



TR250/TR6 Soft Top Installation

I've installed four soft tops on TR6/TR250s, the last about 15 years ago. Well, the top on my '76 TR6 is about 20 years old and needs replacement. It doesn't have any holes in it but the reflective strips look a little ratty and the windows are cloudy. I've never used instructions before but this time I decided to look around on the Internet for guidance. I found an excellent article by Roger G. Bolick on the VTR site that I ended up following pretty closely. Unfortunately, the article doesn't contain pictures so I decided to document the project and do a short "how to" to supplement Roger's instructions. It is suggested you all go to <http://www.vtr.org/maintain/tr6-top.html> and print out Roger's information and use the following as a supplement.

After inspection of the old top it was decided to give it to a friend to use till he got around to putting on a new one. He gave me an old frame in exchange. This frame was slightly rusty and needed repainting. Otherwise it was straight and in excellent condition. Past experience with using adhesives on fresh paint suggested that the paint should dry at least a week before using the adhesives.

This project required several big chunks of time over a several week period, about twice the time Roger indicated in his notes. Part of this may be because I'm older and a bit slower, part of it may be that I'm older and forget where I am, what I'm doing, etc and part of it may be due to my wife coming around with higher priority projects. (I really forget where I am and what I'm doing on her projects --- so much so that sometimes I find myself my TR6 with the top down just driving around.) For convenience I've broken the job down as follows:

- General inspection and determination of material required.
- Frame adjustment and stripping.
- Frame painting.
- Snap, Velcro and channel installation.
- Stiffening plate & snap installation.
- Frame & webbing Installation.
- Securing top to header.
- Side snap installation
- Final adjustment.

General Inspection and material determination

The first thing I did was to strip the old top from the frame. The Velcro on the side rails was shot as was the rubber weather strips on the sides and header. The webbing was also shot. So it was a total rebuild. Fortunately The Roadster Factory (TRF) winter sale was still in progress so the bite was softened a bit. The following is what I bought and where I bought it. One should of course examine all the existing parts and buy only what is required. I believe several others including Moss and Victoria British carry most if not all the parts listed below.

Top: I purchased the Robbins top with reflective stripping and zip-out rear window TRF # RB2220.

Snap kit: The top comes with metal snaps. I much prefer the original plastic snaps and studs. I purchased TRF Fastener kit RFK427 containing snaps, studs, washers and pads for the rear and sides.

Extra studs and snaps: Plastic studs are also required for the rear frame bow (5). The original top was riveted to the front bow. I chose to use snaps here too so that requires another 4 snaps. I ended up ordering 20 in addition to kit RFK427 so that I had some spares. I used the metal snaps that came with the top on the inside flaps for connection to the bows so I didn't have to buy snaps for those. I did buy about 20 extra snaps to repair the tonneau and boot cover and spares. I managed to screw up a couple snaps when installing them so a couple spares are in order.

Snap Tool: I purchased tool to install the two halves of the snaps, TRF #RFT108.

Webbing: I purchased the webbing and hardware kit TRF kit RFK495 which includes the webbing, attachment plates, pins and rivets.

Rivets: Following Roger's advice I used stainless steel rivets on the side studs and rear stiffening plate. Aluminum was used everywhere else. The problem with the aluminum rivets in areas where they are visible and exposed to the weather is that the center pin is steel that rusts and looks like hell in a year or so. On the other hand, the stainless rivets are a pain to drill out. Some of the kits above come with rivets, but not enough, especially if you have to go back and change something. I bought 25 stainless and 25 aluminum pop rivets locally, all 1/8 inch diameter with a 3/8 inch grip range. Two other rivets were purchased to secure the rubber buffers. These are 3/16 diameter with hollow ends that are flattened over washers. I also purchased a couple stainless steel flat washers (#12).

Roof Side Rails Seal & Channel Kit (TRF #RFK491): This kit contains the aluminum side rail channels, nuts screws & washers to secure the channels, rubber side seals and Velcro strips. If one has good aluminum channels, then the Velcro and seals should be purchased separately.

Velcro Pads: The top of the bows between the webbing are covered with female Velcro strips. I bought 5 feet of 3/4 inch wide from a local fabric store and split it.

Header Rail seal: This was also replaced, TRF # 616187.

Header Rail Channels: These were OK so I didn't replace them. They are available from TRF if needed.

Bolts and Screws: I prefer to use stainless bolts and screws in areas that are visible and subject to corrosion. For the top this includes the hardware securing the aluminum side channels and the rear stiffening plate. I get this hardware from the local Fastenal store. The following is the exact quantities required. Order extras, especially of the small stuff that is easily lost if dropped.

All stainless steel:

- 14 8-32 pan head slotted machine screws, 3/8 inch long
- 4 8-32 pan head slotted machine screws, 1/2 inch long
- 18 8-32 nuts, flat washers & lock washers
- 5 1/4-28 hex head bolt, 3/4 inch long with flat washer and internal lock washer

I attempted to get stainless replacements for the six flat head screw that hold the frame to the side of the cockpit. No one locally carried these screws or can order them. McMaster Carr handles these but I didn't want to pay over \$10 (including shipping) for 25 screws. Maybe the next time I order something else I'll get a box.

Cement: In the past I've used the 3M Super Tim Adhesive in the spray can. The only problem is that I'm afraid I'll get over spray and damage something. All the cements are pretty hard on paint. I visited the local auto upholstery to see if they had the same thing in a brush on form. The convertible top expert said he always uses Permatex Back Super Weather-strip Adhesive in a tube. I purchased a tube and it seemed to work OK, was much less expensive and no over spray. However, I think I liked the 3M product a little better and will probably use it the next time.

Frame adjustment and stripping

The first thing I did was to install the frame and make sure it was straight and fit properly. This was a first, everything was straight. Next, all rivets were drilled out, side channels removed and Velcro and fabric removed. The frame was sandblasted next. This took over 4 hours (working off and on) and used about 300 pounds of sand. I was about three quarters done when I remembered that always before I took the frame into Columbus and had it chemically stripped. My guess is that the current cost is \$50 or less and a bargain when compared to the blasting effort. The stripping process also removes all rust.

Frame painting

I used Rustoleum clean metal primer followed by gloss black. The frame is difficult to paint because whatever position it is placed, some of the areas are hidden. I hung the frame and wired it in the partially folded position and painted it as thoroughly as possible and then released it so that it was in the fully extended position and painted all areas that were missed the first time. I powdered coated (black) the heads of the screws securing the frame to the side of the body and the webbing attachment plates. These could have been painted black also.

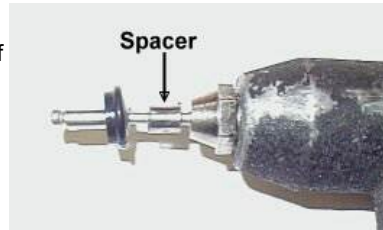
The left photo below shows the folded frame (sorry the vegetation makes it difficult to see). The right photo shows the frame extended. The hump of black & white fur is the always alert watch dog catching a few z's.



Snap, Velcro and channel installation

The day after I painted the frame I tested it with both the 3M and the Permatex cement. The cement ate right through the paint so I worked on the next step and came back to the frame later. I had planned to wait a couple days. I tested the cement again 5 days later and it was much better but still softened the paint some. I got distracted painting the house so it was two weeks when I got back to the frame and at that time the cement didn't affect the paint at all.

The Velcro strips were cemented to the side channels first and left to cure. Next, snap studs were riveted to the two smaller bows using the aluminum rivets. There is a problem riveting the studs because the nose of the rivet tool is too big to fit inside the stud to rest against the top of the rivet. The photo at the right show a spacer used to fit with the stud so that the nose can press against the rivet top via the spacer. The spacer is made from 3/16 inch steel stock drilled 3/23 and is about 5/32 long. I make several at a time because they are easily lost when the rivet pops.



Next, the rubber buffers are installed using the 3/16 inch rivets and stainless flat washers.

The aluminum channels are screwed to the side channels after the cement on the Velcro has set for an hour or so. The 1/2 inch screws are used next to the middle joint where there are two pieces of steel to pass through, all other positions have a single thickness of steel and use the 3/8 inch screws. The next photo shows the an installed channel. The frame had been moved to the basement ping pong table at this point in preparation for the next steps.



Stiffening plate & snap installation

The next step was to lay the top out on the ping pong table inside up and then position the frame one it so that the location of the snaps on the tabs could be marked. The snaps were then installed. The left photo below shows the snap installation tool that consists of a nylon cylinder with a cup cut in one end and a steel pouch. The outer part of the snap is placed in the cup, the material slid over the hollow stem, the inner part positioned on the stem and the steel punch used to flatten the stem as shown in the right photo. The photo shows snaps installed on the forward tab.



The next step is to attach the stiffening plate to the rear of the top. The top is laid on the table inside up and the center of the rear flap determined and marked (white out works great). The stiffening plate is then slid into the crevice and checked to see if it is positioned correctly. The top had seven marks that lined up with the holes for the seven studs. The center mark found previously aligned with the middle stud mark. Next, cement was applied to the under side of the stiffener to beyond the first stud hole each the cent hole. Cement was also applied to the mating surface of the top. The pieces were then pressed together, an awl used to punch a hole for the center stud from the under side through fabric, the middle hole in the stiffener the top fabric. The middle stud is then installed using a stainless steel rivet and a washer on the under side. The fabric was next pulled tight and the studs on each side of the center stud installed.

Next, cement was applied to the under side of the stiffener and the fabric past the the next stud on each side. The fabric was then stretched toward the outside as much as possible before the holes were pinched and studs installed. The remainder of the stiffener was then cemented into place and the fabric stretched as much as possible before the holes punched and outside studs installed. The seven marks for the studs lined up with the holes in the stiffener before the fabric was stretched. After the fabric was stretched and the studs were installed it was found that the outside studs were about 1/4 inch inside of the associated marks. The photo below shows a the underside of the stiffener with the rivet and washer for couple studs.



The final step in the house was to glue the round pad over the studs in the photo above and install the webbing in the slots in the stiffener. In the past I seem to recall that the one end of the webbing was folded over and sewed so that there was a little pocket to hold the pin. This time, no pocket. The wife fired up here computer driven sewing machine a made a perfect pocket at the end of each webbing strip. The folded end of the webbing is fed through the slot in the stiffener from the inside. the loose end beyond the stitching should be against the top. The next photo shows the webbing ends and one of the pads.

Oh , almost forgot. Mark the center of the front of the top on the underside. This will help later when aligning the top over the header rail.



Frame & webbing Installation.

The next step is to mount the frame to the side of the cockpit and attach the stiffener to the rear deck. Leave the top lay over the rear deck and trunk lid. The bolts holding the stiffener should be left with about 3/8 inch of slack. Pull the frame up but leave the header rail it about 1 inch short (Correction --- best make that about 1/2 inch see following). Mark the position the the web attachment plate as shown in left photo below. Next, pull the header rail back to get some slack, use an awl to make holes for the rivets and then rivet the attachment plate as show in right photo below. After both sides are done, lock the header rail into position and check the tension on both webs. They should have equal tension and be very tight, but not so tight you have difficulty getting the front rail into position to lock. I had mine too tight, had to drill out the rivets and move the attachment point a half inch.



Next, lock the header rail into position again and attach the female Velcro strips to the top of the three bows. The Velcro had an adhesive so the covering was pulled off and the pad stuck into position. The same cement used to attach the top can be used if your Velcro doesn't have adhesive. The attachment plates are then riveted into the middle bow (left photo below). Next, position the front bow such that the outside rivet is midway between the outside rivets on the main bow and the header rail (this should be 12 1/4 inches on each side). Rivet the attachment plates to both webs. Adjust the rear bow such that the outside rivet is 10 inches from the main bow outside rivet. Mark and rivet both attachment plates (see right photo below).



Securing top to header.

The next step is to pull the top over the header rail and align everything as shown in top photo on right.

The top will stretch and I want the top to still be tight after a few weeks so I install it such that initially it take all the force I can muster to latch the header rail. After a few weeks it will stretch some so that it is a bit easier to latch but is still fairly tight.



This spring there was a question about how to latch a top that had been down all winter -- and it was still pretty cool. One suggestion was to tie one end of a rope around the inner lip on the header rail and the other end to a tree. The car can then be backed up and the top will be pulled into position. I don't recommend his method. A couple of buckets of hot water poured over the top should warm it enough so that it can be stretched into position.



I clamp the top to the header rail lip as shown in the lower right photo. I then adjust the it such that I can barely latch the header rail. I then mark the position.

The top is unclamped, newspapers are spread over the rear deck and the top lain over the newspapers. Cement is then applied to both the top and the header rail on the surface from the front edge back to under the position of the center channel. There was a slight crease made by the front edge that was left on the underside of the top that helped in determining where to spread the cement --- see left photo below.

The top is then pressed into position. Care should be taken to make sue it is aligned properly. Next, the holes for the center channel rivets are punched with an awl. **Be careful that the awl doesn't go thought the hole in the header rail and then through the top fabric.** The center channel is then riveted into position. The font side channels are then loosened and the side tap slid under the channel. cement is applied to the under side of that part of the tab over the header rail and also to the header rail the the tabs pulled to stretch the top both to the front and the sides. See right photo below. Next, the each end of the top is cemented into position and stretched so that there are no wrinkles. The LH and RH channels are then riveted in to place.



At this point the top looks like:



Side snap installation

On the side snaps, the first thing to do is measure the position of the snaps. Roger said there was 7 inches between the back and middle one and 7 1/2 inches between the middle and front one. On mine the front measurement was the same but the rear measurement was 7 1/8 inches. I checked several other cars, and found that Roger's measurements are probably correct. The rear snap on mine should be about 1/8 inch toward the front. My Tonneau and cover fit the current positions so I'm not changing them. As a matter of fact, the covers can easily be stretch 1/8 inch if need be.



Note the black mark just behind the door in the photo. A guy made a left hand turn from the right lane and smacked me five days after the car came out of the paint shop. The hood and right front fender were destroyed. The fender and door were pushed back which knocked off the paint chip. Fortunately, everything returned to position, so a little work is required beyond replacing the fender & hood. He had a pickup that was higher than the bumper so it wasn't damaged.



To mount the snaps, start at the rear and stretch the material as tight as possible and mark the position and then install the stamp. I lay a towel folded about 8 times on the rear deck forward extension, put a length of 2X4 on it and then the snap tool on the 2X4 as shown in the photo. Next, with the rear snap in place, stretch the material as far as possible and install the middle snap, and then the front snap.

When done, the tabs on the bottom at the front should be to the front of the forward edge of the rear fender as shown in next photo.



Final adjustment.

I had intended to add some words here about final adjustment but it all went together without the need for any final adjustments.

Good luck with your top