MARLIN CRAWLER FRONT CHROMOLY OUTPUT SHAFT

FOREWORD

This Installer shows how to install our 30-spline Front Chromoly Output Shaft into a Toyota 1979-95 gear drive (RF1A) transfer case.
This installer can be used in the following two ways:

- The **experienced technician** can refer to the photos and major headings for fast and accurate step-by-step instructions. Important specifications are printed in bold type, right at the point where they will be needed. Following every step will guarantee that the job is done correctly.
- The **new technician** will find the details of how to perform each step particularly helpful. By studying the photos and carefully following the instructions, a new technician can readily install or service this Marlin Crawler component.

MARLIN CRAWLER • (559) 25-CRAWL
1543 N. Maple Ave • Fresno, CA 93703

Front Chromoly 30-Spline Output Kit
Part Number MCTC-152

HOW TO USE THIS INSTALLER

The procedures are presented in a step-by-step format:

- The photo or illustration shows *what* to do and *where* to do it.
- The task heading tells *what* to do.

The detailed text tells *how* to perform the task and gives other information such as specifications and warnings.

GENERAL REPAIR INSTRUCTIONS

1. Use fender, seat, and floor covers to keep the vehicle clean and prevent damage.
2. During disassembly, keep parts in order to facilitate reassembly.
3. Before performing electrical work, disconnect the negative (-) cable from the battery terminal.
4. Check hose and wiring connectors to make sure that they are secure and correct.
5. Always replace gaskets, O-rings, and oil seals with new supplied parts.
6. We coat some metallic parts in a viscous petroleum distillate (cosmoline) to protect the surface from corrosion and rust. Cosmoline must be fully removed before assembly. Any mild detergent solution, oil soap, or mineral spirits are effective at removing cosmoline.
7. Carefully observe all specifications for bolt tightening torques. Always use a torque wrench.
8. Care must be taken when jacking up and supporting the vehicle.
    a. If the vehicle is to be jacked up only at the front or rear end, be sure to block the wheels to ensure safety.
    b. After the vehicle is jacked up, be sure to support it on stands. It is extremely dangerous to do any work on the vehicle raised on the jack alone, even for a small job that can be finished quickly.

TOOLS REQUIRED

- 12mm, 14mm, and 30mm sockets.
- Torque Wrench.
- Dead blow hammer or rubber mallet.
- Snap ring pliers.
- Gasket scraper.

ADDITIONAL EQUIPMENT

- Bench vice.
- Press.
- Appropriate fixtures and spacers for use with press.

PARTS REFERENCE

Flange Nut 24x1.50mm

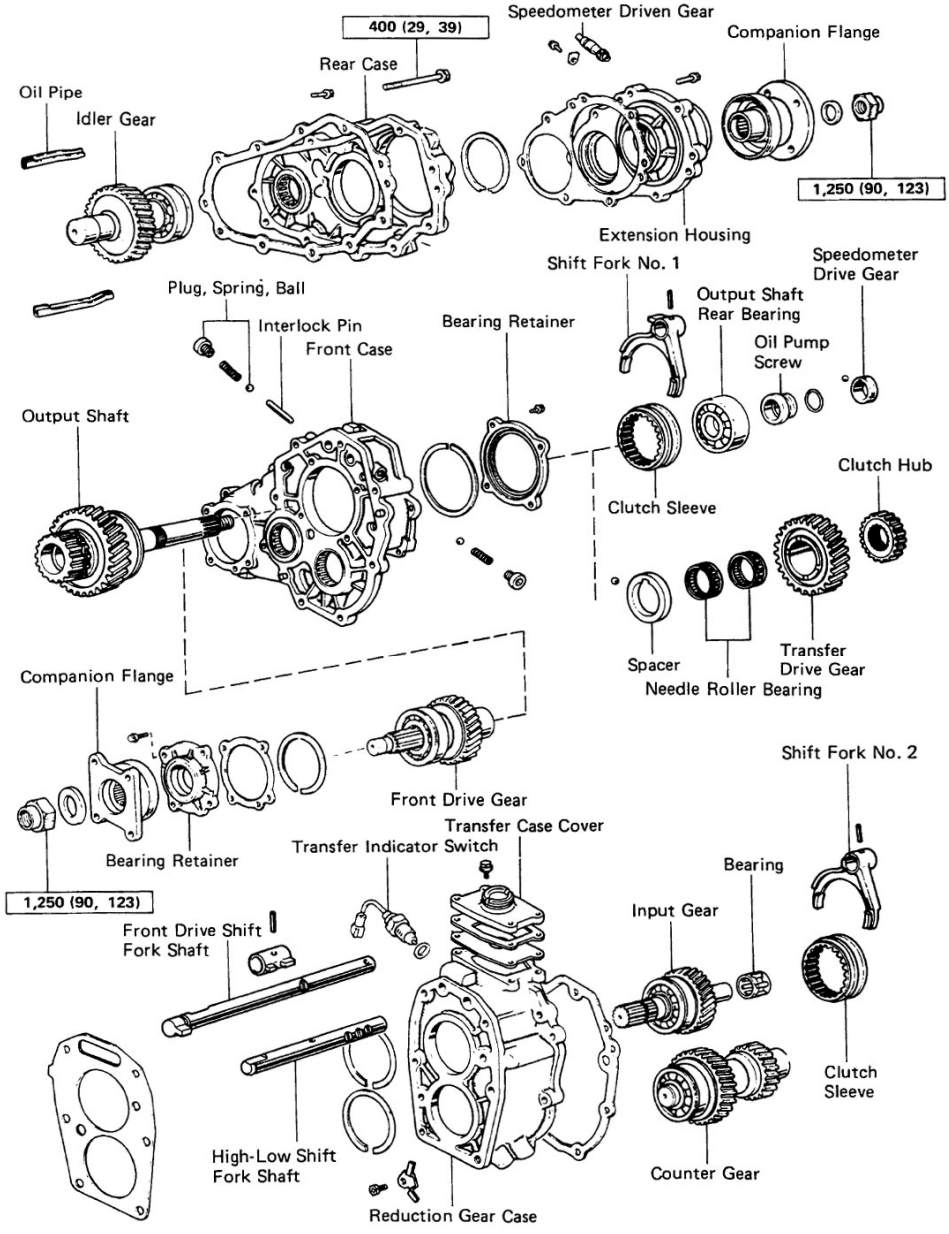
EcoSeal™ Front Output Seal

“4-30” Flange with Dust Shield

Output Bearing with Snap Ring

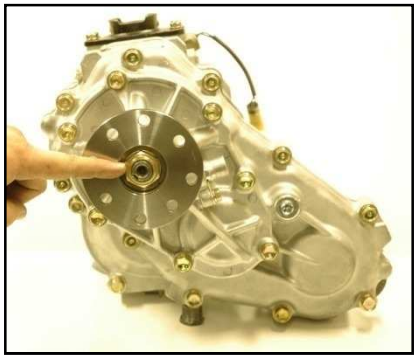
30-Spline Chromoly Front Output Shaft

BASIC RF1A TRANSFER CASE ASSEMBLY



kg-cm (ft-lb, N·m) : Tightening torque

REMOVAL OF FACTORY FRONT OUTPUT SHAFT



1. REMOVE REAR FLANGE

(a) Remove the 20mm factory nut and washer using a 30mm socket.

(b) Remove the flange.

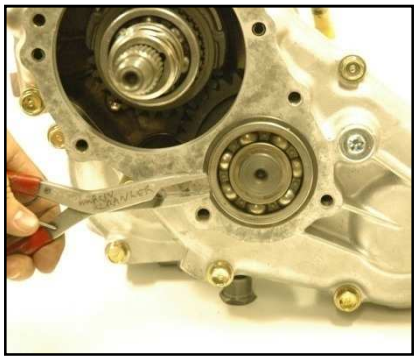
NOTE: The flange may sometimes be difficult to remove. This is due to a tight silicone seal of the splines. In this case, you may use a mallet and tap on the backside of the flange face in different locations until the silicone seal is broken.

2. REMOVE EXTENSION HOUSING

(a) Remove the seven 10mm bolts using a 14mm socket.

(b) Remove the extension housing being careful to preserve the paper gasket.

NOTE: The speedometer sender does *not* need to be removed.



3. REMOVE BEARING RETAINER

(a) Using snap ring pliers, remove the snap ring.

NOTE: It helps to pull the bearing out slightly before attempting to remove the snap ring. This will relieve pressure against the case and will help your snap ring pliers to get a firm hold on the ring. Also, be careful the snap ring doesn't fly from your pliers during extraction.

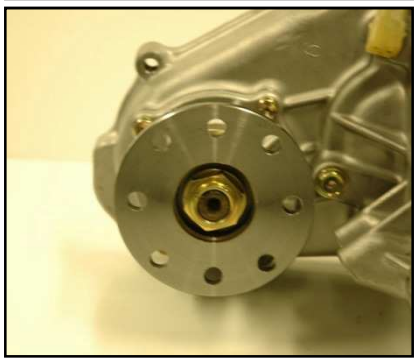
Snap Ring Pliers – Part Number MCHT-822

4. REMOVE REAR HOUSING

(a) Remove the ten 10mm bolts using a 14mm socket.

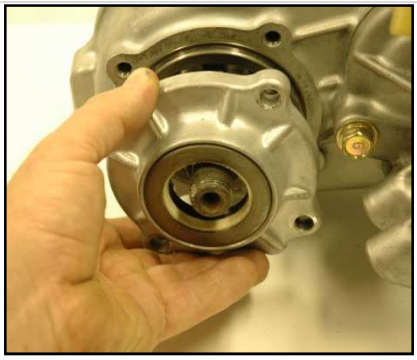
(b) Remove the rear housing being careful to preserve the paper gasket.

NOTE: Hold the front case so the rear does not descent. If it descends, the main shaft components may fall off the main shaft. If this happens, please refer to the transfer case assembly diagram shown on page 2. The idler gear may come out with the rear case despite removing its bearing retainer in step 3. Be careful not to drop the gear.



5. REMOVE FRONT FLANGE

(a) Follow the same procedure as in step 1.



6. REMOVE FRONT OUTPUT COVER

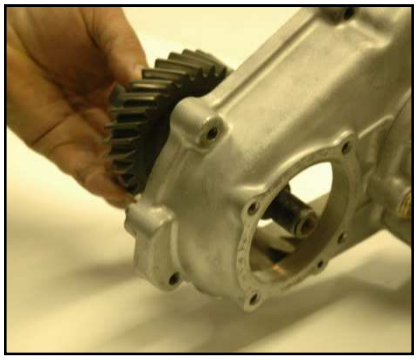
(a) Remove the four 8mm bolts using a 12mm socket.

(b) Remove the front output cover being careful to preserve the paper gasket.

7. REMOVE THE FRONT OUTPUT BEARING RETAINER

(a) Using snap ring pliers, remove the snap ring.

NOTE: If the snap ring is difficult to remove, please refer to the notes in step 3. Be careful the snap ring doesn't fly from your pliers during extraction.



8. REMOVE FACTORY FRONT OUTPUT SHAFT

(a) Remove the factory front output shaft.

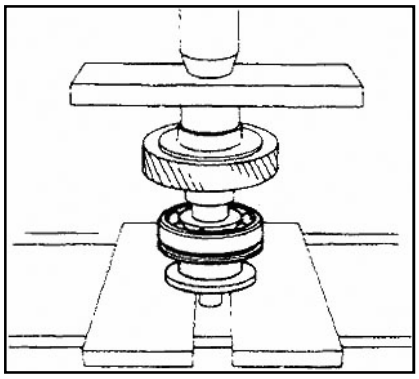
INSTALLATION OF MARLIN CRAWLER 30-SPLINE FRONT OUTPUT SHAFT

The installation of the Marlin Crawler 30-spline Front Output Shaft is simply a reverse of the removed factory front output shaft. The supplied new bearing will need to be pressed onto the new 30-spline front output shaft (see step 9 below). Make sure the bearing is installed such that its snap ring groove is oriented away from the gear (check with the removed factory component for a comparison).

Inspect each mating surface for any protrusions or burrs. If the flange surface is damaged, the housing may not seal properly once fully assembled. *It is important to make sure all flanges mate together without any surface interference.*

Paper gaskets **must be used** in order to maintain proper clearance and spacing between internal components. While reassembling housings, ensure each gasket is not torn and is clean from debris. Oil residue does *not* need to be cleaned from gaskets or mating surfaces. **DO NOT USE RTV SILICONE with the paper gaskets.** This will result in a leaking transfer case due to a restricted gasket expansion. Paper gaskets must be allowed to absorb oil and expand-to-seal. It is perfectly acceptable to reuse factory oil-soaked gaskets as long as they did not tear during disassembly. If desired, sealant may be used in conjunction with paper gaskets so long as a proper **gasket-style-sealant** is used, such as Porter Manufacturing's *Gasgacinch* (P/N 440) or Loctite's *HI-TACK* (P/N 30524) gasket sealants.

If you remove the paper gaskets and only use RTV silicone, the case spacing will no longer conform to stock specifications. Please be aware this may result in increased/improper internal component wear.

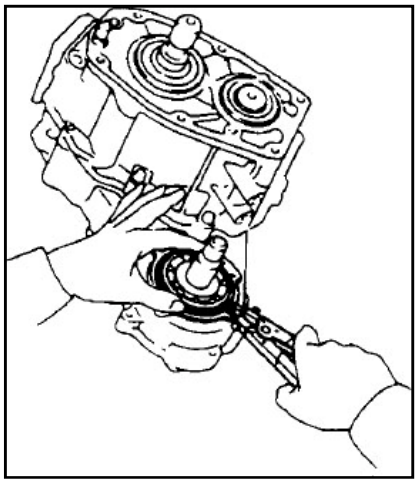


9. INSTALL NEW FRONT OUTPUT SHAFT BEARING

(a) Press the new bearing on over the splines of the shaft.

(b) In preparation for step 16, please remove any grease/oil from the output splines.

NOTE: Ensure the snap ring grove is oriented away from the gear.

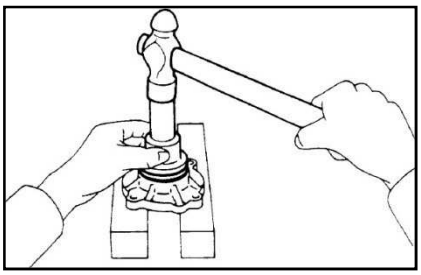


10. INSTALL CHROMOLY FRONT OUTPUT SHAFT

(a) Install new Chromoly front output shaft in the reverse manner of step #8 above.

(b) Using snap ring pliers, install the snap ring.

NOTE: It helps to pull the output shaft up fully exposing the snap ring groove before attempting to install the snap ring. Take care to prevent the snap ring from springing away from your pliers by keeping your free hand above the snap ring at all times.

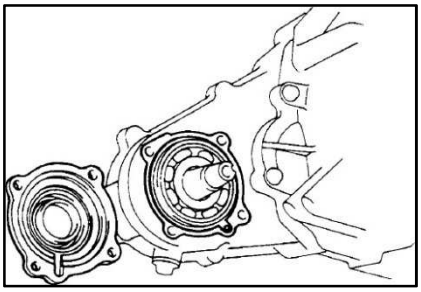


11. INSTALL ECOSEAL™ FRONT OUTPUT SEAL

(a) Drive out the old seal, felt, and dust cover. Discard all three parts.

(b) Drive in the new EcoSeal™ oil seal up to its flange lip.

(c) Apply a generous amount of grease to the inner groves of the EcoSeal™.



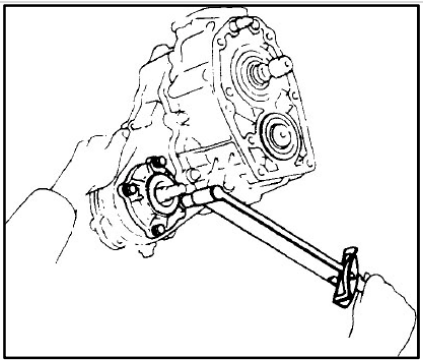
12. INSTALL FRONT OUTPUT COVER

(a) Ensure the gasket and housing surfaces are free from debris.

(b) Install the bearing retainer matching the oil drain slot as shown in the figure.

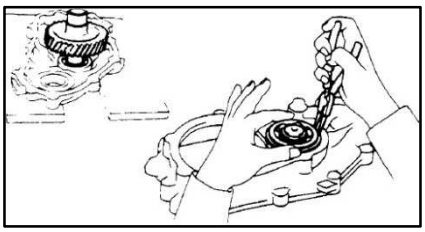
(c) Clean any excess grease from the splines of the output shaft.

NOTE: We recommend the use of a paper gasket. Do NOT use RGV silicone with the paper gasket. If the gasket is damaged, replace it. If a gasket and sealer combination is desired, use an appropriate gasket-specific sealant with the gasket as described on the previous page.



(d) Install and torque the 8mm bolts using a 12mm socket.

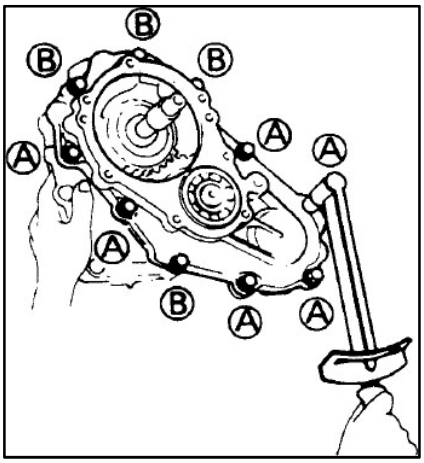
Bolt length: 25 mm (0.98 in.)
Torque: 14 ft-lbs (168 in-lbs)



13. INSTALL IDLER GEAR TO REAR HOUSING

(a) Install idler gear into rear housing.
(b) Using snap ring pliers, install the snap ring.

NOTE: Step four noted the idler gear coming out with the housing. We find it is easiest to install the idler gear into the housing and *then* install the housing onto the transfer case as shown in step 14.

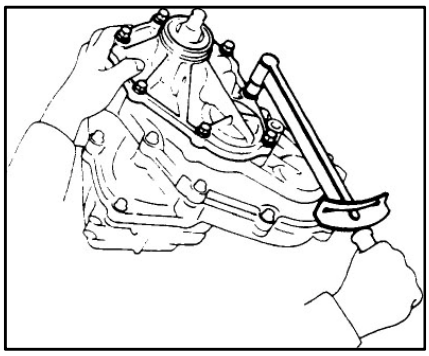


14. INSTALL REAR HOUSING

(a) Ensure the gasket and housing surfaces are free from debris.
(b) Install the rear housing together with the idler gear.
(c) Install and torque the bolts as shown in the figure.
(d) Remove oil and grease from the output splines using a rag and degreaser/solvent.

Ⓐ Bolt length: 47 mm (1.85 in.) Torque: 29 ft-lbs
Ⓑ Bolt length: 112 mm (4.41 in.) Torque: 29 ft-lbs

(e) In preparation for step 16, please remove any grease/oil from the output splines.
(f) Ensure order of main shaft components (see Note in step 15).

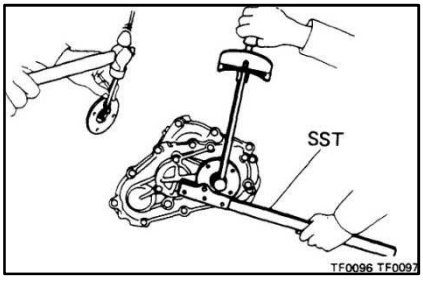


15. INSTALL EXTENSION HOUSING

(a) Ensure the gasket and housing surfaces are free from debris.
(b) Apply a generous amount of grease to inner groves of the seal.
(c) Install and torque the extension housing with seven bolts.
(d) Clean any excess grease from the splines of the output shaft.

Bolt length: 37 mm (1.46 in) Torque: 29 ft-lbs

NOTE: Step four noted the components falling from the main shaft. Consult the assembly diagram on page 2 for the proper order. *Rear Bearing –> Oil Pump Screw –> Locking Ball –> Speedometer Drive Gear*

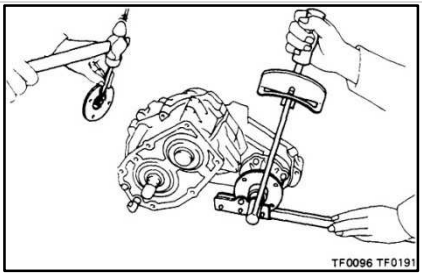


16. INSTALL STOCK REAR FLANGE

(a) Ensure all oil and/or grease has been removed from the splines of the rear output shaft as instructed in steps 14 and 15.
(b) Fully degrease the splines of the rear flange.
(c) Apply a 1-in wide thin layer of silicone to the splines of the flange.
(d) Install rear flange, washer, and nut to the rear output shaft.

Torque: 90 ft-lbs (for stock 27-spline flange)
NOTE: Use a Toyota Service Tool shown (or equivalent) to hold the flange. The Toyota tool is p/n 09330-00020

(e) Stake the nut.



17. INSTALL "4-30" HD REAR FLANGE

(a) Ensure all oil and/or grease has been removed from the splines of the front output shaft as instructed in step 12.
(b) Fully degrease the splines of the front flange.
(c) Apply a 1-in wide thin layer of silicone to the splines of the flange.
(d) Install front flange, washer, and nut to the front output shaft.

Torque: **110 ft-lbs** (for HD 30-spline flange)
NOTE: Use a Toyota Service Tool shown (or equivalent) to hold the flange. The Toyota tool is p/n 09330-00020

(e) Stake the nut ***twice*** (our output features two stake locations).

BREAK IN PROCEDURE

There is no break in procedure for this product. Please ensure you are able to rotate the input gear, rear output flange, and front output flange before installing into your truck.

Once installed, it is recommended to engage 4WD and ensure proper operation.

FINAL STEPS

Transfer Case Gear Oil Grade:	API GL-4 or GL-5		
Transfer Case Gear Oil Viscosity:	SAE 75W90 or 80W90		
Transfer Case Capacity:	Single Case:	1.5 – 1.7* quarts	* W- and G-series transmissions have a front cavity that requires extra oil. L-series trans do not.
	Dual Case:	2.25 – 2.45* quarts	
	Triple Case:	3 – 3.2* quarts	

Replace gear oil every 30,000 miles.

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