

1969 Triumph TR6 FRONT SUSPENSION RESTORATION PROJECT-



Part two- Installation Procedures



FRONT SUSPENSION REFURBISH - PART (2)

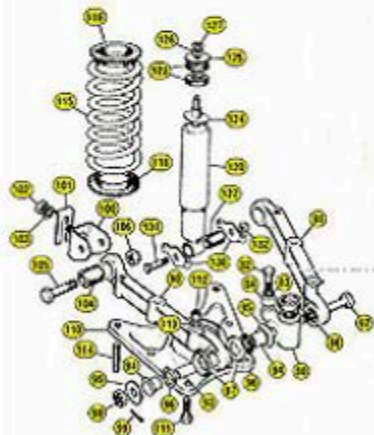
SAFE HARBOUR STATEMENT:

This "How I installed it" essay is presented as general information and has been prepared by a Triumph TR6 owner with very limited auto mechanic knowledge. The installation procedures shown in this document are not professional instructions and are not intended to be such. The front suspension of a 1969 Triumph TR6 was successfully refurbished with these amateur procedures and I was not injured during the process.

The following essay documents the installation procedures used to complete the refurbishing of the front suspension system as well as replacement of the steering tie rod ends. Therefore these procedures can be used also in refurbishing all or portions of the front suspension. Specifically, the routine maintenance task of changing out the A-Arm bushings is presented. Also presented is installing new coil springs, tube shocks and refurbishing the trunion.

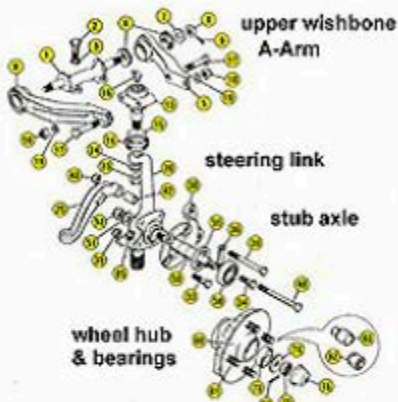
FRONT SUSPENSION COMPONENTS REMOVED DURING PART (1): DISASSEMBLY

Triumph 250 / TR6 : Suspension & Steering
Front Suspension - Moss Motor Sketch



lower wishbone (A-Arm), coil spring, shock absorber, trunion and bushings

Triumph 250 / TR6 : Suspension & Steering Front Suspension - Moss Motor Sketch



Again, the wheel hub and bearings are a separate project and the "How To Refurbish" essay may be downloaded at :

<http://www.scribd.com/doc/260591/wheelBearingsFinal>

As mentioned, for the average Triumph owner with limited or no mechanical skills such as this author, rebuilding the front suspension on a TR 250 / TR6 is a daunting task just looking at the Moss Motors sketch. This essay is written for the Triumph owners who might live in remote areas with no professional mechanics available, no other Triumph owners nearby or folks with limited budgets who cannot afford the professional mechanics.

This essay is also written for the non-mechanic Triumph owner who simply wants to enjoy restoring the car himself or herself and take pride in their work.

UP FRONT: This is a difficult, time consuming, fairly expensive project to undertake. Special tools are required and you need good organizational skills because hundreds of similar looking pieces are involved. Don't let anyone tell you it is an easy project. It is not. But it can be accomplished and the results will be neat and safe.

Safety First:**FRONT SUSPENSION INSTALLATION:**

The safety precautions used in the Part (1) disassembly remain the same for the installation procedures. Keep the chocks at both rear wheels and with emergency brake on and car in gear.

I always work with two jack stands placed opposite each other and an emergency hydraulic jack placed in my immediate work area. I use a fourth redundant jack when I am actually on my back, working under the car.



You might see a scissors jack in several photos. I used it as a working tool and not as a car support device.

SPECIAL TOOLS I USED TO INSTALL THE FRONT SUSPENSION PROJECT:

The installation procedures require the same spring compressor tool that was used in the disassembly procedures. This includes a 1-1/8" open end wrench with a long handle to torque the compressor tool. Additionally, a torque wrench is needed to accurately tighten all the fasteners. A tap and die set and a bench grinder with wire brush wheel are a must.



I fabricated my own spring compressor tool from 3/4" diameter allthread, hardened bronze spacer as the driver piece, 4" diameter steel circular plate with a 1-1/4" threaded nipple insert piece. I drilled 3/8" diameter holes in the plate and inserted 2" length grade #8 bolts as centering studs. (Shown above)

A spring compressor tool may be purchased from several commercial sources and also rented by the day from local auto parts stores.

NOTE OF CAUTION:

The compressed suspension coil spring is dangerous. It contains much energy and can seriously injure or kill you if not handled properly. If you have any doubts while using your spring compressor tool, slowly place an additional jack under the coil spring plate and slowly remove the compressor tool and start over.



FRONT SUSPENSION PARTS REMOVED:



NEW FRONT SUSPENSION READY TO INSTALL:

Because I have limited auto mechanic experience, I use "work boards" to help keep me organized.

When I remove a car component, I label the piece and carefully place the fasteners I have removed in their approximate location relative to the piece. This keeps me organized because most of the time I do not know what fastener goes with which part.



Meet Amos. He is a bit of a snob when it comes to parts. No K-Mart blue light specials will cut it.

FRONT SUSPENSION PARTS PURCHASED:

Upgraded A-Arm bushings were kindly donated by a fellow Triumph owner.

new lower
A-Arm bushing

My existing suspension components were in poor condition with many layers of black paint and grease and road grime. I stripped everything down to bare metal and powder coated the primary pieces.

I threw out all the existing fasteners and purchased new, American made grade #8 fasteners. This added \$95 additional project cost but I feel is worth the peace of mind. Kits are available at lesser cost and unknown quality. The savings is minimal.

FRONT SUSPENSION REFURBISH - PART (2)

The suspension components of my car had been coated with many layers of black paint, grease and road grime. The frame was in the same poor condition.

I used industrial grease remover, hot water spray and finally paint remover to bring the frame to a bare metal condition. I used rubber gloves and steel wool soaked in cleaning detergent to remove the paint stripper/paint. Finally a clear water spray.

Once the frame was dry, I brush applied a layer of Eastwood Rust Inhibitor and let it dry overnight.



Frame refurbished - ready for new suspension

I then applied a first layer of Norton acrylic modified two component epoxy paint- color grey. I allowed it to dry overnight and then applied a second and final layer of the Norton product. I chose a medium grey color for my frame so I could more easily inspect the various components and fasteners.

In the photo above, notice the brake caliper (blue color) hanging by a white string from the shock absorber tower. The brake caliper must be moved out of the way to begin the reassembly of the front suspension pieces.

Note: I believe experienced mechanics remove the brake caliper and brake fluid hose during the front suspension rebuilding process. This entails bleeding the brakes when completed and I did not trust my skills at bleeding brakes, so I worked around it.



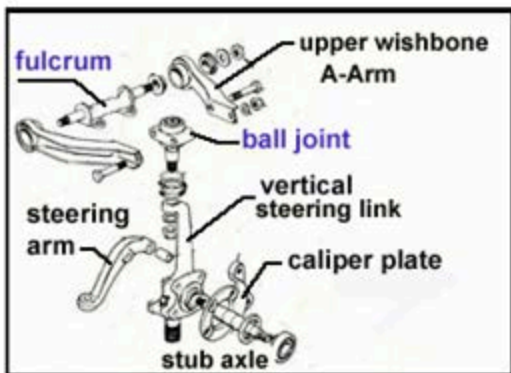
One of my steering rack tie rod ends was broken so I replaced them both. The tie rod end is a good place to temporarily hang the brake caliper while installing the suspension pieces. I first installed a grease fitting in the tie rod ends as shown above.



Secure brake caliper to tie rod end

Make sure you mark the tie rod end locking nut before you remove the old tie rod end. I used white masking tape and red magic marker to keep things lined up. Install the new tie rod end and tighten the locking nut.

The front suspension installation can now begin.



My priority for the reassemble of the front suspension components is to get the coil spring safely installed as soon as possible. To accomplish this task, I begin by installing all the suspension pieces that form a "cage" around the coil spring / shock absorber tower structure. I begin at the top and work my way downward. The first piece I install is the **FULCRUM**.

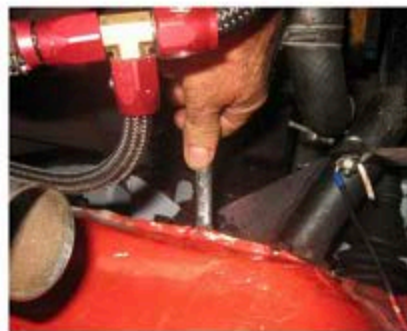


I took a photo of the fulcrum when I removed it during the tear down procedure so I could install it again in the proper orientation. This is rather critical because the fulcrum can easily be installed backwards. You don't want to discover this mistake **AFTER** you have the coil spring in place. The orientation above is correct. The bottom of the photo faces exterior car and the top faces interior car.

It takes a bit of finesse to install the fulcrum. Four each 3/8" bolts and lock washers secure the fulcrum to the frame. The two in the rear are somewhat difficult to install.



Load the two rear bolts and lock washers into the fulcrum holes, outside of the wheel well. Carefully slide the fulcrum and two bolts across the top of the tower with one hand while using the index finger of your other hand to guide one of the bolts into the chassis threaded hole. Once the bolt tip is in the threaded hole, use your free index finger and thumb to rotate the bolt a few turns to "set" it. Use the same procedure to get the second bolt started.



Access to tighten rear fulcrum bolts

In my car, there is not enough clearance to tighten the two rear bolts with a 9/16" socket. On the driver's side I was able to tighten the two rear bolts with a 45° offset 9/16" box wrench. On the passenger's side there is even less clearance and I had to access the bolt heads from inside the engine compartment with a 9/16" open end wrench, as seen in photo above. Do not fully tighten the two bolts at this time.

The front two 3/8" bolts and lock washers both have good access and are easily installed with a 9/16" socket. Use a torque wrench and tighten these two bolts to 24# to 32#. Use your best "feel" about 28# on the two rear bolts with your wrench.



Fulcrum bolts @ 28#

Next to be installed are both upper A-Arms, bushings, thrust washers, castle nut and cotter pins. Each A-Arm is installed onto either end of the threaded fulcrum pins as shown in the photo above.

The entire assembly consists of the pieces shown below. Again, I stripped both arms to bare metal, treated the rust and then powder coated them.

Upper A-Arms Assembly



Note: Arms are NOT identical

There is very limited space to install the A-Arm onto the fulcrum pin. First lubricate the pin and the bushing piece with a quality grease like red wheel bearing grease. Next slide the first bushing half onto the pin as shown below.



Install bushing onto fulcrum pin and THEN slide upper A-Arm onto bushing. Same both sides.

Next, lubricate the inside surface of the A-Arm with the same grease and slide it onto the bushing as seen in the photo. Lubricate the second half of the bushing and push it onto the fulcrum pin and into the opening of the A-Arm.

Place the thrust washer and castle nut onto the fulcrum pin. Begin to tighten the castle nut to drive the bushing fully into the A-Arm. Torque the castle nut to 26# to 40#, then back it off to install the cotter pin as shown below.



Upper A-Arm @ 34#
plus
cotter
pin



UPPER A-ARM INSTALLED

The photo above is the upper A-Arm installed onto the fulcrum of the passenger side of the car. You will readily observe the two arms appear to be mis-aligned with the coil shock tower. This effect is because the two A-Arms are not identical. This goes back to the importance of labeling the parts when you remove them initially.



Dry fit ball joint to confirm offset to rear of car

The two A-Arms are interchangeable, with regards to physically being installed onto the fulcrum. One combination will yield an offset to the front of the car and the other will yield an offset toward the rear of the car.

In order to determine if I had installed the two A-Arms in correct position, I dry fitted the upper ball joint as seen in the photo bottom left.

A straight line from the shock absorber hole in the tower middle to the bottom hole in the tower should yield the upper ball joint offset toward the rear of the car as shown in the photo. If the ball joint is offset toward the front of the car, take both A-Arms off the fulcrum and reverse them side to side.

Don't tighten the two upper ball joint bolts at this time. Leave the ball joint in place as a reference plus it is now off the parts board and difficult to misplace.

My goal is still to build a cage around the coil spring tower so I can install the coil spring.

INSTALL LOWER A-ARMS



Lower A-Arms assembled-Ready to install on frame

Driver's Side Shown Above

The lower set of A-Arms is also slightly different and not identical. Again this stresses the need to accurately label all the suspension parts as you remove them.



A-Arm Assembly - one arm shown:

- A-Arm cleaned; powder coated red to match car
1. Two halves of steel sleeve lined, upgraded bushing
 2. 3/8" stud and lock nut to attach coil pan
 3. 3/8" bolt and lock nut to attach sway bar link and attach coil pan
 4. 3/8" bolt to attach coil pan
 5. Sway bar link mounting bracket
 - 5a. Steel spacer for bottom side of A-Arm
 6. A-Arm mounting bracket to car's frame
 7. 1/2" bushing bolt w/ lock nut

Both sides of the lower A-Arms contain a total of twelve (12) threaded bolts. This is probably a good time to mention a quality thread tap and die kit.

I felt it well worth the little bit of extra time to run a die down the threads of every bolt in my project. You will be surprised how much dirt and bent threads arrive right from the supplier. I also used a tap to clean out all existing threaded holes in the suspension system.

Besides, nice clean threaded bolts go into place ever so much smoother and faster.



CLEAN ALL THREADED PIECES:



The first step toward installing the set of lower A-Arms is to install the new, upgraded bushings. These are item No. 1 in the photo.

The steel sleeve of the A-Arm bushing rides on the 1/2" bolt (item No. 7 in the photo). I wire brush polished the area of the grade #8 bolt where movement occurs. This will greatly reduce the friction and extend the life of the bushing. Remember, you do not want threads inside the bushing steel sleeve.



Lower A-Arm with bushing & mounting bracket

I assembled the lower A-Arms and mounting brackets outside of the car, in order to install as a one piece unit.

First I polished the A-Arm inside where the new bushings would be inserted. I began with 220# wet paper and completed the polishing with 800# wet paper. I cleaned the inside surface with clear water to remove any grit and finally a xyxol wipe down as final preparation.

Now insert both halves of the new upgraded bushings into the lower A-Arm. I used channel locks squeeze the second half into place.

This next step might be important. Pick up the A-Arm and new bushings and closely look at both ends of the bushing. Does the steel sleeve protrude beyond the edge of the bushings? Can you feel the steel sleeve edge with your finger? On my set, the steel sleeve was cut 1/8" too long and I had to grind it flush with the bushing ends so it would not damage the mounting bracket.

I next wrapped a round file with 1600# wet paper and ran it through the steel sleeve to remove any burrs that be lurking inside. After that, I lubricated the bushing thru-hole with red wheel bearing grease. I also lubricated the new bushings inside and outside with the same red wheel bearing grease.



LUBRICATE STEEL SLEEVE

Once the bushings and steel sleeve are in proper working order, insert the A-Arm and new bushings into the mounting bracket. I coated the bearing surface of the polished thru-bolt with red wheel bearing grease, prior to pushing it through the mounting bracket and bushing steel sleeve. It will probably take a bit of effort to get the lower A-Arm assembly into the mounting bracket. I used liberal amounts of wheel bearing red grease to help slide the unit into place.



CLOSE UP A-ARM, BUSHINGS AND BRACKET

NOTE: In my particular TR6, the A-Arm mounting bracket sits between two pieces of vertical frame steel and there is NOT enough side clearance to install the thru-bolt and lock nut. That is why I assembled the A-Arm and mounting bracket as a one piece unit. Your car might be different. Even if your car is different, it is much easier to install the A-Arm into the mounting bracket outside of the car.

During the tear down of the existing front suspension components, the lower A-Arms were removed from the cars with steel shims that slide over the two mounting bracket to frame 3/8" studs. The number of steel shims will vary in your car from none to several.



Lower, rear wishbone arm - passenger front

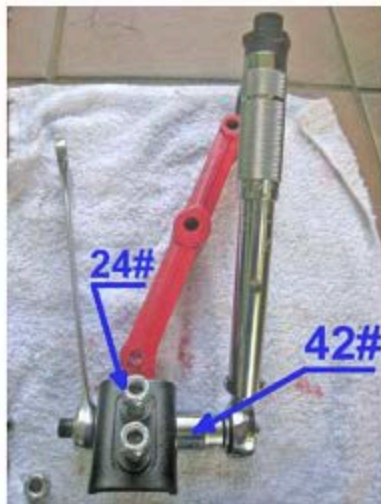
ALIGNMENT SHIMS IN ORIGINAL POSITION

These steel shims are part of the front end alignment process. It is important you keep these steel shims with the specific A-Arm they were attached to. I kept them with the proper A-Arm by loose fastening them with a lock washer and 3/8" nut.

The steel alignment shims from my car were very rusted and dirty. I was not sure how close a tolerance they needed to be but I cleaned them up, removed the rust and polished them with 400# wet paper. Then I put a light coating of red wheel bearing grease on each shim to slow down the rust process.



ALIGNMENT SHIMS - REFURBISHED



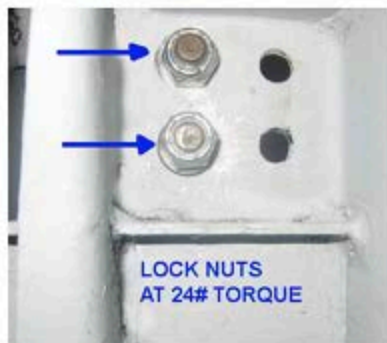
COMPLETED LOWER A-ARM (ONE SIDE)

The lower A-Arms and alignment shims are now ready for final torque and installation into the car.



FRONT SUSPENSION REFURBISH - PART (2)

I found it was easiest to apply the proper torque to the 1/2" thru-bolt assembly when I placed the lower A-Arm on a clean towel. Spin the 1/2" lock nut finger tight and then hold it from rotating with a box wrench. Torque the bolt to between 38# and 46#. Repeat this procedure for the second lower A-Arm.



MOUNTING BRACKET LOCK NUTS

After the lower A-Arms has been installed into the two mounting brackets, it's time to install both. The photo above shows the two 3/8" mounting bracket studs installed into the car's frame and tightened in place with lock nuts and flat washers. The torque applied was 24#. The lock nuts are located on the interior frame side and require lying on your back to access them.

You can also see four (4) holes drilled through the frame. This is why it was so important to mark which holes were used when the lower A-Arms were removed from the car. I used a stubby bolt and nut to mark the original holes.

It is also important that the correct lower A-Arm be installed into the frame. The lower A-Arm with the sway bar mounting bracket gets installed on the radiator side of the front suspension. This is another reason I use a work parts board with everything labeled. There are too many pieces to keep track of and too many combinations of installs possible.



LOWER A-ARMS INSTALLED

The bolt missing from the middle of the right A-Arm above is where the sway bar mounting bracket will be installed. The radiator side of the front suspension is also to the right in the photo above.



LOWER A-ARM W/ SWAY BAR BRACKET INSTALLED



INSTALL GREASE FITTING

I ordered new ball joints from and they arrived without grease fittings installed. If you are installing new ball joints and they have no grease fittings, it is a good idea to install them.

Remember, the ball joints were installed dry fit into the upper A-Arms? OK, they were. Now remove the ball joint and drill a 3/16" hole near the center of the top. Now tap a 1/4" UNF thread into the hole. Screw in the new grease fitting. Reinstall the ball joint into the upper A-Arm but do not torque the bolts at this time.

Note: You may also do this task BEFORE you begin the project. This is where I had the task scheduled on my parts board.

Now back to the task at hand. I am building a protection cage from suspension pieces so I can install the coil spring in a safe manner. I have installed the upper and lower A-Arms and dry fit the ball joint.

Now I will install a key piece that will contain the energy stored in the coil spring. I next installed the coil spring pan. The sequence of the coil spring pan bolts and studs is very important in my concept of the front suspension installation.



The coil pan I removed from the car was in poor condition, as can be seen above. I soaked the pan in industrial strength cleaner overnight to soften the layers of grease and paint. I then used paint stripper to take the piece down to bare metal. I used the wire wheel on my bench grinder to remove the surface rust.

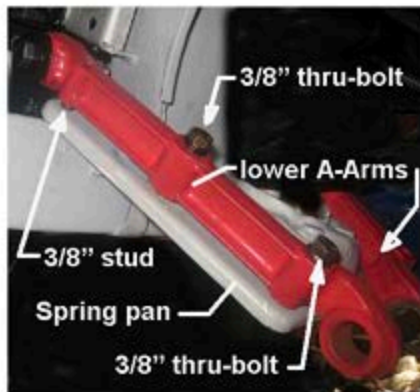


Once cleaned up, I laid down a primer coat of Eastwood Rust Inhibitor and two coats of Norton two component acrylic modified epoxy paint. I then ran a 3/8" UNF die over the four (4) shock absorber mounting bracket studs. The coil pan shown above is the seating surface for the coil spring. The shock stud threads are on the reverse side.

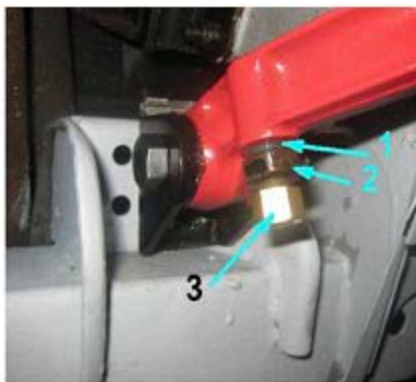


COIL SPRING PAN DRY FIT INSTALLED -
As viewed looking up from floor level.

The coil spring pan is installed onto the **BOTTOM** side of the lower A-Arms with three 3/8" thru-bolts and lock nuts, two studs and lock nuts and the thru-bolt of the sway bar mounting bracket. The shock absorber assembly is installed onto four (4) 3/8" studs and held in place by four (4) lock nuts, as seen in the center portion of the coil spring pan above.



Coil spring pan / lower A-Arm orientation



LOWER A-ARM STUD INSTALLATION

1. Loctite Blue
2. 3/8" UNF, grade #8 nut
3. 3/8" UNF, brass driver nut

The 3/8" studs and nuts in the lower A-Arms are very close to the car's frame. They cannot be removed when the coil spring is installed in the car because the downward pressure of the spring forces the A-Arm to rotate downward and the stud and nut come into close contact with the frame.

I removed both existing studs, cleaned them up with a 3/8" UNF die and then cleaned the threads in the A-Arm with a 3/8" UNF tap. It is possible to install the studs too deeply into the A-Arm and not have enough threads to properly tighten the lock nut that secures the rear portion of the spring pan.

I dry fit the spring pan onto the A-Arms and finger tightened the stud. I then wrapped a piece of white tape around the 3/8" UNF stud when I had enough threads remaining to fully torque the lock nut.

Then I took the spring pan back off, covered the stud threads with Loctite Blue, threaded a 3/8" UNF nut where my white tape ended and then threaded a brass driver nut onto the stud. I installed the stud to proper depth and torqued it to 26#. I then removed both nuts and let the Loctite Blue set up for a few hours.



FRONT SUSPENSION REFURBISH - PART (2)

INSTALL COIL SPRING PAN:

The coil spring pan is probably the most critical piece, in terms of ease of installation of the coil spring. The spring pan installs on the bottom side of the two lower A-Arms as seen in the previous photos. The coil spring is seated on the top surface of the spring pan, as seen in the photo in the upper right on this page.



This next step is important that you get it correct. The rear of the spring pan is attached to the lower A-Arms with lock nuts onto the two 3/8" UNF studs. The lower A-Arm must be rotated into an almost vertical position to install and tighten these two rear lock nut. On my car, it impossible to access these lock nuts with the spring plate in normal position.

Install the rear lock nut and finger tighten it for now. You can also see in the photo above, the middle 3/8" thru-bolt is beginning to center into the second fastener hole on the spring plate.

Rotate the second A-Arm until you can install the second rear locknut on the A-Arm stud. Finger tighten this lock nut also.

Now it should be possible to align the spring pan and both A-Arms so the all the 3/8" thru-bolts can be installed. Finger tighten the lock nuts for now.

The spring pan is now "dry fit" and ready for final tightening. Torque the rear lock nut to 24# to 32#.



Once the coil spring pan is connected to the lower A-Arms, rotate the entire assembly downward as far as it will move. Photo above shows position.

Install the top and bottom coil spring seats onto the coil spring. With a little bit of effort, insert the coil spring and seats onto the spring pan and into the coil spring tower as shown in the photo below.



Now we will prepare the trunnion and vertical link.



Trunnion prior to removal

The trunnion assembly on Triumph cars requires some degree of routine maintenance. The trunnions on my car do not appear to have received any maintenance by the previous owner for many years; perhaps decades..

When all the crud is removed, the trunnion shown above is a hollow, threaded brass casting with series of washers, thin rubber gaskets, metal containment end pieces and bushings of rubber or upgraded materials on either side of the casting. A 1/2" bolt and castle nut secures the pieces.



Trunnion Degreased to show Details

The trunnion on each front wheel is an interesting piece of engineering. It allows movement along two axis only. Up and down for bumps and a radial motion for wheel turning. For me, as a non-mechanic car owner, I wonder why Triumph did not install ball joints instead of trunnions with so many pieces.



Wet Polish Thrust Washers



Wet Polish and Power Wire Brush

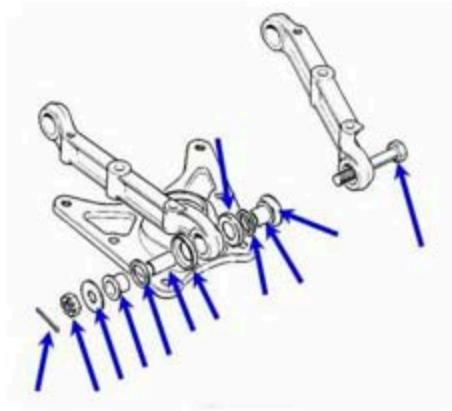
I took the trunnion assembly down to individual pieces and cleaned everything. All the pieces of the trunnion assembly seem to require some degree of movement so I polished all the pieces as smooth as I could. I used #400 and #800 wet paper, 000 steel wool and a wire brush attachment on my bench grinder.

The photo above is one half of a bushing pair, one end cap and one rubber gasket. The 1/2" bolt holds two thrust washers. I lubricated all pieces with red wheel bearing grease.



TRUNNION AND VERTICAL LINK

Each front wheel suspension has a trunnion assembly. The trunnions are cast bronze and attach on to the bottom of the vertical link by very wide threads. The large, 1/2" diameter bolt, bushings, end caps, etc. pass thru both bottom A-Arms with the trunnion centered in the middle.



TRUNNION @ A-Arm Bush ASSEMBLY



The trunnions unscrew from the vertical link without great effort. Both trunnions on my 1969 TR6 had been improperly installed and were filled with dried, caked grease. I removed all the grease with Q-tips and grease remover. (kitchen dish washer also!)

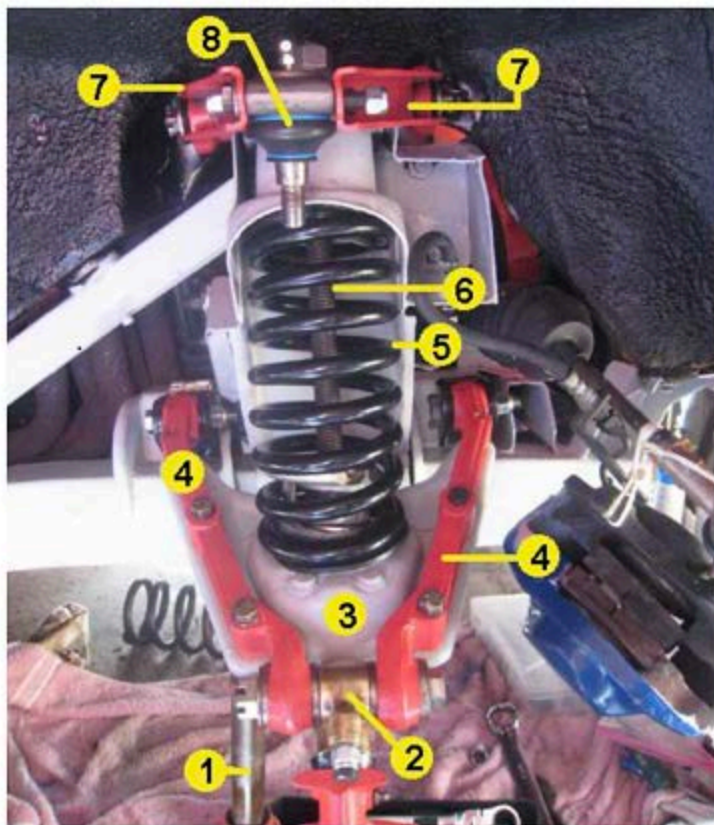
Next I cleaned the outside with a bench grinder wire brush wheel and finished with 000 steel wool. I coated the outside with three layers of clear polyurethane spray. Trunnions clean up very nicely.

As per Bentley, I filled each trunnion 1/3 full of gear oil and threaded the trunnion onto the vertical link until it was *almost* snug with the seal (black band below). Then I backed it off the threads to it's working position as shown below. Don't forget the "stop sleeve", lock washer and 5/16" bolt. Torque to 18#.



FRONT SUSPENSION: PRIMARY COMPONENTS:

Now we install the suspension Coil Spring (5)



1. Small hydraulic jack
2. Trunnion assembly
3. Coil spring support pan
4. Lower A-Arms (2 each)

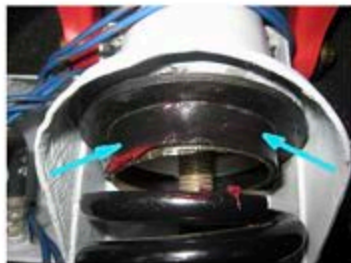
5. Suspension coil spring
6. Spring compressor tool
(Shock absorber goes here)
7. Upper A-Arms (2 each)
8. Upper ball joint

INSTALL COIL SPRING

After the trunnion has been refurbished it is time to compress the coil spring. This step requires the use of the coil spring compression tool.

The first step is to remove the upper ball joint that was dry fitted between the two upper A-Arms. This will open up the work area for access with tools and fingers.

Next, install whatever spring compression tool you are using. The photo above shows my model of compression tool in place and ready to use.



Coil Compressor tool as seen from pan bottom

The photo above shows my coil spring compression tool in place, as seen from the bottom of the coil support pan. The large 3/4" nut is the driver used to compress the coil spring.

Once you have your coil spring tool in place, be sure that the top and bottom coil spring pads are in proper position. The photo in the lower left of this page shows the top spring pad in proper position.

The coil spring is not yet under compression or loaded. The compressive energy of the coil spring will be held in place by the vertical link arm that connects the trunnion and upper ball joint.

COMPRESS THE COIL SPRING:

Place a small jack under the front lip of the coil spring support pan and pump until the pan just begins to move upward. Now tighten the large 3/4" driving nut.

Pump the jack upward 1/4" , stop, now tighten the tool driving nut the same 1/4". The spring compression tool is your safety net while the coil spring is being loaded.

Continue this 1/4" step procedure until the coil spring is compressed enough that you are able to dry fit the upper ball joint and vertical link with trunnion temporarily removed. Always making sure the top and bottom spring pads are in correct position.



COIL SPRING IN COMPRESSION:

The photo above shows the hydraulic jack I used to raise the coil spring pan in 1/4" increments. I tightened the compression tool in equal 1/4" increments. The photo above shows two lower A-Arms in approximate position to dry fit the vertical link to the upper ball joint.



VERTICAL LINK DRY FIT:

I temporarily removed the trunion for the spring compression and dry fit process simply to save time. The trunion fit between the two lower A-Arms is very tight. As seen below left, the upper ball joint is installed with finger tightened bolts and lock nuts.

The vertical steering link is attached to the ball joint with the lock nut finger tightened also. I switched to a scissors jack at this point to give me more load bearing surface area. The jack must remain in place until the shock absorber is installed.



In preparation of the bushing installations, a final cleaning of the bushing holes with fine file and #400 wet paper, 000 steel wool and xylol wash.

The trunion is easiest to install in it's final position by first installing the bushings into both lower A-Arms. Red wheel bearing grease helps the bushings slide into place. I used channel locks to press the bushing halves together.





Moss Motors
Brand new
1 month

011-943

X4

shock rubbers



INSTALL SHOCK ABSORBER:

The shock absorber has one threaded end (blue) and the opposite end contains a bushing where a 7/16" bolt will pass through (yellow end).

The shock absorber installs through the bottom opening of the coil support pan as seen directly below. The shock absorber passes inside the coil spring and fastens between the upper A-Arms as seen below right. Finger tighten the two nuts onto the exposed threads.



Next install the two shock absorber mounting brackets onto the four (4) each 3/8" spring pan studs with grade #8 plain washers and lock nuts. Finger tighten for now.

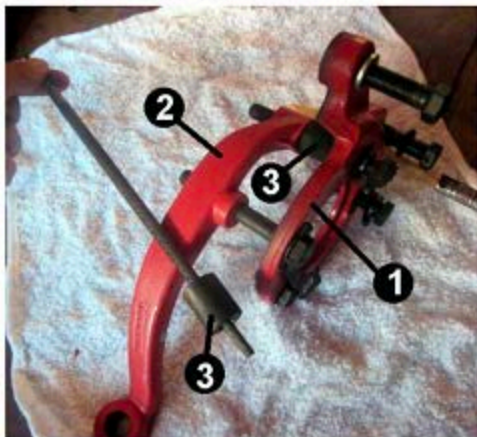
Pull the bottom of the shock absorber downward until the holes in the mounting brackets line up with the bushing hole in the shock bottom. Insert the 7/16" bolt, washer and lock nut. Finger tighten for now.

Once everything is installed finger tight ; final torque the four (4) 3/8" lock nuts to 24# and the 7/16" lock nut to 56#.

Tighten one top nut on the shock absorber until the threads and nut both rotate. Then install the second nut to lock the first one in place.

The shock absorber assembly is now completed.

**INSTALL BRAKE MOUNTING PLATE
AND
TIE RODS STEERING ARM:**

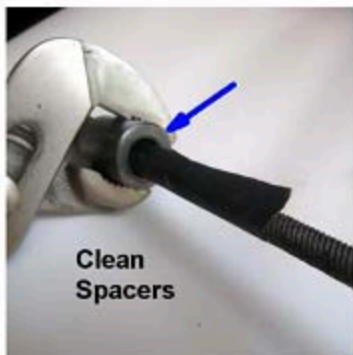


ASSEMBLY DRY FIT TO SHOW CONCEPT

1. Brake Caliper mounting plate
2. Tie rod steering arm link
3. Steel spacers (2)



The brake caliper is held in place with two (2) 7/16" bolts. Clean both threads with a tap. (photo taken prior to powder coating)



Ream both steel spacers with a 1/4" round file and #400 wet paper. Both spacers in both sides of my front suspension were heavily rusted on the inside. I used Naval jelly to soften the rust and then reamed each spacer with 1/4" round file. I then polished the inside with #400 wet paper.

The brake mounting plate fits/installs over the stub axle and vertical link assemble as shown below. The steering arm installs from behind with the two spacer locations being obvious.





CLOSE UP VERTICAL LINK W/ SPACER

Slide the brake caliper mounting plate over the stub axle until it is snug against the vertical link. Next align the four holes for the 3/8" thru-bolts. The two longer 3/8" bolts fit through the top two holes while the two shorter 3/8" bolts fit into the bottom two holes.

I installed anti-seize compound inside both steel spacers and on the bolt shaft section inside the spacer.



**DRY FIT READY TO TORQUE BOLTS.
STEERING ARM AND TIE ROD END SHOWN**



The brake caliper plate is held in place with four (4 ea.) 3/8" UNF bolts- indicated by the No. 1 in the photo above.

Two (2 ea) tab washers are installed between the bolt heads and face of the brake caliper mounting plate. The two tab washers are installed vertically as shown above and span between the upper and lower 3/8" UNF bolts. Each tab washer has a bend able, rectangular tab on either end. The tabs will bend upward onto the flat face of the individual bolts.

Insert the four (4 ea) 3/8" UNF bolts through tab washers and continuing through the brake caliper mounting plate. The two bottom bolts are shorter and I installed the two lock nuts finger tight to hold everything together before I installed the steering arm.

Push the two top, longer 3/8" bolts through the steel spacers and then through the two bolt holes in the steering arm. Install two lock nuts on the upper 3/8 bolts and begin to torque the four bolts in similar fashion to tire lug nuts. When each bolt is torqued to about 26 pounds, slowly add additional torque until the tabs of the tab washer line up exactly with a flat on the individual 3/8" bolt head. Now bend upward each tab onto the bolt. I used a hammer a flat end screw driver.



SWAY BAR AND STEERING ARM LINKS:

After the brake caliper plate and steering arm have been installed, it is now time to install both links.

The steering arm is held in place to the tie rod end, ball joint 7/16" UNF stud with a washer and lock nut as shown by No.1 in the photo above. Torque the 7/16" nut to between 30# to 38 #.

The sway bar ball joint link is a bit tricky to install due to tension within the sway bar. I found it easiest to dry fit the saw bar link to the sway bar and finger tighten the lock nut. No. 3 above

Then I used a small hydraulic jack to lift the sway bar end and ball joint link to a position where I could push the 7/16" UNF ball joint link through the bolt hole of mounting bracket on the lower A-arm. A washer and 7/16" lock nut (No 2 above) completes the dry fit of the sway bar and link.

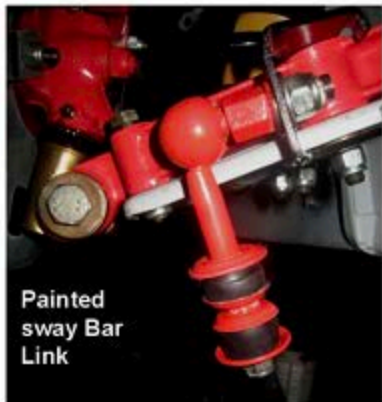
Next torque the 7/16" lock nut, No.2 , to 30# to 38#

Finally, torque the bottom 3/8" UNF stud (No 3 above) 11# to 18#.

Author's Note: My salt air environment rusted the sway within a week. I took it off and painted it as seen on this page. Installed with new lock nuts.



Sway Bar Ball Joint Link



Painted
sway Bar
Link



Previous Owner above Dale below



A world of difference.

The front suspension rebuild is now completed.

All that remains is to install the dust shield, seen in photos left column), the brake disk and caliper brake and the wheel. Installation of these final front end components is shown in the "How To"

<http://www.scribd.com/doc/260591/wheelBearingsFinal>

Repeat this procedure for the other side of the car's front suspension. Once the second front suspension has been installed, lower the car onto the ground.

Take the car out for a short test drive at slow to moderate speeds to load and stress the new suspension components. Make sure you drive the car over a speed bump or two and around both right and left turns. You should be able to feel a difference in how the car handles.

Bring the car back to your work area and remove the wheels on both sides of the front end.

Place your torque wrench on all the suspension fasteners and verify all the fasteners are tightened to specifications. If some are a bit loose, torque them to specifications listed within this document.

Reinstall the wheels, crank up the car and go have a blast driving!

I hope this "HOW TO " essay might be helpful to other non-mechanic Triumph TR6 owners.

Thanks,
Dale