

# **Marlin Crawler “Taco-Supreme” Crawler Install R-10/ Rotated Front Adapter plate, 20 Degrees total Rotation.**

**2004 Toyota Tacoma 3.4 l V-6, Automatic Transmission**

**The first thing I did was obviously remove the stock driveshafts and transfer case.**

**1.** Remove the tail housing from the automatic transmission by removing the six 14mm bolts.

**2.** The tail housing on the automatic transmission may need to be modified if you opt for the ten degree rotation of the front adapter plate due to one of the 14mm front adapter plate bolts interfering with the tail housing. This can be accomplished with a die grinder, I used a sharpie marker to make “witness” marks when the pieces were assembled dry to identify where contact was being made. With the tail housing removed and the crawler setting upright on the bench or garage floor it is fairly easy to notch out the housing.

**3.** Remove the seal, bearing, oil slinger, and snap ring from the tail housing. These are no longer needed as the front bearing on the crawler supercedes this bearing and the inner diameter of this bearing is too small to allow the coupler to be installed. Once the big snap ring is removed the bearing and the oil slinger come right out.



Stock tail housing bearing, oil slinger, seal, and circlip removed.



Coupler installed, Marlin oil seal housing and seal, tail housing notched and re-installed

4. Install the Marlin transmission coupler on the transmission output shaft with the proper arrows marked on the coupler pointing towards the transmission and crawler. This coupler is a press fit, so it will take some force to install it. Use some spray lube then align the coupler onto the splines. Using a hammer **and a block of wood** to protect the coupler pound the coupler onto the transmission output shaft until it stops. Make sure the

coupler is on all of the way, and that you do not damage the end of the coupler with the hammer. (use a block of wood)

**5.** Clean and dry all parts thoroughly and apply *Ultra Grey* silicon to the Marlin Front Seal Adapter and press (tap with mallet or piece of wood and hammer) into the auto. trans. tail housing. Apply *Ultra Grey* silicone to the mating surfaces on the tail housing / rear of transmission and reinstall the tail housing. Apply silicone liberally to the six 14mm. bolts that mount the tail housing before installing them to seal against ATF leaks.

**6.** Remove stock transfer case coupler; This can be easy or difficult, if you have access to a MIG welder it is easy. Tack weld a large nut (about  $\frac{3}{4}$ "") to the end of the coupler making certain that you use as little heat as possible, and protect the input shaft seal from spatter. You don't want to ruin this seal. After the nut is tacked on, use a large bolt to press off the coupler. If you don't have access to a MIG welder it is possible to remove the coupler with certain types of pullers.



Stock transfer case coupler removed with large bolt and nut tack welded in place.

7. At this stage if you are using the R-10 “rotated” rear adapter you must check clearance of the transfer case shift rails and the rear adapter plate. The shift rails will protrude out of the Tacoma chain driven case and any impediment of these rails will effect shifting. With the crawler and transfer case dry, assemble the two together to verify that the shift rails will both clear the inner edge of the rear adapter plate. If there is any contact you will need to die grind a relief area. Once again, use a marker or “die-chem” to mark the area and leave witness marks then grind the area for clearance. Verify by installing the transfer case bolts finger tight that the transfer case will shift through all of its gears before proceeding.



Rear tail housing cleared to clear shift rails.

**Note:** You may not have any problems with this, but check anyway, it could save you lots of time later on.

8. Mate the crawler to the transfer case; In this step it is necessary to replace one of the original stock bolts with a 8 X 1.25 X 30 stud, nut, and washer due to tight clearances and

the inability to fit a bolt into a hole. Make sure the mating surfaces are clean and DRY as any left over brake cleaner will compromise the quality of the seal. Apply *Ultra Grey* silicone liberally approx. 1/8" thick all the way around, and around all bolt holes and alignment dowel holes and let "skin" for about ten minutes. Assemble the Crawler and transfer case together finger tight or until silicone oozes out all around, then after one-hour torque to 20 - 30 ft. lbs.

**Note:** I found it easier to use to 8 X 1.25 X 30 studs on the bottom of the crawler's front adapter plate instead of bolts (seal with silicone). I also replaced the rather questionable looking stock transfer case bolts with grade 8 bolts of the same size.

**At this point you should have the crawler / TC mated together, the transmission tail housing re-installed with the new Marlin coupler and seal housing.**

**9.** Mock up the transfer case / crawler assembly into the vehicle (dry) to identify what floorboard modifications will be necessary; The emergency brake bellcrank may need to be removed from the frame rail, as it will interfere with the transfer case. Using a marker, mark the best you can the areas of the floor that will need to be indented, and also the area where the transfer case shift hole will be.

**10.** Remove crawler / transfer case assembly and using a ball peen hammer indent the floor of the vehicle to provide sufficient clearance, I recommend about 3/4" – 1" minimum clearance off all parts. Using a hole saw cut the transfer shifter hole in the desired

location in the floor. I used a 3 1/4" hole saw and enlarged the hole as needed with a die grinder.

**Note:** It will be necessary to repeat steps 9 and 10 many times in order to achieve the desired fit of the crawler into the vehicle.



**If you have the crawler / transfer case assembly completely mocked up, good clearance of the floorboard all around, shift lever holes are in the proper locations, and verified that the transfer case and crawler both shift through all gears while installed, you are ready to proceed.**

**11.** After you are certain that all of the above steps have been completed you are ready for final install of the crawler. Apply *Ultra Grey* silicon to the tail housing and crawler

mating surfaces, and a slight film of gear oil to the transmission output seal and the coupler. Mate the crawler and transmission and install the new *grade 8* bolts until snug and silicon starts to ooze out. After one hour torque bolts to 20 – 30 ft. lbs.

**Note:** it was necessary with the front adapter plate clocked 10 degrees to use a *8 X 1.25 X 30*, 6 mm. allen head bolt at the one o' clock position since the tight clearance made it impossible to use a regular style bolt.

**12.** Lengthen the wires for the speedometer sensor and the other transfer case sensors approximately nine inches.

**13.** Install shift levers and modify or “dogleg” as necessary in order to achieve the desired fit and location in the vehicle. You will want to have at least ½” of front to back clearance, and ¾” left to right clearance of the shift lever and vehicle body to avoid contact while the engine torque’s. I used ½” cold rolled round bar stock to extend and dogleg my shift levers with a MIG welder. I also opted for the Marlin “short” shifter modifications on both crawler and transfer case shift levers; this makes it easier to fit the shift lever into tight areas such as the front cup holder. The short shift kit’s increased the shifters resistance making it slightly more difficult to select a gear, but dramatically reduce the shifter’s throw. I feel it’s well worth the trade off.



"Doglegged" TC shifter with short shift mod.

**14.** Stock driveshaft lengths will need to be modified; Front driveshaft is lengthened; rear driveshaft is shortened (front section only). In order to get the proper lengths, measure inner flange to inner flange at the 3 o' clock position. Mine required 8.5" longer in the front shaft, and 8.5" shorter in the rear section, which is the overall length added by the crawler to the drive train. Any decent drive line shop should be able to accomplish this modification in a day or two, just make sure you measure correctly. Call the shop and confirm with them what measurements they would like to have before taking them in.



Front section of rear driveshaft shortened 8.5"



Front driveshaft lengthened 8.5"

**15.** The parking brake will most likely need to be modified; This can be accomplished a variety of different ways, I opted to raise the bell crank assembly on the frame rail and shorten the length of the radius arm in order to clear the transfer case. This removes some of the mechanical advantage of the parking brake and makes it engage quicker, but it still functions adequately. To move the bell crank up on the frame I utilized one of the stock pre tapped bolt holes for the lowest of the three bolt holes, then MIG welded the two sides to the frame rails. I also moved the stock cable hanger up to compensate for the raised bell crank. Again, there are many options available to you to modify the parking brake, use you own discretion.



Parking brake bell crank assembly modified



Front brake cable hanger, raised up.

**16.** Install some sort of shifter boot to seal the transfer case shift lever hole; there are many different products and options available here as well. I opted for the factory Toyota boot available from Marlin Crawler.



Toyota shift boot available from Marlin

**17.** Additional support for the drive train; I noticed that with the addition of the crawler the transfer case was now moved backward 8.5" moving the weight of the transfer case rearward, and increasing leverage to the front mounting point at the aluminum transmission tail housing. This appeared as a problem to me, although, it may work fine this way, I wanted more support. I chose to use a factory *heavy duty* V-6 transfer case mount from Marlin Crawler and mount it to the four pre-tapped bosses located on the bottom of the crawler, in addition to the stock transmission mount. I then fabricated a mounting bracket out of 3/8 X 3" steel flat bar stock that bolts to the transmission cross member with 8 X 1.25 X 30mm. Grade 8 bolts. This mount adds support further back in the drive train alleviating some of the stress on the transmission and helps to reduce engine torque over. There are other ways of accomplishing this step. I chose this method because my vehicle is still utilizing the IFS suspension configuration and still has the

transmission cross member. However, those with a solid axle in the front most likely will not have a transmission cross member. Therefore, most seem to opt for a rear mounted transfer case mount like those offered by *Front Range Off-Road*.



Additional transfer case mount and bracket.

**At this stage you should have the crawler / transfer case installed in vehicle.**

**17.** Add gear oil to the crawler; Remove the 10mm. allen head drain plug on the drivers side of the crawlers rear adapter plate and add gear oil until oil begins to flow out of the fill hole. It should hold approximately 2 quarts of 75 / 90 wt. gear oil. Fill the transfer case with gear oil until it begins to flow out of the fill hole. Since I opted for the 20-degree rotation of the transfer case, the drain and fill plugs are almost at the same level. The transfer case is supposed to contain 1 quart of gear oil in its stock configuration. Therefore, I used a jack to raise the passenger side of the truck as much as possible to get

as close to one quart as I could. At this time it's a good idea to check ATF fluid level's as well.

**18.** After a few hundred miles drain and change the gear oil to flush out any particles and contaminates. Check torque's on all bolts and double check all work performed to ensure the trouble free performance of your new Marlin Crawler product.

*Produced and written by...* ***“mojavehanna”***.