M5 Muscle Car Transmission

The installation instructions on the following pages are as complete and clear as possible. Anyone with a minimum of mechanical experience should be capable of installing a transmission using the proper tools and following instructions. It is important to closely follow the instructions. Read each step and if you do not understand it go back and read it again.

These instructions are intended to make your installation as easy and simple as possible.

Transmissions operate at temperatures between 150 and 200 degrees. It is suggested that the vehicle be allowed to cool for a few hours to avoid burns from hot oil and parts. The vehicle should be raised off the ground and firmly supported to easy the removal and reinstallation of the transmission. Don’t work under an unstable vehicle!! Try to raise the vehicle 1 to 2 feet so you have plenty of room to work easily. Also have a small box or pan handy to put bolts in so they won’t be lost and a drain pan to catch oil. You may consider renting a transmission jack from the local rental yard to allow safe removal of the transmission assembly. This is a very heavy assembly! Wear safety glasses, as there will be dirt and dripping oil during this process!!

Due to variations between different car models, exact instructions for every vehicle cannot be provided. These instructions are sufficient for all vehicle installations. You may be required to disconnect and lower exhaust pipes during transmission removal. Often times aftermarket headers must be removed as well.

Step 1. Drain the transmission.

Step 2. Remove the driveshaft. Be careful not to damage the smooth bushing diameter on the slip yoke. Do not let the
cups fall off the U-joint crosses. If the cups fall off be sure not to lose any of the needle bearings. It is a good idea to tape the cups to the U-joint cross, so they do not fall off. This is a good time to clean and inspect the u-joints. Replace if worn or are high mileage U-joints.

Step 3. If removing an Automatic transmission from the vehicle, disconnect vacuum line to vacuum modulator and kickdown linkage if equipped.

Step 4. Remove shifter knob from the shifter handle if the vehicle is originally equipped with a manual transmission.

Column Shifters: Remove cotter key or clip and disconnect rod or bellcrank from shift lever on transmission.

Automatic transmission Console Shifter: Remove cotter key or clip and disconnect shifter rod or cable from shift lever on transmission. Allow rod or cable to hang free. Cable shift units, remove two bolts holding cable bracket to pan and let cable and bracket to hang free. Also disconnect park lock rod or cable on ’69 and later models so equipped.

Step 5. Loosen and disconnect speedometer. Loosen sleeve on speedometer cable and pull cable out of speedometer housing. Let it hang free.

Step 6. Automatic Transmissions: Disconnect oil cooler lines. Use a fitting wrench to avoid damage to the compression nuts. Remove aftermarket coolers if installed.

Figure 1

Step 7. Automatic Transmissions: Remove dipstick and tube assembly. Remove torque converter cover bolts and remove cover. Remove flexplate to converter bolts. Use the starter motor to “bump” each bolt into position.

Caution...be sure main coil wire is removed before “bumping” (minimal rotation) of converter to access bolts. You do not want the engine to start and run during this procedure. Flywheel rotation tools may also be used to access bolts and nuts.

Step 7. Remove distributor cap to prevent damage during transmission removal. Support the transmission with a jack. Remove the transmission mount bolts. Raise the transmission slightly and remove the crossmember. Be sure the transmission jack supports the transmission on a wide area for proper balance.

Step 8. Remove bellhousing bolts. Lower transmission until engine is supported on a jack. Be sure the distributor is not contacting the firewall as this may damage the distributor. Pull the transmission back slightly away from engine. For Automatic transmissions be
sure the converter stays with the transmission, a large screwdriver or small pry bar may be needed to wedge the converter back with the transmission. Lower the transmission/converter assembly and remove from the vehicle. For manual transmissions be certain the transmission/bellhousing assembly is moved back far enough to disengage the input shaft from the clutch. This is a heavy assembly!! Use caution when moving!

Step 9. Inspect the engine block. Make sure there are no burrs or dirt that will prevent the transmission from bolting down flat against the engine. File off any burrs that may be present. The engines dowel pins should stick out of the engine block at least ½” for proper alignment/engagement. Insufficient dowel pin engagement can cause bearing failure and alignment problems upon reinstalliation. See Figure 2

Step 10. Automatic Transmissions: Remove the flexplate from the crankshaft. Clean out the rear surface of the crank; remove any dirt or debris that may prevent installing the pilot bushing.

Step 11. Install new pilot bushing.

Step 12. Install new or resurfaced flywheel onto crankshaft. Be sure to use Flywheel bolts to secure the flywheel to the crank. Torque flywheel bolts to factory specs.

Step 13. Check fit the bellhousing to the engine block. Dial indicate the bellhousing at this time to be certain the centerline of the crank and the centerline of the transmission are running true and straight. This will dramatically improve wear characteristics and reduce noise and vibration. Once checked remove bellhousing from engine. See Pg 6.

Step 14. Install clutch disc/s onto flywheel, hold in place with pilot tool. Install pressure plate assembly to flywheel. Be certain to follow clutch installation procedure according to manufacturer's instructions. With pilot tool in place tighten pressure plate bolts.

Step 15. Install bellhousing onto transmission. Be certain the pilot hole on the bellhousing snugly fits to the bearing retainer on the front of the M5 Muscle Car transmission.

Step 16. Install throw out bearing onto the bearing retainer at the front of the transmission. Lube bearing retainer with non petroleum based grease. If using a
hydraulic throw out bearing assembly route the hydraulic lines through the fork hole in the bellhousing. If using a mechanical throw out bearing, install fork in position and engage the mechanical throw out bearing.

Step 17. Install shifter onto M5 Muscle Car Transmission if it is not already installed from the factory. Shift the transmission into 4th gear at this time.

See Figure 3

Step 18. Place the transmission and bellhousing assembly onto the jack and move it the under vehicle. Remove pilot tool from the clutch assembly. Lift assembly and place against the engine block engaging the input shaft into the splines on the clutch disc. It may be necessary to rotate the output shaft of the transmission to engage the input shaft into the clutch splines. This assembly should fit flat to the engine block with hand pressure only. If it does not sit flat against the engine do not force any parts. Check for interference. Do not pull the transmission to the engine block with the bellhousing bolts!! This will damage the transmission and or clutch and related parts. **Do not allow the transmission to hang on the input shaft to clutch splines as this may damage the clutch!**

Step 19. Once the transmission is in position against the engine install the bellhousing bolts and tighten to 30 – 35 ft. lbs.

Step 20. Inspect the transmission mount. Worn cracked or oil soaked mounts should be replaced. McLeod includes a rear mount adapter that will allow the use of a stock or aftermarket rear transmission mount. Crossmember may require modification for use with M5 Muscle Car Transmission. Raise transmission and install crossmember. Tighten crossmember bolts and transmission mount bolts securely.

Step 21. Install mechanical clutch linkage. If using a hydraulic throw out bearing assembly attach hydraulic lines to the master cylinder and bleed the system.

Step 22. Check clutch release at this time. Follow manufacturer’s instruction when installing or adjusting the throw out bearing travel and clutch release.


See Figure 4

Step 24. Lubricate slip yoke inner splines with high temperature grease. Lubricate OD of yoke with ATF. Install driveshaft. Make sure U-joint cups are properly
installed. Tighten U-joint bolts or nuts securely.

Step 25. Connect shifter handle and knob.

Step 26. Add 2 quarts of fluid to the transmission. McLeod supplies 2 Quarts of Redline D4 ATF fluid for the M5 Muscle Car Transmission. Add entire 2 quarts of fluid into the fill hole. The full level is just below the bottom of the fill hole. Wipe off excess fluid from the case and install fill plug. Tighten to 15 ft.lbs.

Step 27. Replace distributor cap and wires. Place shifter in Neutral position and start the engine. Shift the transmission through all gear positions. If the rear wheels are off the ground shift the transmission through the gears several times at low RPM.

Test drive the vehicle. Be sure to follow manufacturer’s recommendations on clutch break-in if the clutch is new. Shift the transmission through all the gears several times. After about 100 miles of street driving the shifting will become smoother.

Maintenance: Only periodic maintenance is required. Check fluid level at 20,000 miles. Remove fill plug and add fluid until the fluid begins to drip out of the hole. Reinstall fill plug and tighten to 15 ft. lbs.

Towing: The drive shaft MUST be disconnected if the vehicle is to be towed. Failure to do so WILL result in internal transmission damage.

Additional McLeod Racing Products you may consider for use with the M5 Muscle Car Transmission:

McLeod Street Pro Clutch Kit

McLeod Slip-On Hydraulic Throw Out Bearing

McLeod Steel Flywheel

M5-I501
Bell Housing Alignment Procedure

When swapping a clutch, bell housing or transmission it is highly recommended you check the alignment of the bell housing to the engine block/crankshaft and to the transmission input shaft/output shaft. Think of this as a theoretical straight line running through the crankshaft, through the input shaft of the transmission and the output shaft of the transmission. Misalignment along this path can lead to leaks, poor clutch release, premature wear of components and excessively noisy operation. This inspection can be performed with a few common measuring devices and some time. Manufacturer’s tolerances of engine/crankshaft alignment can vary especially if the engine block has been modified throughout its lifetime or if you are performing a bell housing and/or transmission swap. If you find excess misalignment on your engine/bell housing you can correct the problem with off-set dowel pins. (Lakewood Industries offers Offset dowel Pins to correct misalignment conditions). You will need a dial indicator with a magnetic base along with some typical hand tools to perform this inspection. It is critical you pay close attention to detail when performing this inspection in order to achieve accurate assembly results.

1) Install flywheel onto crankshaft, using proper bolts and torque to factory setting.
2) Be certain the engine block dowel pins stick out of the rear of the engine block at least 3/8” for proper bell housing engagement. Check the rear surface of the engine block at this time to be certain it is free of nicks or burrs that will prevent the bell housing from seating against the block.
3) Install just the bell housing and hold in place with a few bolts. Install dial indicator base onto crank flange or flywheel face and adjust plunger to contact the register bore of the bell housing. Rotate the crankshaft and note the indicator reading as you sweep the register bore of the bell housing.
4) Misalignment can be determined by dividing the change in the indicator by 2. Maximum allowable runout is .005”.
5) If your reading exceeds .005” off set dowel pins must be used to correct the misalignment. Lakewood Industries offers such dowel pins in several sizes.

This alignment procedure will eliminate premature wear on many of the transmission and clutch related components and will provide smoother operation.