

Know Yer Trunnions?¹

One of the mysteries of the small-chassis Triumphs (Spitfire, Herald, GT6, Sports 6 & Vitesse) is the use of “Trunnions” in the front suspension rather than the kingpins used in other British

vehicles of a similar era. Trunnions are made of brass, are lubricated with hypoid oil rather than grease, and can be adjusted for wear (up to a point).

Although the trunnions and the vertical link look almost the same for both sides, this is not the case - the LHS of the car has left-handed threads on the trunnion and link whereas the RHS has right-handed ones.

The mounting of the trunnions to the lower wishbone is through a nylon bush with a steel insert. Water ingress is prevented by the use of a rubber seal which is held in place by 2 sealing washers at each end.

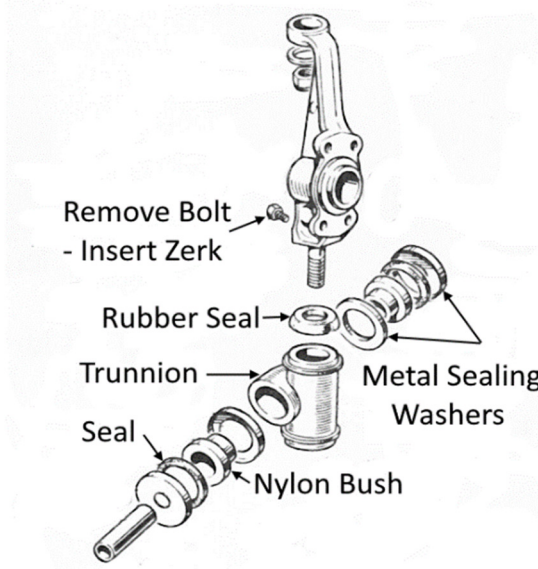


Figure 1 - Trunnion and Vertical Link

If you find one of these small chassis Triumphs with the small plug bolt on the rear side of the vertical link still in place, BE AFRAID, this will likely mean the trunnion has never been maintained properly as replacing this bolt with an angled zerk, pumping in hypoid oil and then replacing the plug bolt is tricky, tedious and time consuming.

If your trunnion maintenance has been neglected for an extended period, Figure 2 shows what can happen. Note LHS has the original plug bolt and RHS has a zerk.

Photo courtesy “Practical Classics” magazine, November 1980 edition.

In extremis, the trunnion and vertical link can part company while driving, fortunately maximum force on this component happens on full steering lock at low speeds.

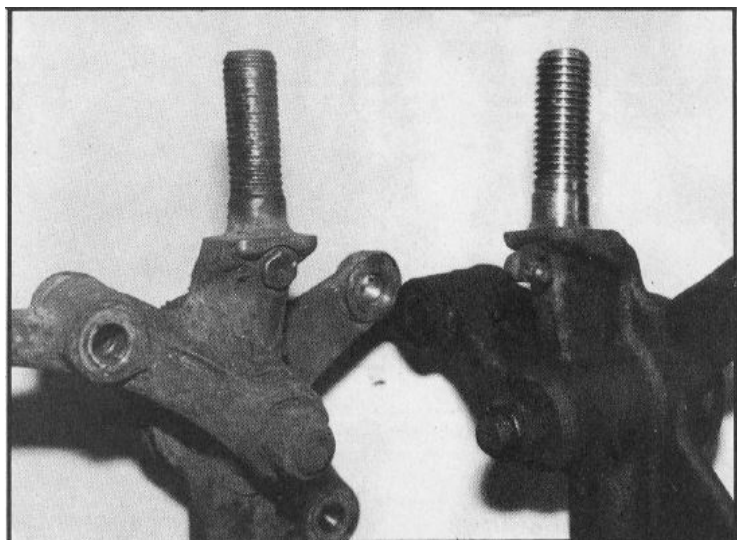


Figure 2 - Poor v. Well Maintained Trunnion

¹ This is a play on a Northern English colloquial phrase “he knows his onions” which means he’s an expert at his subject.

In my case although the trunnions were regularly maintained, the rubber seal between the top of the trunnion and the vertical link had become very brittle with old age and the seal could no longer keep water out.

As it's a Triumph, it will come as no surprise that replacing this rubber seal is more complex than it seems.

1. Removing the Vertical Link and Trunnion from the Car



Figure 3 - Rotor & Backplate removed

The first step is to take off the front rotor caliper. Rather than removing the brake pipe, I prefer to hang the caliper up using an old wire coat-hanger, in this case over the battery retaining bolts. This ensures no stress is placed on the flexible brake line and obviates the need to bleed the brakes afterwards.

The stub axle nut can then be wound out and the rotor and hub assembly removed from the car.

This reveals 4 bolts which hold the back plate onto the vertical link. The bottom 2 bolts also connect to the steering arm which is attached to the rack ball joint.

A jack is now placed under the lower wishbone to remove any pressure from the coil spring on the outer top and bottom wishbone bolts. It also advisable to slacken, but not remove the lower shock absorber bolt to allow easy extraction of the trunnion.

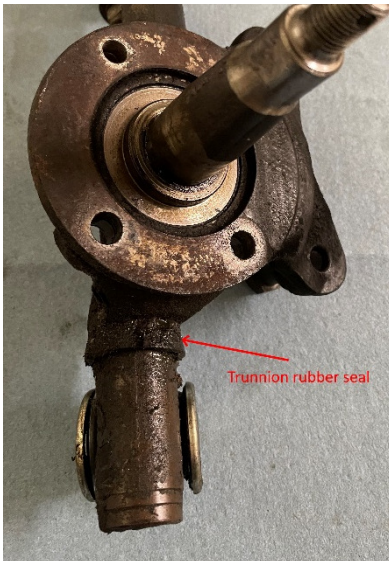


Figure 4 - Vertical Link & Trunnion as removed

Once off the car, the trunnion can now be wound off the upright and both parts examined for undue wear.

The parts were put into an ultrasonic cleaner, but a kerosene bath would have worked just as well.



Figure 5 - Dirty but OK?

Once all the parts were cleaned and the steel parts sandblasted and repainted, reassembly can begin. In my case, no new parts were needed apart from the various seals.

Note that the caliper carrier has been removed from the vertical link. It is held on to the vertical link by the same 4 bolts that hold the backplate in place.

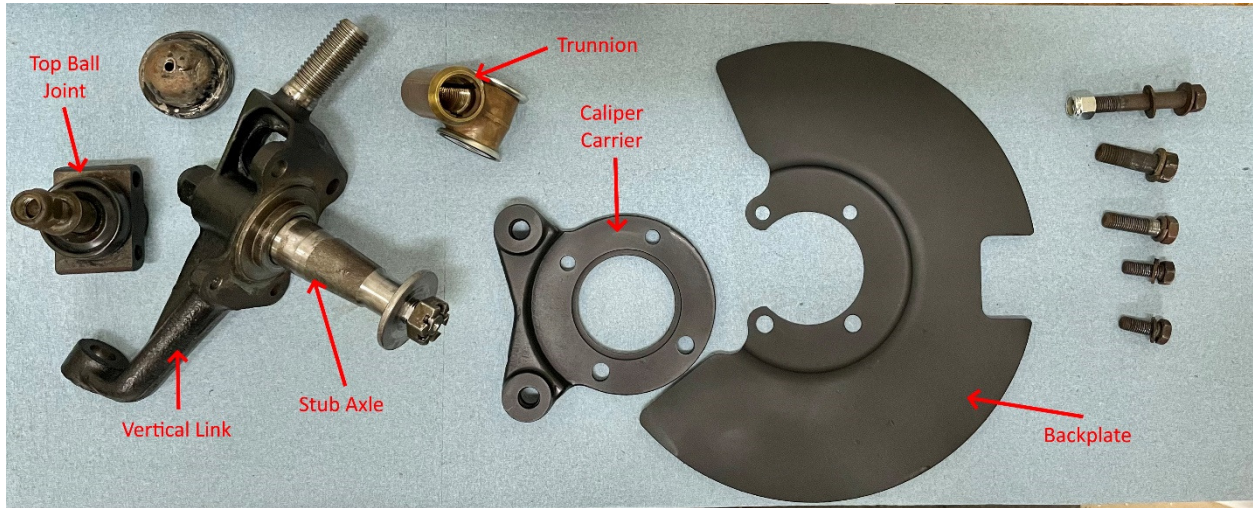


Figure 6 - All parts cleaned & painted ready for reassembly

2. Reassembly & Refitting of the Vertical Link and Trunnion

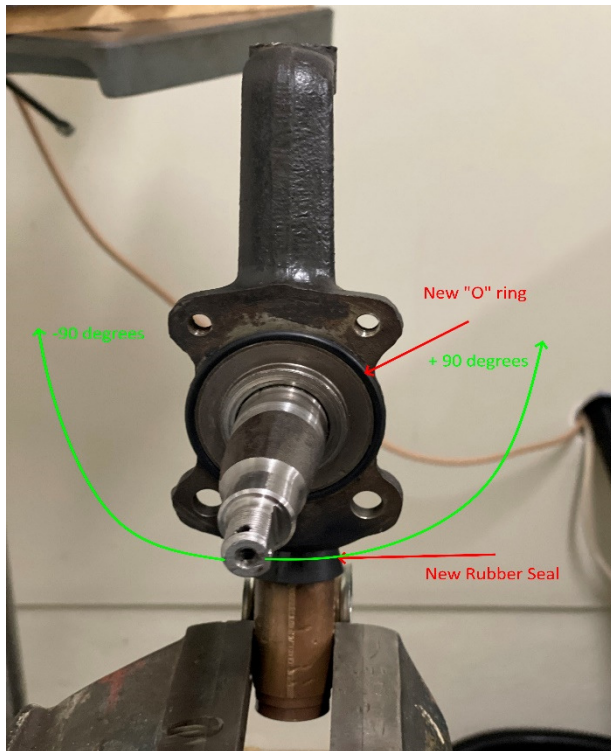


Figure 7 - Assembly of Vertical Link & Trunnion

Remove the bolt or zerk from the vertical link and fill the trunnion 1/3 full with Hypoid 90 or similar oil. Put a new rubber seal at the end of the threaded portion of the vertical link and screw in the trunnion. Oil should come out of the zerk hole. Screw in the vertical link as far as possible, but ensure that the stub axle can rotate freely through +/- 90 degrees from the center position (as on the car) and shown in Figure 7, if tight loosen the trunnion by one turn.

Screw the zerk into the back of the vertical link.

There is an "O" ring between the vertical link and caliper carrier which prevents water ingress into the axle bearings. This should be replaced – an R-32 "O" ring works nicely.

The caliper carrier and the backplate can now be assembled onto the vertical link as shown in Figure 8 using only the top 2 smaller bolts – do not tighten fully.



Figure 8 – Assembled vertical link

trunnion is bolted to the bottom wishbone. Note that oil or grease should not come into contact with the nylon bushes in the trunnion as this will cause them to expand and wear prematurely.

While the rotor and hub are off the car, it is also worth cleaning and regreasing the wheel bearings and replacing the felt grease seal between the hub axle and the vertical link.

Tighten all bolts and adjust the castellated nut on the stub axle such that you can feel a very slight movement when the road wheel is attached, but off the ground, and rocked in a vertical direction. Use a split pin to lock the castellated nut in place. Finally mount the caliper onto the carrier and you're ready to go.

Happy spannering!

David Brooks – 26th Jan 2023.

Note that once the backplate is in place, the trunnion can no longer be adjusted.

At the top of the vertical link is a tapered hole into which the top ball joint is mounted. This joint can be loosely assembled onto the vertical link, but will need a sharp hammer blow to lock the taper in place so that the nylock nut can be fully tightened.

The steering arm is inserted through the vertical link. Don't forget the spacer washer between the front facing attachment point and the vertical link as shown in Figure 9. This must be done before the



Figure 9 - inserting the Steering Arm