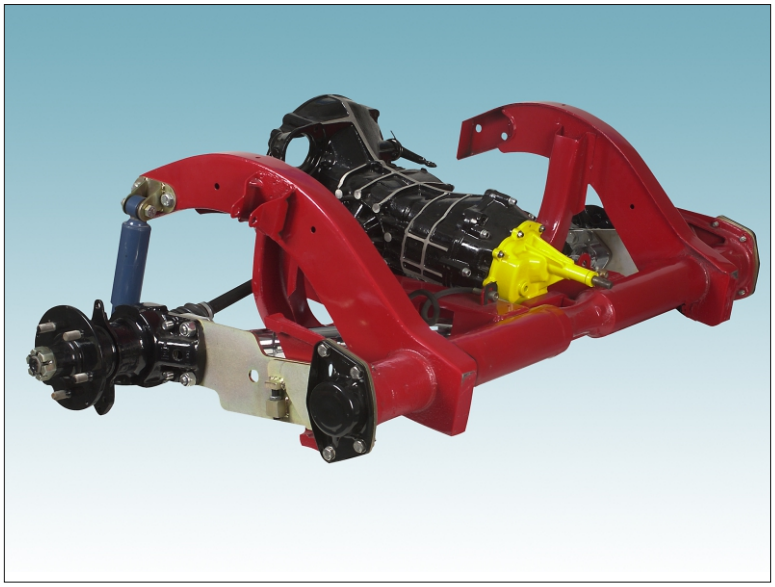
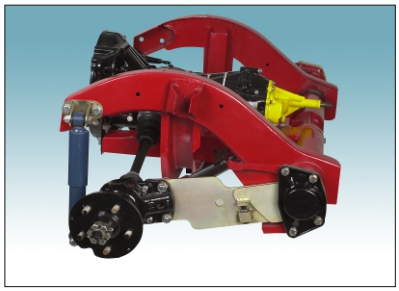
CREATIVE ENGINEERING

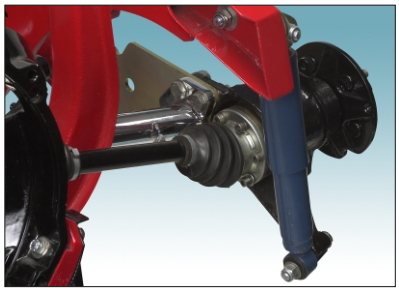
IRS FITTING INSTRUCTIONS

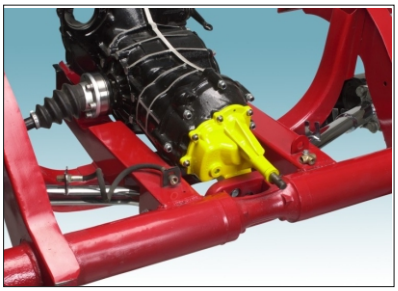
From a Bay Bus
1 pr 68/69 Hub assembly (large bolt pattern, 1 pr 68/69 Swing arms, 1 pr 68/69 Spring plates, 1pr 68/69 Drive shafts & 1 pr of CV joints.
If you cant find a 68/69 & you probably wont, use ;
70-80 hubs (small bolt pattern) 70-80 drive shafts, & 1pr of CV joints.
And then buy from us...
replica 68/69 Swing arms, Spring plates & new large PCD drums listed below. We recommend replacing all the rear end bolts with our new bolt kit.



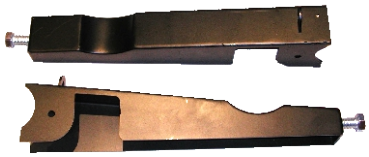
From a Bug
1 IRS bug transmission (CV joint type) 1302 /1303/1303S, 1 pr of bug CV joints





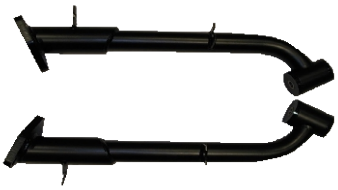


CHASSIS LEGS



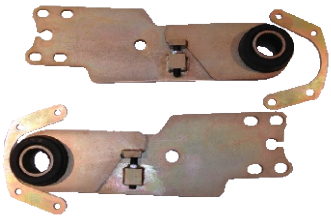
Tried & tested by ourselves & hundreds of our satisfied customers worldwide, these laser cut chassis legs have proved themselves to be the key to an easy and accurate conversion. Designed to use 68-69 bus axle parts (or our repro parts) and a beetle box, they are the only kit to retain factory geometry & optimum CV pivot alignment not obtained by any other system. Supplied with photographic fitting instructions Fits 50-67 Splits.

SWING ARMS



Brand new repro 68/69 swing arms with built in corrected alignment mounting faces to give acceptable camber on lowered vehicles. Constructed from heavy wall CDS tubing and laser cut bracketry for perfect fitment, these arms come with pre installed new bushes and are powder coated for lasting good looks.

SPRING PLATES



Brand new adjustable 68/69 spring plates laser cut from the correct tensile steel. Adjustors allow careful dialling in of wheel clearance after fitment. Features handbrake cable hole for stock cable use. Supplied with new ***rubber*** donuts and packing spacers. NOTE ; Beware of spring plates that are NOT made of tensile steel and *NEVER use urethane donuts !!*

SHOCK MOUNTS

These shock mounts are designed for buses using either IRS, Air or Hydraulics where large changes in travel occur. They have a 90 degree rotated top to stop shocks binding up when going through long arcs. Complete with all mounting hardware.

BOLT KIT

We offer a rear bolt kit that replaces all the bolts, nuts and washers you will come across when doing your IRS conversion. All are EU manufactured high quality zinc plated. They include upper and lower shock bolts, swing arm pivot bolts, 8 hub bolts including the difficult to obtain M14 fine threaded bolts. Also you will get new spring plate cover bolts. Your spending a lot of money doing the conversion, don't ruin it by refitting rusty worn threaded fastners.

ADJUSTABLE SHOCKS

It is vital to buy your shocks ***after*** your bus has been lowered and settled at the ride height you require. When you are sure the bus is fully settled you can establish the top bolt to lower bolt measurement at both the front and the rear of your bus. When you have this measurement call us and we will advise you which shock you need. ***Note;*** If your bolt to bolt measurement is 350mm, you do ***not*** fit a 350mm shock absorber. You need a longer shock. Measure bolt to bolt & call us.

Enford Mead, Gains Cross, Durweston, Blandford, Dorset. Dt11 0QW England Sales tel/fax +44 01258 863600 E-Mail; palmer@creative-engineering.com

Bolt Kit

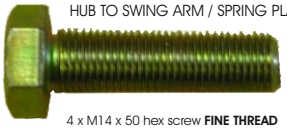
IRS FASTENER CHECK LIST FOR USE WITH NEW CE SWING ARMS & SPRING PLATES

HUB TO SWING ARM / SPRING PLATE COARSE SCREW

4 x M14 x 60 hex screws **COARSE THREAD**

8 x M14 washers 4 x M14 nyloc nuts.

HUB TO SWING ARM / SPRING PLATE FINE SCREW



4 x M14 x 50 hex screw **FINE THREAD**

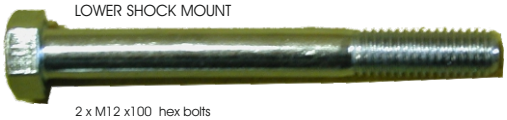
4 x M14 washers.

REAR SWING ARM TO CHASSIS LEG

2 x M12 x100 hex bolts

4 x M12 washers 2 x M12 nyloc nuts.

LOWER SHOCK MOUNT



2 x M12 x100 hex bolts

4 x M12 washers 2 x M12 nyloc nuts.

SPRING PLATE COVER SCREW

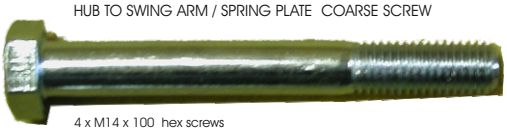
8 x M10 x 40 Hex screw

8 x M10 washers

Bolt Kit

IRS FASTENER CHECK LIST FOR USE WITH ORIGINAL SWING ARMS & SPRING PLATES

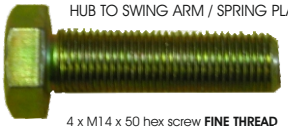
HUB TO SWING ARM / SPRING PLATE COARSE SCREW



4 x M14 x 100 hex screws

8 x M14 washers 4 x M14 nyloc nuts.

HUB TO SWING ARM / SPRING PLATE FINE SCREW



4 x M14 x 50 hex screw **FINE THREAD**

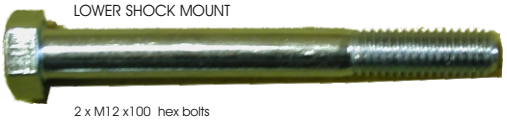
4 x M14 washers.

REAR SWING ARM TO CHASSIS LEG

2 x M12 x100 hex bolts

4 x M12 washers 2 x M12 nyloc nuts.

LOWER SHOCK MOUNT



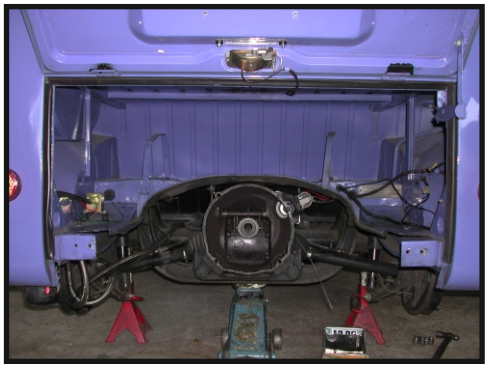
2 x M12 x100 hex bolts

4 x M12 washers 2 x M12 nyloc nuts.

SPRING PLATE COVER SCREW

8 x M10 x 40 Hex screw

8 x M10 washers

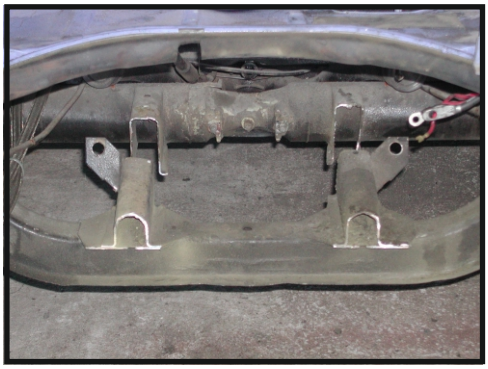


Disconnect battery and unhook all electrics. Remove engine. Br sure to drain and remove petrol tank. You are going to make a lot of sparks so make sure there are no fumes or petrol traces.

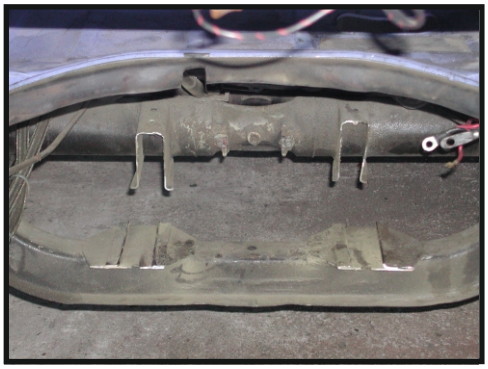
Remove gearbox, axles and spring plates.

Cut the bracket retailing heater cables so that steel tubing can be bent out of the way until its time to relocate.

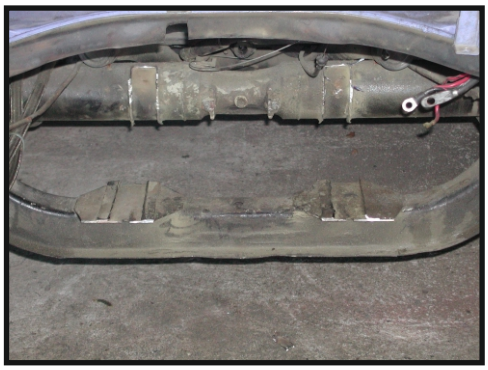
Make your first cut through the old chassis legs just forward of the torsion bar tube. Then make a second so as to remove as much as possible behind the top hat shaped cradle.



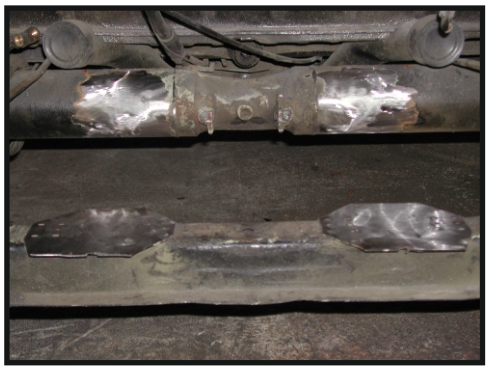
Cut the rear most sections clean off.



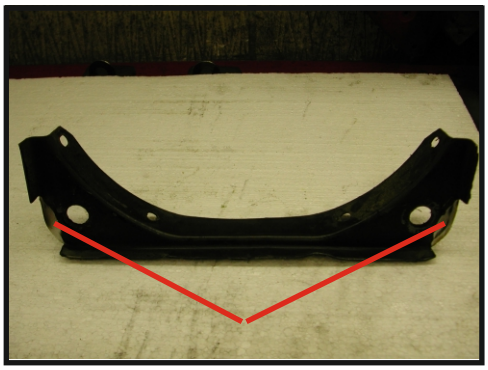
Now remove as much of the old material without damaging the two plates that are spot welded to the cradle.



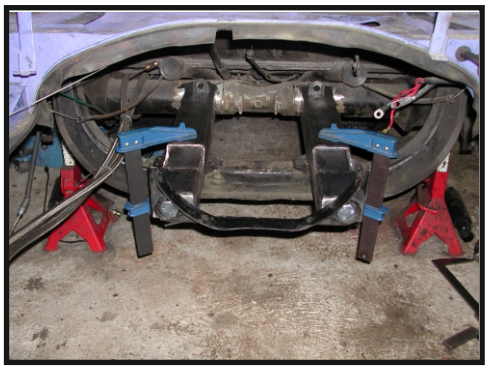
Remove the remaining material on the torsion bar tube.



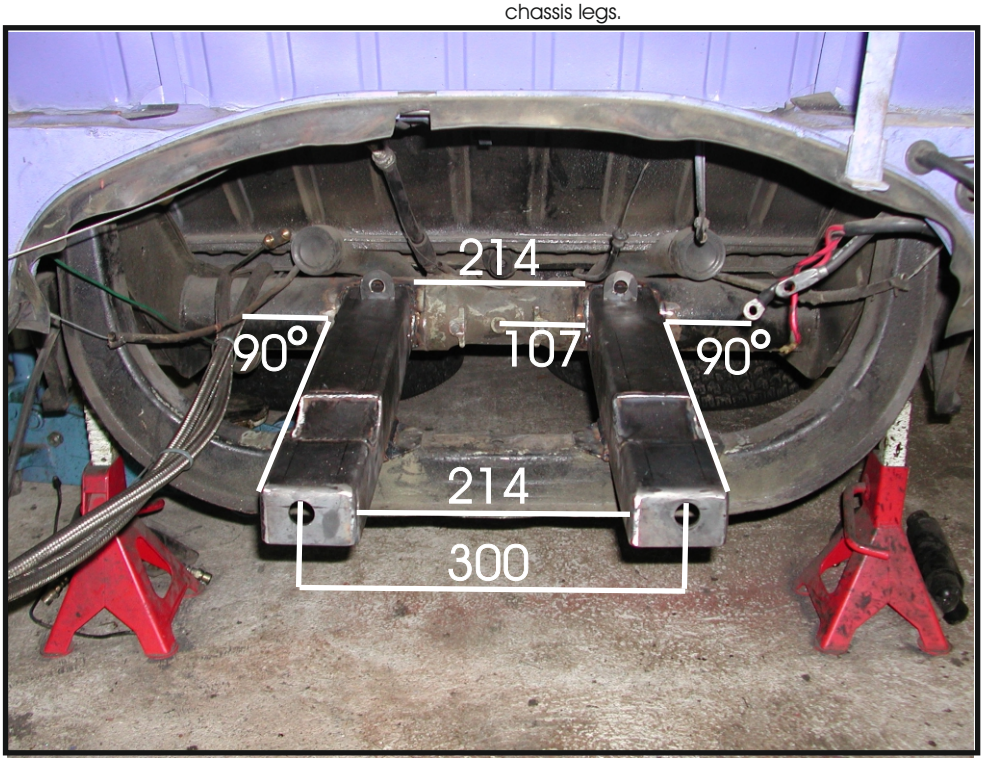
With all major material removed, sand all four areas smooth of all debris, paint, grease and dirt.

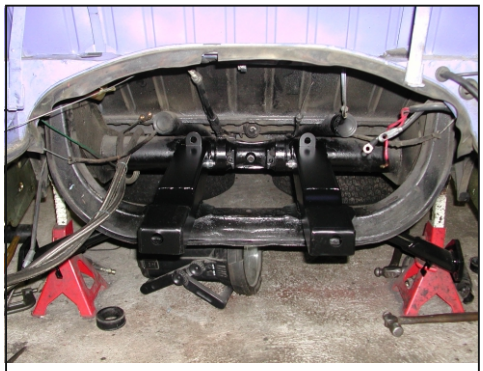


It is necessary to trim some material of your old gearbox cross member to allow it to fit our new chassis legs.

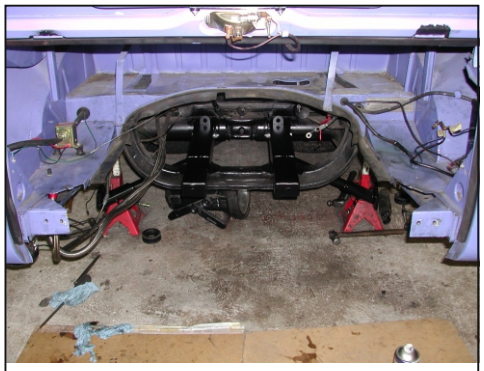


Bolt your gearbox crossmember to the new chassis legs with 20mm bolts included. You should get a measurement of 214mm between the chassis legs. Make sure you have the same measurement at the back where the chassis legs join the torsion bar housing. Be sure to centre the chassis legs from the centre hole as shown.Finally check you get 90 degrees against the chassis legs and the torsion bar housing. Use G clamps to hold every thing in place prior to welding. Tack first and check all measurements prior to final welding. After you have welded the new chassis legs on, be sure to give them a coat of paint.

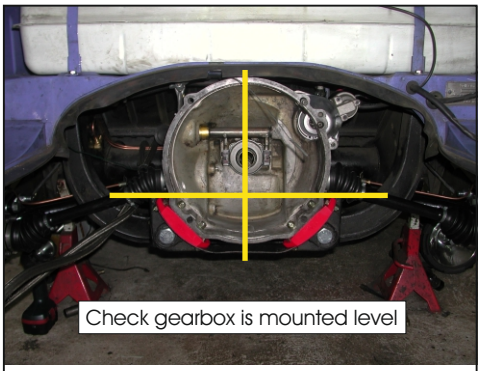




Paint the chassis legs. When dry you can install the swing arms, spring plates and hubs.



You must trim the top hat section for swing arm clearance. Fit the swing arm and move it upwards. Trim the cradle until the swing arm completely clears. **It must never touch. Be sure brake lines can never touch or rub the cradle.** Only trim enough for clearance.

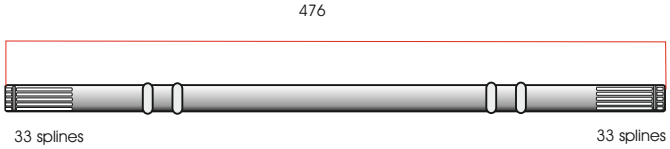


The gearbox can be installed. It is sensible to replace all rubber mounts. We always use urethane mounts as they are stiffer than rubber and aid positive gear shifting. Be sure to mount the gear box level. See above.

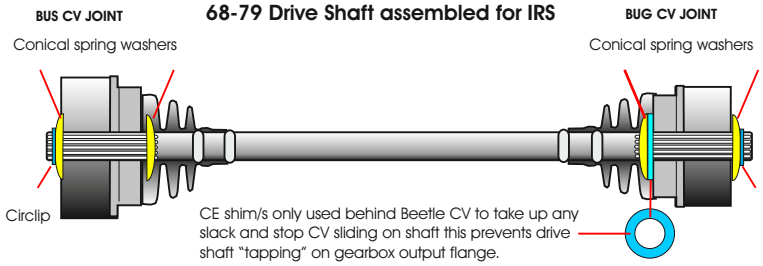
DRIVE SHAFT ASSEMBLY

Your German manufactured Bay window drive shaft must be 476mm long and assembled with one bus CV joint and one Bug CV joint. No other length drive shaft will work. The Bug CV must have no more than1mm of movement on the splines to prevent the drive shaft travelling through the CV joint and hitting the gearbox output flange. This amount of travel is determined by the depth of the conical washer supplied in your CV kit. If you need shims to take up excessive movement contact us. They are only available 1mm thick. Measure how many you might need.
Tip. Don't be tempted to use old CV joints, new ones are not that expensive and you don't want to do this twice. Drive shaft length must be 476mm long.

68-79 Drive Shaft Detail

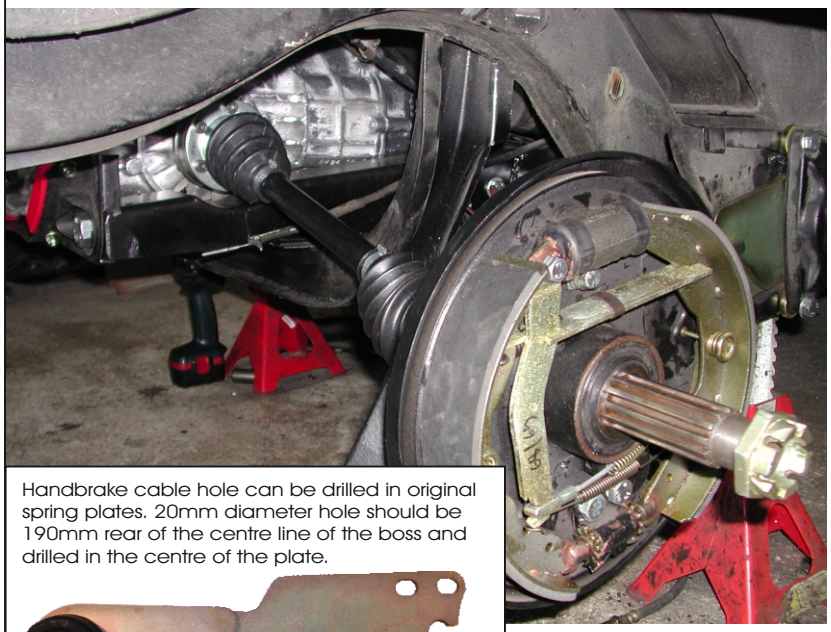


68-79 Drive Shaft assembled for IRS

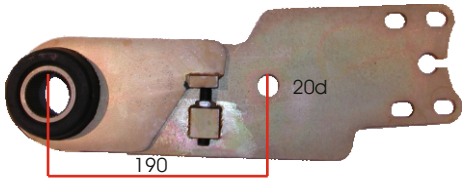


TRANSMISSION

You can use any Beetle IRS gearbox in your bus however care should be taken to match a gear ratio to your engines power and torque . A good guide would be buses with less than a 1776hp engine should keep away from the 1303S or GT boxes and go for 1302 1303 transmissions.
Your IRS bug transmission must have its snout changed to the old Split bus one. Use the bus selector hockey stick if its good although you can use a beetle one if you need to. If you do not do this, the gearbox shift rod will not line up with your shift rod in your chassis. Swopping the snouts is an easy job that takes about half an hour. We normally use a Urethane beetle gearbox mount kit on both the front and rear of the box. Use the original bus gearbox crossmember. It will need the corners trimming to fit our chassis legs. This will not weaken it enough to cause problems. You will need to use a 200mm beetle clutch not your old bus clutch.



Handbrake cable hole can be drilled in original spring plates. 20mm diameter hole should be 190mm rear of the centre line of the boss and drilled in the centre of the plate.



TRANSMISSION SNOUT

Bug transmission — Install Split nose cone — Completed transmission

When installing a bug transmission, you will need to remove the bug nose cone and replace it with the one from your Split bus transmission. You can use *either* the Splity or the bug selector fork. Don't panic, this is a simple job to complete.

This photo shows the bulk of the work completed. Handbrake cables should be routed through the spring plate not over or below it. See inset photo.

We recommend the use of 64-67 handbrake cables (inner & outer) no matter what year your bus. These will need shortening for 1950-60 buses as the standard earlier cables are often to short to hook up but these 64-67 may be a touch too long. We can offer custom length cables if you get stuck. Call if you have a problem

REAR FLEXI BRAKE HOSES .
Use T2 68-79 270mm long with female fittings at both ends.
GSF pt no 65850

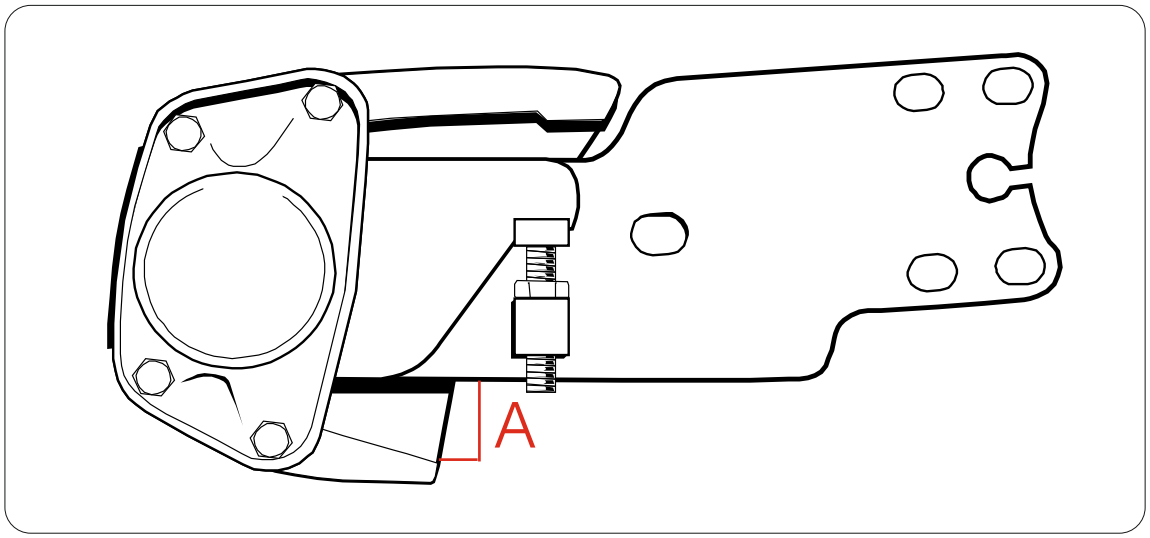
SPRING PLATE FITTING FITTING INSTRUCTIONS

Our adjustable spring plates are designed to give vertical adjustment on IRS equipped 50-67 buses. Adjustment is made by setting and locking the grub screw at a suitable position. This allows vehicles to be levelled side to side without constant dismantling of the entire system in order to get the required height. Adjustment is limited to the amount the screw can safely be raised and lowered. However, this amount is in turn, set by the angle and spline you fit the spring plate on at. This means you can fit the spring plate on at one position and get adjustment up and down but if you installed it on the next spline up or down, you would get another range of adjustments. This makes the system infinitely adjustable. The question is what spline to set the plates on to start with ? Read on and you will see that even if you get it wrong, adjustment can be made without dismantling the entire system.

We recommend for vehicles needing approx a 3-4 " drop, the spring plate should have a gap at A of approx 12mm. The entire rear IRS should be assembled and the vehicle set on the ground with its full weight of engine etc to give a true ride height. The vehicle should be "settled" by pushing and bouncing the rear end in order to get the full settled weight onto the torsion bars. (Shock absorbers should not be fitted at this point)

With the vehicle settled, adjustments can be made up or down with the grub screw. The screw should not be wound upwards more that level with the bottom of the block. Likewise, do not lower the screw lower than 1mm above the lock washer.
If after adjustment you can not get the bus to sit at the height you require, DO NOT PANIC. YOU DO NOT HAVE TO DISMANTLE THE ENTIRE REAR SYSTEM.

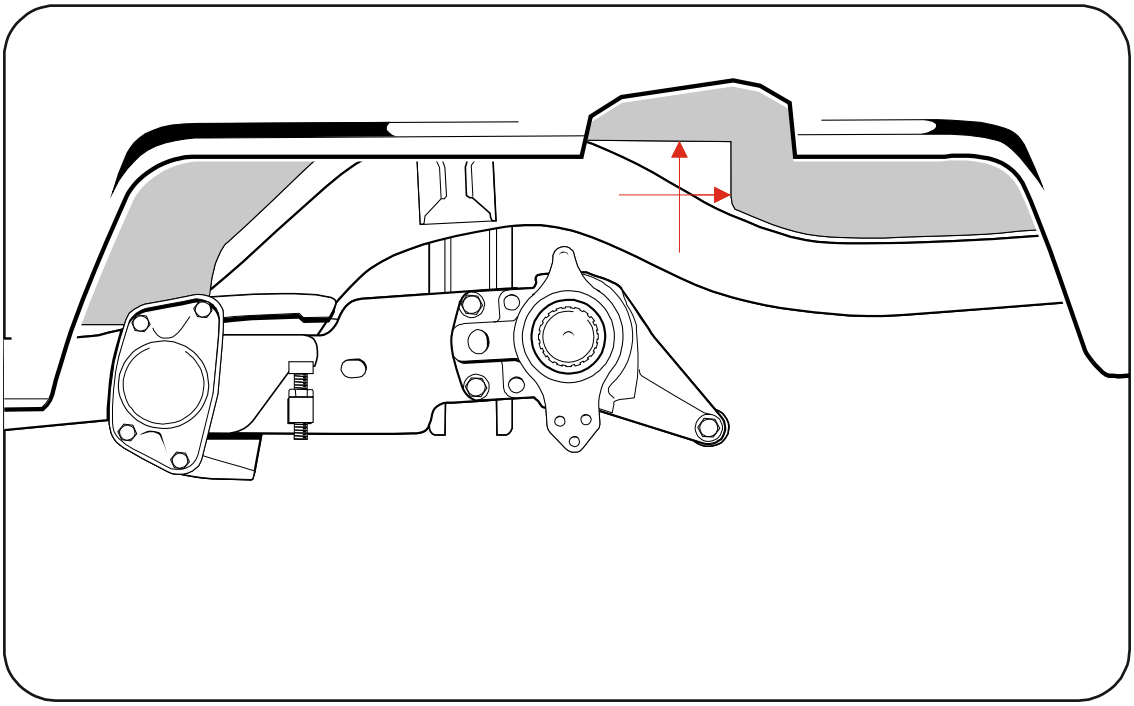
It is possible to reposition the spring pate onto the next appropriate spline without removing it from the hub assembly. Jack the vehicle and place the chassis on axle stands. Remove rear wheels. Simply take off the spring plate cover E, remove the outer rubber bush. Mark any spline on the torsion bar and the corresponding spline on our spring plate with paint or by dot punching.
Now gently remove the spring plates shorter outer section from the torsion bar. Rotate it ***up*** one spline to ***drop*** the vehicle another 3" or rotate it ***down*** one spline to ***raise*** the vehicle 3". Reassemble and get the vehicle back onto the ground. Resettle once more. Once settled, re adjust the grub screws accordingly.



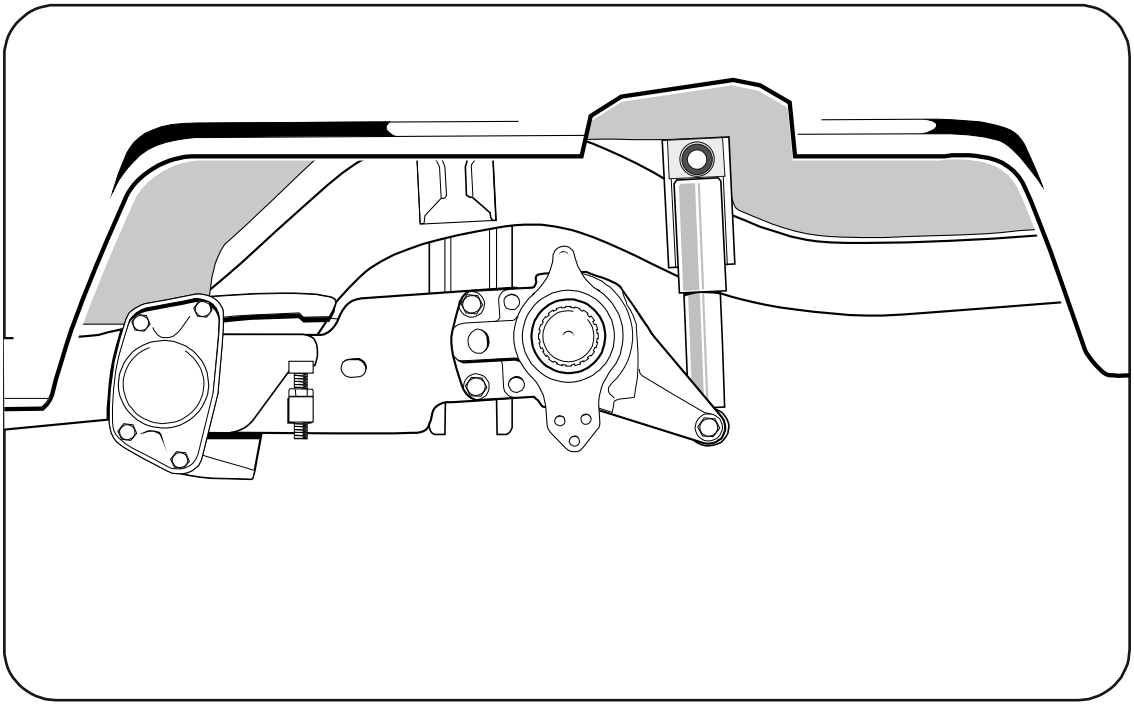
Enford Mead, Gains Cross, Durweston, Blandford, Dorset. Dt11 0QW England Sales tel/fax +44 01258 863600 E-Mail; palmer@creative-engineering.com

SHOCK MOUNT FITTING INSTRUCTIONS

Our upper shock absorber mounts are designed to allow the fitment of most telescopic shock absorbers and will work with IRS conversions, hydraulic or air suspension systems. The 90 degree rotated top mount, allows shocks to work without binding under varying height conditions.



The shock mount is designed to fit in the floor corner underneath the fuel tank floor area. *See above diagram.* It should be positioned as high and rearward into the corner shown as possible. You will need to trim a small amount of sheet metal to aid top shock clearance. We recommend a shock is loosely fitted to the mount and offered up before any fixing is carried out.



The completed installation should look like this. Be sure to use the correct length shock, which can only be calculated with the vehicle on the ground under full weight. The bolt to bolt measurement will be required to select the right length shock.

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