



SILVER SPORT
Transmissions

1967-1969 GM F1-Body

**CAMARO
FIREBIRD
TRANS AM**

T56 MAGNUM 6-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.

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OUR WEBSITE FOR MORE INFORMATION**

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 results.

It is also a good idea to measure engine driveline angle and driveshaft operating angles for your existing transmission to use as a comparison to the new angles after the T56 Magnum is installed. 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.

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. Hydraulic throw out bearing kit – Hydraulic Kit Instructions for GM MAG-00402
3. MAA-00801 – T56 Magnum Installation General Guidelines

NOTE: This 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 shift gate positions while rotating the input shaft and checking for output shaft rotation. If the input shaft will not turn, slide a 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 at **888-609-0094** for assistance.

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

A. REMOVE EXISTING EQUIPMENT (IF FACTORY MANUAL CAR SKIP TO SECTION B)

1. Disconnect negative (-) battery cable.
2. If equipped with console, remove to permit disconnecting and removing floor shift components. If equipped with key/steering wheel lock, the linkage must be locked in position to permit key removal and turning steering wheel at all times. If column shift, remove linkage at steering column. Remove linkage from transmission.
3. Remove engine breather assembly, throttle linkage, ignition cap and components and any other items that would restrict lowering the back of the engine for transmission removal.
4. Remove the automatic dipstick tube bracket from its attachment at the engine. Some vehicles will permit removal of the dipstick tube from the transmission while others are removed with the transmission. Fluid may drain from the transmission at this point if the dipstick tube is removed.
5. Remove the transmission kickdown cable/linkage and brackets from the engine and vehicle. If a column shift, remove linkage between steering column and transmission and any associated brackets.

6. If equipped, remove vacuum modulator vacuum line from its connection at the engine and plug the engine vacuum source.
7. Remove fluid cooling lines at radiator and transmission. Fluid may drain. Plug the radiator connections.
8. Locate and disconnect the neutral safety switch wiring and backup light wiring, if equipped. Tag for future reuse during manual transmission installation.
9. Remove the automatic brake pedal. Depending on the vehicle and the under dash access, pedal removal may require removal of the front seat, under dash facia and or dropping the steering column. If the new pedal kit includes a new pedal support bracket, the original pedal bracket will also need to be removed. Retain all parts until the new pedals are installed.
10. Locate the factory clutch rod hole used for standard transmission vehicles. The hole generally has a factory rubber plug sealing it and is located behind the factory insulating/carpeting material.
11. Raise car securely on lift or jack stands (Sears 6-Ton recommended).
12. Loosen exhaust at manifold and remove as required for working clearance and to allow the engine to drop during transmission removal.
13. The emergency brake cable may need to be disconnected for working clearance.
14. Remove the driveshaft at the differential and transmission, if necessary, and remove driveshaft from vehicle.
15. Unbolt starter and set aside.
16. Remove speedometer cable.
17. Remove torque converter dust cover.
18. Remove the torque converter to flex plate fasteners. The engine will need to be rotated manually to access all the fasteners. (**NOTE:** The battery should have already been disconnected as directed in step number 1 to prevent accidental startup)
19. Secure rear of engine with hydraulic jack.
20. Remove bolts from transmission isolator at the crossmember and raise engine slightly to remove weight from crossmember.
21. Secure and support transmission (transmission jack recommended) and remove the crossmember.
22. Remove the bellhousing bolts holding transmission to the engine, lowering back of engine and transmission, as required, permitting access to all bolts.
23. Move transmission and torque converter rearward as a unit and disengage the transmission bellhousing from dowel pins. Continue moving rearward until the transmission unit can be lowered and removed from the car.
24. Remove the flex plate from the crankshaft.

B. REMOVE EXISTING EQUIPMENT (FACTORY MANUAL CAR)

1. Disconnect negative (-) battery cable.
2. Place transmission in neutral. Remove shifter knob and boot.
3. Remove console. Note location and orientation of all components and wiring.
4. Remove front seats and carpet.
5. Remove engine cooling fan and fan shroud.
6. Remove breather assembly & ignition cluster cover/distributor cap from engine.
7. Raise car securely on lift or jack stands.
8. Loosen exhaust at manifold pipe.
9. Unbolt starter and set aside.
10. Remove drive shaft at rear differential pinion yoke and remove from car.
11. Remove bell housing dust cover/inspection cover.

12. Remove linkage pin & clip at torque arm to clutch fork.
13. Remove shifter assembly.
14. Remove speedometer cable.
15. Remove exhaust pipes as required for working clearance and permit engine to drop.
16. Unbolt transmission isolator and remove crossmember.
17. Loosen brake cable lines and secure for working clearance.
18. Disconnect backup switch wiring.
19. Secure rear of engine with hydraulic jack.
20. Secure transmission (jack recommended) and unbolt 4 speed transmission from bellhousing, then move rearward in vehicle and remove.
21. Remove manual transmission bellhousing, clutch pressure plate and clutch disk.
22. Remove manual transmission clutch fork and release bearing from bellhousing. Inspect release bearing, fork, and pivot ball stud for wear. Contact Silver Sport Transmissions for replacement or repair.
23. Inspect flywheel ring gear teeth (no cracks, chips, wear), and friction surface (no cracks). Silver Sport Transmissions strongly suggests removing flywheel and having it surfaced, then dynamically balanced at a reputable automotive machine shop **unless** the engine was externally balanced with the flywheel installed.
24. Remove the manual transmission pilot bushing.

C. INSTALL NEW EQUIPMENT (IF FACTORY MANUAL CAR SKIP TO SECTION D)

The vehicle is now ready for installation of the components to convert it to a manual style vehicle.

1. For all vehicles, install new pedals and pedal supports bracket and components. See supplied diagram with pedals if applicable.
2. If a Silver Sport hydraulic system is to be installed, refer to the appropriate portions on the installation manual for mounting of the hydraulic master cylinder.
3. If the original style mechanical linkage (clutch rod, Z bar, Z bar mounts, fork rod) is to be used, install the components per the Factory Service Manual for the particular vehicle. Note: On some vehicles, the frame side Z bar support is not bolted in but must be welded in.
4. To locate the shifter hole for vehicles whose kit did not include a shifter hole location on the template or in the sheet metal, the following procedure can be used to locate the shifter hole.

Temporarily install the bellhousing to the engine and raise the engine to approximate final elevation. Measure from the bellhousing mounting face of the transmission to the center of the shift lever location, including offset from the centerline of the transmission. Transfer this dimension to the underside of the floor pan by measuring from the transmission mounting face of bellhousing down the underside of the floor pan and mark the shift lever location, including offset. Measure the square section of the shift tower and transfer this to the underside of the floor pan. Drill pilot holes and cut out the required area. It would be good to temporarily install the transmission to verify the accuracy of the work. **NOTE: Confirm nothing is in the way inside or under the vehicle during cutting.** Remove the bellhousing from the engine and lower the engine.

5. Complete the remaining installation per the instruction manuals provided with the transmission kit.

D. INSTALL NEW EQUIPMENT

Before installing, please note that if you are using an Oldsmobile engine, not all crankshafts on factory automatic cars were machined to accept a pilot bearing. The crankshaft will need to be machined or you could purchase an adapter and shorten the input shaft.

1. Clean all mating engine surfaces and dowel pins. Verify dowel pin full diameter exposed length is greater than 3/8" to assure that Quick Time bell housing will be accurately positioned with the Quick Time engine block installed. Reposition or replace with longer dowel pins if necessary.
2. **If using Quick Time bell housing, be sure to install engine block plate prior to installing flywheel.** Install new flywheel and flywheel bolts torqued to factory spec. Be sure to tighten bolts in alternating pattern sequence.
3. Install new pilot bearing assembly into crankshaft using a socket of similar diameter to the bearing and a rubber mallet. **The side with the needle roller bearing grease seal faces the transmission. No additional grease is needed.** Gently tap bearing fully into crankshaft until bearing face is flush with crankshaft face. Pilot bearing is designed to be light press fit (.0005" - .002" press). Replace or modify pilot bearing if necessary.



CHEVROLET PILOT BRG.

PONTIAC PILOT BRG.

PBG-00104A Used with Adapter Plate

*******TRANSMISSION SIDE SHOWN*******

4. 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.
 - a. **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.**
 - b. See MAA-05000 clutch installation instructions for more details.
5. Lower rear of engine as far as possible (required for new transmission installation).

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 Silver Sport 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.

6. With the bellhousing still removed from the engine, install clutch fork and release bearing in the bellhousing if using mechanical clutch linkage. *The tips of the clutch fork and the spring fingers on the rear side of the clutch fork **both fit inside** the groove on the release bearing.*



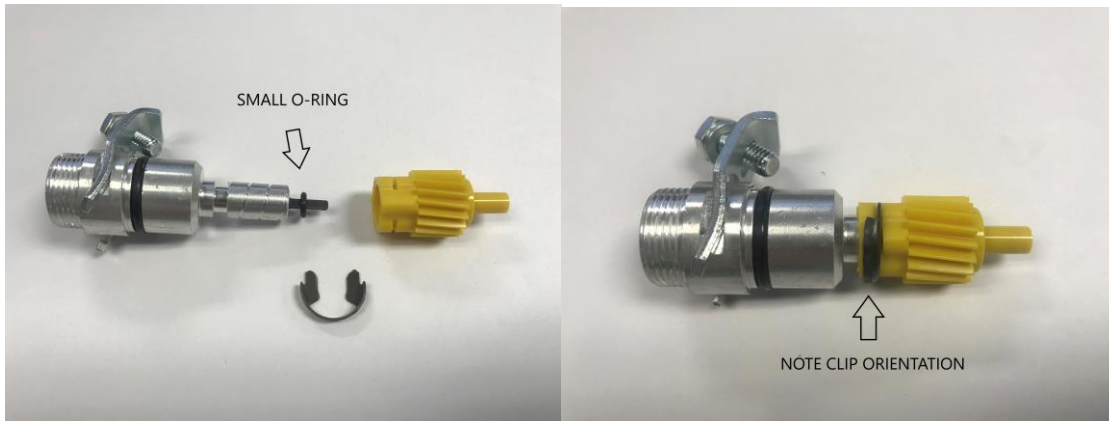
7. Install bellhousing to engine, while making sure there are no hoses, cables, or wires caught between the bellhousing and engine block. Torque the fasteners to the specification found in your factory service manual or Quick Time instructions.
8. It will be easier to add transmission fluid at this point before completing the final installation of T56 Magnum transmission. See MAA-00801. The fill plug is on the left side of the transmission midway up the case. Use pipe sealant - but do not over tighten the tapered pipe plug until head is flush with boss. Be sure to use shipping plug installed into rear seal to prevent fluid loss during installation.
9. At this point either install the clutch pedal rod, "Z" bar mounts, "Z" bar, retainer springs, and pushrod. If using a SST Hydraulic system (available separately) follow instructions provided, MAG-00402.
10. When installing T56 Magnum transmission, use caution when inserting the input shaft into the 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).
11. **DO NOT UNDER ANY CIRCUMSTANCES use the transmission-to-bellhousing bolts to draw/pull the transmission up to the bellhousing!** This could damage the input shaft of the transmission and is not covered by Silver Sport Transmissions' Warranty. If the transmission will not slide up to the bellhousing, there is a problem. Stop and call Silver Sport Transmissions' Technical Support at 888-609-0094 for a consultation.

NOTE: ONLY IF YOUR VEHICLE IS USING MECHANICAL CLUTCH LINKAGE

If the transmission stops approximately 1/2" away from seating fully against the bellhousing, install and **finger-tighten** bellhousing to transmission bolts. 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.

13. Raise up engine/transmission until transmission contacts the top of the tunnel.
14. If not already installed after tunnel clearance check, attach rubber isolator mount to transmission using M10-1.5 x 30 bolts and lock washers (HWG-PACK H).
15. Repeating the same procedure as before for installing crossmember (Section B – Steps 7-8), place your crossmember on the frame rails so that perch mounting slots lines up with the new isolator mount holes. Lower transmission fully onto crossmember, and attach to mount with hardware pack HWG-PACK B. Confirm no interference to car body or noise will occur as the driveline moves under load.
16. Attach the crossmember to the frame using your original hardware to subframe location of original crossmember.
17. Remove shipping plug and insert slip yoke fully until touching transmission seal rubber dust boot. Set driveshaft into position at differential and seat u-joints into differential pinion yoke. Make certain all parts are clean and properly assembled.
18. Install straps and torque to factory specs: 17 lb-ft for 1310/1330 U-bolts; 24 lb-ft for 1350 U-bolts (excessive torque can distort bearing cap leading to premature failure). Double check your assembly.
19. This would be a good time to double check driveline operating angles to confirm front and rear angles are within recommended values. Adjust as necessary.
20. Install E-brake cable. Adjust tension per factory specs.
21. Reinstall bell housing dust cover/inspection cover and starter.
22. Connect clutch linkage - do not preload release bearing. Adjust linkage as required. (Not required for hydraulics)
23. Splice backup light harness into original harness. The backup light switch is on the right side of the main case.
24. The reverse lockout solenoid needs to be wired to be energized when shifting into REV. This can be done in one of two ways:
 - a. The preferred method is to wire solenoid pigtail into the optional ELAP-T56RLO lockout control module. See instructions included with the module kit.
 - b. Wire solenoid pigtail into the brake light circuit so the reverse lockout solenoid is energized when the brakes are applied. The reverse solenoid is at the rear of the transmission near the top of the extension housing. One wire from the reverse lockout solenoid pigtail must be grounded and can be connected to the crossmember.
25. Re-install and tighten exhaust.
26. Install new speedo cable per MAA-00102.
27. Wrap tape around speedometer cable ends to prevent damage and keep them clean while routing new speedometer cable to transmission.
Remove mechanical speedometer port plug from the speedometer cable port on left side and install new speedometer cable or adapter with gear, clip and o-ring (HWA-PACK S) into transmission case. Install cable retainer bolt and tighten bolt to 4 lb.-ft. Connect cable to speedometer.

*****Speedometer gear will have resistance when turning after assembled*****



28. Bolt on upper shift handle with 3/8"-24 x 1" bolts and washers provided (HWA-PACK L). Use medium strength thread locking compound. Torque to 25 lb-ft. Confirm shifter motion through all gears.
29. Install carpet, shifter boot, retainer ring, and/or console if equipped.
30. Install front console (if equipped) and front seats.
31. Install new 6 speed shift pattern plate.
32. Connect throttle linkage to carburetor.
33. Install distributor cap and breather.
34. Tighten fan shroud if it was loosened earlier.
35. Reconnect the negative (-) battery cable.

E. QUALITY CHECK

It is important you confirm your work:

1. All bolts tightened to specifications
2. Full fill transmission fluid. Do not over tighten plug until head is flush with boss. This is tapered pipe plug.
3. Driveshaft fully assembled at both ends. Minimum 1/4" clearance around moving parts.
4. Shifter operates smoothly through all gears.
5. No vibration at idle speed, upper RPM or highway speed.



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 web-site and catalogs.

F. FINAL INSPECTION AND START UP PROCEDURE

- Start engine and let idle for 2 minutes.
- Slowly rev engine in neutral and listen for odd noises. Feel for vibration in driveline.
- With clutch disengaged, shift through all gears. Do not shift into reverse at RPM higher than idle.
- Test drive at low speeds and low RPMs. Gradually test higher RPMs, then higher speeds.
- If you experience a vibration at cruising speeds, it may be necessary to adjust the rear end angle to achieve the correct driveshaft angle. Please refer to factory manuals for measurement and adjustment methods.
- If you experience a vibration at zero speed, as you rev up engine with clutch released, a faulty flywheel/clutch plate balance may exist. If vibration occurs when depressing the clutch pedal only a release bearing may be faulty.
- Reverse is synchronized and uses a reverse lockout solenoid wired into the brake light wiring to ensure the vehicle is stopped prior to engaging reverse.
- Drive easy for 500 miles break-in period.
- Change oil at 30,000 miles.
- Spare parts are available from SST or an authorized TREMEC distributor.

G. SPECIFICATIONS

- Do not exceed input torque
700 lb-ft in 4th gear

- Gear ratios:

	CLOSE		WIDE
1 st	2.66	1 st	2.97
2 nd	1.78	2 nd	2.10
3 rd	1.30	3 rd	1.46
4 th	1.00	4 th	1.00
5 th	0.80	5 th	0.80
6 th	0.63	6 th	0.63

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!**

FLUID CAPACITY: (approximately 3 quarts, 21 ounces)

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. Dexron III is recommended for first 500 mile break in.**

The proper fill level is achieved when the oil reaches the fill plug hole.