



## Transmission Removal, Installation, and Testing-v.1.1

**GM - LCT1000-LCT2500  
DODGE - 47RH/47RE/48RE  
FORD - E40D/4R100/5R110**

**Please read this entire manual before performing any work**

### **Transmission Removal**

**Note:** Check and record all codes and actions of your transmission before transmission is removed. This will help if you still have problems after installation. Damage to your transmission may have been caused from some other external source.

**Note:** Deactivate air bag system before performing any service operation. Do not apply any electrical power to any component on steering column without first deactivating air bag system, otherwise AIR BAG MIGHT DEPLOY.

**Note:** When battery is disconnected, vehicle computer and memory systems may lose memory data. Drivability problems may exist until computer systems have completed a re-learn cycle.

- 1) Disconnect negative battery cables from all vehicle batteries, remove dipstick, place transmission shift lever into the neutral position. Raise and support the vehicle.
- 2) Remove all necessary skid plates, if equipped.
- 3) Remove any engine to transmission struts (if equipped), and any exhaust components required for transmission removal.
- 4) Mark drive shaft and axle flange or yoke for reassembly reference, and remove drive shaft(s).
- 5) On all models, disconnect any shift linkage, wiring harnesses and control cables.
- 6) On 4WD models, remove any shift linkage, cables, wiring harnesses, brackets and braces from transfer case.  
**Note:** Use caution when pulling any wiring connectors. Do not pry on tabs or connectors with a screwdriver. Slightly wiggle while pushing in or pulling out on tab(s). It should come apart with a little patience.
- 7) Remove transfer case prior to removal of transmission.
- 8) On vehicles equipped with Power Take Off (PTO) unit, disconnect controls and remove.
- 9) On all models, remove necessary heat shields for access to electrical connectors.
- 10) Unplug all connectors from all turbine sensors, solenoid assembly, and speed sensors.
- 11) Remove starter and converter inspection cover. Rotate crankshaft clockwise and remove torque converter bolts (nuts) from drive plate (flex plate).
- 12) Remove transmission oil pan (or plug if equipped) to allow transmission to drain.
- 13) After transmission is drained, reinstall the pan (or plug) and place a jack under the transmission.
- 14) Slightly raise transmission with jack, and remove transmission mount and cross member.
- 15) Disconnect oil cooler lines, and remove filler tube. Cover all cooler line openings.
- 16) Secure the transmission to the transmission jack with safety straps or chains.
- 17) Remove all remaining transmission-to-engine bolts and torque converter bolts.
- 18) Move transmission rearward approx. 1 to 3 inches and slightly down.
- 19) Install a small C-Clamp or other holding device, to hold torque converter in place while removing the transmission.

- 20) Do not remove the transmission all the way, only a few inches (1 to 3) at a time. Check to make sure everything is disconnected and clear.
- 21) If everything is clear, slowly lower transmission while moving rearward until you are sure everything is clear of all hanging parts and wiring harnesses. Pulling on wiring harnesses can damage wires.
- 22) Once transmission is removed from vehicle, remove the torque converter holding device, and remove the torque converter from the transmission.
- 23) Now is a good time to drain the old torque converter core, so you can ship it back to us at ATS.

## Inventory

- 1) Check your shipment with the invoice, make sure there is no damage, and all of your shipment is there.
- 2) Check your transmission to the one you received. Make sure the cases are the same, bolt holes, positions for mounts or brackets are there and transmission electrical connectors are the same.
- 3) To help you with your new transmission, it has been dyno tested for all pressures and functions.
- 4) This packet also includes your warranty papers, a copy of your invoice, and your test result sheet. Retain these papers for your records; if you have any trouble you will need them.

## Pre-Installation

- 1) Raise and support vehicle if not already done. Make sure shift lever is in neutral and negative battery terminals are disconnected.
- 2) Uncover cooler line ends and flush your transmission's oil cooler system; this is a very important part of your installation. Good cooler flow rate with all contamination removed is a must! After cooler has been flushed, re-cover cooler lines to keep all dirt out of lines.
- 3) Inspect the flex plate, back of engine block, dowel pins (make sure dowel pins are in block and in good condition), cooler lines and fittings.
- 4) Check all brackets, wiring harnesses, and any switches.
- 5) Check for frayed wires, cracked connectors, and loose wire terminals in the connectors.
- 6) Check all hoses, cables, shift linkage, drive shaft and u-joints for any damage.
- 7) Repair or replace all parts at this time. Doing so now will save you time, labor, and money.
- 8) Inspect filler tube for any damage, and then install o-ring or boot for filler tube. Make sure tube is in its proper place for installation.
- 9) Again, make sure your transmission oil cooler system is flushed at this time. If you have not done it yet, do so now. This is very important for proper operation and life of your transmission!

**Note:** If you suspect contamination and/or partial blockage, replace the transmission cooler. Also, check for crimped or damaged lines. Some coolers have check valves in the lines or coolers. If you have trouble flushing one way, try reversing the lines and flushing the other way.

## Installation

- 1) Get someone to help you remove the transmission from the pallet and set it on a transmission jack. (Make sure to remove the pump lug if present.) Secure the transmission to the jack with safety straps or chains.
- 2) Install torque converter onto transmission input shaft.
- 3) When installing torque converter, hold pilot or use two long bolts that fit the threads on the face of the converter, and turn converter as you lightly push in. You will hear or feel 3 clicks as the converter splines into each one of its positions.

- 4) Ensure torque converter is fully seated by measuring distance from engine block surface on transmission bell housing to front edge on torque converter.
- 5) You can use a small C-clamp or other holding device on the edge of transmission bell housing to secure the torque converter in place.
- 6) Make sure all wires, cables, brackets, and anything else, are clear between the transmission and engine block.
- 7) Lift transmission into place and align with back of engine block, remove holding device for torque converter, and slide transmission up to dowel pins. Install 2 of the bell housing bolts close to where the dowel pins are, and slide the rest of the way forward. (Do not use bolts to draw the transmission up to the engine. This can damage both transmission pump and torque converter).
- 8) Make sure you check the bell housing and engine block area for any pinched wires or brackets between transmission and engine block before tightening up bolts.
- 9) When transmission is up to engine block, use fingers to tighten the two bell housing bolts. You may need to install one of the top bell housing bolts if transmission is not squared up to block.
- 10) Check the torque converter for movement (rotates or turns) before you tighten the bell housing bolts to specifications (45 ft. lb). After bolts are tightened, recheck torque converter for movement.  
**Note:** If torque converter does not move, it is not installed into the pump properly. Remove transmission (using holding device for torque converter) from vehicle. Remove holding device and check to make sure torque converter turns in pump okay. Remove torque converter from transmission and inspect for damage to hub. If everything is okay, return to step number 3 and start over.
- 11) Make sure to use the proper length and number of bolts for your Five Star Torque Converter. They are provided with your shipment. Use either red or green thread locker on the bolts when you install them.
- 12) Install torque converter bolts and tighten to specifications (35 ft. lb.).
- 13) Install torque converter cover, the starter, and tighten.
- 14) Remove cooler line covers and install lines onto transmission.
- 15) Install any switches, wiring harnesses, brackets and any heat shields. All shields and brackets that came off transmission must be reinstalled. Install all wiring harnesses, clips and brackets. These are very important parts; please take the time to install them. It will save time and lots of money later.
- 16) Install transfer-case if your vehicle is a 4WD model.
- 17) Install any wiring harnesses, cables, linkages, brackets and braces on transfer case.
- 18) Install cross member, drive shaft (using your reassembly reference marks), and all other parts.
- 19) After all parts are installed, go back and check all your work. Make sure all bolts, brackets, braces, wiring harnesses, heat shields, and cables are right and tight!
- 20) Install any exhaust, exhaust brackets, and skid plates (if equipped), and tighten.
- 21) Install ATS Co-Pilot or Commander at this time, if you ordered it with your transmission and torque converter. (There should be an installation and operation packet with your new Co-Pilot or Commander.)
- 22) Lower the vehicle, put shift lever into park position, and rock vehicle forward and backward to make sure the park holds. Adjust as necessary to make sure it will hold.
- 23) Reactivate air bag system (if equipped) with extreme caution, using the proper procedure.
- 24) Reinstall the negative battery cables.

### **Filling Transmission**

- 1) You are now ready to fill the transmission. Amounts will depend on transmission type and pan size.

- 2) Start with the engine off and vehicle in park. Install the recommended starting amount of ATF.
- 3) Once minimum amount (start amount) of fluid is in the transmission, start engine and start installing the rest of the fluid, checking under the vehicle for leaks as you go. If you see any leaks stop, find the source of the leak, and repair as needed.
- 4) When  $\frac{3}{4}$  of the fluid is in the transmission, start checking the level as you go. Do not overfill.
- 5) When transmission reaches the top full mark, shift transmission through the gears one at a time, from park to low and then back again (3 complete times). Recheck fluid again and add as needed to top full mark.
- 6) Recheck for leaks.
- 7) Shut off your vehicle and install pressure gauges to the proper pressure ports. Refer to the warranty packet for needed pressure taps and tests, and follow all the instructions for pressure tests. This is needed for your warranty and any Technical Support.
- 8) Once all tests are done and your results are recorded, you can remove the gauges.
- 9) If any of the tests are out of range, please call for Technical Support. We want to help make this as easy as possible for you.
- 10) Clean oil residues from the transmission and all frame areas.
- 11) Start vehicle, run through the gears again (park to low and back, one gear at a time) and check the fluid level.
- 12) If okay you are now ready to test-drive your vehicle.

### **Test Drive**

- 1) Record all actions of the transmission that you may think are wrong, and any codes that are set during the test drive.
- 2) First thing you will need to check, if equipped with our ATS Co-Pilot or Commander, is that it is turned OFF.
- 3) Next, is reverse. Back vehicle up, and make sure it will hold without slipping. Use a heavy throttle if possible. If you have any problems with reverse, you will need to first check the shift linkage, making sure all wiring harnesses are connected, and that the manual lever position sensor (MLPS) is adjusted properly.
- 4) If reverse is okay, go to low gear and move the shifter up through each gear while driving vehicle, making sure each one of the gears works in each position.
- 5) Test the park position again by rocking vehicle, or test on a hill or incline. Make sure the park position holds, and the vehicle does not roll.
- 6) If everything has checked out to this point, you can drive the vehicle in its normal drive position.
- 7) Next, turn Co-Pilot or Commander ON (if equipped) and test drive. Use several different settings, to make sure it is working ok.
- 8) If all these tests worked ok, recheck for leaks, recheck the transmission fluid level, and you're done.