

# 400-Pro

## Heavy Duty & High Performance With “Class”

*This is a “Professional” product made for the experienced mechanic who is wanting to reach for perfection.*

This TransGo PRO Kit™ was a very intelligent decision. Your transmission will love you for it. This kit transforms a good working “stock” automatic transmission into a rugged, responsive, heavy duty, high performance unit.

The TransGo PRO Kit™ will more than double the life of your transmission under high load conditions. There’s no reason to lose precious efficiency with soft shifts that generate heat and consume horsepower.

TransGo brings automatic transmission performance out of the dark ages into the space age, in one giant step. Installed in your transmission, the TransGo PRO Kit™ recalibrates it to hi-performance specifications. It controls shift timing and “shift feel” for instant response and racing performance.

### UPSHIFTS

How much time a shift takes from when the valve moves until the shift is completed is a prime and critical function. It’s the most important thing to be considered and adjusted. A too-short shift creates a bang an audible noise and chirps tires. That’s great for showing off, if that is what your customer wants. However, a too-firm shift may not be the best choice for uses that call for long term performance, drivability, economy, and durability.

A too-short shift attracts rough shift complaints. A too-long shift subtracts performance, drivability, economy, durability, and attracts complaints of slip, slide, runaway, or slide-bump.

A perfect gear shift has no “feelable” features to talk about, except how long or short it is. Anything else you could say about a shift, other than the engine slows down and the car speeds up, would be describing something less than perfection.

### SOFT AND FIRM

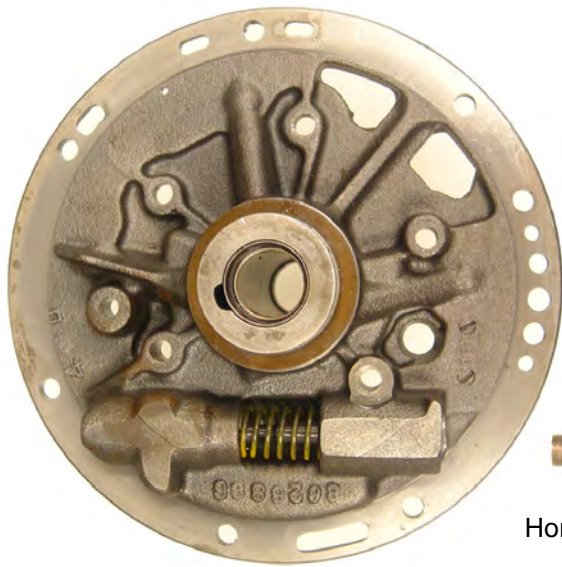
More than just engine power, the axle ratio, converter size and vehicle weight control shift softness/firmness. Even carb size effects the shift a great deal. Late shifts or over-revving will make the shift feel softer because there isn’t much engine torque left by the time the shift happens.

It is easy to get firm shifts in light vehicles with 3.42 or lower axle ratios. It is not in the cards to get really hard shifts in vehicles with 2.41 to 3.08 axles or with high-stall converters or huge tires.

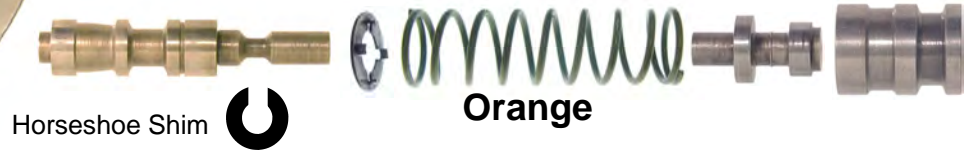
Parts and instructions needed to adjust shift firmness is included in this kit. The durability weakness in this trans (direct clutch) is corrected with a smart Pat’d dual feed delivery system that triples the holding power of the direct clutch.

**Thanks For Listening, Gil**





**1. Pressure Regulator**  
**ONLY install ORANGE spring with converters that stall over 4000 or with engines over 500 HP.** When using ORANGE spring discard any Horseshoe shims.



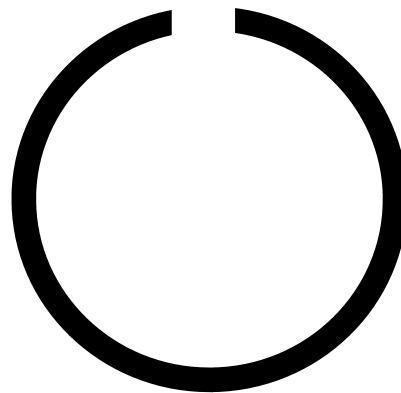
## DURING MAJOR REPAIR

**If trans is apart, items below will improve quality and durability:**

1. Install a **waved** plate in **all** the clutch packs, (Fwd,2nd, & direct) even if it didn't have them. This will reduce the light throttle clangs and bangs but still give short and firm shifts with hard throttle.
2. Hand sand or tumble 2nd and direct steel plates for fast break-in and cooler operation.
3. Use high quality frictions—OE type smooth tan Borg-Warner work great.
4. Install 2nd clutch snap ring included with this kit, to reduce risk of snap ring pop-out and broken case lugs. (Step 2 below).
5. Install direct clutch return springs furnished in this kit to reduce accidental clutch drag and burnout. (Step 3 below).

### 2. Heavy Duty Snap Ring:

Intermediate [2nd] pressure plate snap ring.  
 This is the last snap ring that installs in case.



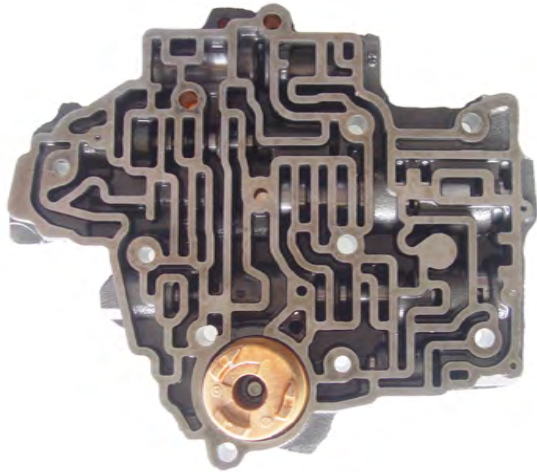
### 3. Direct Clutch—High Rate Return Springs:

Install ALL 16 new springs in direct clutch.  
 (When installing these springs it is not necessary to put any special bleed holes in the piston or drum unless engine RPM is to exceed 7500 RPM).

## Shift Command:

Installing the new 1-2 shift valve and the new plug gives "Shift Command" control of 1st gear. With this feature installed, the trans will not upshift in the manual "1" position, and will shift back to low gear whenever the lever is moved to the "1" position.

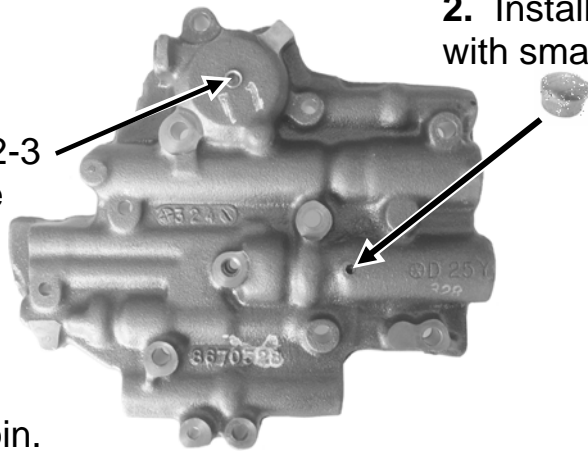
This means the trans will shift back to low at ANY speed when the "1" position is selected. If you do not want the back to low at any speed feature. **Skip steps 1 & 2**



1. Install the **NEW 1-2 Valve** that fits your Valve Body



2. Install **PLUG** with small hammer



3. Place valve body on bench with the 2-3 accumulator piston hanging out over the edge. Use 3/16 punch. Knock 2-3 pin straight down and out of valve body.

4. Install "E" clip on the new threaded pin. Install pin through new piston and ORANGE spring. Insert entire assembly into the bore make sure ring is in groove of piston. Install the nut and tighten. When 14 to 15 threads are sticking through the nut you will feel the pin bottom in its bore.

5. After tightening nut. Cut the threads off with a hacksaw, or grind the threads off with grinder. One or two threads left is okay.



"E" clip

Threaded Pin



Piston

Orange

Install Metal Ring

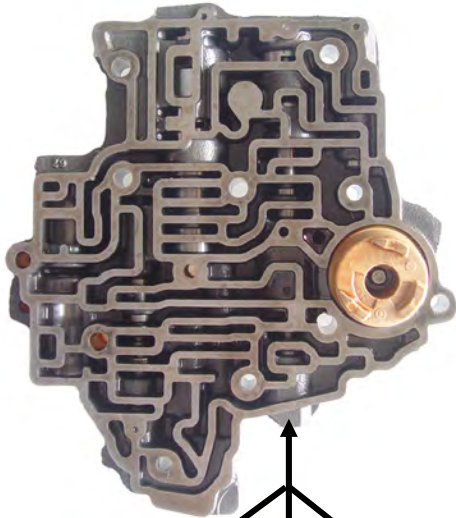


Nut

You are going to love this setup: With easy throttle the 2-3 will be comfortable. It will get shorter and firmer as you add throttle.

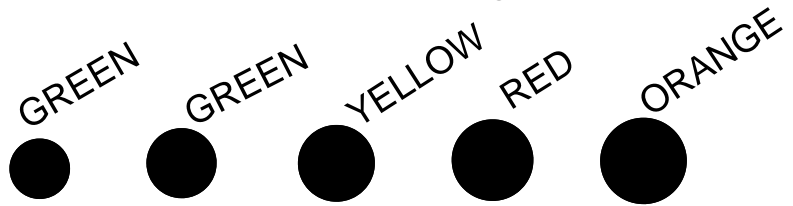
## 2nd Accumulator Valve: 1-2 Shift Feel

Install the springs recommended. Then make road test. If you then want to make the shift shorter or longer. Just drop the pan, remove the pin and change the outboard spring.

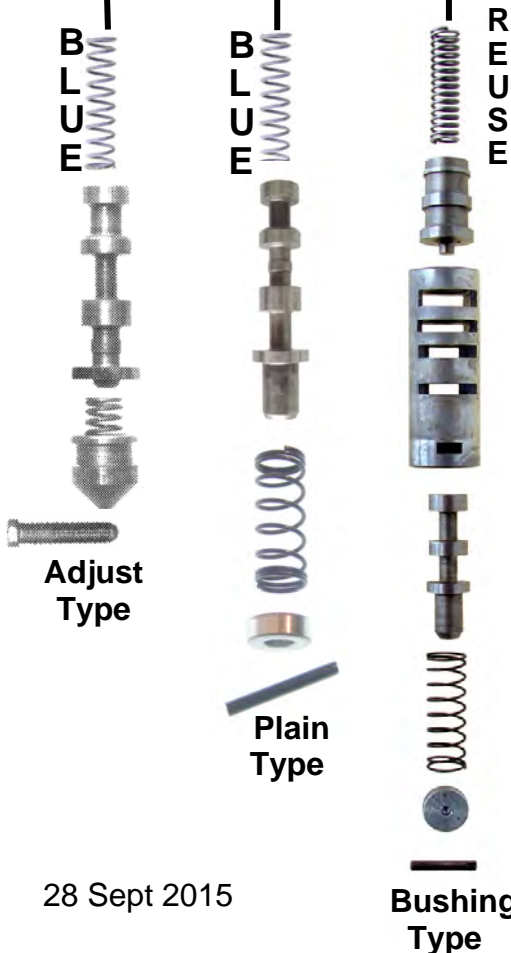


**1. Adjustable Type: Install skinny BLUE inboard spring. Reuse outboard spring.**

**2. Plain Type: Install skinny BLUE inner.** Then find spot that matches INBOARD end of valve, and install outer spring shown.



**3. Bushing Type: Re-use inner Spring.** Discard outer spring.



### Adjusting 1-2 Shift Feel After Road Test.

**Adjust Type** Firmer—Remove outer spring. Softer reinstall original inner spring.

**Plain and Bushing Type:** Change the outboard spring without removing the valve body.

**Softer** **Firmer**  
ORANGE-RED-YELLOW-GREEN-BLUE-NONE

**Bushing Type:** For much firmer shift at all speeds install skinny BLUE spring inside the original inboard spring that was reused.

The hole sizes in the Separator Plate are the primary adjustment of shift firmness. The most effective way to make a shift firmer is by making the feed hole in the plate larger.



# Selecting Shift Firmness

**Choosing feed hole size:** Be conservative. It's easier to produce a tight even feeling shift with some "class" if the feed hole is not too big.

## Hole A: 1-2 Shift firmness.

**Range #1:** Passenger, police, taxis, van, limo, and light trucks: leave as is or .082  
Smooth and even with lots of class.

**Range #2:** Motor homes, heavy trucks, street rods, & huge tires: .093  
Comfort at light throttle and shorter at heavy throttle.

**Range #3:** .110 - Starts getting short above 1/4 throttle. Takes careful accumulator adjustment to get comfort.

**Range #4:** Competition ONLY .156

## Hole B: 2-3 Shift Firmness.

3rd clutch holding power has been tripled, so be conservative with hole size. After a road test you can always make it bigger. Extra gaskets are furnished for changes.

**Range #1** Passenger, police, taxis, van, limo, and light trucks: Don't drill hole B.

**Range #2** Motor homes, heavy trucks, street rods, & huge tires: Don't drill Hole B.

**Range #3** You want it firm: .093 to .110

**Range #4** Competition ONLY: .156

## Hole C: 3rd Accm feed size

**Range #1,** Drill feed .125 - .140

**Range # 2, 3, 4:** Don't enlarge accm feed.



## Separator Plate

© Checkball locations  
Trans in vehicle  
**ALL MODELS!!!**

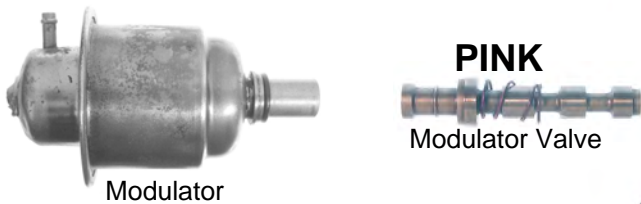
The Special Case Gasket, with additional holes, must be used with TransGo® triple plate. Two are provided for convenience.

Make sure the case gasket has the four holes circled on plate. ○  
These holes don't go through all three plates but the holes must be in the case gasket.

**Always install a Vacuum Modulator**

**This system REQUIRES a Vacuum Modulator.** And you should always run manifold vacuum to the modulator to prevent all time high pressure that wears out pump and rings. With turbo or super charger a pressure bypass must be installed in the vacuum tube. Order VBP-VAC, about \$28.00

**1. Modulator Valve Spring:**  
Install **PINK** spring.  
After road test: If slightly later or shorter light throttle shifts are needed, remove PINK spring.



Don't forget Front Servo

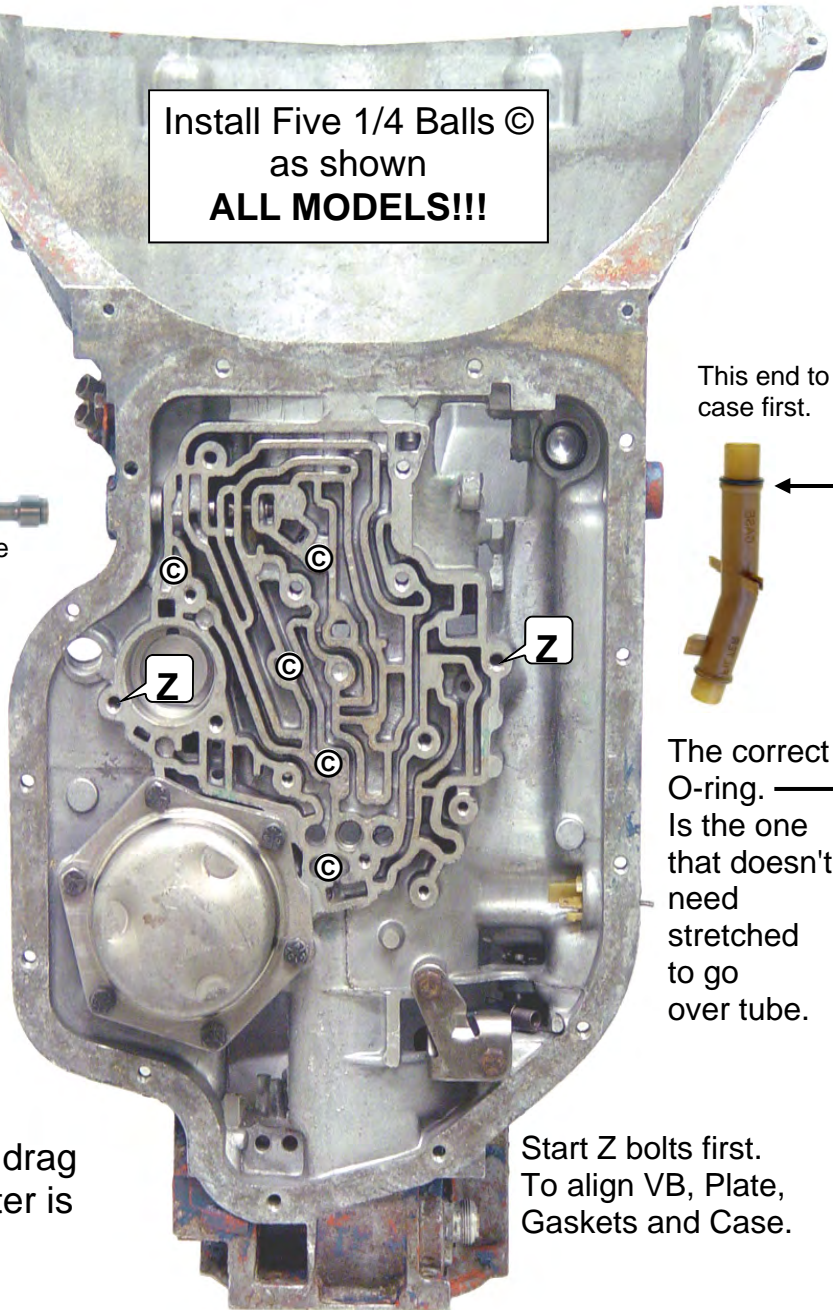


For hard launching high RPM drag applications an Allison type filter is recommended.

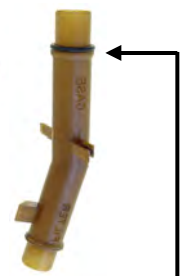


Allison Type Filter has a bronze screen visible in the pipe hole. It does not use a paper or fiber element.

Install Five 1/4 Balls © as shown  
**ALL MODELS!!!**



This end to case first.



The correct O-ring. Is the one that doesn't need stretched to go over tube.

Start Z bolts first. To align VB, Plate, Gaskets and Case.

## Shift timing: Adjusting for Earlier or Later Shifts

**PINK Modulator Valve Spring:**

Install PINK spring. After road test: Removing Pink spring will cause slightly later light throttle shifts.

### **Governor: Adjusting Shift Timing**

Quite often this kit may be installed in vehicles that have had trans, engine or axle ratio changes, or huge tires. Engine, axle and tire changes can cause shifts to be too early or too late.

Shift points can be adjusted by changing governor springs and/or altering the inner weights.

Start by road testing what trans has.

Then make spring change to see if they will do the job.

When changing springs is not enough:

**To make max shifts & kick downs earlier:**

Use governor with taller, fuller inner weights.

**To make max shifts & kick downs later:**

Install governor with shorter or smaller inner weights, or grind inner weights as shown below at A, B, and C.

The lighter the inner weight the later the shifts will be. After max shifts are about where they need to be, then make spring changes for fine tuning.

No need to take governor apart to change springs.

**Earliest shift is "A" latest is "H"**

A = Red and Yellow

B = Red and Green

C = Blue and Yellow

D = Blue and Green

E = Blue and White

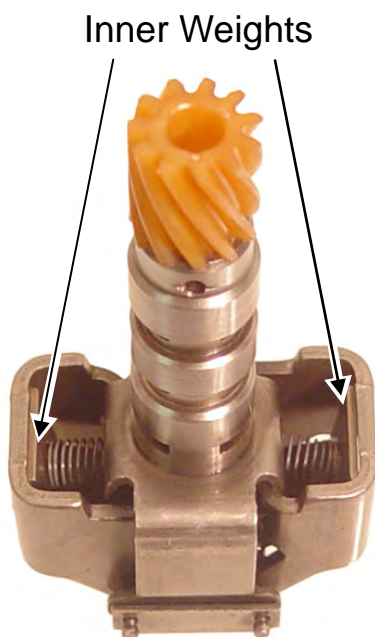
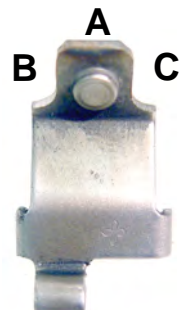
F = Green and Black

G = Green and Yellow

H = Black and White

Must take governor apart to grind weights.

Earlier shifts    INNER WEIGHT    Later shifts



## **Breaks Center Support Bolt**

Happens most often in 4x4's, snowplows and light dump trucks. The low one-way roller clutch inner race is on the center support. High idle N to D engagement or selecting drive while the truck is still moving backwards, shocks the center support, hammers the case lugs, and breaks the center support FEED bolt. Rocking out of mud or snow, or a dump truck bumping the last bit out of the bed when dumping, or an old car with no brakes — all very hard on center support bolt.

The FIX is a new case and some tactful driver education.

Torqueflite's break the race in the back of the case from the same change in direction abuse.

## **Case Damage at Rear Washer**

Doesn't happen under acceleration. The angle cut planet has tendency to pull together under pull ahead and leaves clearance on the case washer. Under decel or in rev, the planets thrust apart and load the case washer. The washer usually wipes out coming down a hill when manual two or one is used for coast braking, or when backing up an incline with a heavy load.

Put a Torrington bearing in the back of the case instead of the two original flat washers. Use a Torrington from the back of a late 350 pump — and two shims. This bearing will also allow you to reuse a case that is rough from washer spin.

Place the case on the floor, bell housing down and case bushing up. Insert bushing driver in the case bushing from the rear. Hit the bushing driver just enough to drive it so that it will be slightly above flush inside the case [.030 to .040] — enough to center the needle bearing. Install the two shims (.012) on the bushing and then the Torrington - black side down.

Then install the planetary, center support, 2nd clutches and front snap ring. Air apply the 2nd clutches while checking rear planet end play. If no end play remove one shim and check it again.

## **Breaks case at bell housing**

Happens in HD trucks, 4x4s, and mobile stores, such as tool trucks, plumbing, and lunch trucks.

[Gil says, "A common cause is loud hard rock music and skipping Sunday Church."]

The lower bell housing bolts are high - as high as the crankshaft.

Other manufacturers positioned the lower bell housing bolts below crank center to reduce flexing the bell housing with bouncing weight of engine and trans on rough roads and rough service. GM added a brace package on 4x4s to secure the bottom of the trans to the engine.

The package is a heavy aluminum dust cover with two strut rods from the bottom of the cover to the motor mount bolts. The cover attached to the case with six large bolts. 4x4's had a special case to accept the six bolts, but most all cases will drill/tap and accept five of the six.

## ***GM 400 — The Rembrandt of transmissions***

When I see a 400 apart on the bench I am awed; the same feeling as looking at the Sistine Chapel ceiling or the statue of David.

Some things get worse with age but this one was born as the best in 1964 and got better as the decades went by. It is now an ancient 40.

*Gil Younger*