

# FITTING INSTRUCTIONS

## Steering rack conversion TR3/3B

**Partnumber: 045.166**

### Safety

**Your Safety and that of the users of the vehicle to which these products are to be fitted and all other Road Users and members of the General public is paramount. Accordingly the fitment of these products should only be undertaken by persons who are competent skilled vehicle technicians and will execute the work in accordance with accepted standards of safety and quality of workmanship. All work should be undertaken with the correct tools, which must be in good and serviceable condition. Where applicable reference should be made to all safety instructions contained in the original Triumph Workshop Publications.**

### NOTES: VERY IMPORTANT

1. This kit cannot be installed with a standard engine fan fitted. Remove standard fan and replace with an electric fan. Order a Kenlow fan partnumber 185.129 and part number 166.262 crank bolt/washer set to fit the pulley back to the crank without the extension. During development of this kit we decided that putting the rack in its ideal position was more important for correct steering geometry than keeping the original fan arrangement. When installed with the modified steering links provided in the kit, the car should exhibit zero bump steer.
2. The kit includes modified steering arms, which should be fitted so that the track rod outer ball joints just clear the discs.
3. The original indicator and horn arrangement cannot be re-used. Alternative arrangements will need to be made. We can supply suitable switches and cowl. Please see flasher switch partn° 083.578. Observe all health and safety precautions during welding particularly paying attention to the proximity of the carburetors and uel pump.

### Proceed as follows:

- Disconnect the battery.
- Jack up the car at the front and secure on axle stands.
- Referring to the original workshop manual, remove the two front road wheels and the front apron.
- Remove the steering box, drag link and idler.
- Remove the control head and its wiring.
- Drain and remove the radiator and down pipe.
- Remove front hubs, discs, back plates and steering arms. The steering arms should be returned to your supplier, as they are exchange.
- Remove the engine fan and extension to the fan and replace the pulley and hub using bolt/washer set 162.262.
- Clean the chassis of all oil, dirt and paint where work is to take place.
- Clean and inspect all suspension/hub parts, which are to be re-used and replace any worn items.
- Offer up the two rack support brackets. They sit just behind where the steering box and idler were bolted.
- Offer up the steering rack and bolt this temporarily to the support brackets.
- You will notice that the rearmost M10 screw on the driver's side is particularly difficult to insert. To overcome future difficulties we propose a slight alteration to the chassis.
- The angled strengthener to the forward lower suspension mount is the piece of chassis, which causes the obstruction.
- Mark this directly below the drivers side rearmost attachment screw and then remove the rack and brackets.
- Mark two vertical lines 15mm either side of this mark and cut down these lines approximately 3/4 of the total depth of the strengthener. Bend out this middle portion so that it is vertical.
- Offer up the rack and its brackets once again to establish that a socket can be put up to the screw and that the screw can be removed and inserted with ease. Remember that the brackets will be welded in place when the kit is finally installed.
- When satisfied remove once again the rack and its brackets and weld up the two 'V' shaped gaps produced by bending the strengthener.

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### **WARNING**

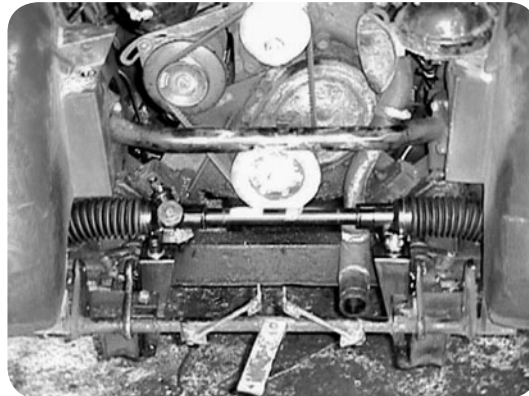
**If gas-welding equipment has to be used take suitable precautions to ensure that the rack is not damaged by heat.**

Fit the brackets and rack once again and establish that the brackets sit satisfactorily.

The new rack mountings are correctly positioned when the rear edge of the bracket is up against the turret and the top face is parallel with the chassis. In this position the forward flange should touch the original steering box/idler support.

As all chassis vary slightly, and many have been repaired, some slight alteration may be required to the brackets to ensure a snug fit.

With the rack in place, tack-weld the brackets to the chassis. The rack is used to hold the brackets in the correct attitude.



When the brackets have been tacked in place, remove the rack and finally weld the brackets to the chassis wherever they can be.

Pay particular attention to the forward flange, which connects to the steering box/idler brackets.

Paint the chassis and brackets when welded.

It is important that the lower Universal Joint (UJ) can slip easily onto the rack pinion spline. Clean up the splines in the UJ and on the pinion to make sure this can happen. It may be necessary to prize open the split in the UJ.

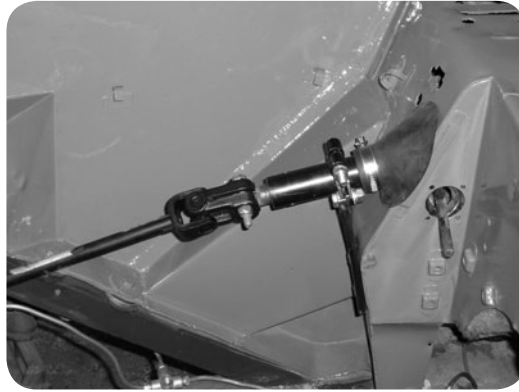
**If this instruction is not observed and the UJ is hammered onto the steering rack, the pinion is in danger of being forced too far into the pinion housing resulting in the rack needing repair before it can be fitted.**

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The rack can now be finally installed using bolts, washers and nyloc nuts supplied. Loosen the upper column and slide this into the cockpit slightly.

Slide the new steering shaft with 2 UJ's on to the rack and onto the upper column, whilst sliding the upper column into the top UJ.

Secure the UJ's with nuts, washers and bolts provided. Where this conversion is replacing a solid column steering box, a new short upper column and support kit will be required. See photos for details.

If not ordered at the same time as your rack kit, please order: -

234.346 Upper column set

043.998 Support kit Left Hand Drive.

Referring to the original workshop manual re-assemble the front suspension using the modified steering arms, part numbers RTR3130/1. These are modified from standard units to move the outer track rod ball joint outboard by 30mm to change the Ackerman angle from negative  $6^{\circ}$  to positive  $9^{\circ}$ , thus providing toe-out on turns rather than toe-in.

**IMPORTANT: What was a left hand steering arm is now fitted to the right hand side of the car.**

This transposition requires the use of one longer spacer part number RTR3115 per side and longer bolts.

Ensure that the ball joints do not foul the discs or back plates. If so place washers between steering arms and spacer (equal number front and rear). The disc back plates can be left off, as they offer little protection and their presence reduces the cooling air available to the discs.

Check that the caliper attachment bolts do not protrude so far that they may touch the discs when the shields are removed. It is acceptable to file off excess thread to ensure clearance exists, or use an extra washer simulating the thickness of the shield bracket.

Connect up the track rod ends and refit the hubs taking care to adjust the wheel bearings correctly.

Track the front suspension to 20 minutes toe in, ensuring that the track rods are of equal length.

Refit the steering wheel, radiator, front apron, and road wheels.

Ensure all bolts and nuts are secure before road testing.

Remember that at this point you now have neither indicators nor horn.

Can provide suitable switches and shrouds if necessary.