SILVER SPORT Transmissions

1968 – 1979 CORVETTE
(Factory Manual Conversion)

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.

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.

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

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 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 **865-609-8187 extension 118** for instructions.
THIS CANNOT BE CORRECTED WITH THE TRANSMISSION INSTALLED IN THE CAR! TEST SHIFT FIRST!

NOTE:
This kit has been engineered to fit the T56 Magnum into your C3 Corvette. The T56 Magnum is much larger than the original factory transmission requiring special modifications outlined in these instructions and will still be a tight fit into tunnel and console areas. Due to factory build variations and body changes resulting from aging and decades of driving, there could be some additional modification adjustments required to achieve the final fitment.
Contact SST Customer Service and Tech Support for additional assistance as required.

A. REMOVE EXISTING EQUIPMENT

1. Disconnect negative (-) battery cable.
2. Remove LH & RH interior side panels from console.
3. Remove console top plate. Disconnect power window switch connector (note orientation of connector). Remove power window switch heat shield cup and switch.
4. Remove shifter knob and boot. Place transmission in neutral.
5. Remove console. Note location and orientation of all components and wiring.
6. Remove engine cooling fan and fan shroud.
7. Remove breather assembly & ignition cluster cover/distributor cap from engine.
8. Raise car securely on lift or jack stands.
9. Loosen exhaust at manifold.
10. Unbolt starter and set aside.
11. Remove drive shaft at front slip yoke, then at rear differential pinion yoke.
12. Remove bell housing dust cover/inspection cover.
13. Remove linkage pin & clip at torque arm to clutch fork.
14. Remove shifter assembly.
15. Remove speedometer cable.

16. Remove E-brake pulley, bushing, bolt, washer, and nut. Secure brake cable lines.
17. Disconnect backup switch wiring.
18. Secure rear of engine with hydraulic jack.
19. Remove bolted–on transmission mounting bracket from crossmember.
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.

B. INSTALL NEW EQUIPMENT

1. The new drive shaft is supplied with the slip yoke attached, mark driveshaft slip yoke u-joint position in relation to the driveshaft weld yoke, then remove bearing cap straps and separate slip yoke from driveshaft. Set driveshaft and slip yoke aside.

2. Clean all mating engine surfaces and dowel pins.

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

4. Install new pilot bearing assembly into crankshaft using a socket of similar diameter to the bearing and a rubber mallet. Gently tap bearing fully into crankshaft until bearing face is flush with crankshaft face.

   NOTE: 1. The side with the needle roller bearing grease seal faces the transmission. 2. If pilot bearing OD is larger than crankshaft ID by more than 0.002", a different pilot bearing is required. Contact SST or your local parts store for a suitable replacement.

5. Attach the bellhousing, without the clutch components, to the engine for a trial fit of the new transmission for clearance check and to modify the crossmember to accept the new C3 Magnum crossmember center section. The tunnel shifter opening must be modified or a new hole cut for T56 Magnum shifter clearance.
   a. For additional tunnel clearance to the top surface of the T56 Magnum transmission, it may be required to re-position the positive battery cable. See Fig. 4-1. This can be accomplished by rotating the two right side wire clips and the rear wire clip 180 degrees to slightly raise and relocate the cable.
   b. Remove wire clip screws and pull cable down and away from tunnel when cutting openings and drilling holes.

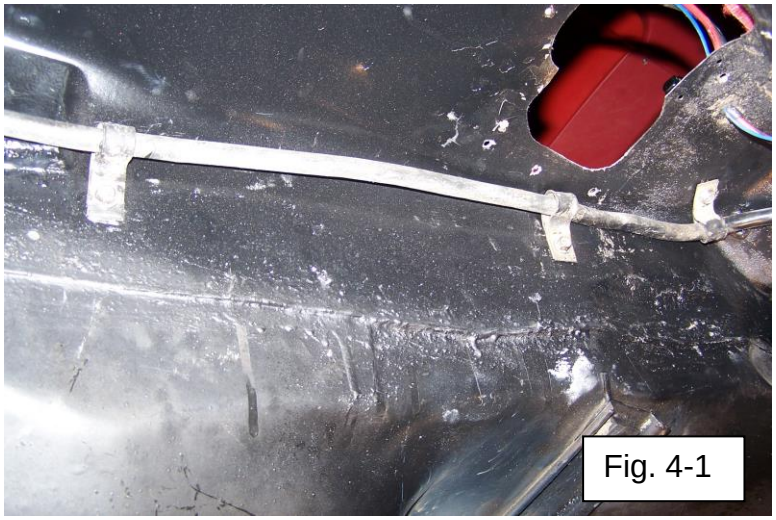
Fig. 4-1

6. 1968-‘75 Factory Manual cars came with a hole cut into fiberglass tunnel for manual shifter - but an additional area of tunnel must be removed to provide clearance for the T56 Magnum shift tower.
    a. From engine RFB, measure 27.1” (5.95” deep QT bell housing) or 27.9” (6.3” deep GM bell housing plus 0.5” adapter plate) or 21.125” from front mounting face of T56 Magnum) on driveline centerline and mark tower center location on underside of the tunnel floor.
    b. Drill 1/8” dia locating hole.
    c. Position shifter opening cutting template TMG-03102 or TMG-03202 on topside of tunnel with the shift tower opening centered about the locating hole. See Fig. 5-1. Mark and cut opening in tunnel. Remove factory steel backing plate if so equipped.
    d. See Fig. 5-2 for bottom view of finished shifter hole tunnel cut. The final shift handle connection joint will be positioned in the same location as the original factory shifter handle and will fit in factory console opening.

7. 1976-’79 Factory Manual cars, the tunnel design changed to a stamped steel floor which also must also be enlarged for the T56 magnum shift tower.
    a. From engine RFB, measure 27.1” (5.95” deep QT bell housing) or 27.9” (6.3” deep GM bell housing plus 0.5” adapter plate) or 21.125” from front mounting face of T56 Magnum) on driveline centerline and mark tower center location on underside of the tunnel floor.
    b. Drill 1/8” dia hole thru tunnel to locate center of shifter tower.
    c. Position cutting template TMG-03102 or TMG-03202 on topside of tunnel to verify the shifter opening cut required for the T56 Magnum is centered about the locating hole and mark around cross hatched area for new hole cut. See Fig. 5-1. Mark and cut opening in tunnel.
    d. See Fig. 5-2 for bottom view of finished shifter hole tunnel cut. The final shift handle connection joint will be positioned in the same location as the original factory shifter handle.

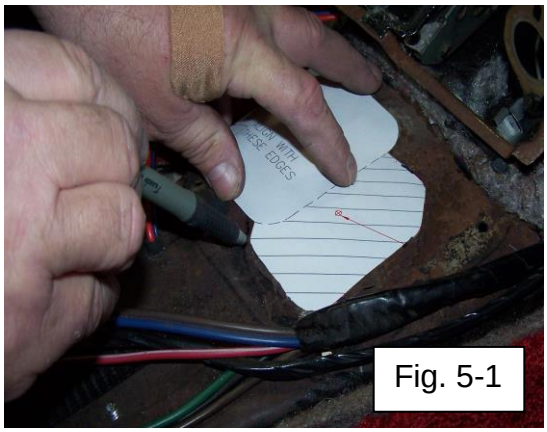
Fig. 5-1

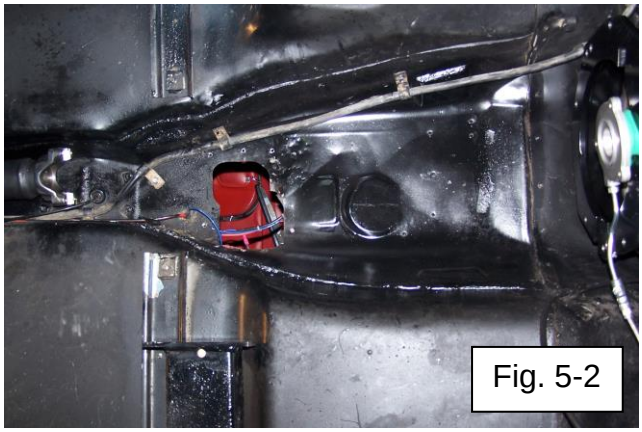
Fig. 5-2

8. Because the T56 Magnum transmission is much longer than original manual transmission and the slip yoke will now be located closer to rear where the tunnel begins to taper down in width, the passenger side of tunnel wall might need to be modified for driveshaft slip yoke clearance.
    a. For 1968-'75 model years with fiberglass tunnel and floor, it might be necessary to remove a small section and install a fiberglass patch.
    b. Use template TMG-03105 around the slip yoke to identify the tunnel clearance required. See Fig. 5-3. Be sure to check interference with yoke pushed in and with yoke pulled all the way out. If interference is found, use template to mark the tunnel area to be removed and enlarged with patch. NOTE: This check can only be made with slip yoke installed in T56 Magnum when performing temporary installation check following step 18 after the crossmember has been modified and T56 Magnum is installed at final driveline angle.

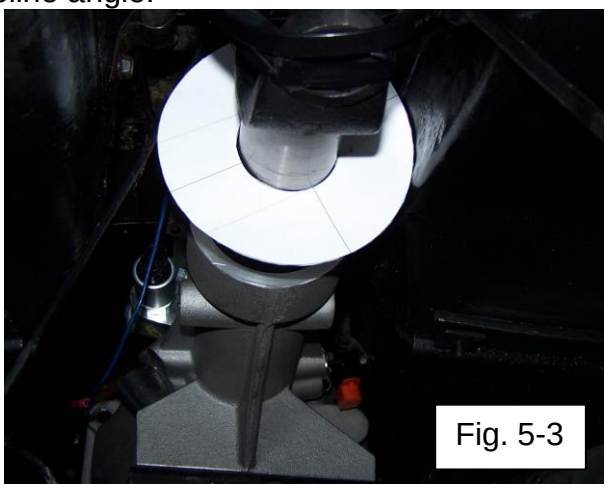
Fig. 5-3

A fiberglass patch kit such BONDO Fiberglass Repair Kit 420 can be purchased from any auto parts store to complete the fiberglass repair patch on tunnel modification.

c. For 1976-’79 model years with steel floor pan, the slip yoke clearance area can be bumped out with a ball peen hammer. The area of floor material being reworked is located just forward of seat belt anchor plate on passenger side. The depth of bumped material is minor and will not be noticeable in cabin under the floor carpeting.
See Fig. 6-1 showing the bumped area with paint removed prior to filling and painting.

Fig. 6-1

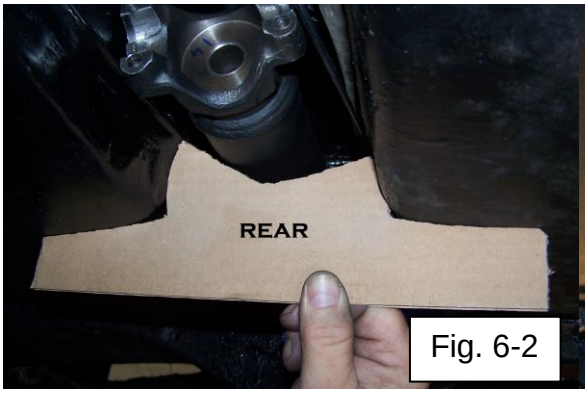

Fig. 6-2

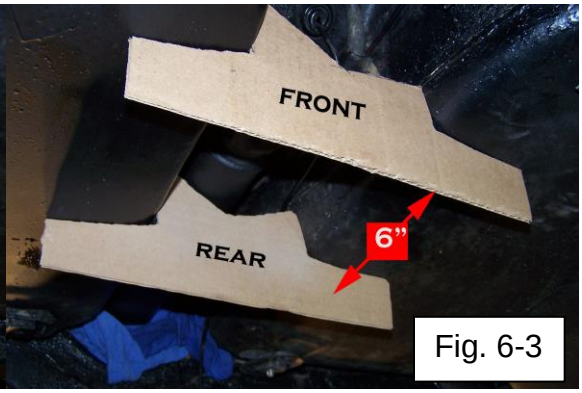

Fig. 6-3

d. Begin by making cardboard profile templates by gluing template pattern for FRONT and REAR profiles from TMG-03104 to stiff cardboard.
e. Using a ball peen hammer, bump out the tunnel floor on passenger side enough to match the REAR profile template when positioned just in front of the seat belt anchor plates. See Fig. 6-2. (picture shown after bumped area has been confirmed for clearance and finish painted)
f. Repeat bump out process moving forward along the tunnel wall enough to match the FRONT profile template when it is positioned approx. 6” from REAR profile template location. See Fig. 6-3.
g. Do not finish or paint the bumped area at this time. The final clearance check for slip yoke flange to tunnel bump area will need to be confirmed AFTER the T56 Magnum transmission is properly mounted with the new crossmember center section and the slip yoke is installed.

9. <u>Procedure for modifying the crossmember on a factory manual transmission C3:</u>
The crossmember for original factory manual transmission option was welded in place to the frame. The center section of the crossmember (21" long) must be removed in order to install the new replacement crossmember center section. See Fig. 7-1.

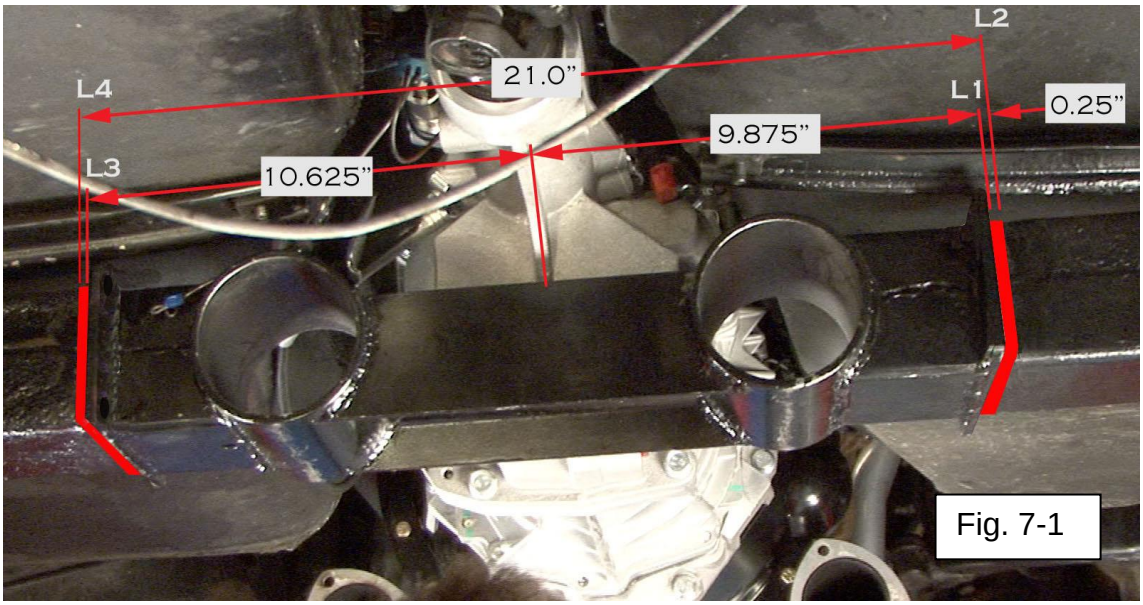

Fig. 7-1

a. Begin by scribing reference marks on both ends of the crossmember and record measurement for frame width (FW). This measurement will be used later to assure that frame width does not change during modification of the crossmember.
b. Using a square, scribe a line (L1) on the crossmember passenger side located 9.875" from the centerline between the (2) transmission mounting bracket mounting holes on the crossmember. Continue the line as far as possible around the crossmember to guide your cut. This will be the first rough cut thru your crossmember.
c. Scribe a second line (L2) 0.25" from L1 toward the end of the crossmember welded to the frame and continue the line as far as possible around the crossmember to guide your cut. This second line will be the final finished trim cut on the passenger side of your crossmember.
d. Using a square, scribe a third line (L3) on the crossmember driver side located 10.625" from the centerline between the (2) transmission mounting bracket mounting holes on the crossmember.
Continue the line as far as possible around the crossmember to guide your cut. This will be the second rough cut thru your crossmember that will remove the center section.
e. Scribe a fourth line (L4), 21.0" from L2 toward the driver side of the crossmember on driver side and continue the line as far as possible around the crossmember to guide your final cut. The L4 line will be the final finished trim cut on the driver side of your crossmember.

f. Using an appropriate power saw, cut thru L1 on passenger side of crossmember. Take precaution to not saw into floor above crossmember.
g. Next, cut thru L3 on the driver side, remove and discard center section.
h. You are now ready to make final finished trim cuts. Go back to the passenger side and carefully make another cut thru crossmember at L2. Since this is the final cut on passenger side, it is important for this cut to be squared to the crossmember. With center section removed by the initial rough cut, the cut at L2 can be done with air tool cutoff wheel for more accurate control.
i. Go back to the driver side and carefully make another cut thru crossmember at L4. Since this is the final cut on driver side, it is important for this cut to also be squared to the crossmember.
j. Grind surfaces of crossmember cut ends to clean and prepare for welding.

Temporary install T56 Magnum transmission to bell housing using bolts from Hardware Pack HWG-PACK A T56.

NOTE: Do not remove shifter tower 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.

10. Attach isolator mount to transmission using Hardware Pack HWG-PACK H.
11. Attach new crossmember center section (as rec'd with outer flange plates bolted in place) to the isolator mount using Hardware Pack HWG-PACK B.
12. Using jack, raise rear of engine/transmission into place with new crossmember center section assembly centered between the cut ends of the crossmember. It may be required to file or grind on the finish cut ends to achieve a good fit with minimal clearances. Verify the FW measurement recorded from Step 9a to assure the new crossmember center section assembly will not be pushing the frame apart or pulling the frame in after the flanges are welded in place.
13. Using appropriate indicator tool, align the bottom surface of new center section assembly (surface X) to be in same horizontal plane as the cut crossmember bottom surface (surface Y) on both sides. See Fig.8-1.

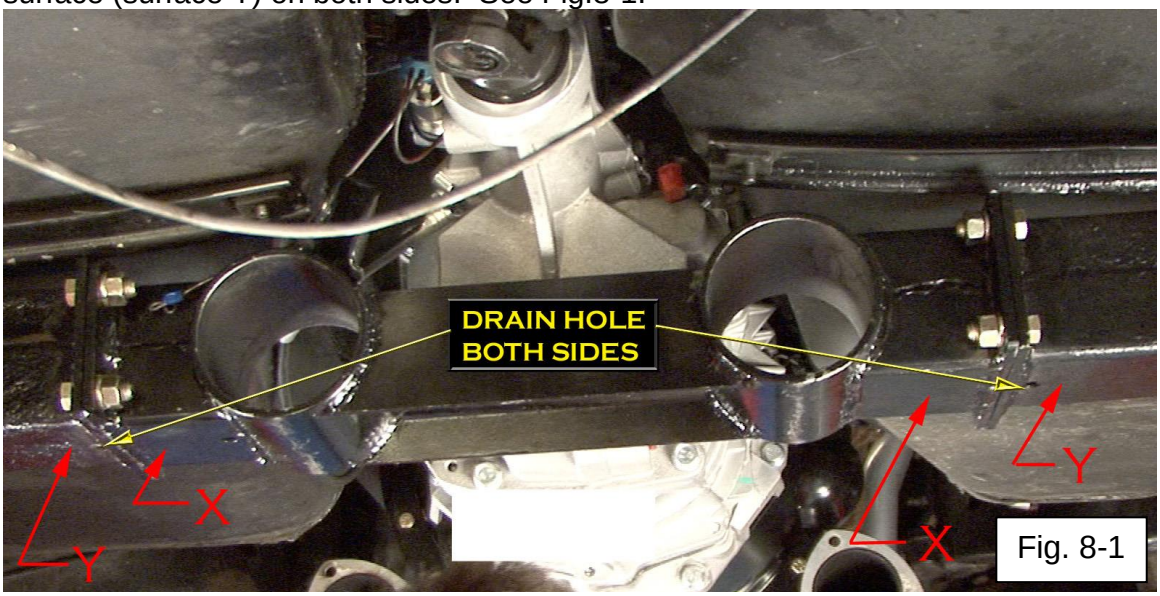

Fig. 8-1

14. Tack weld the bottom, front and back surfaces of outer flanges to the cut ends of crossmember on both sides.
15. Remove new center section assembly from isolator and set aside. Complete welding of flanges to cut end of crossmember on both sides. You will not be able to weld across the top due to the clearance with floor.
16. Drill 1/4" dia drain hole thru bottom of crossmember on both sides. See Fig. 7-1. Apply body sealer LORD Fuser 803DTM Metal Sealer or equivalent across top of the flange to cut crossmember joint to prevent water intrusion. Paint finished welded flange on crossmember cut ends for corrosion protection.
17. Reinstall new center section assembly to isolator. Use jack under engine/transmission to align the crossmember flange holes and install bolts for clearance check. Install drive shaft slip yoke. Verify the following clearances: a) approx. 1/4" between T56 Magnum transmission housing and tunnel; b) shifter stub is approx. in center of modified opening; c) approx. 1/4" clearance between slip yoke flange and bumped tunnel. Adjust clearance areas if required per instructions from Step 6 and 7.
18. For 1968-'75 Factory Manual car with fiberglass tunnel, a backing plate is needed on bottom side of tunnel for anchoring patch panel sheet metal screws.
    a. Place shifter opening patch panel BMG-03002 or BMG-03102 over T56 Magnum shifter with the opening centered around the shifter tower. Adjust bend of panel if needed to conform to tunnel shape on driver side. Using a marking pen, draw outline of the patch panel and mark the (4) 1/8" dia pop rivet holes around the outer edge and the (8) 3/16" dia mounting holes plus the (3) 1/8" dia holes around the edge of the shift tower opening for drilling. See Fig 9-1.
    b. Remove patch panel, new crossmember assembly and T56 Magnum transmission to provide working clearance to complete panel/backing plate installation.
    c. Drill the tunnel for the (4) 1/8" dia holes for pop rivets, (8) 3/16" dia and (3) 1/8" dia holes for mounting screws. Loosely install rivets into the drilled rivet holes in the tunnel. See rivet locations in Fig 9-2.
    d. With a second person positioned under car, place backing plate BMG-03004/BMG-03104 on bottom side of tunnel and locate over the (4) rivets. Adjust bend of backing plate if needed to conform to tunnel shape.
    e. Apply bead of body sealer or Permatex Black Silicon Adhesive Sealant #81158 (or equivalent) to top of backing plate and re-position over the (4) rivets. Install rivets from top. See Fig.10-1. Backing plate is now attached to bottom of tunnel. See Fig. 10-2. Paint for corrosion protection.

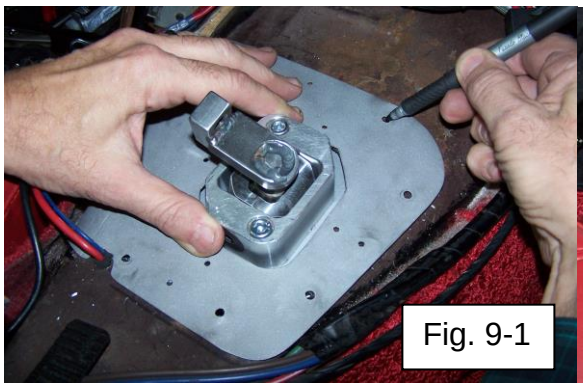
Fig. 9-1

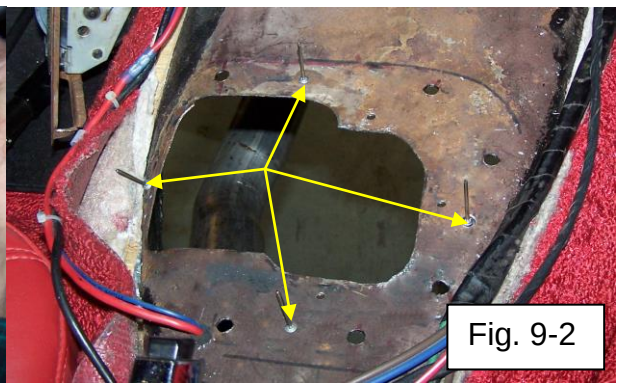
Fig. 9-2

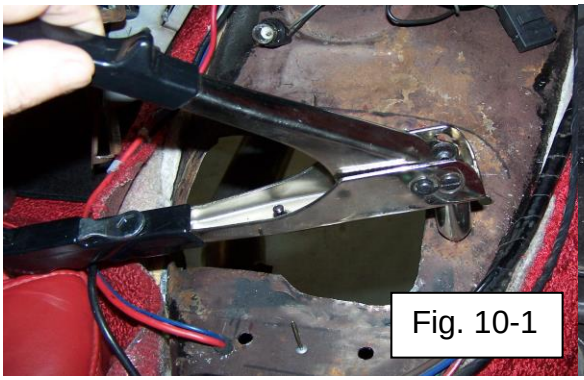
Fig. 10-1

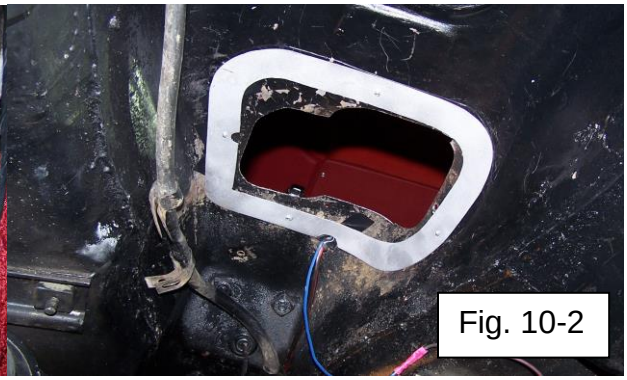
Fig. 10-2

19. For 1976-‘79 Factory Manual car with steel tunnel, the backing plate is not required and the BMG-03002/BMG-03102 patch panel will attach directly to tunnel with sheet metal screws. Pop rivets will NOT be used.
    a. Place shifter opening patch panel BMG-03002/BMG-03102 over T56 Magnum shifter with the opening centered around the shifter tower. Adjust bend of panel if needed to conform to tunnel shape on driver side.
    b. Using a marking pen, draw outline of the patch panel and mark the (8) 3/16” dia holes plus (3) 1/8” dia holes around the edge of the shift tower opening for drilling. See Fig 9-1.
    c. Remove patch panel, new crossmember assembly and the T56 Magnum transmission.
    d. Drill (11) 1/8” dia pilot holes thru tunnel for sheet metal screws. Do NOT install patch panel with screws at this time. See Fig. 10-3.

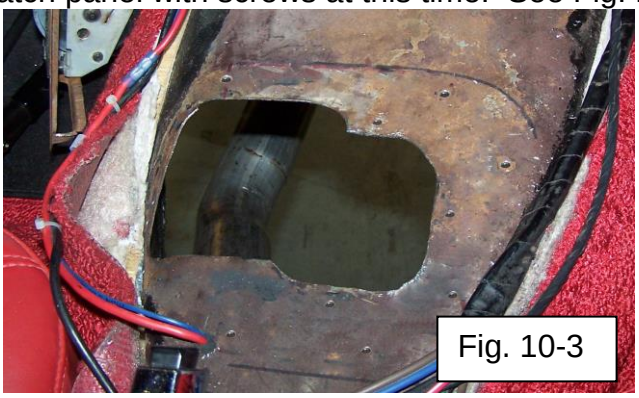
Fig. 10-3

    e. Apply body filler for smooth finish to tunnel bump area if desired. Paint modified areas for corrosion protection.
20. Remove the bell housing to prepare for final installation.
21. Install release bearing and clutch fork on bellhousing/adapter plate assembly. Follow separate instructions if a hydraulic kit is being installed.
22. At this point either install the clutch pedal rod, “Z” bar mounts, “Z” bar, retainer springs, and pushrod or the hydraulic clutch kit following the kit instructions.
23. Install the bellhousing/adapter plate, clutch pressure plate and clutch disk using the alignment tool to center the disk on the flywheel so the transmission installation will go smoothly. Using clutch alignment tool, attach clutch disc and pressure plate to flywheel. Install each bolt only finger tight on the first round, then incrementally tighten each one in an alternating sequence until all six are snug. Torque each one in the same sequence to 35 lb.-ft.

24. Set driveshaft into position at differential and seat u-joints into differential pinion yoke. Make certain all parts are clean and properly assembled. Install straps and torque to factory specs: 17 lb-ft for 1310/1330 U-bolts (excessive torque can distort bearing cap leading to premature failure).
25. Double check your U-bolt assembly. Push driveshaft up into tunnel and stuff rags between driveshaft and rear floor support to keep driveshaft out of the way when installing transmission.
26. It will be easier to add ATF 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 in rear seal to prevent fluid loss during installation.
27. Using the transmission jack, raise the T56 Magnum transmission into place to begin final installation on the engine.
28. Use caution while engaging transmission input shaft into 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). Tailshaft plug may be temporarily removed and the slip yoke inserted and the tailshaft rotated, as required to facilitate engagement into clutch disk. Once the transmission is fully seated by hand against bellhousing, install and tighten bolts.
    DO NOT force the transmission into engagement – damage to the bearing may result.
29. Raise up engine/transmission and attach crossmember center section and bolt into place at flange ends.
30. Install E-brake pulley and reattach cables. Adjust tension per factory specs.
31. Remove shipping plug, and insert slip yoke fully until touching rubber dust boot. Remove rags and lower driveshaft into place and seat u-joints into slip yoke. Make certain all parts are clean and properly assembled. Install straps and torque to factory specs. Double check your assembly.
32. Reinstall bell housing dust cover/inspection cover and starter.
33. Connect clutch linkage - do not preload release bearing. Adjust linkage as required. If using a SST Hydraulic system (available separately) follow instructions provided.
34. Splice backup light harness into original harness. The backup light switch is on the right side of the main case.
35. The reverse lockout solenoid needs to be wired 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.
36. Re-install and tighten exhaust.
37. Install new speedo cable per MAA-00102.

38. You are now ready to complete BMG-03002/BMG-03102 shifter patch panel installation on the tunnel console area.
    a. Apply bead of Permatex Black Silicon Adhesive Sealant #81158 (or equivalent) to top surface of tunnel console within the previously marked outline of patch panel. See Fig 12-1. Press patch panel into place to form tight bond with tunnel.
    b. Install the #8 x 3/8" lg sheet metal screws to secure patch panel. Do NOT over tighten screws. (Sheet metal screws are used to allow easy removal for future transmission or clutch service).
    c. Install shift tower to body seal with open flange up. Press body seal down into gap between shift tower and patch panel opening. See Fig. 12-2.

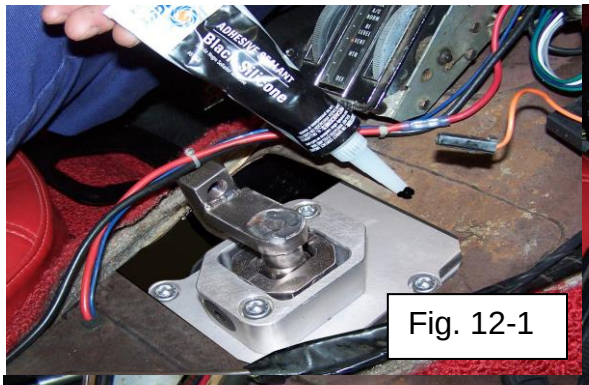
Fig. 12-1

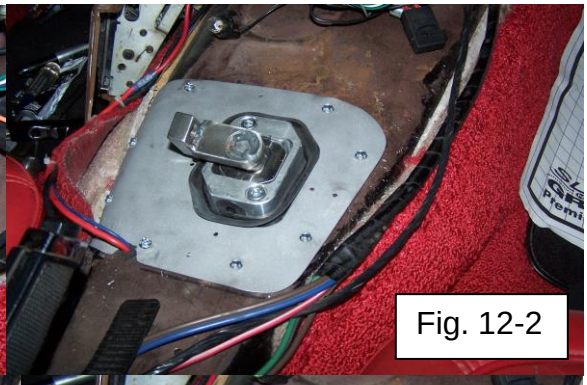
Fig. 12-2

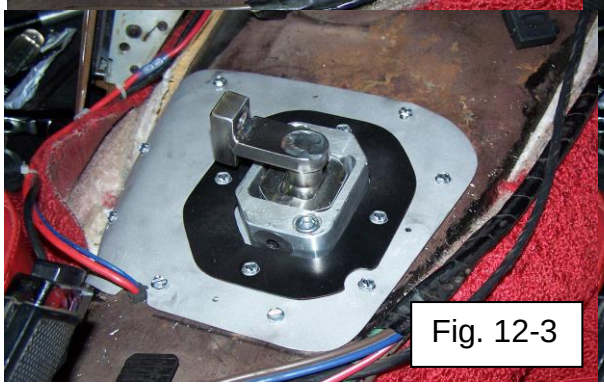
Fig. 12-3

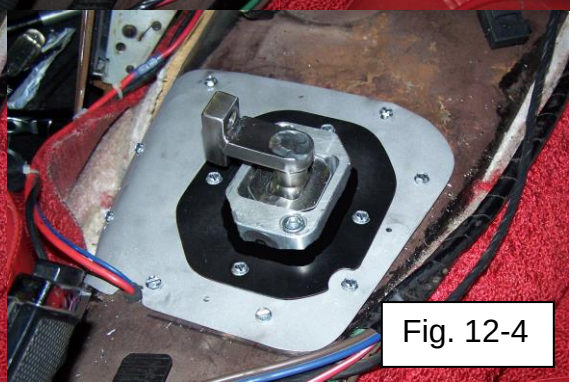
Fig. 12-4

    d. Install seal panel BMG-03003, sandwiching the lip of the body seal between the patch and seal panels, and attach with (4) sheet metal screws. Do NOT overtighten screws. See Fig. 12-3.
    e. Apply bead of the sealant around perimeter of the shift tower to complete the tunnel patch. See Fig.12-4.
39. Bolt on shifter handle with bolts and washers provided. Use medium strength threadlock compound. Torque to 25 ft-lb. Confirm shifter motion through all gears.
40. Remove the shifter knob, slide the console with boot over the lever and reinstall the knob.
41. Complete console and seat installation.
42. Install new 6 speed shift pattern plate.
43. Install ignition cluster cover/distributor cap.
44. Reconnect battery negative (-) cable.

QUALITY CHECK

It is important you confirm your work:

1. All bolts tightened to specifications
2. Full fill of Dextron III oil in transmission. 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.

C. 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.

D. SPECIFICATIONS

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

- Gear ratios:

CLOSE		WIDE	
1st	2.66	1st	2.97
2nd	1.78	2nd	2.10
3rd	1.30	3rd	1.46
4th	1.00	4th	1.00
5th	0.80	5th	0.74
6th	0.63	6th	0.50

CONTACT INFORMATION

SILVER SPORT TRANSMISSIONS
2250 STOCK CREEK BOULEVARD
ROCKFORD, TENNESSEE 37853-3043
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Toll Free: (888) 609-0094
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SALES EXTENSION: 113

CUSTOMER SERVICE AND TECH SUPPORT
EXTENSION: 118

WWW.SHIFTSST.COM

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!