

New Triumph Rack & Pinion Steering Units

TR4 from CT20064, TR4A, TR250, TR6 (LHD)

667-126 or 306830	Standard Ratio	3.5 turns lock-to-lock
667-177 or 306830HR	High Ratio	2.6 turns lock-to-lock

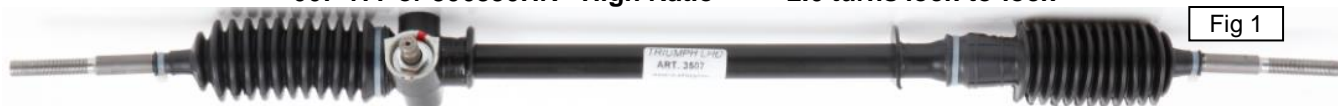


Fig 1

A little History...

Moss was fortunate to find a cooperative company making rack & pinion steering gear assemblies for a long list of automobile manufacturers. They make thousands of rack units for hundreds of different models every year. We managed to convince them that making small numbers of four different Triumph racks for Moss was really a good idea.

About these racks...

There are a number of design features have been built into these racks. The joint where the tube and the pinion housing come together is very important. The end of the tube is flared like a trumpet, and the “lip” or edge of the tube (2a) engages a groove inside the pinion housing. In addition, the end of the pinion housing is clamped around the pipe all the way around the circumference (2b). This is done using a special press and fixture. The end result is a rack unit that is very, very strong.

How do I lube the rack?

Lubrication technology has moved on since the TR4-4A was in production. The new racks are pre-lubed for life with a special grease.

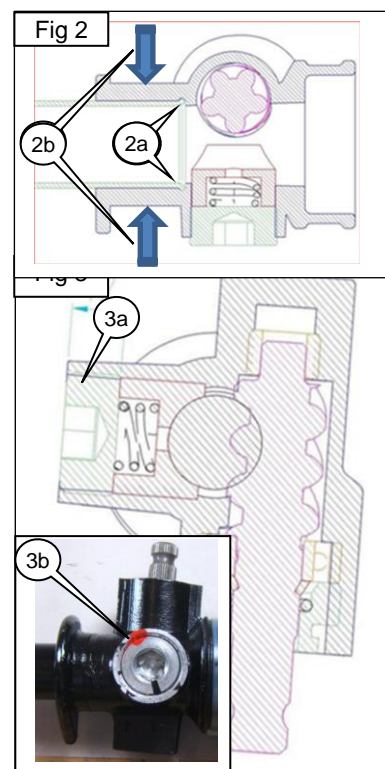
What about the pre-load on the pinion?

The threaded section of the pinion nut (3a) is a full 12mm. Pinion nut torque set at factory between 15-25 kg-cm. The adjusting nut is then secured with anaerobic thread locking liquid (3b), similar to Loctite. In time, when it becomes necessary to re-adjust the pinion nut, the nut can be locked in its new position by driving a piece of the aluminium nut into one of the grooves in the collar of the pinion housing.

What does “High Ratio” mean ? Is it for racing ?

The original racks were geared to reduce the effort required to turn the wheel at low speeds. The steering wheel must be rotated 3 ½ times to move the tires from “all the way left” to “all the way right”. This is generally written as “3.5 turns lock-to-lock”. Our high ratio steering racks are 2.6 turns lock-to-lock, which means the tires change direction faster as you rotate the steering wheel. The result is quicker ‘turn-in’ on the bends for a more responsive feel. Some describe the car as being “more nimble” with the high ratio rack installed. It will also require more effort to turn the wheel at low speeds or when stopped, especially if you have upgraded to wider and/or stickier tires.

Please note: all our Triumph racks are for street use only – they are not suitable for racing of any kind. Modern suspensions and wide sticky tires generate forces the original Triumph design is simply not designed for, even with the improvements we have made.



What about mounting this rack?

These racks are made using the dimensions of the original Triumph racks so that they would fit properly. We offer three different mounting options so that you can pick the one that suits you best.

683-183 Super-Pro Polyurethane Bushings

Sold as a pair – order 1. Our favorite because it is the ideal street setup, not as soft as the original rubber bushings, and not as harsh as the solid mounts in terms of transmitted road chatter.

680-070 Rubber Bushings (OE Type)

Sold individually – order 2. Softer than the Poly bushings. There are two issues with the rubber mounts. They need to be installed carefully following the factory workshop manual, because they need to be pushed apart while the U-bolt clamps are being tightened. There was a factory tool designed for this purpose, but most individuals (and shops) do not have the tool. Most people improvise by using clamps or vice-grip based welding pliers to force the rubber mounts outward while the U-bolts are being tightened. Regardless of how well the installation is done initially, the rubber mounts tend to wear out over time, and the rack floats a bit after a couple of years. With the car parked, have someone turn the steering wheel gently as you watch the rack. If the rubber mounts have been improperly fitted, or if they are old and tired, you can see the rack shift slightly as the rubber mounts compress before the wheels start to turn. The only solution is to replace the rubber mounts regularly.

667-288 Solid Steering Rack Mounting Kit

We developed a solid rack mounting system for the late TR4-6 based on the aluminum block and U-bolt rack mounts used on the early TR4 up to CT20064. Feedback from customers indicates that the solid mounts transmit some road vibration to the steering wheel, other say they can't tell the difference. Logically, you would expect the steering to be more precise, with slightly more vibration. Certainly the solid mounts last longer than the rubber mounts.

What about tie rods and tie rod ends?

The tie rods on the new racks droop a full 30 degree like the OE tie rods. Some of you with TR4s know the tie rods are not the same as TR4A. It turns out that the TR4 tie rods are about 2/10 of an inch longer than TR4A- 6. That is simply not enough to be a cause for concern. Tie rod ends are not included. If you need to replace them we suggest ordering 667-265, a pair of tie rod ends, and two new jam nuts 310-390.

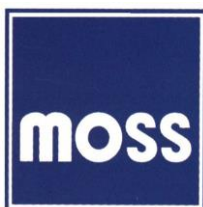
How is it that these racks fit the TR4?

It is actually possible to fit either of these racks to any TR4 after CT20064, which is when the rack mounts went from horizontal to vertical. There is no reason for a late TR4 owner to miss out on a new rack & pinion.

Before You Begin

If you are interested in a new rack and rack mounts because you have some problems in the front suspension, you need to reconsider what you plan to do first. Buying a new rack and rack mounts is a good idea if your existing rubber mounts have gone soft and your rack is worn out. If, however, the overall condition of the front suspension is not very good, we suggest that this needs to be attended to before you start adding in things like solid rack mounts or the "High Ratio Rack". Rebuilding the front end is a project but you will usually find the rewards are well worth the effort. In addition to the factory workshop manual, which is essential, Roger Williams has an excellent book How to Restore Triumph TR2-4A, Moss# 213-780. Roger does an excellent job of explaining the issues and the procedures needed to bring your car back to its original handling potential.

Although every effort has been made to ensure the accuracy and clarity of this information, any suggestions that you may have that will improve the information (especially detailed installation notes) are welcome. Please use the simple email form on the "**Contact Us**" page on the Moss website: <http://www.mossmotors.com/AboutMoss/ContactUs.aspx>. If you prefer, you may call our Technical Services Department at 805-681-3411. So many people call us for help that we are often not able to answer the calls as fast as we'd like, and you may be asked to leave a message. We respond to every call for help as quickly as we can, which is normally within 2 business days, but when the volume of calls and emails is high, it may take longer. We apologize in advance for the inconvenience.



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Instruction Sheet Moss 667-126_306830_667-177_306830HR September 2014