This is a basic transmission R&R guide. Read completely before starting project. The safety measures outlined in any off-the-shelf DIY mechanics manual should be observed before you proceed (ie. Jack stands, wheel chalks, etc) A specific manual for your vehicle will have more in depth R&R instructions than provided here. If not using a lift, attempt to create 20"-25" from ground to subframe so trans will slid out to side.

DRAIN

Traditional Method: Position drain-pan to rear of transmission pan. Remove pan bolts starting at the rear, up both sides to the point fluid starts to drain from the loosened pan. Once stopped draining, carefully continue to remove all pan bolts and bring pan down towards your drain-pan. No loose objects should be in pan.

Alt Method: Remove return coolant line (AOD-Bottom Line, AODE/4R-Top line) from trans – place a short section of hose onto line draining to catch pan. Start the engine. This will pump 80% of the fluid out of the trans and is often less messy. Kill the engine as soon as you see the stream has stopped. Wait a few minutes and repeat. The transmission is now empty enough to remove.

Dispose of fluid in environmentally responsible manner

DRIVESHAFT REMOVAL

Use a chalk marker or scribe to index the DS flange to the pinion before removing the DS. Replace the DS back in this same position for assembly. (Ford uses 12mm 12 point head bolts on many applications)

EXHUAST REMOVAL

This is often the most frustrating and time consuming part of the R&R. Examine how the exhaust is installed and how it mush of the system must be removed (if any) before you proceed. A shot of lubricant on thread points before the job is suggested – especially O2 sensors.

1) Disconnect from tail section
2) Disconnect O2 sensors, or, Remove O2 sensors (TIP: If you must remove sensors AND are replacing with new – break sensor in half with hammer – often easier than trying to remove. You can pull the guts after midpipe is removed.
3) Remove collector nuts.
4) Cut smog piping out of your way so that it can be easily reconnected it with High heat rubber tubing.

MISC TRANS REMOVAL

1) Disconnect battery
2) Tape off ext housing to prevent fluid leak
3) 2 bolt starter remove – 3 bolt starter requires extension from front of K-member. Often can remain wired and pushed aside
4) Flexplate shield
5) Torque converter nuts – use socket on front pulley to rotate engine
6) Disconnect neutral safety sensor (at manual lever)
7) Speedo cable/wires
8) TV cable/shifter cable
9) Coolant lines from case
10) Dip stick tube (attached with bellhousing bolt)

9 *and 10 may be easier after crossmember removal*

There are 6 large bolts now holding the bell to the engine, and often some small bolts.

11) Use a jack under the pan to support the weight of the trans
12) Remove rear crossmember
13) Lower jack (pivot the motor/tranny down) *if you have solid motor mounts they should be loosened.*
    9 and 10 from list above
14) Remove bellhousing bolts (2 bottom, 2 top) – leave 2 middle of the easiest to access finger tight
15) Jack back up to flat position – steady the trans - remove the last 2 bolts. Pull away from engine making sure the converter is following. *Weight balance is about 3" back from the front of the pan.*

INSTALATION REQUIRMENTS:

Trans Cooler Cleaner
12X QUARTS OF FLUID
BOTTLE OF LUBGUARD* RED OR BLACK
see fluid note below**

OPTIONAL INSTALATION REQUIRMENTS:

LOCKTIGHT BLUE
REAR MAIN SEAL (ENGINE)
0-100 PSI OIL PRESSURE GUAGE, 1/8 NPT MALE FITTING

INSTALLATION PREP
Remove the flexplate and replace the rear main seal while you can! Torque the flexplate bolts properly and use Loctite. Try to mark how the flexplate installs, so it will be easy to install it – it only goes on ONE WAY, so don't force any bolts. *This step is optional*

Note any brackets, levers, bolts, speedo sensors, etc on the old trans that will need to be swapped over to the new trans.

ALIGNMENT DOWLS
Alignment dowels are not provided by SPT, however can be on request. Dowels typically stay in the engine block, often they will stick in the bellhousing. Drive out with dowl, reinstall in block

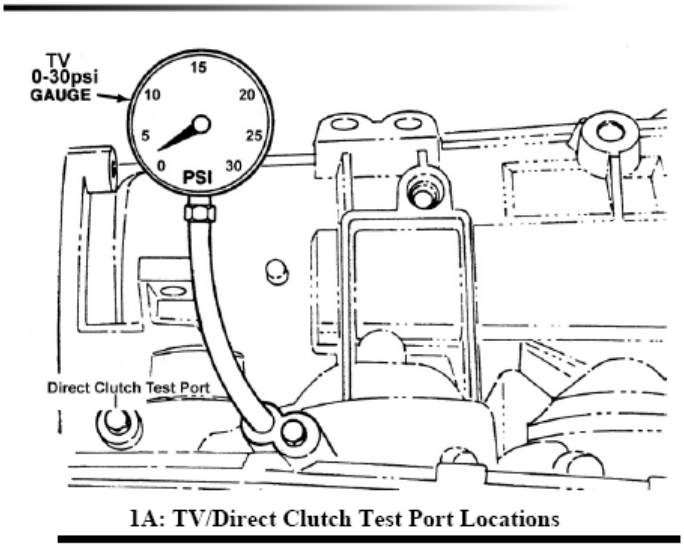
COOLER & COOLANT LINES
AOD: Top fitting is HOT out, Bottom fitting is COOL in.
AODE/4R70W: Top fitting is COOL in, Bottom fitting is HOT out.
IMPORTANT: Make sure to flush your trans cooler!!! Unmaintenanced cooling system will destroy a new trans. KOOLER KLEAN or other similar cooler cleansing aerosol can found at any auto parts store.

TORQUE CONVERTER
New Converter – fill converter with 1 quart of fluid you will use.
Used Converter – Have professionally flushed. OR, slosh paint thinner around inside the TC and drain repeatedly until drains clear. ADD ONE QUART OF ATF to the converter before trans installation.
IMPORTANT: Install converter to transmission. Seating procedures: **3 clunks for AOD** - three shafts to engage. You will know when you hit the last one (tough one). **The torque converter bolt lands will be 1" from the outer bell for double measure (using straight edge across bell).**

TRANS INSTALLATION
1) Lift trans to block
2) Line up with dowls, line up converter with flexplate holes.
If converter has drainplug be sure access hole is lined up in flexplate
3) Shove it all in place – adjust motor angle if need be with wood blocks under oil pan
4) Once the TC bolts are through, put the middle tranny mount bolts in, tighten them snug
IMPORTANT: Clearance the converter. Pull and push on the TC studs and make sure the TC is LOOSE in the flex plate - you should be able to WITH EASE move the TC in and out against the flex plate - this is a must, and tells you that the TC is installed correctly and not bound up. You need 1/8" to 3/16" of clearance to flex. If it does not do this - you may not have the TC seated properly - and will destroy the front pump with one key turn.
5) Reverse removal process. **DON"T forget the dipstick tube and bellhousing bolt**
6) Use NEW converter nuts/bolts, 25-35 ft lbs, use removable Loctite

Notice how I explained 3 ways to ensure the TC is engaged correctly. There is a reason!

FILL ***Note fluid recommendations below
1) Add 4 quarts to trans before starting engine - observe for leaks.
2) Start engine and add 3 quarts as fast as you can – observe for leaks
3) Before topping off, sit in car and place shifter into each gear – return to park and top
off trans. It is common for the trans to act funny during the fill cycle…don't mind this.
4) Fill your trans up to the TOP of the hatch-marks.

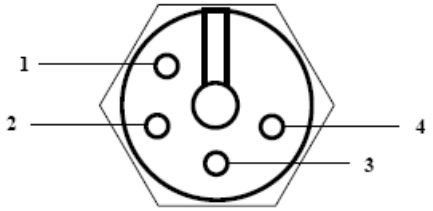


1A: TV/Direct Clutch Test Port Locations

AOD TV PRESSURE SETTING
With SPT valve bodies, it is safe to set the TV pressure so there is no slack at idle
1) On a stock VB or any shift kit modified VB I recommend 5-11 psi at idle or @ 1000 RPM - hot.
2) With gauge tool – install in throttle linkage (5/16" rod in throttle stop) set pressure to 35 psi – hot
3) WOT TV should be around 90 psi

If you do not have a cable and need a professional to help - as default setting I suggest fixing the TV lever on the trans as full motion and see your nearest professional.

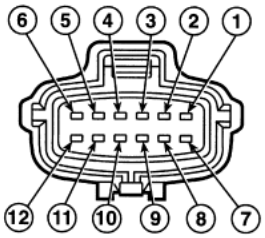
AOD Neutral Safety / Reverse Switch Wiring



(Top view of Neutral Safety switch)

Pin Number	Circuit Function
1 & 2	Reverse lights
3 & 4	Crank Only (Park and Neutral)

DIGITAL TRANSMISSION RANGE (DTR) SENSOR



VEHICLE HARNESS CONNECTOR

Pin No.	Function
1	Not Used
2	SIGRTN
3	TR3A
4	TR1
5	TR2
6	TR4
7	GROUND
8	NEUTRAL
9	PWR Feed
10	STR CNTRL
11	BACK-UP
12	STR to INT

TB-4

4R70W MLPS: 1998+
pins 12/10 are PARK/N and 11/9 are Reverse lights

SHIFTER CABLE ADJUSTMENT
Best results for proper adjustment start with lining the in cabin shifter with the OD or 3rd detent, and the manual lever of the transmission in the 3rd detent back from PARK position (if lever points down, 3rd click back/If lever points up, 3rd click from rear). This is the middle of the range and most critical detent to be adjusted for life of trans. DO NOT attempt to drive vehicle if the PARK PAWL does not engage in the PARK position or if the OD detent does not line up. The ratio of throw of the shifter and the lever must be correct. **NOTE – Use of B&M hammer shifters will void warranty**

TEST DRIVE
Let the engine reach operating temp to allow clutches time to saturate.
There is no “break in” procedure. Make sure it shifts through each gear. Often OD will not shift until 45-50 mph.
If any anomalies are present and repeatable, contact me ASAP

SERVICE / WARRANTY
A WARRENTY is provided and if not included please contact SPT.

FLUID
I recommend a quality/premium Type F with a bottle of Lubegard RED is all applications.
For more high performance use I suggest the use of John Deere Hygard LOW viscosity PN# TY22000 with a bottle of Lubegard.Transmission Protectant (RED bottle): http://www.lubegard.com/~/C-112/LUBEGARD+Automatic+Transmission+Fluid+Protectant
HyGuard: TY22000 gal, TY6342 qt
https://jdparts.deere.com/partsmkt/document/english/pmac/4968_fb_HyGardsTransmissionHydraulic.htm

Fluid Change Interval
Take care of your transmission. Change the fluid every 12,000 miles, or any time it has sustained over 270* for extended time.

Transmission Temp
Transmissions like 170* F, anything over 270*F for prolong period of time will degrade the fluid. Temp sensors should be located in the pan for best reading. Cool return line is the coolest temp, HOT OUT is the hottest your transmission ever sees.

DAN GILSDORF
Silverfox Performance Transmission
816-365-6215
18212 S Walker Est Rd
PLEASANT HILL MO 64080