

# 6L80-TOW&PRO

Fits: 2006-on 6L45 thru 6L90 Patent # 20230228303 A1



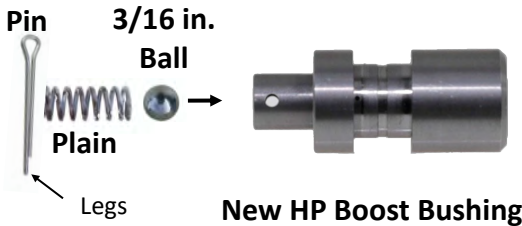
This kit maintains factory shift feel at light to medium throttle & gets progressively firmer above 1/2 to WOT by reworking the 2-6, 3-5-R & 4-5-6 clutch regulator and boost valves along with a new HP main boost bushing and valve.

This kit alone produces firmer, faster and cleaner shifts with increased holding capacity without adding any bumps, clangs or bangs. Perfect for work trucks & performance.

This kit & some simple TEHCM software tuning of the shift time tables using HP Tuners or EFI live, can produce 1-2 & 2-3 hard throttle tire chirping shifts that will bring a smile to your face. See TEHCM tuning pages.

**A MUST READ:** This kits was developed & tested in several vehicles stock & modified, V6 & V8 Camaros, Tahoe's, work trucks & one very fast blown 5.3 short bed with just over 500 RWHP. We used OEM clutch plates & counts, kept all the wave plates, used OEM clutch clearances and loved the way they worked. No bind-ups bangs or clangs or any hint that clutch capacity was lacking. For applications and power levels listed above adding clutch plates & removing wave plates or reducing clutch clearances is not recommended & can lead to bind-ups bangs or clangs. See additional info pages for clutch clearances.

## Cotter



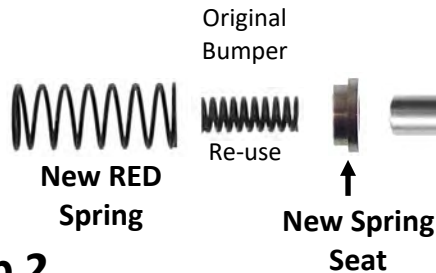
## Step 1.

Assemble EPC Relief 3/16" ball & Plain Spring into **New HP Bushing** & Spread the Cotter Pin legs.

**New HP Boost Bushing & EPC Relief Assy. Assembled**



**New HP Boost Valve**



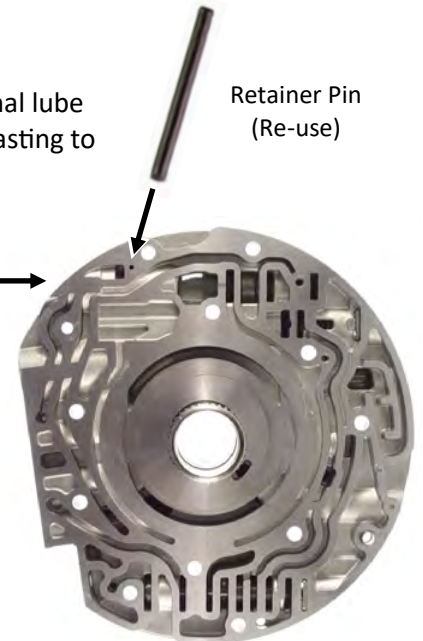
## Tech Note:

This land is purposely undersized for additional lube flow. This helps prevent engine chug while coasting to a stop, when hot.

## Step 2.

Remove & discard original Retainer, PR Valve & **LARGE** PR Spring. Assemble **New Spring Seat** on **New TransGo® PR Valve** as shown above and insert into Pump. Re-use original bumper Spring with **New RED PR Spring**, then install **New Boost Valve** into **New Boost Bushing Assy** & re-use original retainer pin.

The Original Bumper Spring & The **NEW RED PR SPRING** MUST BE USED WITH THE **NEW TransGo® PR VALVE**.



# Rotating Pump Ring Installation

**Read this:** If your pump stator's ring groove area is made of **steel and uses rotating rings**, then installing our **NEW** design sealing rings and expander wires will fix the leaky ring issue with those stators and therefore updating the stator to the non rotating ring type stator is not required.

Do not use the new rings on **aluminum** ring grooves!

**3 Each Provided**

Cut Ends

Use cold assembly Gel to hold rings in place.

**Tip: Do this just before installing pump!**

Expander Wire installs first.

Install cut end of rings away from the ends of expander wires.

No Locking Notches

**If you come across an early *aluminum* ring groove stator WITH rotating rings, **Do Not Use** the rings and expanders supplied in this kit!**

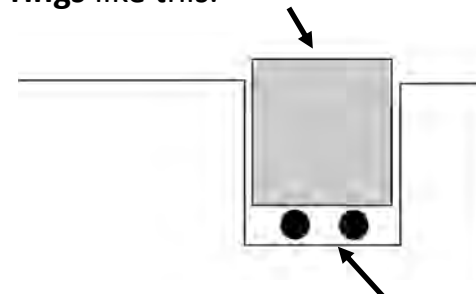
## New Rings only FIT Stator's WITHOUT Locking Notches!

Has Locking Notches

Locking Type Rings (Re-use)

**Our Rings DO NOT FIT a STATOR with Locking Notches. Re-Use Original Rings.**

**Step 2.** Put some cold assembly Gel into each ring groove, then install the **New Sealing rings** like this.



**Step 1.** Install **Expander Wire** in bottom of ring groove **FIRST!** Make **SURE** wire ends do not cross over each other. They should lay side by side.

Original Solenoid Reg

### Step 1.

Remove and discard original Solenoid Regulator Valve, Spring & Retainer.

Clean bore & New parts, Install **NEW Bushing, Valve, White Spring, Spacer & Gold Retainer** as shown. Depending on bore condition, you may need to *Gently* tap the bushing into place. That's ok.

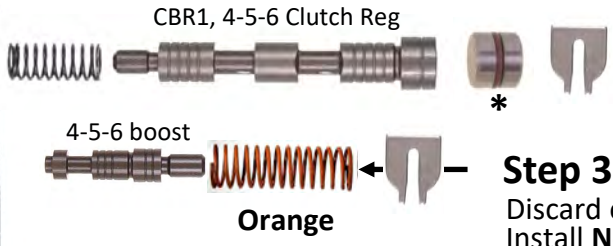
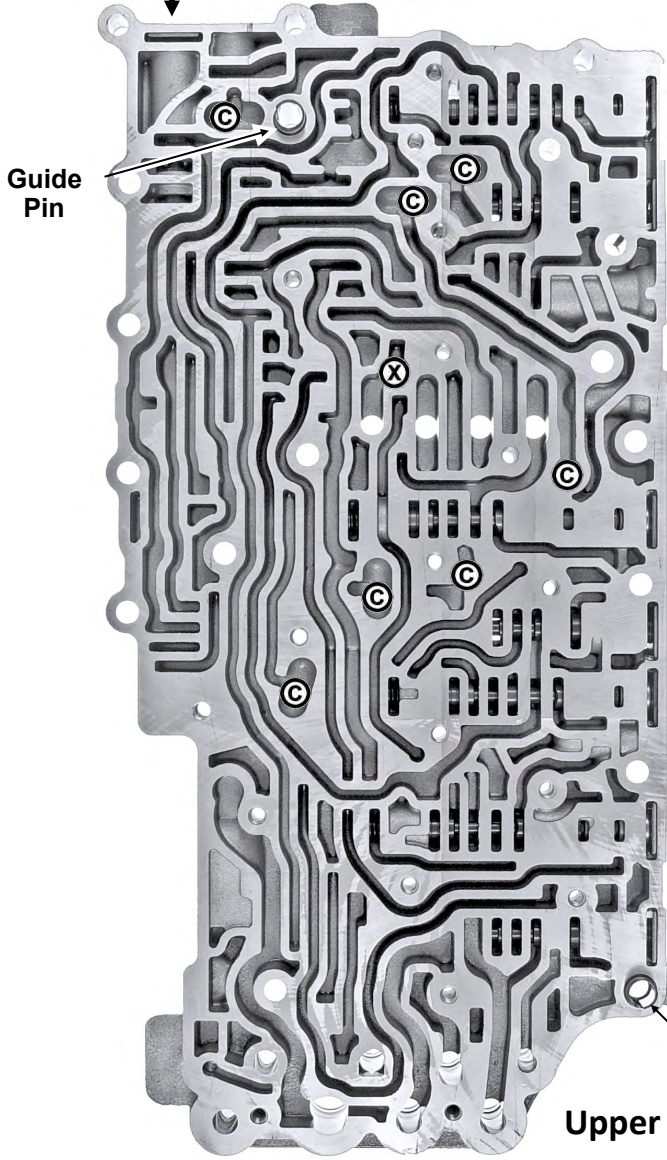


### Step 2. \*

As you are assembling all 4 clutch reg valves, Replace all end plugs with the **New end plugs provided that use O-rings**. Lube new O-rings before installing them into the groove in new plugs. The remaining two plugs & O-rings are for page 4.

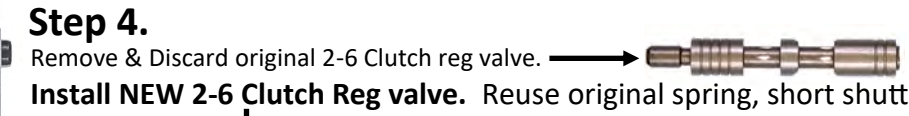


Grind top if retainer is too tall for your casting!



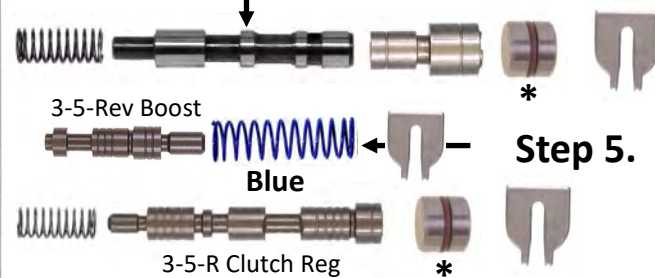
### Step 3.

Discard original 4-5-6 boost Spring. Install **New Orange** spring.



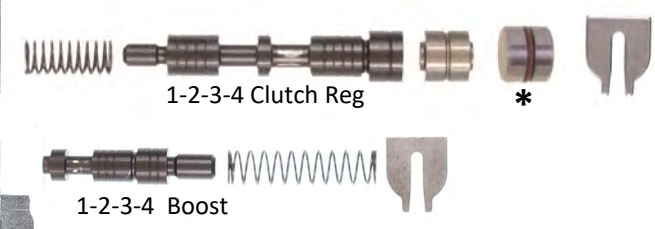
### Step 4.

Remove & Discard original 2-6 Clutch reg valve. Install **NEW 2-6 Clutch Reg valve**. Reuse original spring, short shuttle valve & retainer.



### Step 5.

Discard original 3-5-R boost spring. Install **New BLUE** spring



### MEASURE CHECKBALLS!

No forward or Reverse can be undersized Check-balls!

Ⓢ = 7 .250 Check

Ⓧ = Late VB's have an extra .250 ball at this location.

See page 5 step 2 for Plate ID



# Lower VB Repair

## Step 1.

Discard original clutch select valves and end plugs. Save the springs. When installing the new select valves hold the valve body in the vertical position, let the valve drop into the bore. The valve should bounce off the bottom of the bore. The bounce tells you it's free. **Read step 2 for spring selection.**

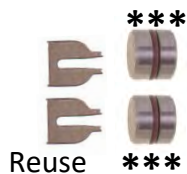
Discard Original TCC Regulator & Spring.



## Step 3.

Remove and Discard original TCC Regulator & Spring. **Install new White Spring and New TCC regulator Valve.** Re-use original Shuttle valve, end plug & retainer.

### New O-ringed End plugs

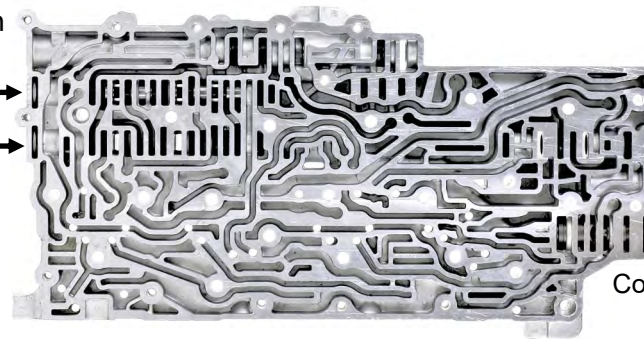


All Models: Install New Steel Clutch Select Valves

Original Or New Black Springs?



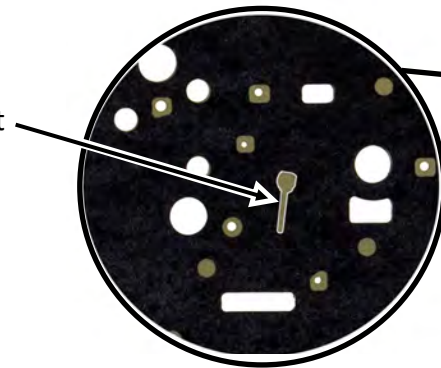
### Lower Body



Compensator Feed Regulator- No changes. Just clean and reinstall as shown.

## Step 2.

All models: If this separator plate gasket you are using (bonded or not) has this slot discard original clutch select valve springs and use the **NEW Black Springs provided.** Gasket without this slot reuse original springs. Install **New Select Valves**, springs then Lube new O-rings before installing them into the grooves in new plugs, install **o-ringed end plugs** and reuse retainers.



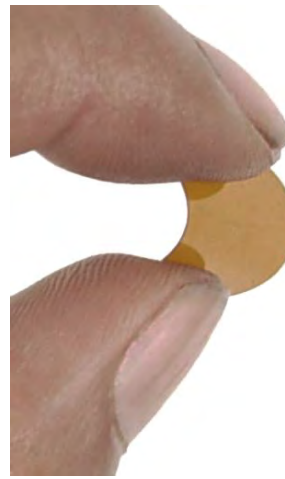
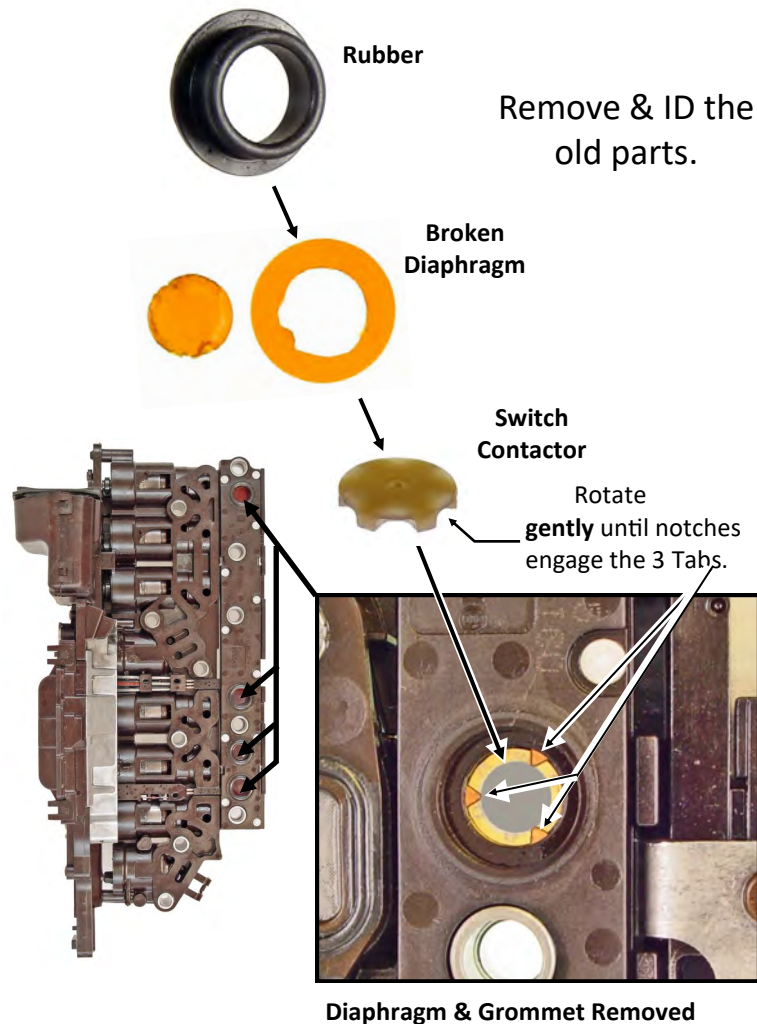
### Clutch Select Valve Sticky in the Bore?

Move valve to tight spot in bore. Place screw driver tip against the valve **between** the lands. Whack screw driver with 5/8" wrench. Re-check. Valve **MUST** be totally free before you install springs, plugs & retainers.

# TEHCM Pressure Switch Repair

Often this trans experiences a drum or clutch piston failure often due to a Pressure malfunction. Typically, at least 2 of the 4 pressure switches in the assembly **will also be blown out** as shown below. **Your choice** is to **repair the TEHCM** with this kit or **replace it** with a new TEHCM from the dealer & have it programmed. \$\$\$!

We have provided the parts you need to **repair** the pressure switches. It does take a bit of talent but mostly **PATIENCE** to get it done. Many techs have performed this task with great success but it's **your choice**. You need only repair the switches that are damaged.



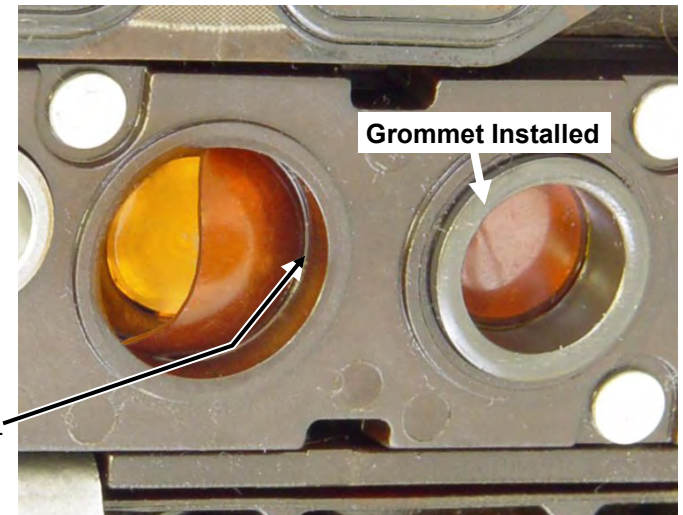
Pinching Diaphragm for installation.

## Testing switches:

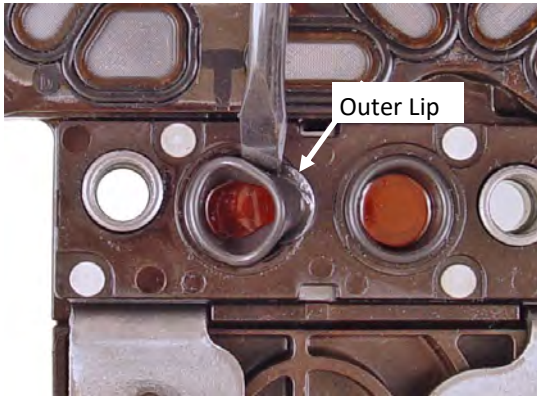
Using a flat washer and a rubber tip blow gun, place the flat washer over the rubber grommet and insert the blow gun tip into the center of the washer. Air check each switch that is not visibly damaged and make sure they hold air. **If they do**, leave them alone!

If they don't, or you see they are visibly damaged, remove the rubber grommet, the damaged diaphragm and insure the switch contactor is in place. Pushing on the switch contactor, you should **feel** a noticeable click as you release pressure off the contactor.

Take one of the new diaphragms, gently pinch the diaphragm into the shape of an upside down taco shell. Insert it as shown below into the switch hole making sure you guide it under the lip of the plastic. Using a small **flat-blade** screwdriver, work the rest of the diaphragm into the hole until it lays flat on the switch contactor. You may use a pencil eraser to move it left or right till it drops in place. **Continue on next**

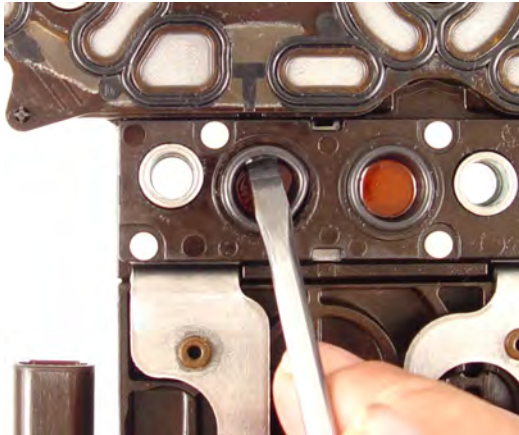






**A Small Flat Blade**  
screwdriver works best  
for doing this!

Pinch the Grommet to start the outer lip under the plastic.  
Work the outer lip under plastic with a small screwdriver.



Use the small screwdriver to push behind the outer lip  
(from the inside) to wedge it under the plastic.



You may have to pull the top of the grommet back slightly to  
make sure the lip is going under the plastic.

## Rubber Grommet Installation

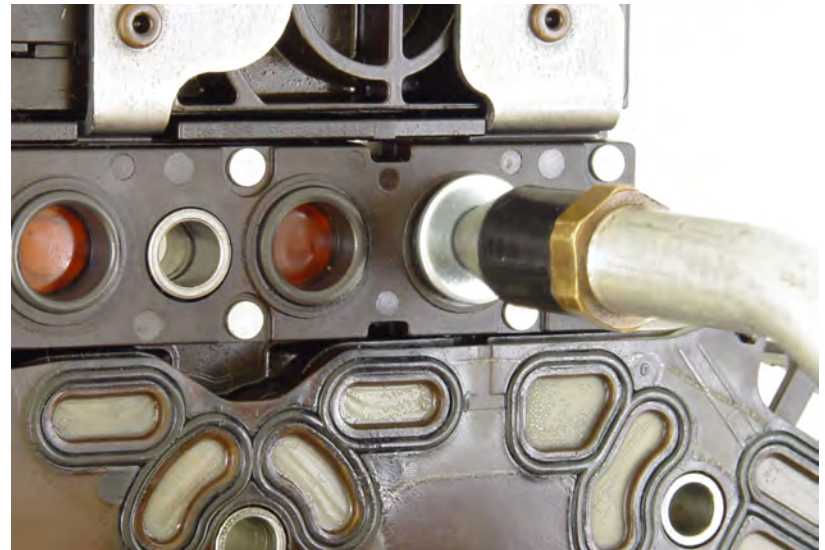
Installing the grommet is done by **patiently coaxing it** into position. You **must** get the **outer lip** of the grommet to go **under** the plastic housing. This is what seals the switch. Lube the grommet & diaphragm with 90w gear oil or something equally as slippery. Treat this just like you would a small child– with patience! The first one is always about getting the knack of doing it. Be successful and you'll be putting cash in your pocket for each TEHCM you didn't have to buy new & then program.

## Final Testing

Using a flat washer on the rubber tip of a good blow-gun, make sure the switch does not leak. It should seal tight. Do the air test with 30 psi. If it holds, it's ok. It will be too hard to hold the blow gun in place to use full shop air.

**Final test:** Use a pencil eraser to gently push into the center of the switch to feel the switch click as you let up on it. Use one of the other switches to compare.

The new grommets **will** be taller than old ones. It's OK!



# Optional TEHCM Tuning

## Street show-off options with HPtuners or EFI Live

Get 1-2 & 2-3 hard-throttle tire chirping shifts with simple computer tuning of shift time tables.  
(Must be used in conjunction with #6L80-TOW&PRO)



Use the QR code to watch the instructional videos using HPtuners software.

### Early: 2006-2009 trucks and 2010 Camaro

The screenshot shows the 'Transmission' software interface with the 'Shift Timing' tab selected. The window is divided into several sections for tuning parameters:

- Desired Shift Time:** A list of shift ranges (1-2 to 4-6) with a value of 0.2998 s for each.
- Torque Adder:** Divided into Normal, Special, and Transition Time sub-sections, each with a 3x3 grid of shift ranges (1-2, 2-3, 3-4) and buttons for 'Mult'.
- Desired Output Torque Factor:** Divided into Normal, Special, and Transition Time sub-sections, each with a 3x3 grid of shift ranges and 'Mult' buttons.
- Inertia Adder:** Divided into Normal and Special sub-sections, each with a 3x3 grid of shift ranges and 'Mult' buttons.

At the bottom, a status bar reads: [TCM] 5500 - Base Shift Time 1-2: Base desired shift time for 1-2 shift. -32 to 32 s

### Late: 2010-2020 trucks and 2011-2020 Camaro

The screenshot shows the 'Transmission' software interface with the 'Shift Timing' tab selected. The window is divided into several sections for tuning parameters:

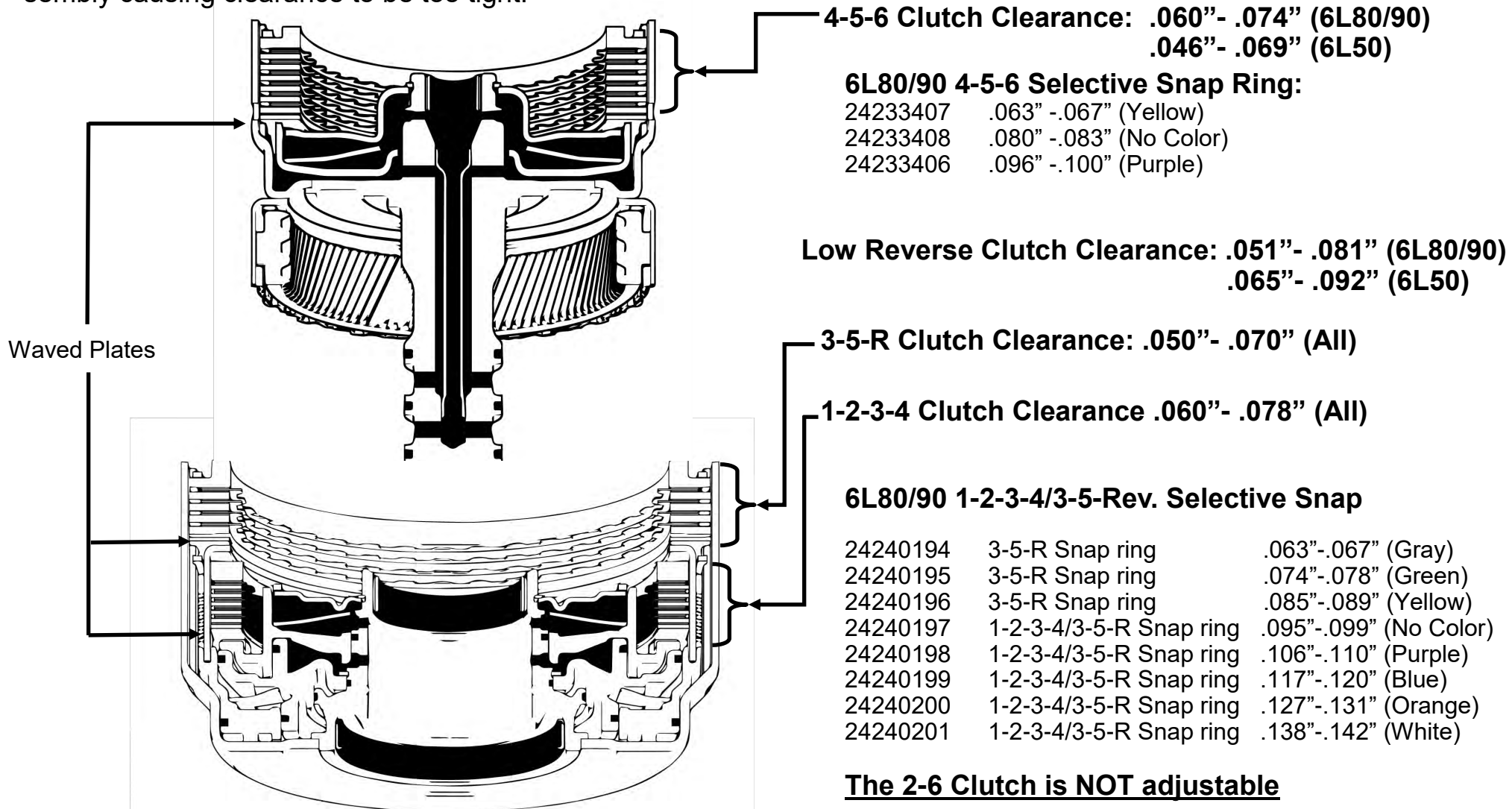
- Torque Adder:** Divided into Normal and Special sub-sections, each with a 3x3 grid of shift ranges (1-2, 2-3, 3-4) and buttons for 'Mult'.
- Transition Time:** Divided into Initial - Normal, Initial - Special, and Final - Normal sub-sections, each with a 3x3 grid of shift ranges and 'Mult' buttons.
- Desired Output Torque Factor:** Divided into Normal and Special sub-sections, each with a 3x3 grid of shift ranges and 'Mult' buttons.

At the bottom, a status bar reads: [TCM] 15761 - Shift Time Initial Transition Time % 1-2: Percent of desired shift time to transition from initial turbine acceleration to maximum turbine acceleration. -32 to 32 %

Screen shots above depict HPtuners Shift Timing tabs.



This transmission has a built in purge/cleaning process that pulses the solenoids after a key cycle, **Clutch Clearances are Extremely Critical** if the clutch clearance is too tight it will cause a chugging or binding sensation on the first shift after a key cycle. We have noticed that the 1-2-3-4 snap ring is usually thicker and can be mixed up with the 3-5-R snap ring during assembly causing clearance to be too tight.





# Valve Body Identification

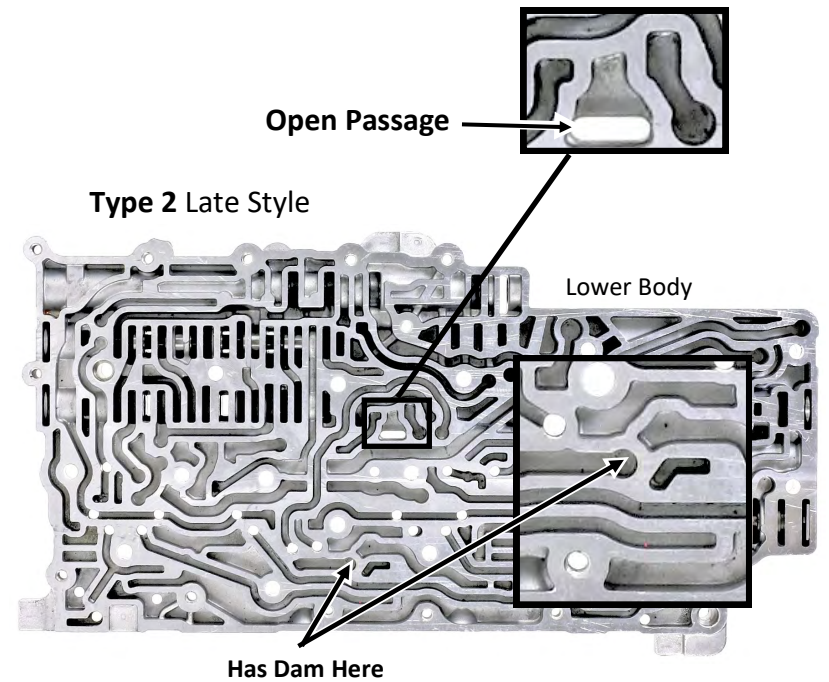
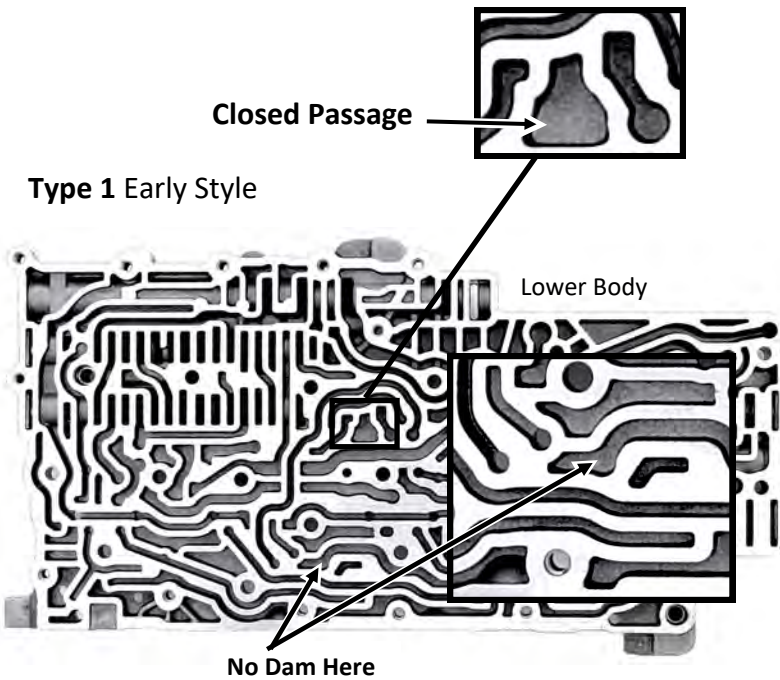
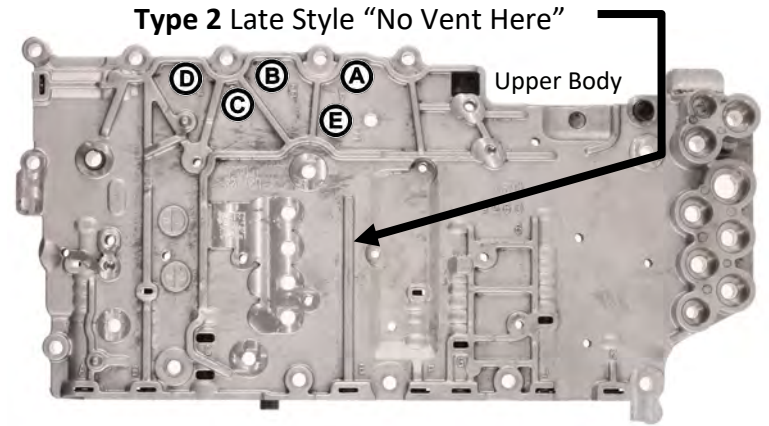
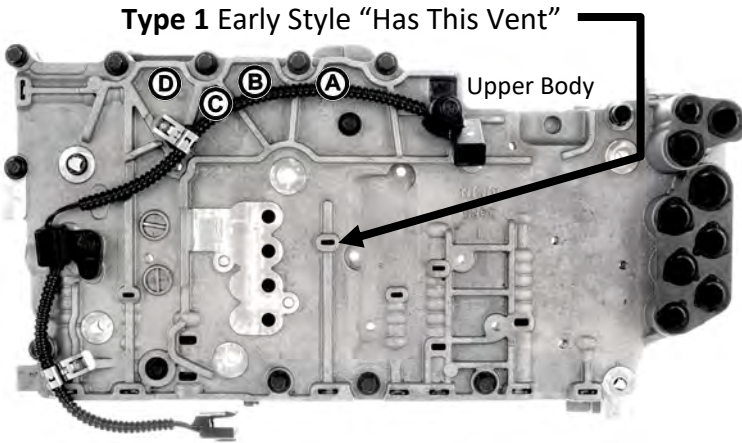
## Upper VB Trans Codes: Which boss is ground?

- A= MYA or 6L45
- B= MYB or 6L50
- C= MYC or 6L80
- D= MYD or 6L90
- E= Unlisted

("E" not casted on Type1)  
Note: Some Upper castings may not be ground.

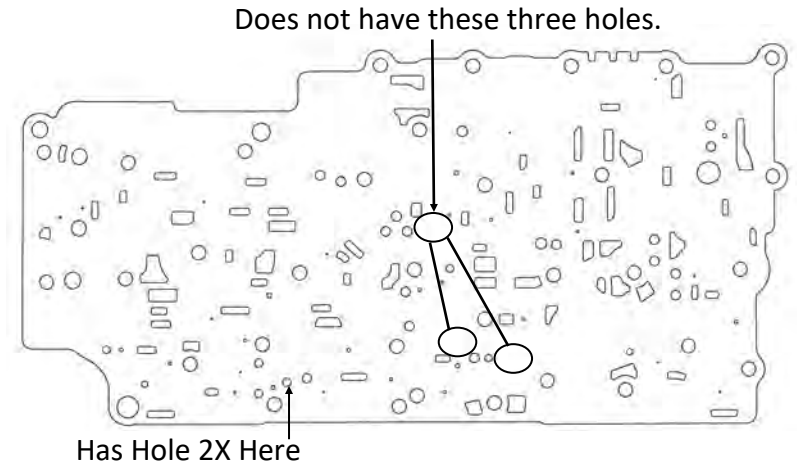
**Please, do not mix ANY parts between Type1 or Type 2!**

Keep in mind the **Upper VB's** are different for the various 6Lxx series of transmissions.  
(See codes above)

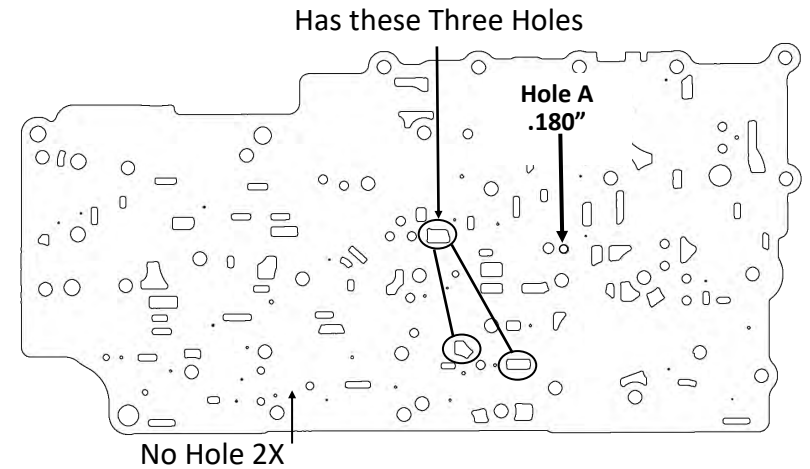


Torque VB Bolts 71 in-lb

**Type 1 Plate**  
 Used with Type 1 VB's  
 Does not have the 3 circled holes.  
 Has Hole 2X  
 Latest Replacement plate  
 For Type 1 VB's GM # 24245720  
 Install Check Balls 1-7

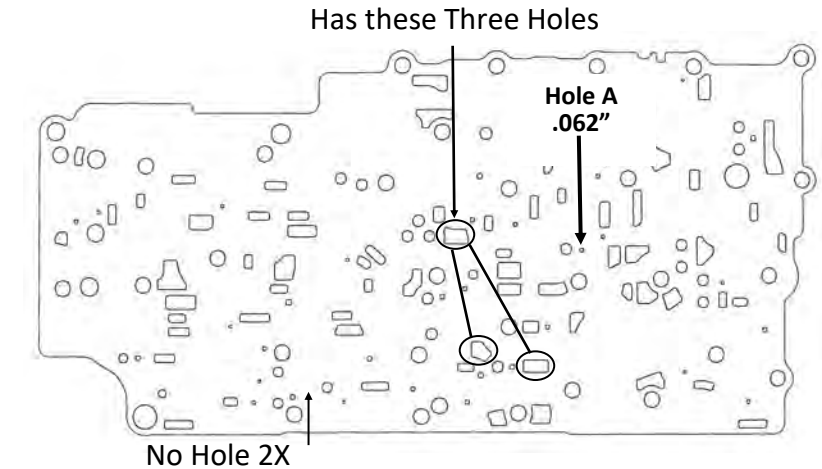


**Type 2 Plate, Version 1**  
 Used on Type 2 VB's thru 2013  
 Has the 3 circled holes & .180" feed hole A.  
 No Hole 2X  
 Install Check Balls 1-7  
 It is a good idea to update this Type 2  
 Version 1 plate to a Version 2 during repairs  
 and add the #8 check ball. Plates are cheap  
 and come with bonded gaskets.

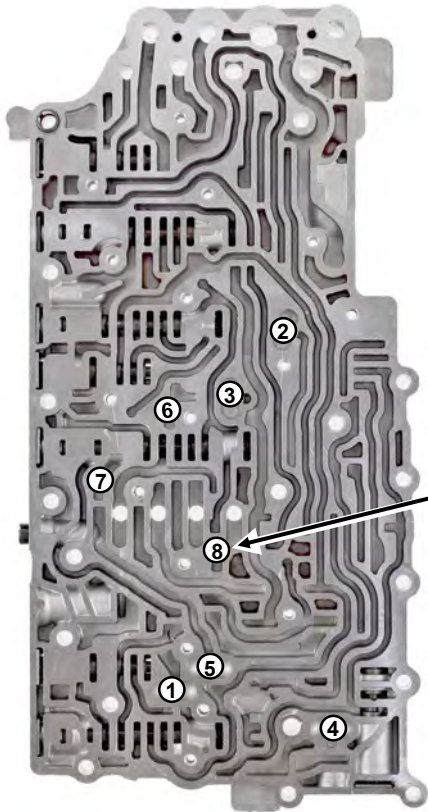


Always install #8 ball when using  
 GM Type 2 Version 2 plate.

**Type 2 Plate, Version 2.**  
 Used on Type 2 VB's 2014 up  
 Has the 3 circled holes & .062" feed hole A.  
 No Hole 2X  
 Install Check Balls 1-8  
 GM # 24272467



*Pay attention to #1 & #5 check balls. They wear  
 and will stick in the plate causing forward &  
 Reverse engagement concerns.*





**A Few GM & BMW's Mid Production Change over from Type 1 to Type 2**

**Used a hybrid combo as follows:**

Type 1 Upper VB

Unique Lower VB Has Open Passage but No Dam

This VB can be found with two different plates.

Type 1 plate: Plate has 2X hole, **No wedge hole** and no lower holes.  
(Can use updated plate # #24245720)

Unique Plate Has 2X hole & **Has wedge hole**, does not have lower holes,  
no replacement plate available.

**Install balls 1-7**

**Mid Production Unique Plate**

May or May not have wedge shaped hole here.

