SILVER SPORT Transmissions

1966 – 1977 FORD BRONCO

TR-4050 5-SPEED
INSTALLATION MANUAL

FOLLOW FACTORY SERVICE MANUAL (FSM) RECOMMENDED SAFETY PRECAUTIONS. TRANSMISSION REMOVAL AND INSTALLATION IS A LABOR INTENSIVE JOB, WHICH CAN RESULT IN SERIOUS INJURY OR DEATH IF CAUTION IS NOT TAKEN. PLEASE BE CAREFUL PERFORMING THIS JOB, OR HAVE A PROFESSIONAL PERFORM THE JOB FOR YOU. REFER TO FSM FOR ADDITIONAL DETAILS OF THE PROCEDURES BELOW, AS REQUIRED.

Before you start:

Test drive the vehicle, if possible, before you begin. Pay attention to noise and vibration and record your observations. At the end of the installation, perform another test drive to compare.

In addition to this manual, you should have received instructions for checking your bellhousing runout. **The bellhousing runout must be checked (and corrected if necessary) for Tremec's warranty coverage.**

You should also verify the parts you received. Compare the received items to the detailed invoice provided in your shipment.

PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLATION

In addition to these instructions, you should receive the following instructions based on your order, **if applicable**:

1. All kits – MAA-00101 Inspection and Correction of Bellhousing to Crankshaft Runout
2. MAF-20001 – Bronco Hydraulic Kit Instructions. (if applicable)
3. MAA-05000 Clutch Installation instructions.

Your invoice lists the individual hardware packs and where they are used.

NOTE: Transmission **must** be test shifted before installation. Due to jostling during shipping, some transmissions will not shift properly when removed from the box. Please make sure that the gear selector will move into each of the (6) possible positions while rotating the input shaft and checking for output shaft rotation. If the input shaft will not turn, slide the clutch disc over the input shaft and jerk the clutch disc left and right to break it free. If this does not correct the issue, call Silver Sport Transmissions' Technical Support at **888-609-0094** for assistance.

THIS CANNOT BE CORRECTED WITH THE TRANSMISSION INSTALLED IN THE CAR!
TEST SHIFT FIRST!

A. REMOVE EXISTING EQUIPMENT

1. Disconnect negative (-) battery cable.
2. Remove shifter knob and boot. Place shifter in neutral.
3. Remove console if equipped.
4. Remove the lower shift boot.
5. Remove the transfer case shifter.
6. Remove the shifter tunnel plate.
7. Remove 4 shifter bolts and remove shifter.
8. Using an angle finder or digital level, measure the transmission angle, front differential, rear differential, front driveshaft, and rear driveshaft. The most reliable place to get the engine/transmission measurement is from the machined vertical face that the rear seal goes into at the back of the tailhousing. Record this measurement for future reference.
9. Raise Bronco securely on lift or jack stands. Make sure you give yourself enough working room under the Bronco.
10. Disconnect front driveshaft at transfer case and at front differential and remove from vehicle.

11. Disconnect rear driveshaft from rear differential and remove from vehicle.
12. Secure rear of engine with hydraulic jack. While lowering engine the fan shroud may need to be loosened as fan blades may contact it as the engine is lowered in the back during transmission removal.
13. Support engine remove the transmission crossmember.
14. Drain transmission and transfer case.
15. Disconnect transfer case linkage.
16. Remove clutch linkage.
17. Unbolt starter and set aside.
18. Remove bellhousing dust cover.
19. Remove transfer case lever assembly.
20. Disconnect speedometer wiring from transfer case.
21. Disconnect reverse lamp wiring.
22. Remove exhaust, as required, for working clearance and to permit the engine to drop.
23. Unbolt transfer case from transmission.
24. Secure transmission (jack recommended) and unbolt transmission from engine, then move rearward and remove from vehicle.
25. Remove clutch unit.
26. Inspect flywheel ring gear teeth (no cracks, chips, wear), and friction surface (no cracks). Silver Sport Transmissions strongly suggests removing flywheel and having it resurfaced, then dynamically balanced at a reputable automotive machine shop **unless** the engine was externally balanced with the flywheel installed.
27. Remove pilot bushing using removal tool.

B. VEHICLE PREPARATION

1. If you are converting from an automatic transmission or from a column-shift vehicle, first you must cut the shifter hole. To locate the shifter hole, use the following procedure:
    (a) Measure the transmission from the bellhousing mounting face to the center of the shift lever, including offset from the centerline (if any).
    (b) Temporarily install the bellhousing to the engine (clutch unit not required) and raise the engine to approximate final elevation. If applicable install the adapter plate.
    (c) Transfer the shifter location to the underside of the transmission tunnel by measuring from the transmission mounting face of the bellhousing rearward down the underside of the transmission tunnel, and mark the shift lever location, including any offset.
    (d) Measure the rectangular section of the shift tower, and transfer this to the underside of the transmission tunnel. Drill pilot holes and cut out the required area.

NOTE: Confirm that nothing is in the way, inside or under the vehicle, during cutting.

2. The hat channel in the tunnel will need to be modified on the top and drivers side of the tunnel. In order to determine if modification is needed, temporarily install the bellhousing (clutch unit not required) and transmission on to the engine and begin to raise into place. When the transmission contacts the underside of the tunnel, measure the transmission angle as you did in Step A-9 above. You want the new transmission to be very close to the same angle as the original one, in order to preserve the driveline geometry.

Fig 4-1.

3. If the new transmission (jacked all the way up) is higher than your original, lower the new transmission to the same angle as your old transmission, and check for clearance around the transmission case. You should have at least 1/4 inch of clearance everywhere. If your new transmission is not high enough, then some modification is necessary. You may be able to create enough clearance by dimpling the tunnel in the spots that the transmission touches. If you need to raise the transmission significantly, then it may be necessary to cut out a portion of the tunnel and raise it to create clearance.
4. Using a paint marker, mark the tunnel around the area of the transmission needing removal and remove the material. Raise the transmission into place and measure again from the center of the output shaft straight up to the top center of the tunnel. Several attempts may be required to fully determine the area to be removed and permit the transmission to sit at the proper height.
5. Once the opening is made, a cardboard (or other stiff material) template can be made to cover and overlap the area. The template will be used to cut a repair patch from 20 gauge sheet metal to cover the opening. Additional slits in the sheet metal at the appropriate locations will assist in folding and shaping the sheet metal. Remove the transmission and bell housing.
6. Install the sheet metal, seam seal and paint. Below are photos of a typical tunnel modification with new sheet metal installed:

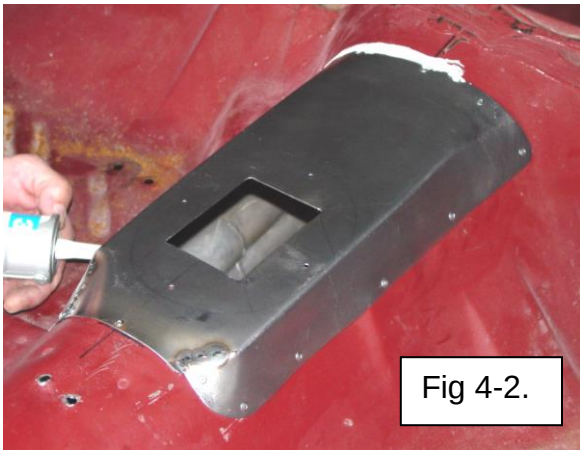


Fig 4-2.

Fig 4-3.

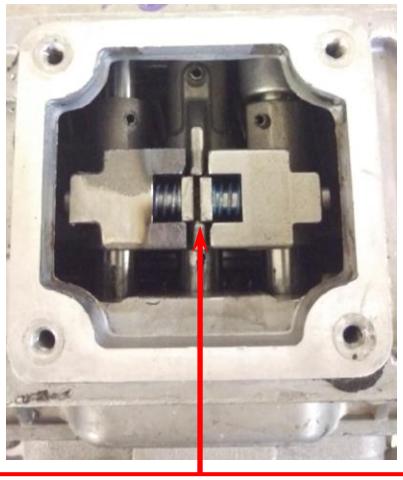
7. Temporarily reinstall the transmission in the car (no clutch assembly necessary). Install the isolator mount onto the transmission, and test-fit the crossmember to determine what modifications are necessary. Return to these instructions when the crossmember has been modified for proper fitment with the new transmission at the correct angle.

NOTE: Do not remove shifter tower (2 bolts) from shifter base plate to gain clearance for installation. Shift stub seal in base plate could be damaged or not properly located when tower is reinstalled on base plate. It is ok to remove the 4 bolts to remove the shifter from the transmission. (See on next page for shifter removal and installation)

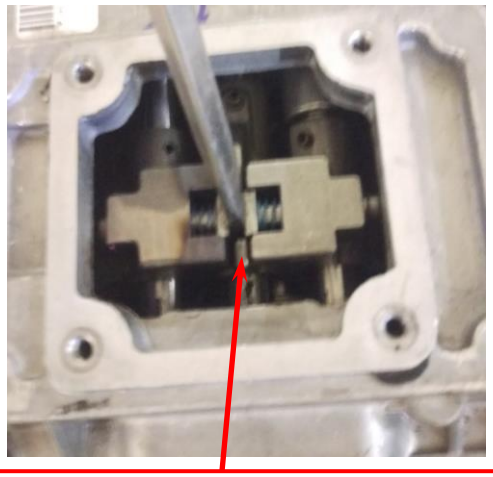
Shifter removal and installation

If you need to remove the shifter place the transmission into 3rd or 4th gear before removal. This will make reinstallation much easier.

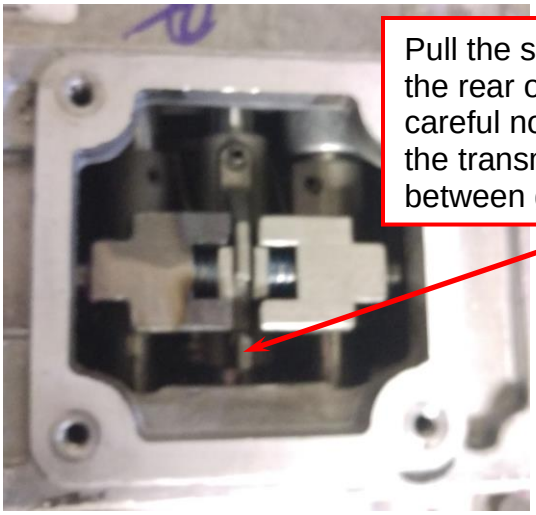
If you did not remember to put the transmission in 3rd or 4th gear before taking the shifter off, then follow the directions here;



Locate the center shift rail



Insert a long flat blade screwdriver in between the outside rail interlocks



Pull the screwdriver back towards the rear of the transmission. Be careful not to move the other rails, the transmission could jam in between gears.

C. TRANSMISSION INSTALLATION

1. Install block plate.

2. Install new flywheel and flywheel bolts torqued to factory spec. Be sure to tighten bolts in alternating star pattern sequence.

3. Install new pilot bearing assembly using a socket of similar diameter to the bearing and a hard rubber mallet. Make sure the bearing is installed facing the right direction (see photo below). Gently tap bearing fully into crankshaft until bearing face is flush with crankshaft face.
   NOTE: The pilot bearing is designed to be a slight press fit in the bore, and the pilot bearing hole is not always sized correctly in some crankshafts. Your pilot bearing OD should be between one-half of a thousandth and two thousandths of an inch (0.0005" - 0.002") larger than the ID of the hole in your crankshaft. If outside of this range, a different pilot bearing is required, or your crankshaft or pilot bearing may be modified to fit. Contact your local parts store or machine shop for a suitable replacement or to modify your existing parts.

(TRANSMISSION SIDE SHOWN)

4. Install bellhousing and inspect for proper alignment to crankshaft using dial indicator or test indicator (SST can provide these tools at extra cost). See "Inspection and Correction of Bellhousing To Crankshaft Runout" instructions MAA-00101 provided with your literature package. Make sure to record your runout data in a safe place, as it will be required in the event of a warranty issue. Mark offset dowel pin position if used to correct bellhousing runout, and carefully remove bellhousing.

IMPORTANT !!! Refer to MAA-00101 Inspection and Correction of Bellhousing to Crankshaft Runout

It is an absolute **requirement** that **runout** is **checked** and **corrected** **PRIOR** to installing the transmission. The runout specification for all of Silver Sport's kits is **0.005" (5 thousandths of an inch) MAXIMUM**. You MUST document the results PRIOR to installation of transmission and keep these measurements recorded in a safe place for your transmission warranty. Silver Sport's Customer Service will need this information if a warranty issue arises.

5. Using clutch alignment tool, attach clutch disc and pressure plate to flywheel. Install each bolt with medium thread locking compound only finger tight on the first round, then incrementally tighten each one in a star pattern sequence until all are snug. Torque each one in the same sequence to 35 lb.-ft.

NOTE: When installing the pressure plate and clutch disk onto the flywheel, NEVER use power or air tools. Using power or air tools will cause the flanges of the pressure plate to distort. This will in turn cause uneven pressure plate finger heights, which will lead to inconsistent or unsuccessful clutch releases. See MAA-05000 clutch installation instructions for more details.

6. Refer to Hydraulics manual to measure for proper bearing cushion distance and transmission mounting instructions.

7. Install bellhousing with inspection cover to engine, while making sure that there are no hoses, cables, or wires caught between the bellhousing and engine block. Torque the fasteners to the specification found in your Factory Service Manual.

8. Reinstall starter.

9. Install transmission, using caution when inserting the input shaft into the slave cylinder bearing, clutch disc and pilot bearing. Do not allow weight of transmission to rest on assembly until fully engaged (doing so can misalign disc or damage pilot bearing). The tailshaft rotated, as required, to facilitate engagement into clutch disk. **DO NOT** use the transmission to bellhousing bolts to draw the transmission up to the bellhousing!

NOTE: If the transmission stops approximately 1/2 - 3/4 inch away from seating fully against the bellhousing, install and **finger-tighten** bellhousing to transmission bolts (HWG-PACK A). Connect clutch linkage and depress pedal lightly while pushing transmission forward to facilitate alignment of clutch disk to input shaft and pilot bearing. **DO NOT** force the transmission into engagement – damage to the pilot bearing may result. Tighten bellhousing to engine bolts once the transmission is seated against the bellhousing.

WARNING: THE FOLLOWING CAN CAUSE THE EARS OF THE TRANSMISSION CASE TO BREAK AND IS NOT COVERED UNDER WARRANTY (SEE PHOTO):

a) DRAWING THE TRANSMISSION UP TO THE BELLHOUSING BY THE BOLTS.
b) NOT TORQUING THE TRANSMISSION-TO-BELLHOUSING BOLTS TO 50 lb.-ft.
c) NOT HAVING THE TRANSMISSION FULLY SEATED AGAINST THE BELL HOUSING WHEN TORQUING THE TRANSMISSION-TO-BELLHOUSING BOLTS.

Fig 5-1.

10. Once the transmission is fully seated by hand against the bellhousing, fasten with 1/2” x 1-1/2” bolts and lock washers provided (HWA-PACK W) and torque to 50 lb.-ft.

11. Install transmission mount ISA-622268 using (1) HWG-PACK B1.

12. Install crossmember to frame using the HWF-PACK Z (8) 3/8” – 16 x 1 ¼” bolts which come in the kit. Use the remaining HWG-PACK B1 to attach the crossmember to the transmission mount.

13. Install transfer case to the back of the TR-4050.

14. The reverse light switch is located on the driver’s side of the top plate and is a white-bodied switch. The switch is a normally open, non-directional switch that will complete the lighting circuit when the transmission is in reverse. SST has provided a two-wire harness with your kit that will attach to the 5-speed reverse light switch. It can be spliced into your car’s wiring harness in place of your original switch.

REVERSE LIGHT SWITCH

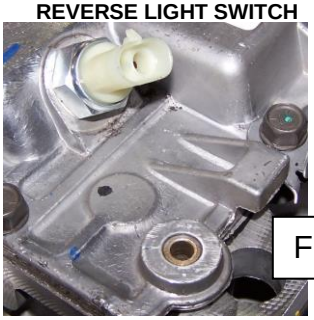


Fig 9-2.

15. This is a good time to take the driveline measurement, per the driveshaft instruction sheet, as long as the total weight of the car is supported on the axles to provide an accurate measurement. After the final clearance check and the driveshaft measurements, remove the transmission and bellhousing to complete the remaining work

16. Install front and rear driveshafts. Use the factory torque specs: 17 lb-ft for 1310/1330 U-bolts; 24 lb-ft for 1350 U-bolts.

17. Tighten exhaust.

18. Apply body sealer LORD® Fuser 803DTM Metal Sealer or equivalent to tunnel hole perimeter to prevent water intrusion. Install modified tunnel cover with original screws.

19. Bolt on upper shift handle with 3/8”-24 x 1” bolts and lock washers (HWA-Pack L). Use medium strength thread lock compound. Torque to 25 lb.-ft. Confirm shifter motion thru all gears.

20. Reconnect the negative (-) battery cable.

FINAL INSTALLATION STEPS

1. If you did not fill the transmission with fluid before installation, remove the fill plug on the passenger's side of the transmission and fill with 3.7 QUARTS, (3.5 liters) of transmission fluid, or until fluid runs out of the fill hole with the vehicle level. Reinstall the fill plug after adding fluid.
2. Start engine and allow engine to idle for a few minutes.
3. Check for leaks while warming up.
4. Slowly rev engine in neutral and listen for any unusual sounds or vibration.
5. Shift through all forward gears with the clutch disengaged (clutch pedal depressed).
6. Test drive at low speeds and low RPM.
7. Gradually increase engine RPM and vehicle speed.
8. Compare this test drive to the pre-installation test drive.
9. Drive conservatively for the first 500-1000 miles for transmission break-in.
10. If you experience vibration at highway speeds, verify that there is no body contact with the new transmission. If there is no contact, it may be necessary to adjust your driveline angle. Much has been written about driveline angles and how to determine them, and there is a lot of great information available online from multiple websites. If you need further help with your driveline angle, call Silver Sport Transmissions' Customer Service at 865-609-8187.

SPECIFICATIONS AND MAINTENANCE

TREMEC HighPerformance ManualTransmissionFluid is endorsed by Tremec for use in all aftermarket high performance Tremec brand manual transmissions. **Dexron III Automatic Transmission Fluid (ATF) and Mobil 1 ATF are the only other fluids approved by Tremec.** The proper fill level is achieved when the oil reaches the fill plug hole. **The use of ANY other fluid will void your warranty.** Silver Sport Transmissions recommends that the fluid be replaced after the first 500-1000 miles of normal driving, and then every 30,000 miles thereafter. It is acceptable to use the less-expensive DEXRON/MERCON fluid for the break-in period and then replace it with the Tremec HP MTF or Mobil 1 ATF.

FLUID CAPACITY: 3.7 QUARTS, (3.5 liters)

DO NOT EXCEED MAXIMUM INPUT TORQUE:

- TR-4050: 600 lb.-ft. in 4th gear

GEAR RATIOS:

- 1ST 6.16
- 2ND 3.11
- 3RD 1.71
- 4TH 1.00
- 5TH 0.76
- REV. 6.03

CONTACT INFORMATION

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SILVER SPORT TRANSMISSIONS IS DEDICATED TO YOUR SATISFACTION AND ENJOYMENT OF THIS PRODUCT. PLEASE SEND US PICTURES OF YOUR CAR ALONG WITH A TESTIMONIAL OF HOW YOU RATE THIS PRODUCT. WE WILL BE POSTING MANY CUSTOMER FEEDBACK LETTERS AND PICTURES ON OUR WEBSITE AND BROCHURES.

ENJOY YOUR SILVER SPORT TRANSMISSION SYSTEM!