.

Step 8

Fit the R380 lower pivot and the Puma upper pivot together. Line up the holes and insert the grub screw. Use the nordlock washers are



locking nut to prevent the grub screw falling out. If you are not happy with where the gearstick sits, the alignment/ rotation of the 2

pivots can be adjusted to however the customer wants. For example, left and right-hand drive. We recommend once you are happy with the alignment that you weld around the two pivots to make a solid piece. We recommend you would have to do a dry build first to find out where you would like the gearstick, then strip and weld up.





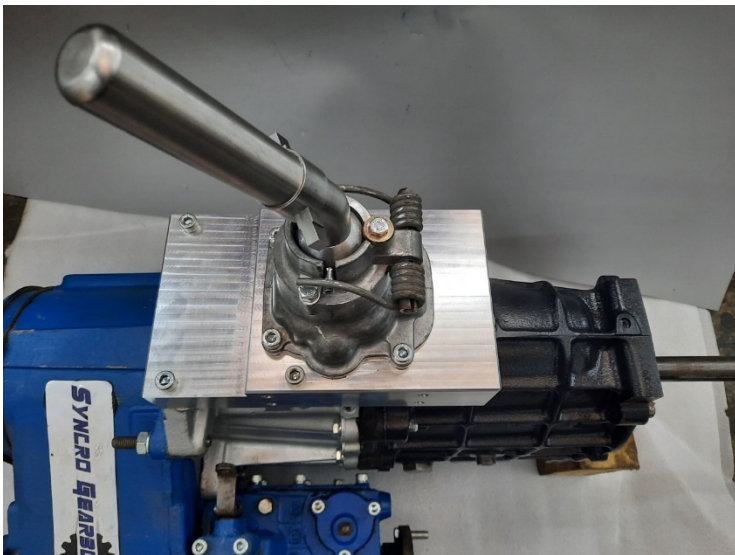
Step 9

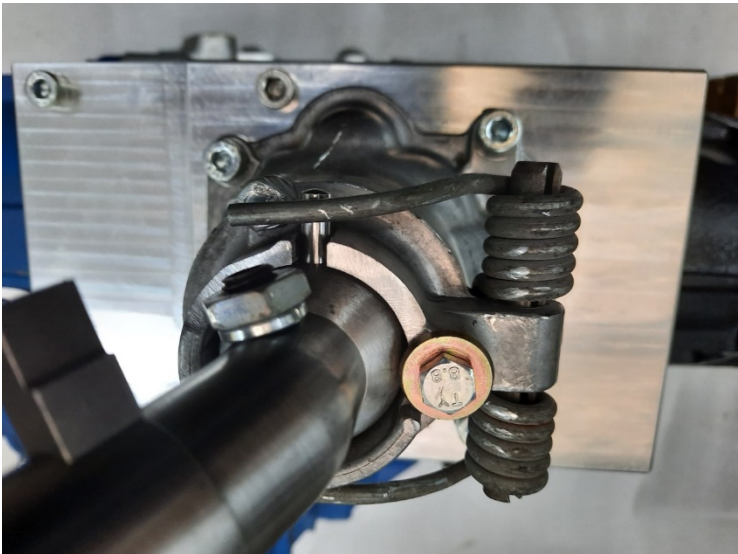
Use plenty of grease around the ball of the lower pivot and in the top of the turret where the pivot sits. Insert the pressure spring and nylon pad into the hole in the lower pivot. Pushing the pressure spring in drop the pivot into the turret. Secure the pivot into the turret with the washer and M6 bolt.



Step 10

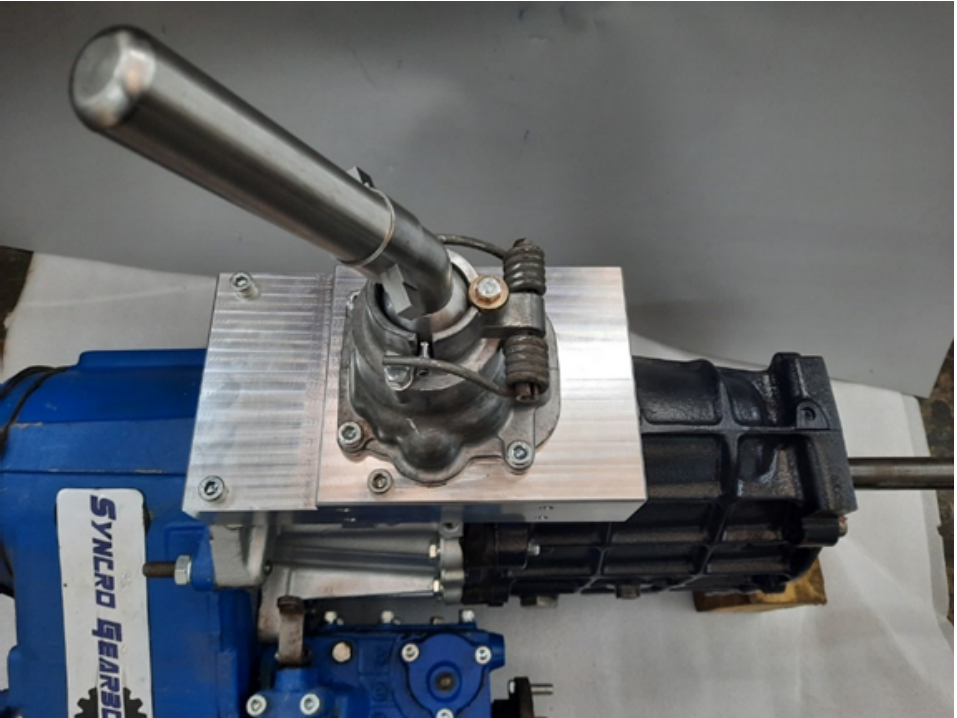
Using a screwdriver or Allen key push the bias spring over the pegs in the lower pivot. Take care as the spring is strong. Do one side at a time.





Step 11

Fit the 2 dowels into the top of the gearbox. Take your time don't drop them. Use RTV around the top/ mating face of gearbox. Drop the main billet assembly onto the top of the gearbox. Ensure that the 2 selectors slide together. You may need to use a soft mallet just to pop the assembly onto the dowels. Use 2x M8 and 2x M8 fixings and washers.



Step 12

Put the Puma gearstick lever onto the top pivot. Make sure all the gears select. Put it into third. Adjust the M6 bolts until they touch the bias spring. Take it out of gear and make sure that third and fourth gear are in a straight line. With the bias spring set correctly third gear should be straight forward from its neutral position. Tighten the locking nuts on the adjustment bolts to set.

Step 13

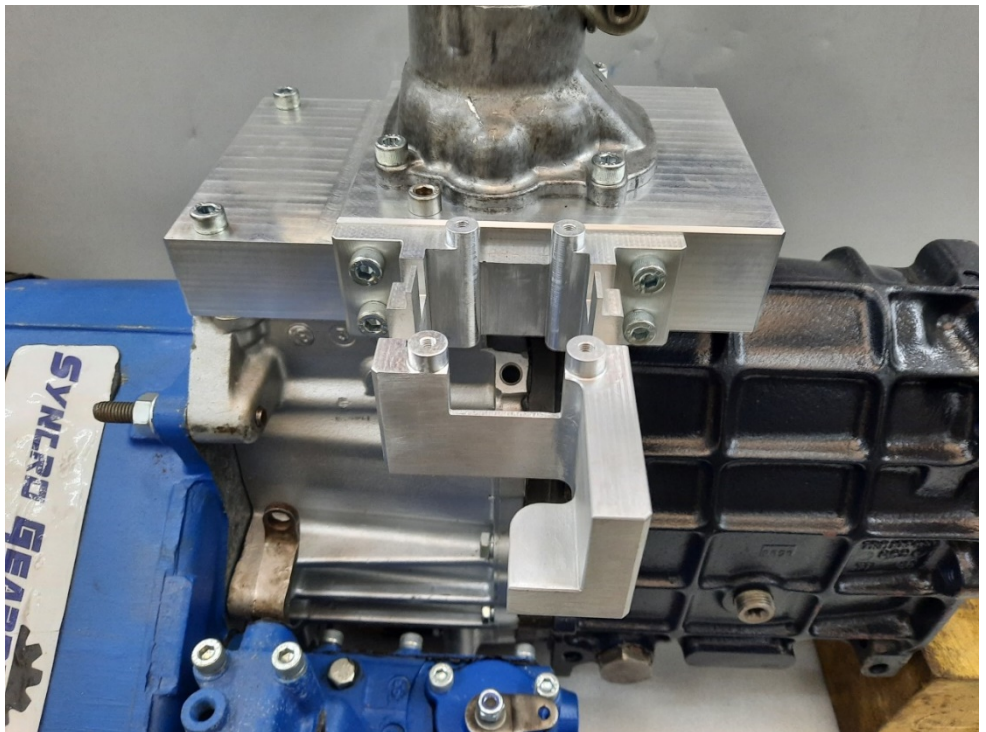
Put it into reverse. Adjust the M10 reverse stop stud until you feel it touch the side of the yoke. Back it off $\frac{1}{4}$ of a turn and tighten the locking nut. Check that you can get all gears. If not, try this process in 5th gear.

Step 14

Run through the gears a few times. Once you are happy that all gears select smoothly take the Puma gearstick off. Make sure there is plenty of grease around the top of the turret and pivot. The turret gaiter can then be fitted. Put it over the top of the upper pivot. Once down to the pegs put it over one side at a time. It is tricky but the gaiter will stretch enough. Ensure that it is sat correctly around the turret.

Step 15

Bolt the Difflock/ High-Low billet to the side of the main billet. Use 4x M8x25mm fixings and washers.



Step 16

Take the High-low selector off the top of the transfer box. Put an M10 fixing through the hole in the selector, with washer and bolt up tight. Make sure the bolt goes through from the gearbox side. Make sure that the bolt is straight and parallel to the top of the selector housing. After many years of abused the swan shaped selector may be bend. Use a vise to straighten. Put the selector back on the transfer box using RTV.

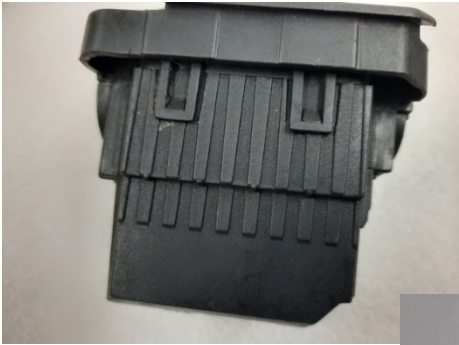
Step 17

Take the Difflock tear drop plate off the transfer box. Using a drill countersink the plate from the underside. Put an M6x40mm countersunk fixing in from the underside with washer and bolt up tight. Refit the plate back on the transfer box.



Step 18

The Puma Difflock lever needs modification to work with the kit. Pull main Difflock/ High-low gearstick off the top. They are tight. Will need a lot of force. Using a screwdriver, pull the clips open on one side to pop the plastic housings off the mechanism. Use a punch and hammer to knock the roll pin out of the Difflock part on the end to remove.



Step 19

You will see the assembly is riveted together. Use a drill to take the top of the rivet and knock the rivet out with a punch and hammer. The assembly will now come apart.



Step 20

Once you have the part separated from the assembly shown on the adjacent page pop the bush out. Carefully trim around the weld with a hacksaw or grinder to remove the plate. Please take your time not to cut too much and scrap the part. The plate should just pop off once you have cut all the weld.



Step 21

File around the edge of the part so that it is round and has a clean edge. Use the new plate provided in the kit, file until it fits flat to the shoulder on the part. The plate needs to be aligned to the part to ensure the lever is in the correct place.



Step 22

Clean a small amount of paint off around the top of the new paint ready for welding. We found the best way to align the plate is to put an 8mm allen key in the slot of the part. All of the hole in the bottom of the new plate should be visible to the left-hand side of the allen key. The right-hand edge of the hole should be touching the left-hand side of the allen key. When happy it is aligned correctly put a mark on the plate and the part, so you know where it goes.



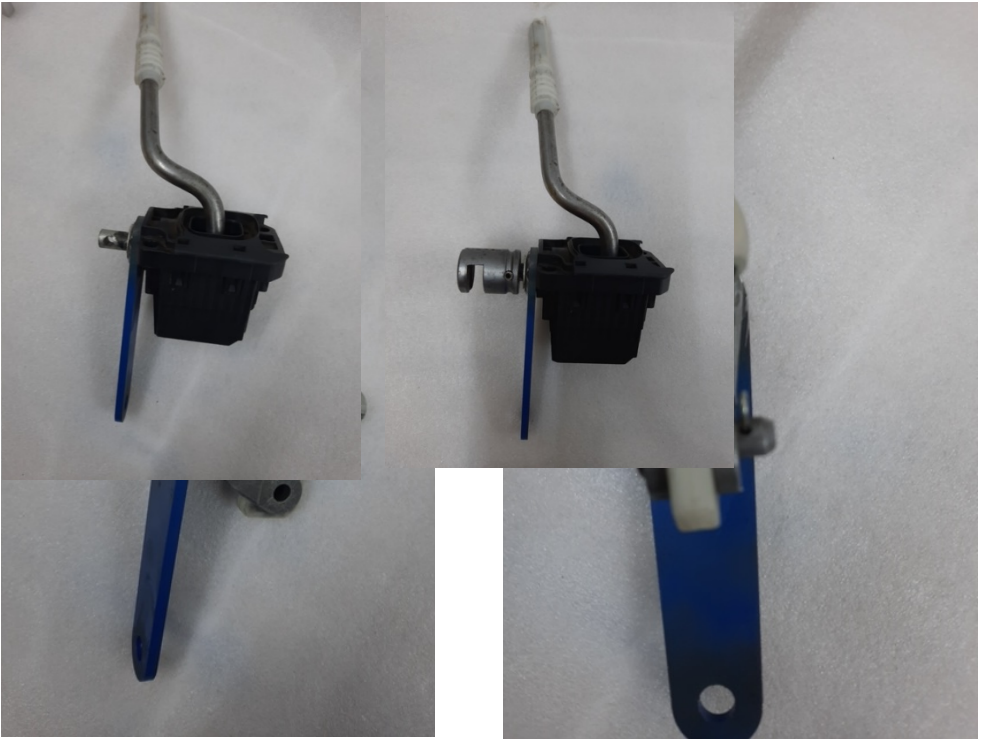
Step 23

Get the part setup so that it is held in the correct place and flat to the shoulder on the part. Weld around the part and the plate just like the weld that you cut off to remove the old plate. Do not weld the inside. Only around the front. Once welded file or grind the weld flat and smooth so that the bush pushes back in. Repaint.



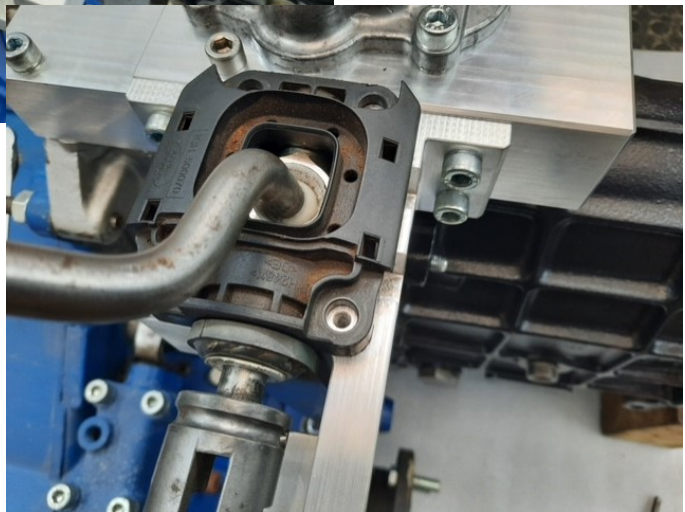
Step 24

The lever can now be reassembled. First check that the modified part fits and turns smoothly in the bottom housing. Put the lever mechanism back together just as it came apart. Use the new clevis pin and clip provided in the kit to replace the rivet drilled out. Pop the Difflock part back on the end with the roll pin. Use plenty of grease around all of it and around where the assembly sits in the plastic housings.



Step 25

The lever can be pushed into the billet. It is a tight fit. Use the original M5 shoulder bolts to secure it into the billet.

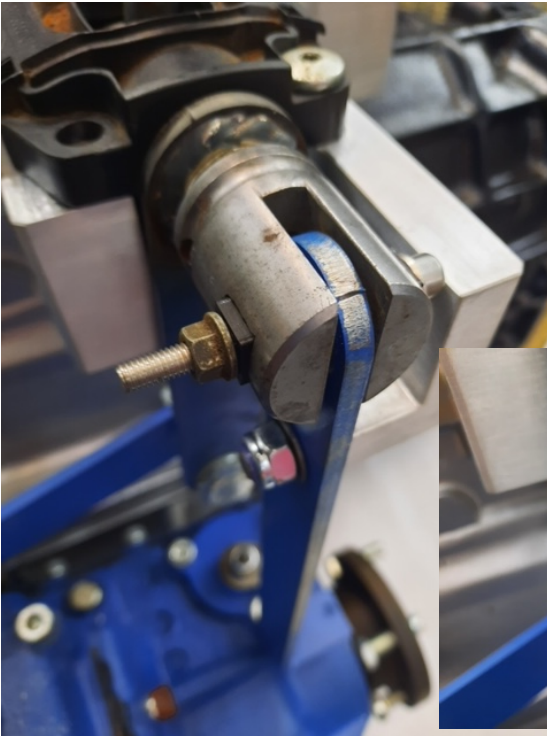


Step 26

Fit the 2, 3d printed bushes to the top of the Difflock linkage with M5 fixing. Don't bolt to tight. Make sure they are free to move. Put an M6x40mm countersunk fixing in from the underside with washer and bolt up tight.

Step 27

Push the Difflock linkage up into the Difflock lever. The bushes fit in the square slot. Put an M8 through the billet with a washer. As it passes through the billet and Difflock linkage bar put washer between them. This acts as the pivot point. Do the bolt up tight into the billet. Use a nyloc nut and washer to secure the linkage. Do it up just so its snug. Make sure the linkage moves smoothly without binding.



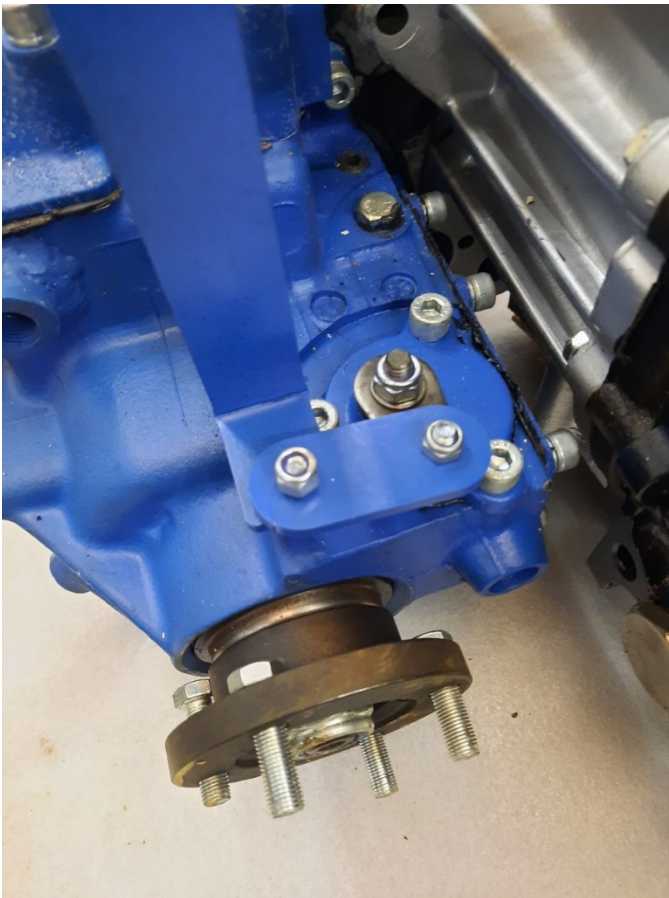
Step 28

Drop a washer onto the top of both the M6 fixings then the second Difflock linkage plate.

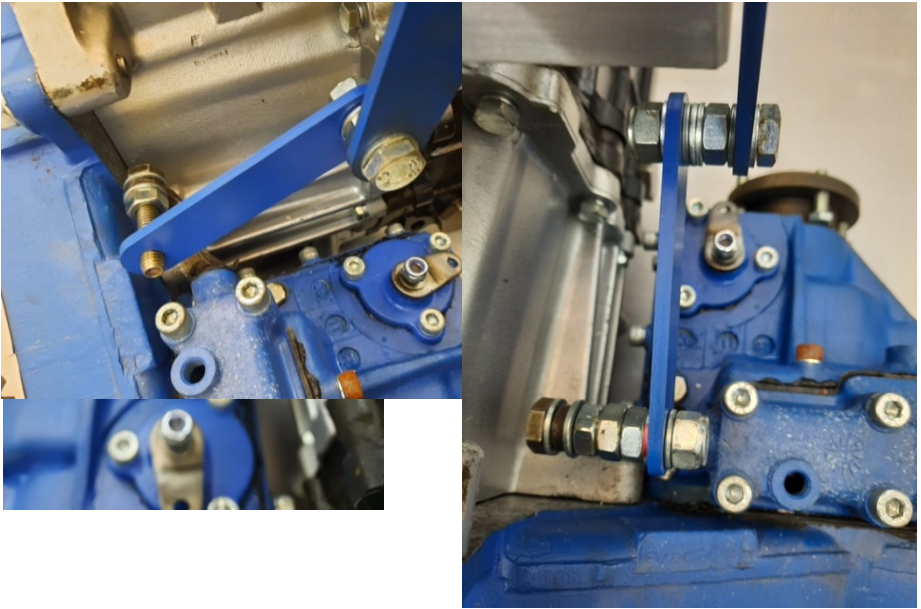
Again use 2 nyloc nuts and washers to secure the linkage. Do them up just so they are snug. Operate the Difflock and make sure that it selects nicely in and out.

Step 29

Put an M10 fixing in the hole at the bottom off the new High-low lever plate. The opposite way



to the one in the transfer box selector. Leave loose for now. Put the new High-low linkage plate onto the 2 bolts. Work out how many washers you need on the transfer box end to evenly spacer the linkage so that's its straight. Once worked out. Fit the washers, do the bolt in the lever end up tight. Then fit 2 nyloc nuts just up snug. Operate the High-low and make sure that it selects nicely.



Step 30

The lever conversion is complete. Once you have fitted the tunnel and tunnel gaiter but are not happy with the look of the main gaiter around the gearstick's, or the positioning of the Difflock/ High-low lever. You can disassemble

the Difflock/ High-low lever and bend the top in the vice to better suit your vehicle.

