SK 700-G™ Shift Kit®

TransGo® COMPLETE SYSTEM CORRECTION SysKo® Kit

The Genuine Fix: Even for the "Authorized Complaints"

VALVEBODY, SERVO, ACCUM, GOVNR, PUMP PARTS/DATA

PARTS AND INFO– FOR PREVENTION/CORRECTION OF THE FOLLOWING COMPLAINTS AND FAILURES:

Downshift Clunk—3-4 Clutch Failure—TV won't adjust properly—Late Shifts—Early Shifts—No Lockup—Erratic or Over busy—2-4 Band Failure—Lockup too early—Chuggs—Pings—4th too early—1-2 Slide—1-2 Slide Bump—2-3 Cut loose or Clang—Reverse delay hot—Reverse Clutch Failure—Slips or delays holdback in Manual "1" hot—Falls out of 4th, or shuttles 4-3-4-3.

WHAT YOU BELIEVE COMES TRUE. WE BELIEVE IN YOU.

When the **SK® 700** kit was first released, some "experts" and quite a few shop owners said that it would not succeed because it was too much smarter than the guys who were expected to install it. They said "Gil, don't you realize these are the guys that in school got put in shop classes cause they couldn't pass anything that took reading, writing, math or even talking with more than four letter words?" Well, I was one of those guys who had auto shop four times; I even flunked it once for doing my own stuff instead of threading a rod and soldering a Western Union splice for the twentieth time.

And, by God, I had a different opinion. I believed that guys working on cars have something more important than a year of algebra, two years of Social Studies and two years of urban conversational French. **They have a craftsman's urge to make things work like they should and the caring to FIX it right the first time.** I believed that if a mechanic could get the parts and info that would really FIX the complaint, **instead** of just **renewing** the **complaint,** he'd make winners out of losers; even when he had to spend time for a brief and difficult learning experience that wasn't in the "genuine" repair and flat rate manuals.

I bet my reputation on my opinion of you and WON. You guys are really FIXING 700's and making the trans, you and the customer winners.

It was a lot of work getting smarter parts and info into a box for you to use. We never could have done it without you. It's your desire to really FIX it, by changing a slide-bump shuttle shifting clang banger into a vehicle that leaves with both bumpers smiling and a happy customer, that makes it all possible. **What you believed you could do came true.**

You absorbed the technology fast and asked for more. Here's more.

Thanks, Gil

WARNING: This is not a "do-it-yourself" kit. It's for the experienced, professional trans mechanic ONLY.

It doesn't make HARD shifts or let you transplant trans, engine, carbs or linkage. We can not furnish assistance for transplants or engine, carb, cable and or linkage changes.

More than 80% of the complaints, failures and rework is caused by a TV System malfunction. The patented BOOTSTRAP® TV System makes all that hassle history.

Correcting the shift complaints, eliminating friction failure and improving the durability of this trans was and is a very challenging goal. This kit is our way of sharing with you both the challenge and attainment of the goal. It took several years of hard work and lots of "Midnight Review" to get all the systems working like we believed they could. Some of the complaints just kicked our butts good, month after month. Often, we were just humbled and devastated by repeat failure and dismal progress.

It was like trying to get your boots laced on "real tight" with shoe laces made outa' old kite string. Every time we got the shifts feeling about right they would suddenly get real early or real late and burn something up.

We finally decided it wasn't gonna' work right until we discarded the string (the TV system) and put in some good new laces. About 40 designs and 200 road tests later, we had a darn good set of laces. It took a whole new TV system to get it right. Once the TV system was right, most of the other systems required recalibration for timing and firmness.

In this trans, the **TV** system is the **CENTRAL LEADER** of communication and regulation. It's the CENTER, the **QUARTERBACK** and the **COACH.** It not only calls the plays and the count, it TAKES the ball and gets the play going. It's the LEADER and when it working right, all the other players (systems), get in step. We call the new TV system **BOOTSTRAP®** (US Pat 4711140). It lifts itself and other systems into harmony; and it also gave us a real boot, you know where, getting it worked out.

READ SEPARATE "ADDITIONAL INFORMATION" FIRST.

IF THE TRANS IS OUT—Enlarge the seal drainback passage to reduce LEAKS and keep the seal from blowing out.
Use a 1/4"-9/32" drill (.250-.281)

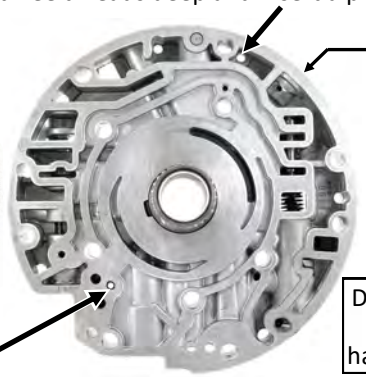
Drainback Passage

"Bell Mouth" the drainback hole:
To increase flow, after enlarging the passage, insert the drill again into the hole about 3/4". Move the drill motor — Leftward and Rightward to widen the top of the hole.

Don't worry if your drill breaks into the priming spring area, it's OK.

Use the same drill to check or enlarge the holes shown in the pump and pump cover.

—IF THE TRANS IS OUT AND APART—
Look at the left end of this passage. If it has an open hole that the orifice plug furnished will fit, drive it in it. Otherwise: Tap it two or three threads deep and insert a piece of 1/4" bolt.



Clean Thimble filter. Reinstall **WITH SEAL.**

Don't risk broken rings! Order: **NO YO YO ®** hardened Pump Ring Kit

THE PROBLEM: Clearances and wear allow more oil to enter seal area than the drainback hole can handle. Pressure builds under seal causing the seal to blow out of the pump or leak.

NEVER use IMPACT to assemble the pump and cover or to install the pump. These castings crack very easily or will DEFORM from overtight. PR stuck "IN" breaks rotors/rings.

ATTN TECHNICIAN: This kit is a total System Correction Technology. "Technology", means the parts, the specs and the info to really fix the trans. YOU plus the parts/specs and info become the method, the whole technology.

This kit is not for the do-it-yourselfer or the amateur who is still trying to believe that a few clutches a band and two bushings will **FIX** the trans. That will only return it to the same condition it was in just before it failed. Friction material doesn't burn out because it was defective, it burns out because a system malfunction allows it to slip.

You can expect to spend a few hours learning this system correction technology on the first few installations. Be patient with yourself-You can do it.

Product Support: [626] 443-7451

Step 1.

PRESSURE REGULATOR & BOOST SYSTEM

A.

REDUCE PR VALVE BUZZ
Grind this land off flush with the spool, ALL THE WAY AROUND. Its not fussy.

SPOOL

Pressure Regulator Valve

GREEN P.R.

TV Boost	Rev/Intermed Boost
.500 dia. - p/n **7-500**	.300 dia. - p/n **7-300**
.472 dia. - p/n **7-472**	
.422 dia. - p/n **7-422**	

TransGo® Replacement Boost Valve P/N's

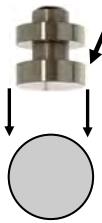
After installing the boost valve snap ring, push it in deeper with a screw driver, to be sure it has snapped into its groove.

Valve Bushing
Reverse/Intermed. Boost

Flat End

Valve Bushing
TV Boost

B.



PLACE THE FLAT END OF TV BOOST VALVE DOWN OVER THE SPOT, TO MEASURE IT.

CIRCLE THE CORRECT SIZE:

Valve is: **SMALLER** **BIGGER** than spot.

Spot .450

Valve is **SMALLER**—Install **PURPLE** outer and skinny **WHITE** inner into line bias valve. (Step 8-G)

Valve is **BIGGER**—Install **PURPLE** spring only. (Step8-G)

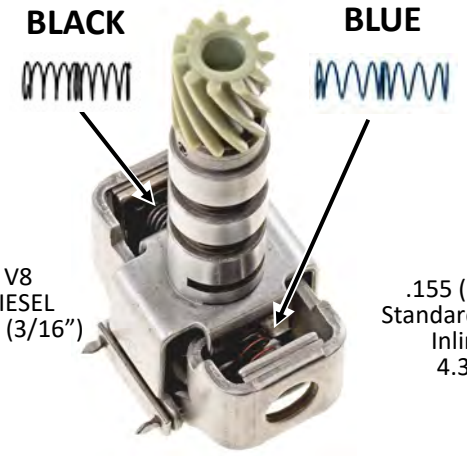
C.

Install a dab of assembly gel on the stems of the Reverse/Intermed boost valve and the TV boost valve to keep them assembled during installation.
Cold gel on clean, cool, dry parts works best.

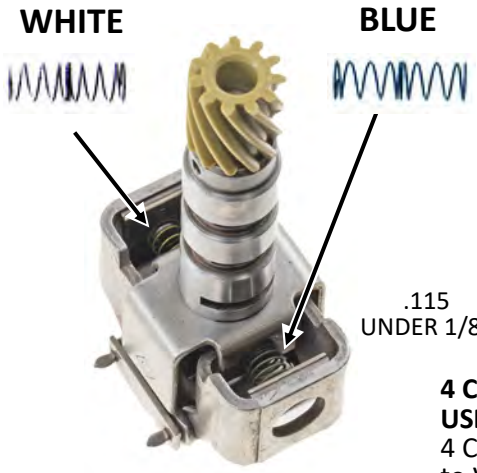
Step 2.

GENERAL TYPES OF GOVNRS ARE SHOWN TO IDENTIFY THEM. The pictures are shown so that you can install the correct springs in the govnr that you have. Some Hi-Output models, such as 82 Vette and some 83-84 Trans Ams used a V6 type govnr with wrong springs and could not make a max throttle 1-2 shift before floating the valves. If you have that complaint, install BLACK & RED spring.

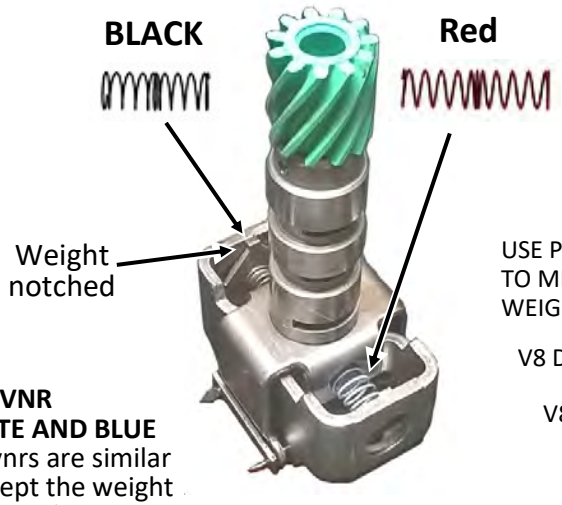
STANDARD V8 GAS & DIESEL
Also: Inline 6 & 4.3 V6



V6 TYPE



V8 — HI-OUTPUT
MOST—VETTE—Z-28—TRANS AM



USE PRINTED LINES TO MEASURE GOVNR WEIGHT THICKNESS

V8 Diesel

V8 Gas

V6

4 Cyl

4 CYL GOVNR
USE WHITE AND BLUE
4 CYL govnrs are similar to V6 except the weight thickness is 1/16"

Step 3.

A.

Circle the three numbers that matches the last three numbers of the OE 2nd piston casting code. No numbers? Measure the diameter of the small ring tower as shown. Then you'll know what size the 2nd piston is for Step 8E and for making a change later if needed.

The three piston sizes effect 1-2 & 2-3 shift firmness.

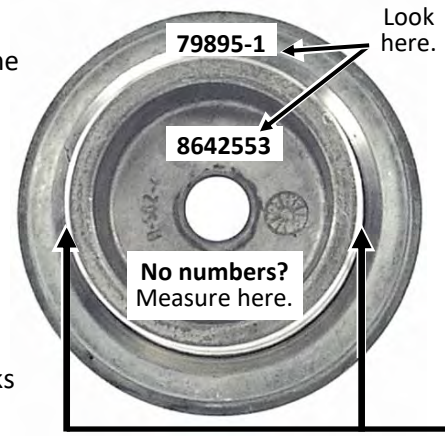
554 is light duty– Not for V8's or turbo.

553 is medium duty– V6, V8 Cars & Trucks

093 or 95-1 - H.D. or High Output

(Aftermarket **"Corvette Servo"** is same as 093, 95-1. Our servo p/n is **7-2P**)

2nd Piston Number/Diameter



CIRCLE:

554 —2.519"
553 —2.312
093 —1.792
95-1 —1.792

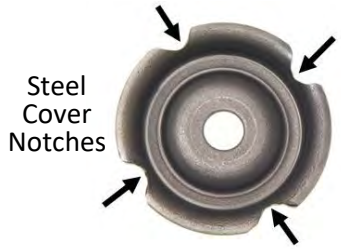
We do not recommend 554 piston for hard drivers or Heavy Duty use. Band will burn up.

B.

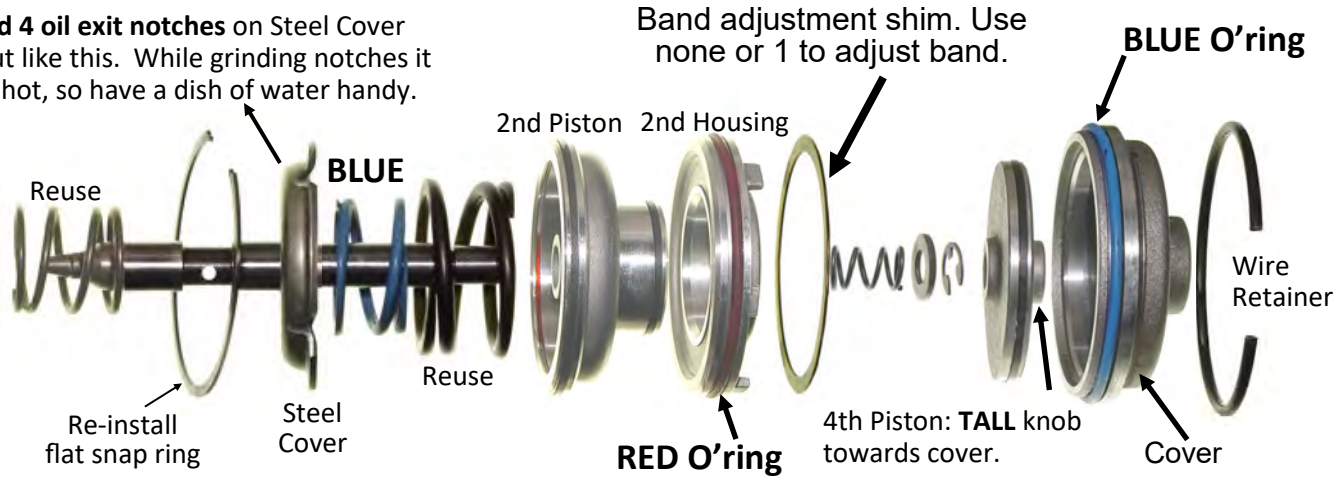
2nd Accumulator
Discard original springs.
Install spring seat and new springs as shown.

Use new seal that fits the groove and is snug in the housing bore.

Step 4.



Grind 4 oil exit notches on Steel Cover about like this. While grinding notches it gets hot, so have a dish of water handy.



A.

Install the **BLUE** spring inside of original cushion spring. Grind 4 notches on steel cover as shown. Re-install steel cover & flat snap ring. Install **RED** O'ring on 2nd piston housing.

Note: Do not sand the drum where the band rides.

B.

Servo Assembly & Adjustment:

Install 2nd piston assembly and housing into case with adjusting shim against housing.
Install 4th piston and cover **without Blue O'ring.** Then the wire retainer.
Band must wiggle on drum front to rear, by hand, 1/8" or more.
If band wiggles or output shaft will turn by hand in both directions, the clearance is OK.
Too loose? Start with longer pin.
Too tight? Remove shim & recheck.
If the band is still too tight, grind the end of the pin 1/32" and recheck.
Then remove the cover and **install** the **Blue** cover O'ring & reinstall.

You'll love the no bang shifts.

-Gil

Step 5. Plate Hole Sizes

Trucks—Vans—Full Size cars:

"A" = .093 to .111" (2-3 Shift)

"B" = Comfort—.070"
Norm—.076" (1-2 Shift)
Short—.096"

"C" = .106 to .117"

"D" = .125 to .250"

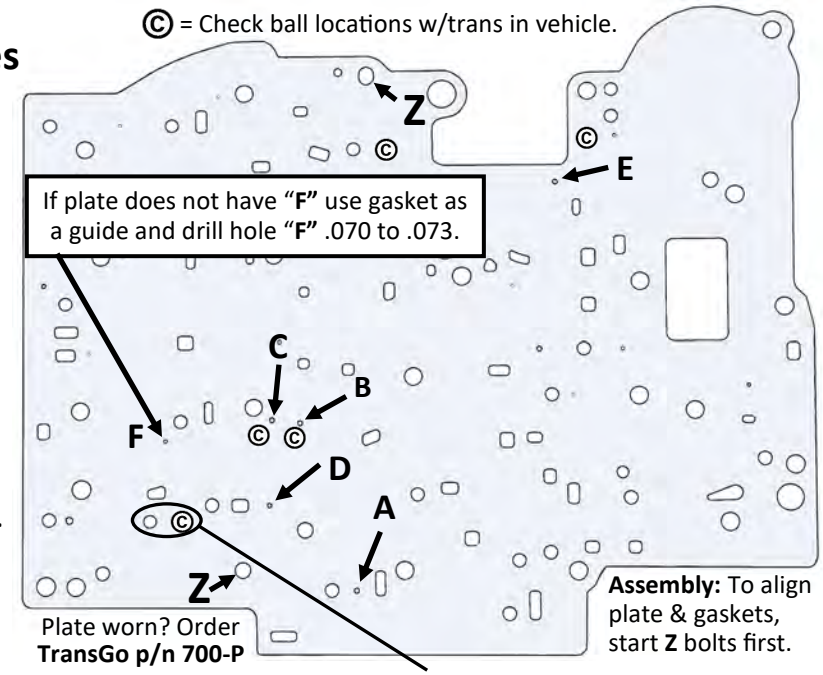
"E" = .110 to .128"

"F" = .070 to .073"

If plate has no hole "F" use gasket as a guide & drill it.

Shifts will feel firmer in vehicles with low gears. Higher axle ratios such as 2:73 & 3:08 will feel softer.

Please use these hole sizes. They are matched to the accumulator and servo changes furnished in this kit.



If plate has these 2 holes: Install #9 check ball (82-87)
Don't install check ball: **If plate has only 1 hole.** (88up)

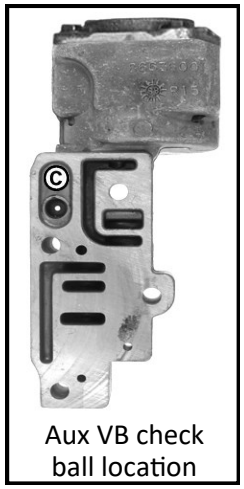
Got a hole too big? Place the hole that's too big onto the face of a sprag race. (Hardened Surface) Place 5/16 steel ball on the hole and hit it with a small hammer. Redrill to correct size.

Step 6. CASE, PLATE & 4th ACCUM

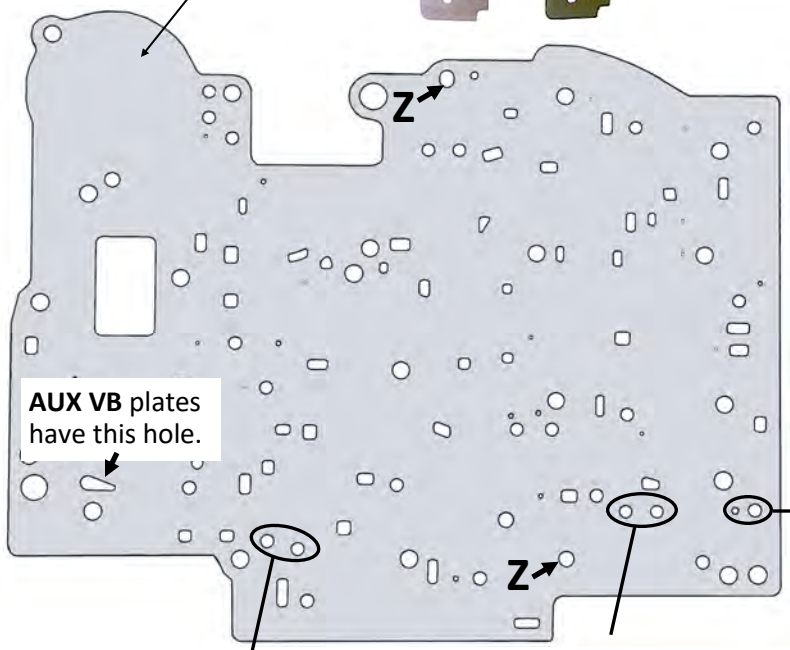
START A GOOD HABIT-RIGHT NOW.
Save yourself a couple of major headaches a year and lots of needless aggravation.

Start two VB bolts thru the gaskets and plate at holes marked "Z". They're the lineup holes. Then install and TIGHTEN the hold down plate or AUX VB.

When installing the valve body: Install the "Z" bolts first and tighten them. The rest of the bolts will then go in and tighten easily.

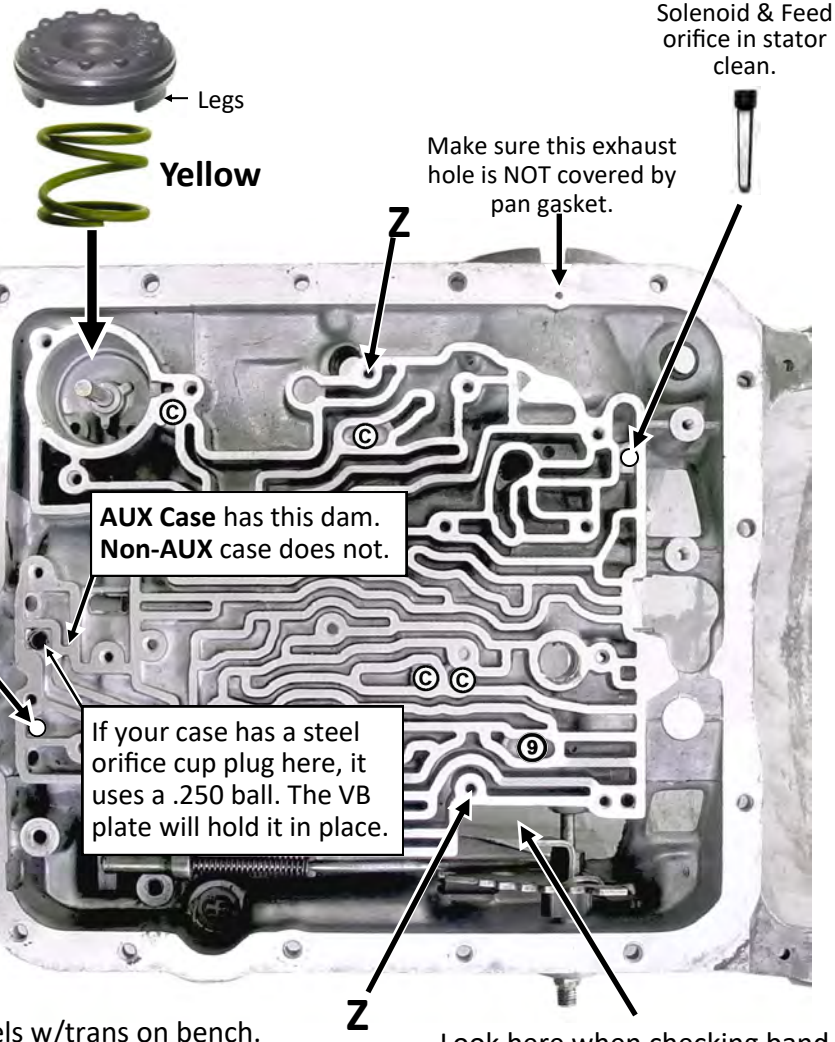


2nd Accumulator: Some early models may have an "extra" stiffener plate and gasket here.



A.

Install YELLOW spring into case first.
Install **seal furnished** that fits the piston groove correctly and installs in the bore snugly. Insert piston with legs first into the case as shown.
This may be different from how you found it. It's OK, it improves the 3-4 shift feel.



Ⓒ .250 Balls All Models w/trans on bench.

⑨ **82-87** Models use #9 / **88up** Models NO #9 ball.

Gaskets, Seals or Drills are not furnished as part of this kit. They may be included from time to time for your convenience.

Step 7. **Working on a Vette?** Read Update Sheet before changing Step 7 springs.

Good News! If you have "TCC Dummy Plugs" in your VB and want to control Lockup without wires, Order TransGo p/n **700 LU**– Includes Valves & Springs.

TCC Dummy Plugs (No Changes)

E.

MTV Down—No Changes

Long Orange

D.

Std Gas 2WD **-Blue**
Diesel-Camaro-4WD **-Red**

Choose Spring

Normal Conv TV Valve
Grind the stem flush with land.

Spacer

Later models deleted TCC shift valves & bore. It's casted closed.

Std Gas 2WD **-Brown**
Diesel-Camaro-4WD **-Brown & White**

Brown White

Choose Spring

Long Stem Conv TV Valve

TCC Shift

C.

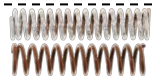
Std Gas 2WD **-Green**
Diesel-Camaro-4WD **-Orange**

Choose Spring

3-4 Shift TV—**82-87**

3-4 Shift

Std Gas 2WD **-White**
Diesel-Camaro-4WD **-Brown**



Choose Spring

3-4 Shift TV—**88up**

B.

Kinky End Yellow

2-3 Shift TV all years.

2-3 Shift

A.

1-2 Shift TV **82-87**

Yellow

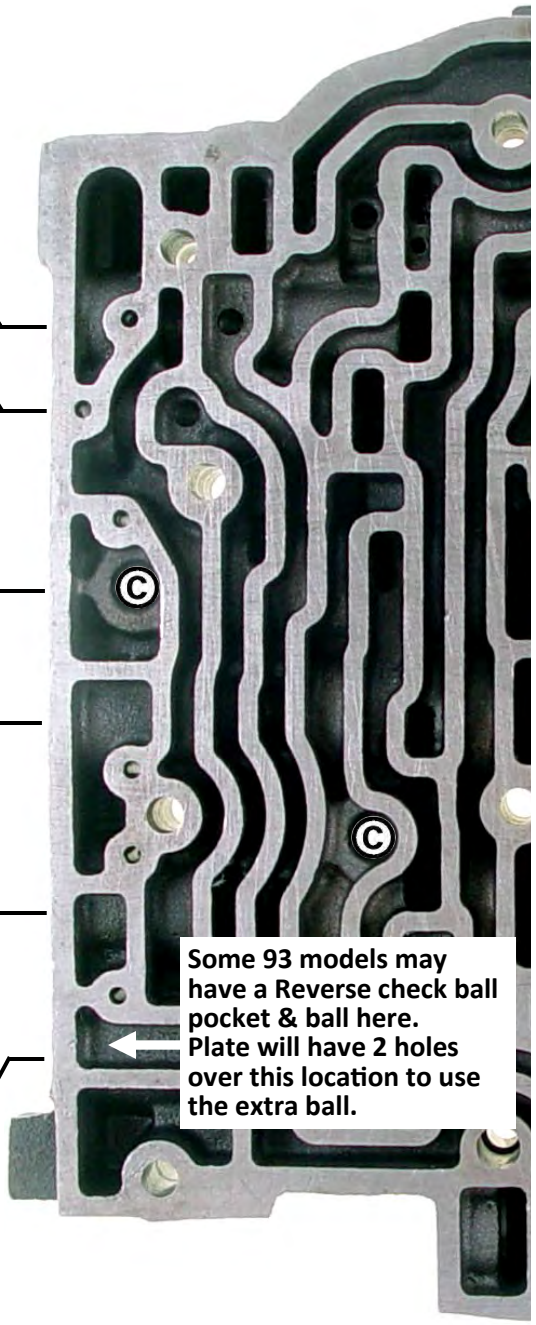
Low Range Bushing & Valves 82-87

Roll Pin

1-2 Shift

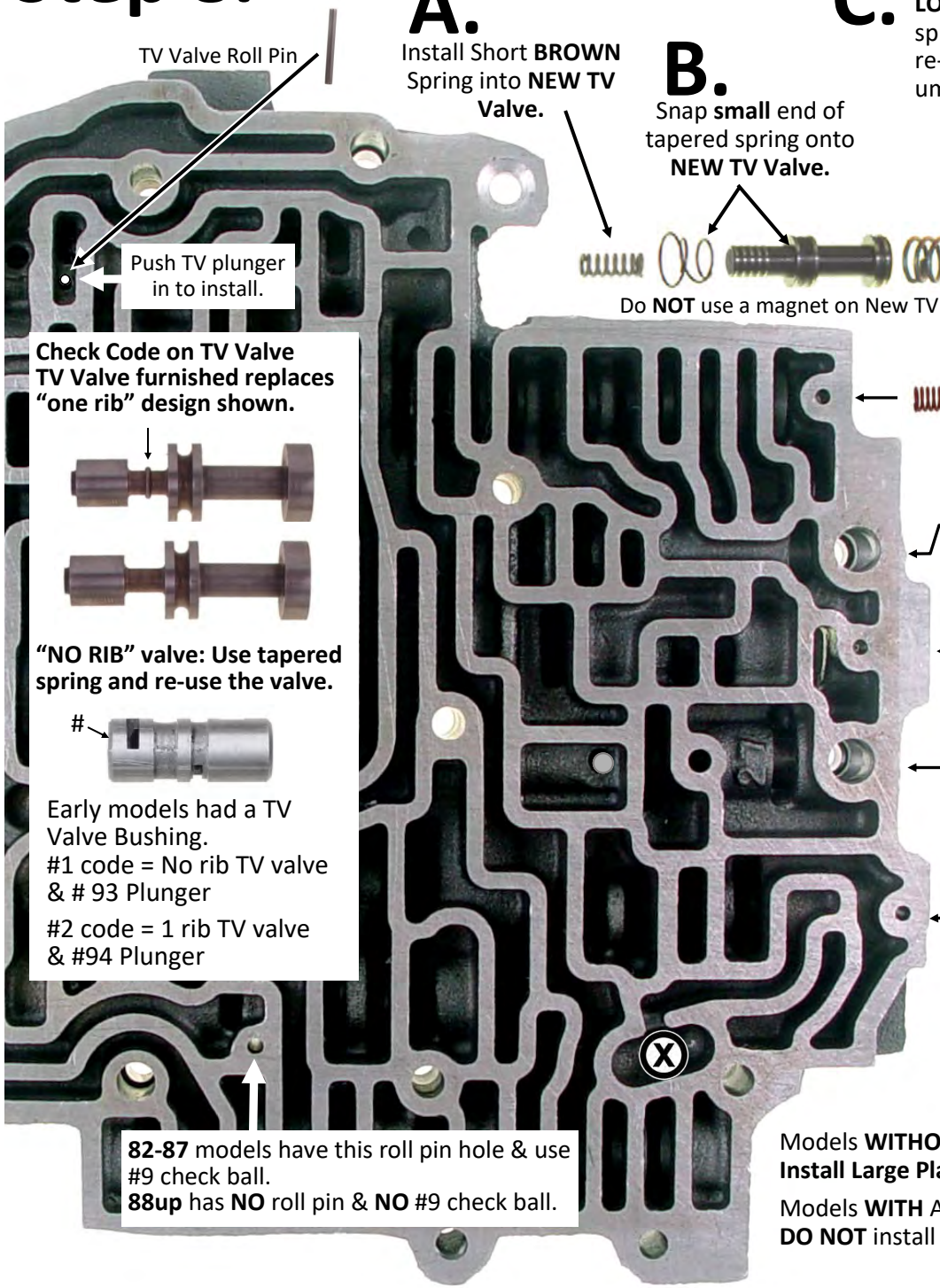
Combined Shift TV & Low Range Bushing & Valve **88up**

Black



Some 93 models may have a Reverse check ball pocket & ball here. Plate will have 2 holes over this location to use the extra ball.

Step 8.



A. Install Short **BROWN** Spring into **NEW TV Valve.**

B. Snap **small** end of tapered spring onto **NEW TV Valve.**

C. If original TV Spring is **LONGER** than **RED** TV spring furnished, re-use it without alum shim.

If original is shorter:
Gas: Install **RED** TV spring without alum shim.
Diesel: Install **RED** TV spring with ONE alum shim.

D. **NEW SPACER**

If **plunger** has no number or a #94, install the **new TV Valve** furnished.
Any other number: Install the tapered spring onto the original valve and do not install the short brown spring.

Do **NOT** use a magnet on New TV Valve!

Check Code on TV Valve
TV Valve furnished replaces "one rib" design shown.

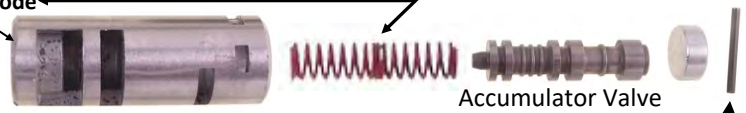
"NO RIB" valve: Use tapered spring and re-use the valve.

Early models had a TV Valve Bushing.
#1 code = No rib TV valve & # 93 Plunger
#2 code = 1 rib TV valve & #94 Plunger

Get 2nd Piston Code From Step 3-A, use bushing code & select matching spring.

2nd Piston #	Bushing Code	Spring
553 or 554	A or B	**BROWN**
553 or 554	All Others	**ORANGE**
093 or 95-1	ALL Codes	**BLACK**

E.



If TV Boost valve is SMALLER than spot (Step 1-B) install Purple outer and skinny White inner.
If TV Boost valve is BIGGER than spot, install purple only.

G.

H.

If your valve has a rib here, Re-use original Spring.

Wire Clip Replaces Roll Pin on models with either a Pressure Switch or Pipe Plug to hold the **loop end**.

82-87 models have this roll pin hole & use #9 check ball.
88up has **NO** roll pin & **NO** #9 check ball.

Models **WITHOUT** Aux VB: Ⓧ
Install Large Plastic Ball provided.

Models **WITH** Aux VB:
DO NOT install ball.

Accumulator Valve Note: A wire clip retainer has been furnished to allow spring changes on the accumulator valve without removing the valve body. **No pipe plug or switch?** Reuse original roll pin.

1-2 Accum Spring Firmness Selection:
Softest - Black - Brown - Orange - **Firmest**
Always start with the chart recommendations.

Larger 2nd Piston size adds firmness also. See step 3A

Throttle and TV Cable Relationship

Give your customer the full benefit of this kit and your talent by giving him the best possible relationship between shifting and engine torque.

This may look like the "Long Way Around", but in fact you will find it is the fastest way possible to give your work a real touch of perfection.

Don't worry about figuring it out, just follow the steps and in 5 minutes you will be road testing the results.

Gasoline: 1. Remove the air cleaner and place it on your bench (Please).

2. Push the TV adjusting tab and move the cable housing approx 1-1/2" toward the Carb.

3. Have someone floor the gas pedal from inside the car. While they hold the pedal floored, you bend the throttle cable bracket away from the Carb until the Carb arm bottoms solidly against it's stop.

4. While someone is still holding the pedal floored, depress the adjusting tab and slide the TV cable housing AWAY from the Carb firmly until it stops. Release the tab and let it lock. Go to step 5.

Diesel: 1. Release the locking tab and push the cable housing and inch or more TOWARD the bare cable.

2. Have someone floor the accelerator pedal from inside the cab, while you adjust the rods or pedal cable until the arm on the injector pump is against its wide open stop.

3. While the throttle is still being held wide open and the locking tab released, push the cable housing firmly away from the bare cable until it stops. Engage the locking tab.

4. Go to step 5.

5. Use a pocketknife or hacksaw blade and make a visible mark on the cable housing up against the front of the stationary adjustment assy. This mark is MAX TV– never go past it.

6. Release the locking tab and let the max tv mark move 1/8" toward the Carb.

7. Road test before installing air cleaner.

8. The first check is for **detent**. Here's how: Make a very light or min throttle 1-2 shift. (10-13 mph) As soon as it shifts, floor the throttle. The trans **must** shift back to first. If it doesn't you need more TV.

Some Hints: The mark you made is MAX TV. Moving the mark away from the adjustment assembly reduces TV. Diesel and gas V8's work best from max to 2 clicks away (about 3/32"). V6's work better with about 4 clicks away from max. (about 5/32").

Note: Information is based on OE installations.

TV and Road Test: Many 88up and later gas models have a part throttle 3-1 & 2-1 KD. I love it, they just come alive! This also means that the TV could be adjusted wrong and still have a low speed 3-1 or 2-1 KD. Then the max throttle2-3 and 3-2 would be too low and pressure rise could be off in relationship to throttle opening. Here's an easy and quick way to get right on.

1. **Adjust the TV to max as explained in step #4.**
2. **In the "3" position, at 47 MPH, make a max throttle 3-2 KD.**
3. **Reduce TV one click at a time until you do not have a 3-2 KD at 47 MPH.**
4. **Increase TV one click at a time until you once again have a 3-2 KD at 47 MPH. Make another mark on the housing. This will be the MIN mark.**
5. **Test drive and adjust for the best shift feel between the min and max marks. Go for it.**

Additional Technical Info

Rear Planet: 82 to 86 lacked positive lube to rear planet pinion gears. For HD applications, positive lube rear planet and support should be installed. GM p/n's 8654200 and 8654197.

Pump Rings: Broken pump rings can cause total wipeout comebacks, requiring another pump, converter and total trans rework. Order the **NOYOYO®** pump kit, with **HARDENED STEEL** rings. Insist on genuine **NOYOYO®** kit so you wont get a cast iron substitute. A major comeback could cost you more than **50 NOYOYO® pump kits.**

Lockup Valve: To correct chugging & clanging in certain diesel models, a converter clutch TV valve 8642970 was released by GM. Installing this valve in a unit that has not had the systems corrected can cause hot trip rear planet or converter failure and/or late lockup, no lockup or shuttle. If VB already has the long stem valve, the kit installation will prevent the problems.

3-4 Clutch Complaint/Failures:

High Capacity HD 8 pack and HI-Perf 9 Pack is available from your distributor for performance vehicles or heavy work trucks. For added durability on normal work trucks or for light to med towing, order a 4l60E 3-4 clutch apply plate GM p/n 8685044, this allows you to replace the original apply plate parts with the integrated version saving enough space to add 1 extra clutch. A C6 or 350 snap ring may be required. 3-4 clutch clearance of .020 to .050" is ideal. A benefit to adding additional clutches is more safety from slip during an accidental wrong gear start.

2ND Piston and Housing: 3 Sizes

Large: 093- 8642079 Piston, 8642110 Housing.

Norm: 553- 8642613 Piston, 8642936 Housing.

Small: 554– 8642614 Piston, 8642926 Housing.

#093 comes in Vettes. If customer complains of rough 1-2, installing **553** will tone it down. The **093** piston can be installed in other vehicles that request a much **firmer** 1-2 & 2-3 shift or for correcting a 2-3 cutloose in V8's.

V8 gas and diesels need **553** piston. Using the 554 piston in these models can cause 2nd band burnup and/or 2-3 cutloose.

554 is OK for 2.8 - 4.3L V6 non-towing vehicles. Never use 554 in any V8 gas car/truck or diesels.

Adjusting Shift Firmness:

See Parts & Info Update Sheet.

Dear Mechanic: In this box you will find an additional information sheet. Take it home and read it. It's for you.

The guys that learn system correction are gonna own the trans repair business and the rest are going to spend half their life fighting clangs, cutlooses, no 4th, slips and late or early shifts. Be patient with yourself. Set aside a few hours for just learning when you don't have a "won't ship" kicking your butt.

This kit is just part of the data developed for FIXing 700's. There's a lot more available from our Training and Tech Service. If you are really serious about learning how to fix today's transmissions, give us a ring and ask about our Tech and Training materials.

Product Support (626) 443-7451

Mr. Shift®

Gil Younger

700 Parts and Info Update #2

Read the steps in regular instruction first. Then add these instructions.

Vettes Only:

Some had SMOG axle ratios 2:73/3:08
Others have HI-PERF ratios of 3:22/3:73

If axle ratio is unknown reinstall the original converter TV shift spring (if it has one), and install a checkball in the solenoid snout. If you have the vehicle, finding the axle ratio is duck soup.

Finding axle ratio: With vehicle in the air, position yourself on the passenger side, just in front of the rear axle. Make a chalk mark on the inside of both tires and on the driveshaft or pinion flange at 6:00 O'clock. Rotate both tires exactly one turn (both at the same time), and count how many times the driveshaft/flange turns.

2:73 ratio will turn about 2-3/4 turns.
3:08 ratio will turn just barely over 3 turns.
3:22 ratio will turn 3-1/4 turns.
3:43 just under 3-1/2 turns
3:73 about 3-3/4 turns.

If it's @ 3-1/4 or more it's a HI-PERF ratio.
If it's @ 3 turns or less it's a SMOG ratio.

With HI-PERF ratios 3-1/4 turns or more: Install springs shown for Diesel in Step 7.

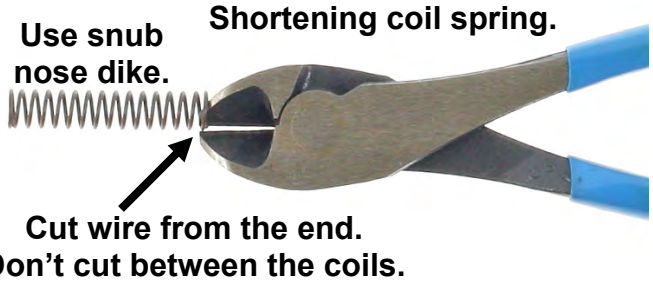
With SMOG ratios @ 3 turns or less: Adjust springs so that lockup and 4th won't be later than most customers desire. **Here's how:**

With Normal Converter Clutch Valve: Cut 1/2 of the end coil off both ends of the RED spring as shown in the picture. You can also measure the free length of the spring & grind both ends to make the spring .035-.045 shorter.

With Long Stem Converter Clutch Valve: Don't use a long stem type valve if you can avoid it. Rob a Normal type valve and bushing from another VB if possible or order our TransGo® part# 700-LU, lockup valve kit and use the valves. If you must use Long Stem type, cut 4-1/2 coils off WHITE spring and install BROWN and WHITE spring. With long stem valve, the job will work better if you retain the electrical Un-locking feature. **This means if the electrical is working and the long stem is used, don't install a checkball in the solenoid.**

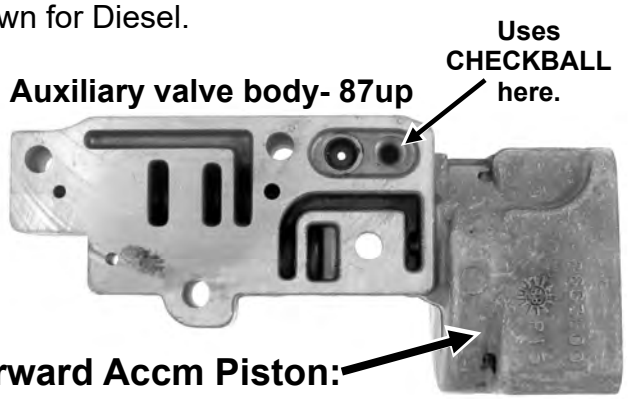
With 1st design 3-4 Shift Valve: Use smaller diameter of the two unpainted springs furnished in small plastic bag.

With 2nd design 3-4 Shift Valve: Use the larger diameter of the two unpainted springs furnished in the small plastic bag.



Some TWO WHEEL DRIVE cars and trucks with V6 or V8 may have factory towing package (or lower gears may have been installed). This means the vehicle has 3:22 to 4:11 axle ratio instead of 2:73 or 3:08 which is normally installed in 2WD vehicles.

This can cause lockup and 3-4 shift to be early. If you get this complaint, check the axle ratio. If it's 3:22 to 4:11 install springs in step seven shown for Diesel.



Forward Accm Piston:
Install a seal furnished that fits the groove correctly and installs in the bore snugly.

Factory Part INTERCHANGE

82-87 VB's Interchange-
(Check for TCC Shift Valve)
88-92 VB's Interchange
(Match inner most land on Line Bias)
93 VB's with extra VB Checkball must use matching plate.
88-93 Cases require Aux VB.
82-86 Case do not use Aux VB.
With the correct electrical connections, entire units can interchange all years.

Mr. Shift®

(OVER)

CUSTOMIZING SHIFT FIRMNESS:

Hole "B" (2nd oil): Rough 1-2 is a common complaint. It's cured by other things besides hole size. AFTER you have cured the band, the easiest way to get 1-2 comfort is hole size.

Safe size of 2nd feed hole is .065-.110. Instructions shows .076 as the smallest, because many plates have been drilled and won't smash down much smaller than that.

For 1-2 comfort it's OK to reduce hole "B" by installing a cotter pin in the hole. -- **HERE's HOW** →

Install head on VB side. Bend one tang only. Cut both tangs off short. Rotate the pin so that the tang and head will have clearance in passages when installing. Accm spring adjusts firmness between min & 5/8 throttle.

SOFT--No spring--Black--Brown--Orange--Firm

2nd piston effects 1-2 firmness: (Part numbers page 8)

Firmest is 093--Normal is 553--Softest 554>(V6 & 4cyl.)

If customer just HAS to have a much firmer 1-2, 2-3 shift, use **TransGo®** 2nd piston p/n **7-2P**. (Same as HI-PERF Vette Type 093) When 093 piston is used drill "C" .116-120 to give cleaner manual 3-2 and 3-2 kick-down.

Hole "A" (3rd oil): Larger hole "A" will make the 2-3 shift at light throttle looser (softer) and the max throttle 2-3 shift shorter and firmer. (provided you have quality 3-4 clutches)

3-4 Clutch: Normal or HD, order 8 pack Alto #57757A

Big blocks and HI-PERF use 9 pack Alto #57757B

Plate Hole	Cotter Pin Diam	=Hole
.100	.074	.066
.094	.060	.072
	.058	.074
	.045	.082
.089	.060	.065
	.058	.067
.086	.060	.062
.084	.058	.060
	.058	.064
	.045	.073
.076	.045	.062
	.040	.064
.073	.032	.066

Mr. Shift®

87 & later Reverse Complaints

COMPLAINTS: Won't engage on hot idle. Slow reverse engagement hot. Slips in reverse just above idle. Falls out of reverse at hot idle. Burns up reverse input or low-reverse clutches.

Cause: 87 Reverse input drum has an .081 orifice at the inner diameter feeding into the piston. A .106 orifice drilled thru the piston. Supposedly this would let air out of the system (no checkball) and then build enough pressure to flatten the angled cushion plate and seal the .106 hole. It's not working so good. We expect 100% complaint as the usual warp wear accumulates over time.

Do yourself a favor. If trans is apart fix reverse. If you don't, then get ready to have a hot reverse complaint/failure sooner or later.

There are several fixes depending upon the parts on hand. Needed most are the extra wave cushion plates #8647067-- Trade# 77121.

#1 SOLUTION: The fast fix using 87 drum and piston. Discard angle cushion. Install a flat steel against piston, then a friction, a wave plate, a friction, steel, friction, another waved (if you have it) or flat steel, then friction & finally the backing plate.

#2 SOLUTION: Using original 87up parts. Plug the original bleed hole in the piston and drill a new .063 to .076 bleed hole in another location. Re-install the angled cushion plate and clutches.

#3 SOLUTION: Using 87up drum/piston and additional parts. Remove piston and enlarge the bleed hole to .152 to .157. Then install the small orifice cup plug furnished in the kit into the hole. This will function as the air bleed. Re-install angled cushion plate, then steel, friction, waved cushion (77121), then a friction, steel, friction & backing plate. If you don't have an extra early cushion, install a regular steel plate.

#4 SOLUTION: Install an 82-86 Reverse Drum assm--lock, stock and barrel. If you discard one steel plate and install and extra waved cushion (8647067/77121) between 2 frictions, it will reduce delay and give a quick smooth apply.

READ THIS BEFORE YOU START INSTALLING SK700 SYSTEM CORRECTION AND CALIBRATION PARTS.

This installation is not a "LITTLE DINKY PILE" of parts that install in a few minutes. It is a complete SYSTEM CORRECTION and CALIBRATION PACKAGE.

If you complete your first "in the car" installation CORRECTLY, in 6 hrs, you will be doing very well. Quickness comes with practice. At a glance you might think the prices we are suggesting are high, but you will soon see that they are not.

If you are doing this as a warranty repair it could be priced as a package or as individual piece repairs.
AS A PACKAGE: SYSTEM CORRECTION and CALIBRATION installation. $450.00-680.00

AS PIECES: R & R driveshaft (S10 & 15), R & R crossmember, R & R pan, R & R PR valve, R & R Solenoid, R & R inspect and repair- Govnr, 1-2 Accm assembly, valve body, separator plate, 3-4 accm, 2-4 servo assembly. Check and adjust throttle cable, C & A TV cable. Labor $???
Parts: System package $92.00 plus pan gasket, oil, filter etc.

Let me suggest that if the trans is going to be removed to replace other parts, a trans R & R, parts replacement and labor be added to the SYSTEM CORRECTION installation. There are three solid reasons for this;

1. The system package is the FIX in this repair. The SYSTEM CORRECTION parts and TECHNOLOGY is what makes the band, clutches and converter function properly to eliminate the complaints and assure durability.

2. If you sell the customer (from the traditional habit), an "over haul or rebuild;' he will expect you to fix his trans FREE if he has a hard parts breakage after you have worked on it. You cannot fix, prevent or predict hard parts breakage before hand. The risk of hard parts failure came with the trans, it's a risk the customer takes when he BUYS the vehicle. If you sell him the "traditional fix;' that risk will be transfered to you, for the length of your guarantee. If you charge enough so that you can honestly take the risk from the customer, your competitor, who may not understand the risks, will make your price seem high.

3. The customer has three things that he wants; and uses the same three things, to judge the value of your work. He wants the complaint/failure and their causes corrected. He wants the vehicle to respond properly with throttle opening. (up and downshifts that happen at the right TIME and FEEL RIGHT). He also wants it to last.

He will also want a guarantee. But he expects your guarantee to be additional PROOF that you are CORRECTING the complaint/failure causes. He does not want your guarantee to be used as an *excuse* for *not* correcting them. He is paying you to get the complaints FIXED. He is not paying you to tell him that the complaints are GUARANTEED all the way to the scrap yard. This customer is your neighbor, your cousin, your uncle, your sister and brother. Don't give the kind of repair, and a story to go with it, that you wouldn't like if you had your car worked on.

Many car and truck owners are aware of the performance and the durability complaints; they already have a desire for improved response and durability. *If* they are primarily wanting improved response and durability, install the kit exactly to instructions, without any high performance hole sizes.

In our opinion, a fair charge for a total, in the car (system correction and calibration) service is $450-680. Look at it like this: They have a lot of complaints with the original systems and calibration. They don't have a reputation of lasting too long either. You know this, and so does the customer. He has probably complained to the dealer, or some other shop, and has been told, "That's the way they made them:' If they also had told him that, the factory had a service option package for fleet, taxis, police and heavy service, for increasing durability and performance, costing $680 plus oil and gaskets, they would probably be selling several thousand each day to 700 owners.

You now have a complete valve body, govnr and servo package for your customer, with some truly HI-TECH improvements, that is going to correct the driveability complaints they haven't been able to get fixed. There is no reason for you to charge less than $500 for the response and durability you'll deliver.

If your goal is to turn out a really perfect job, there are some things that require some thoughtfulness on your part. A bangy 1-2 shift with this trans, is either a malfunction or a mistake. It is OK to have a firm 1-2, but it should not have a thump, bump or bang. If you have a customer who insists on bang shifts, then go ahead and give them to him, after informing him clearly that the responsibility for the consequences is all his. A proper 1-2 shift for a 700, starts gently, gets firmer towards the middle of the shift and then disappears at the end. Lighter vehicles such as Vette, Z-28 and TransAM may peel rubber or be firm at the end of the shift. That's OK on light ones.

HELPFUL HINTS: From some of our advanced HI-TECH Students, who have a lot of experience with SYSTEM CORRECTION installations.

S10 & S15 4WD-In the vehicle installation. The first thing to do is disconnect the Oxy sensor wire just above the cooler lines and remove the Oxy sensor. This will make more room to remove the 2-4 servo and will keep you from accidently damaging the sensor. They are $50 a shot. Remove two bolts on the driver's side of the transfer case crossmember. This will usually allow the removal of the 2-4 servo, but it's a tight fit. To make more room, if necessary, remove the driveshaft and disconnect the exhaust pipe next to the crossmember. To remove the govnr: The transfer case lever must be moved to one side. Remove the two bolts that hold it on the driver's side and one bolt at the top of the trans. Now the assembly will move over enough to remove the govnr.

We were having problems getting the shift points and kickdowns working right, UNTIL we started doing it just like the instructions on page 8. If the air cleaner didn't hit the bench, it couldn't be right. Also we found that in step' four where it says FIRMLY, it should probably say, "as HARD as you can:' The new BOOTSTRAP'· throttle valve system and REALLY following the cable instructions has changed an impossible headache into fun.

BAND CURING-The band curing sure sounded like it might be like "Snipe Hunting" when I read it. For one thing I didn't believe it would work and the other thing was, I was chicken to try it. You probably know the rest. After trying 8 other things, three trips to the customer and at least 2 days working time, we cured the band. It shifted perfect-all over. Now I realize the reason I was chicken to do it. I didn't think it would work. It does. (This was the reaction of the TransGo Tech-Student's first installation. "Don't let band curing scare you;' it works.)

After installing over 30 kits, we've found three things that need special care.

1. Find the little notch on each alum bushing that the roll pin slides into and install the bushing so the roll pin goes IN it. If you are not watching carefully it is really easy to have the bushing turned wrong-with-thepin-in an oil slot instead of its own little notch:

2. Installing bolts into holes "Z" shown on the instructions and tightening the holddown plate is a must. If you don't do it that way, it is easy to not get the plate tightened and have some crazy shifts.

3. If you don't get the TV bellcrank mechanism lined up on the roll pin and you tighten the bolt it will BEND the bracket. The side of the bracket will then rub against the plunger and hang it up. We have also found that sometimes the bracket is bent from bad original installation or from someone giving it way too much TV. **Here is how we check it:** Install the bracket. Make sure the bracket clears the plunger. Rotate the arm and see that it bottoms the plunger by the time it gets to the middle of the TV cable hole.

SOME ENCOURAGEMENT FROM OUR TECH TEAM:
When a customer is screaming about how much trouble he has had with his trans he always talks about the MONEY. The real problem is not the MONEY. The real problem is that he didn't think it was FIXED CORRECTLY, but he doesn't have any way to prove that, so he YELLS about the MONEY. He can PROVE that.

Everybody squeaks a little then they spend money for service. If you take the effort to really make this trans work CORRECTLY, the only loud talk will be the customer, trying to convince his lady and his friends, that he is a Hero for finding somebody who DID fix it correctly.

If you really "buckle down" about learning SYSTEM CORRECTION technology, you will fix trans's that nobody else around can fix. Customers will come to you, who have just had the "Traditional Repair" done somewhere else, and will pay you to **really** fix it. New or nearly new vehicles will show up with complaints and worries. They will be happy to pay you to fix the complaints and furnish additional durability.

There are two other common complaints this tech corrects:
1. REVERSE SHUDDER or CHATTER with EVENTUAL LOSS OF LOW-REV CLUTCHES. This is a common malfunction many 700's have if really warmed up. Repeating loss of low-rev clutches is one of the main reasons this trans would not hold up under heavy duty use.
2. Cut loose or neutral condition on hard throttle start off. If vehicle takes off easy ok, but has cut-loose on hard throttle, it isn't usually the input sprag. It's a pressure rise malfunction that this tech FIXES.

BAND CURING COMPLAINTS: Complaints concerning the 1-2 shift, have been a sore spot for the factory and the trade since day one, and continue to get worse as time passes. We were no exception. Even with the extended accumulator range of the kit, we were not getting a 1-2 shift that consistently felt good. It is a *two part problem.* If you want to turn out trans's that have a consistently good 1-2 shift-no complaints, now or later-then please take the time to know the cause and the fix.

THE FIRST PART OF THE PROBLEM: The final holding capacity of a fresh band, (new or relined), and a fully CURED band, with 10,000 or more miles on it is the same. HOWEVER, a fresh band will have a much faster apply rate during light to medium throttle shifting requirements.

This means that above *5/8* throttle a fully use-cured band will apply as well as a fresh band. Quite often, I am sure you have found, it will even apply better than a fresh band. Yet, the fresh band will make a shorter, quicker or firmer apply under light to medium throttle.

THE SECOND PART: The Accm system, even with its range extended, does not have the capacity to produce consistent 1-2 shift feel with a fresh and a fully cured band.

HERE IS HOW IT WORKS OUT: The difference in apply speed at mid throttle, with a fresh band and a use-cured band is more than the Accm system can handle.

The ability of a fresh band to engage the drum at mid throttle, changes rapidly, during the first 20,000 miles. At 20,000 miles the band would be use-cured. From 20,000 onward, there will be almost no change in the ability of the band apply, unless some pressure malfunction causes excessive slippage.

A FRESH BAND CHANGES RAPIDLY AS IT BECOMES USE-CURED.
A USE-CURED BAND REMAINS CONSTANT, UNLESS EXCESSIVE SLIPPING OCCURS.

This means the factory has a tough choice to make:

CHOICE 1 IF THE APPLY FLOW AND ACCUMULATION IS CALIBRATED SO THAT THE MID THROTTLE APPLY WILL NOT BE TOO ABRUPT WITH A FRESH BAND, THE LIGHT THROTTLE AND HEAVY THROTTLE WILL HAVE A LONG SLIDE WHEN THE BAND BECOMES CURED. MID THROTTLE WILL HAVE A SHORTER SLIDE, OFTEN WITH A BUMP ON THE END OF IT.

CHOICE 2 IF THE APPLY FLOW AND ACCUMULATION IS CALIBRATED FOR A USE-CURED BAND THE 1-2 SHIFT FEEL FROM 10,000 ONWARD WILL BE GOOD. WITH A FRESH BAND THE 1-2 SHIFT WILL BE UNACCEPTABLY ABRUPT, CAUSING IMMEDIATE COMPLAINT.

CHOICE 3 IS TO CALIBRATE SOMEWHERE IN BETWEEN #1 and #2. IN THIS CASE THE 1-2 IS FIRM FOR A FEW THOUSAND MILES, OK FOR A FEW THOUSAND, THEN A SLIDE FROM THERE ON.

I could haul you, but won't, through *all* the complaints, that this situation brings about. Briefly, the unfortunate mechanic at the dealerships and other shops have reached a state of complete frustration. If they do not replace the band the trans has a slide or slide bump on light throttle and almost a runaway at *3/4* throttle. If they replace the band it whams at *3/8* throttle and is still way too long at *3/4* throttle. If they install the factory fix, with a smaller 2nd piston, it fixes the wham 1-2, but if the customer pushes it at all, it's back in a few months with the band gone. We should all be grateful that we can avoid this hassle.

The obvious answer to obtain a durable and consistent 1-2 shift, is to install a new band and cure it, or a use-cured band and the calibration that matches it. The factory does not have this option, but you do.

The 700 kit is calibrated for a use-cured band and a smooth drum. This means that you will install a cured band, seasoned from use, or a fresh band that *you will* CURE. A fresh band that you cure or a seasoned use-cured band will give you consistent 1-2 shifts with long term satisfaction.

Some states require a fresh band during O'haul or rebuilding. Many shops prefer to install a fresh band, mostly because the mechanic does not know the difference between a well seasoned band and one that is burned beyond good use. It is important that you know how to tell the difference between a well seasoned band and a burned one, so that you will not install one that is burned out. The difference between a seasoned band and a burned band is covered later. **Keep reading.**

Since a great many 700's will not have a band that is reusable let's talk about what will happen if you install a fresh band without curing it. Nothing dangerous or damaging will happen. The 1-2 , shift may have a temporary roughness at *1/2* throttle, that will go away between 5 and 10 thousand miles. It will not be any rougher than the original calibration, because we've changed the relationship between flow and accumulation to minimize the complaint. The best part is that once the band becomes fully cured, the shift will be perfect from then on, rather than having the long slide so familiar with the original calibration. The BEST thing to do is TO CURE the BAND before you deliver the car. WHY? If the customer becomes accustomed to a really firm 1-2, he might think there is something wrong when it corrects itself in use.

PAY ATTENTION HERE, and you will save yourself a bunch of complaints. Many vehicles came with accm code "A:' The accm pressure is so high, and the shift so abrupt, with code "A" that the band may not EVER become use-cured. With code "A" accm valve you will often find it necessary to CURE the band even though it has many miles on it.

CURING A FRESH BAND: What we accomplish by curing the band is to take it thru its wear in, or break in, cycle in a few minutes instead of a few thousand miles of road use. If we look up curing in a big dictionary we find: "To process; by smoking, heat, time, salting or use:' Well we are not going to use the salt. We will use a little of all the rest.
It takes two persons less than 5 minutes. HERE'S HOW—

THIS IS HOW TO CURE THE BAND

Vehicle on a rack, or horses, rear wheels free to turn. One person in the driver's seat, the other under the vehicle with a long large screw driver or pry bar. Place the lever in the "1" position and increase speed to 30-35 MPH. The 2nd person then pries in smartly on the 2-4 servo cover to apply the band, while counting to 5 by thousands. That is, by saying out loud, "one thousand and two thousand and three thousand and four thousand and five thousand and:' release the band. At the same time the person on top adds a little throttle to keep the wheel speed above 22 MPH. The person underneath will hear a whirring sound and will see smoke coming out of the vent as the oil heats up on the drum.

If the person underneath pushes too hard he will stop the transmission rotation. The idea is to get 2 or 3 seconds of a good whirring sound-the band rubbing firmly against the drum. This is not a fussy operation, you are not going to hurt the band in 5 seconds. Always check the curing with a road test.
Make a 1-2 upshift in "D" at 17, 19,21,23, 25, and 27 MPH while watching for a place that is too firm, short or bumpy. If you still find a hump, rump or hard spot, give it another 3 seconds of curing. The very worst thing that can happen, even if you overdid it, is that you would need to install one step firmer accm valve spring. It's much easier to install a used seasoned band, but they may be in short supply.

INSPECTING AND SELECTING SEASONED (used) BANDS
You should not discard a band for these reasons-
1. CRACKS in lining. Mostly the cracks are there because somebody stretched the band out flat to see if they were there and that is what cracks the lining. They don't mean a thing.
2. FLAKES or small spots where some lining is missing. Unless the flaking is 20% of the total lining, it don't mean a thing.
3. COLOR: The natural color of fresh band is white to dark brown. The natural color of a seasoned band is black to very dark brown. A black color alone is no reason to discard the band. A black color does indicate that you should check other things that matter.
Here are the reasons for not-reusing a band .
1. THICKNESS: If you see an unusually thin place (less than .020) replace it.
2. RESILIENCE: Run your fingernail edgeways across the lining to see if you can make a groove, or ridge, or line on the surface of the lining. If yourfingernail will leave a mark without having to remove any material, the band is OK.
3. CARBONIZATION: If you have to push so hard with your fingernail to leave a mark, that your fingernail is actually chipping, breaking or removing material to make the mark, replace the band, it's carboned, or the resin has surfaced.
4. PARTIAL CARBONIZATION: If the middle strip or middle portion of the band or down close to the ends is carboned but the major portion of the lining is still resilient, it is perfectly OK to reuse the band.

If the middle strip is carboned, you can rough it up with a couple strokes of 80-180 emery. This will allow it to squeeze down more and let the rest of the lining take its share of the load.

Sincerely,
GIL YOUNGER

Have a nice day!

TransGo is accepting applications from SERIOUS mechanics for our PRIVATE instant trouble shooting and HI-TECH training program. A private phone number, for when there is a problem and some homework that will show you how to fix it on the bench BEFORE it even happens.

BUILD YOUR OWN "ROLL PIN EXTRACTOR"