200-4R-HD2-A

Reprogramming Kit™

Features:

Street & Strip, the options in this kit will produce shifts from Firm to WILD.
New dual feed 3rd Clutch circuit increases 3rd Clutch holding torque by 200%.
Included is our new Billet 2nd Servo Piston that increases Band holding torque.
High Performance shifts & durability all in one Box!

This is an HD and Hi-Performance product for professional installation. It is not a "do-it-yourself" product. Its for the experienced, **full time**, professional transmission mechanic who is already familiar with the 200-4R transmission.

TRANSGO®

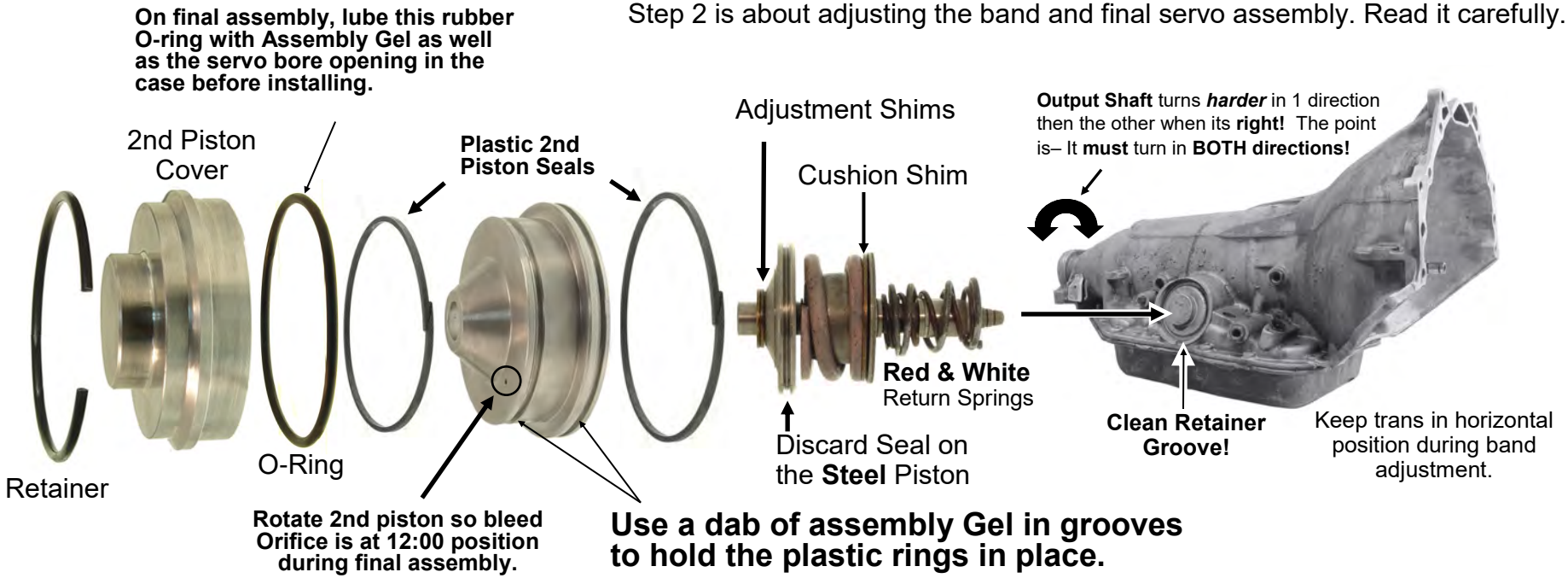
2621 Merced Ave, El Monte, CA 91733-1997

Read the instructions before starting. We've included some helpful information on the last few pages.

2nd Servo Assembly

Step 1: Use this **temporary** setup just for **adjusting** the Band.

Remove the 2nd servo assembly and discard the original return spring. Install cushion **shim** under the cushion spring. Place **2 adjustment shims** on top of the steel piston after **discarding** the seal. Take the new **2nd piston and cover** without any seals or o-ring & install the servo back into the transmission case with the new **white** return spring only. Fully seat the retainer.
Step 2 is about adjusting the band and final servo assembly. Read it carefully.



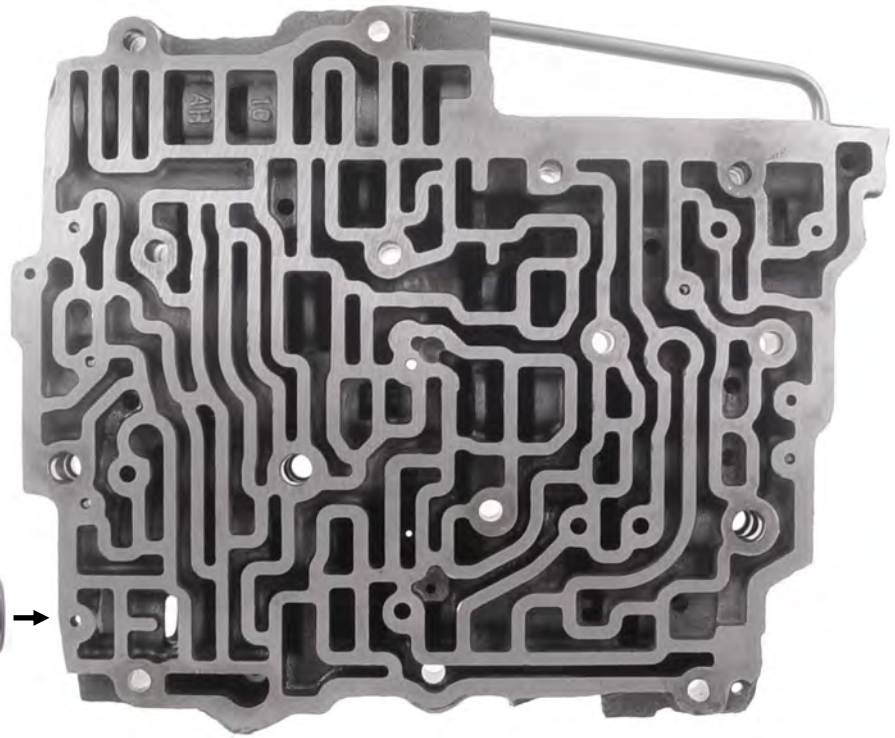
Step 2

Band adjustment: With servo assembled as described in Step 1, see if output or driveshaft turns in both directions with the wheels in the air, Trans in neutral & engine off (if trans is in the car). If the output or driveshaft will only turn in one direction, remove one Band adjusting Shim, re-assemble and re-test. Repeat until you **CAN** turn output or driveshaft in **BOTH** directions.

Final Assembly: After band adjustment is done and shim usage is determined, remove the servo & add the **RED** return spring to the **WHITE** return Spring. Install the O-ring onto the servo cover and the 2 plastic Seals onto the new 2nd piston. Use Transmission assembly Gel or petroleum jelly to lube the servo bore opening in the case & the servo cover O-ring. Do **NOT** use grease. Make sure piston orifice is at the 12:00 position when installing assembled servo into case.
NOTE: It requires a lot of effort to compress Red & White Return Springs far enough to install Retainer in Case Groove.

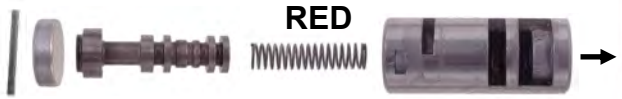
Retainer must be fully seated in groove when installed to avoid servo blow out & case damage.
Final check: Driveshaft **MUST** turn **in both directions** with Engine off, Trans in neutral and wheels off the ground!

Valve Body



Step 1

Install **RED** Accum Spring.



Tech Notes:

The Grand National & Monte Carlo SS Valve Body & Governor is **ideal** for conversions, **IF** you can find one.

However, due to limited production of those units and the difficulty in obtaining them, we have provided a few spring options along with additional data to allow the use of a “standard” Valve Body & Governor. The parts provided will help to reduce the need for a High Performance Valve Body & Governor in most applications. The calibration Parts & Data will also help make tuning the Trans a little easier. See Pages 11 & 12 for tuning instructions.

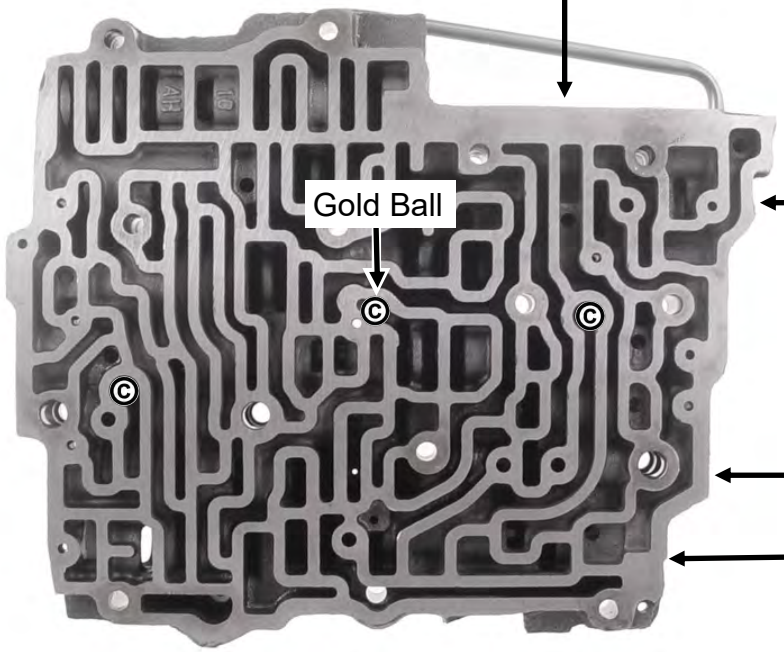
The last page shows valve body codes and matching governor types that work well together right from the start.

Valve Body

"H.O." Valve Bodies from Grand Nationals or Monte Carlo SS's generally do not need MAX throttle shift timing changes. ***If the Valve Body is a known High Performance H.O. Valve Body skip steps 2 & 3.***

See the last page to identify your Valve Body & Governor Type.

Paint Code
(Bottom of VB)



Valve Body
Check Ball Locations ©

Step 1 Install **WHITE** Line bias Valve Spring.

WHITE Line Bias Valve

Step 2 **Grand National, Monte Carlo SS (HO Types)**
Skip this step!

Standard Type: Discard Hollow Roll Pin and install **YELLOW** Spring ***after*** the Valve Body is Bolted on Trans.
Push Spring into Bore past Valve Body Bolt hole with Screwdriver then install Valve Body Bolt to Retain Spring.
This will allow WOT shift timing changes with out VB removal.

TV Limit Valve

Step 3 TV Plunger Spring Usage:
Grand National, Monte SS (HO Types)
Install New Spacer & Re-use Original Spring

Standard Type: Install New **Spacer** & **RED** Spring.

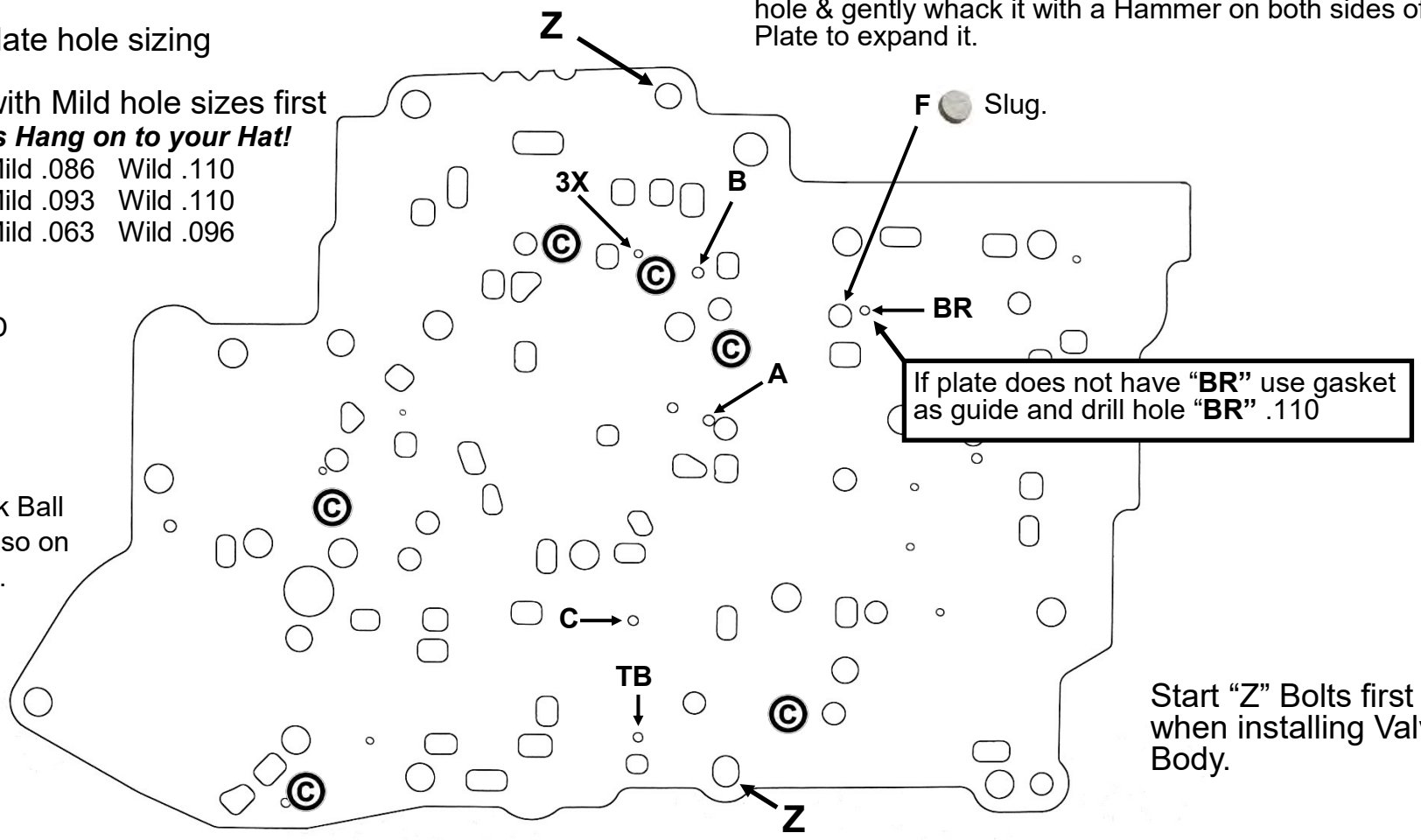
Installs into
the Spring

Separator Plate

Step 1 With a 5/16 Drill chamfer both sides of hole “F” by hand. Lay Plate on hard flat surface. Insert Slug into hole & gently whack it with a Hammer on both sides of Plate to expand it.

Step 2 Plate hole sizing

Drill plate with Mild hole sizes first
WILD means Hang on to your Hat!
A 1-2 shift Mild .086 Wild .110
B 2-3 shift Mild .093 Wild .110
C 3-4 shift Mild .063 Wild .096
3X .110
BR .110
F PLUGGED
TB .055



© Case Check Ball Locations also on page 8.

Start “Z” Bolts first when installing Valve Body.

Shift Feel & the Vehicle Relationship.

Shift feel has several contributing factors outside of the Transmission, Vehicle weight, Axle ratio Engine output and Torque Converter stall speed. A 2900lb Camaro with 3:73 Gears will shift firmer/harder than a 3600lb Chevelle with 3:08 Gears. High stall Torque Converters will hide the shift feel in the Converter slippage.

Dual Feed 3rd Clutch

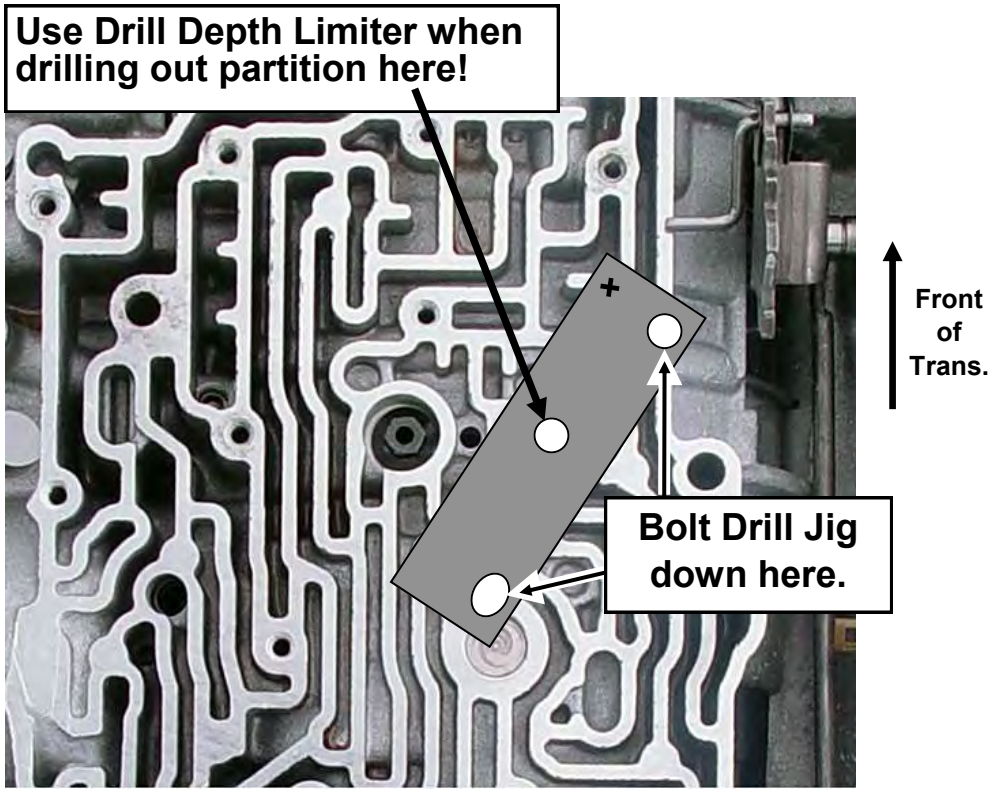
Dual Feed 3rd is advised for Hot Rods & Racing.
Dual Feed gives a **FIRM** 2-3 shift and increased torque capacity for Hot Rods.

For every day drivers:
Skip Dual Feed installation on Pages 6 & 7.

Drills Provided:

Step 1

Install Drill Jig using 2 bolts with "**+**" side facing up at you and towards the front of the trans.



Step 2

Set drill depth to .300 on a .203 drill bit.

Step 3

Drill straight down until Drill Depth Limiter bottoms on Drill Jig. What you are doing is removing part of a partition and **NOT** drilling a hole clean thru the case! Look at page 7 to see a better view.

Feed Bushing Installation

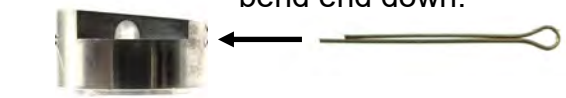
For every day drivers: Skip Dual Feed installation on Pages 6 & 7.

Step 1

Make sure there are no case burrs from drilling. Bushing needs to fit freely in case.

Step 2

Insert cotter Pin and bend end down.



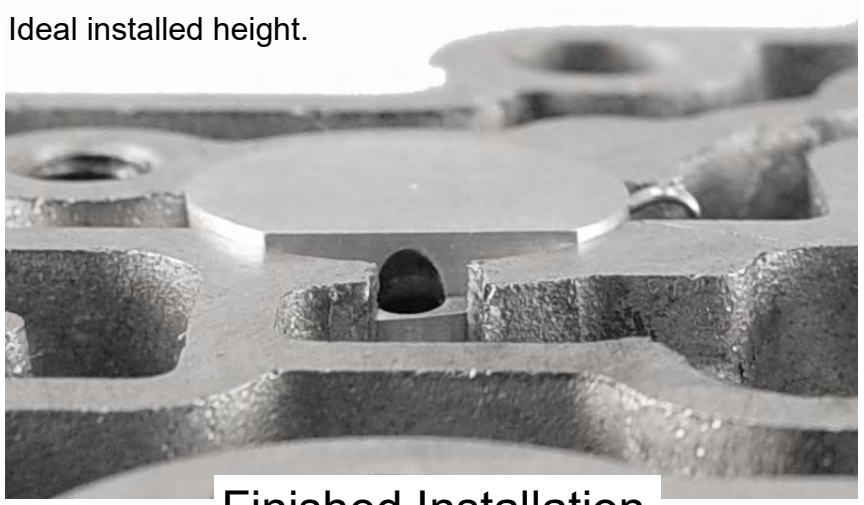
Step 3

Install thin o-ring over center Support Bolt.

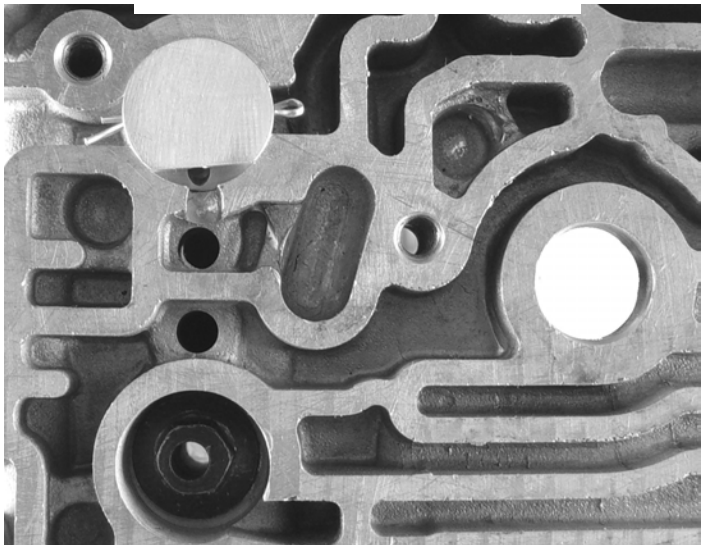
Step 4

Installed height of Bushing should be slightly above Case surface. If Bushing is flush or below remove thin O-ring & install thick O-ring. Valve Body will push Bushing flush with case when Bolted to Trans.

Ideal installed height.



Finished Installation



Case Components

Check Ball Locations ©

Use a dab of Assembly Gel in each checkball pocket and push checkball into Gel to hold it in place. NO GREASE!

Pressure Regulator

No Balls here

Install & tighten Z Bolts first.

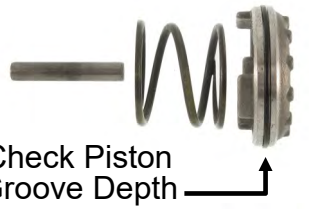
Z

Feed Bushing

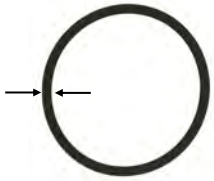
Z

4th Accumulator

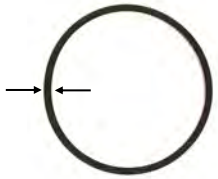
Select & install new Seal. Install Piston in Case first, original Spring & Guide Pin.



Check Piston Groove Depth



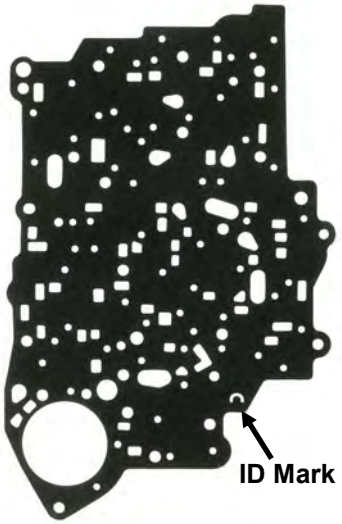
Deep Groove Type Piston



Shallow Groove Type Piston

Gasket ID

Separator Plate to Case Gasket



Separator Plate to VB Gasket

Reverse Fix "Guppy"

Accum Body Plate Installs after VB gasket!

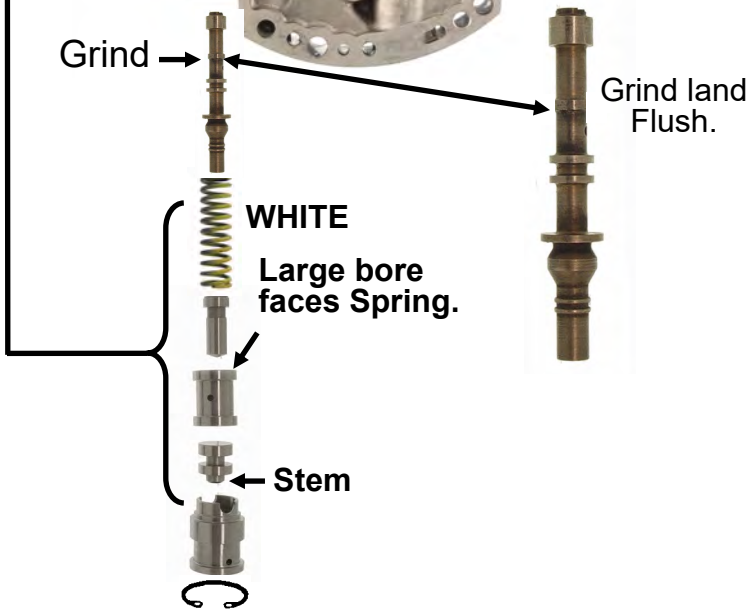
Open & read **Reverse Fix Pack**. "Guppy" installs with this short bolt but leave bolt loose ***until*** the 2nd Accum. housing is installed. (Page 9)

Pump & 1-2 Accumulator

Step 1 Pressure Regulator Valve

Remove PR Valve and grind land flush.
Install WHITE Spring & **New** Boost Valves.

Note: If Trans is on Bench & running a NON-LOCK UP converter, help it out. Install **TransGo 7-CCV.**
It will run cooler by charging the converter correctly. Do NOT install when using a converter with a clutch in it!



Avoid Pump Ring failure & Max RPM pressure drop.
Install **TransGo 700-PKH** Hardened Ring Kit.

Step 2 1-2 Accumulator

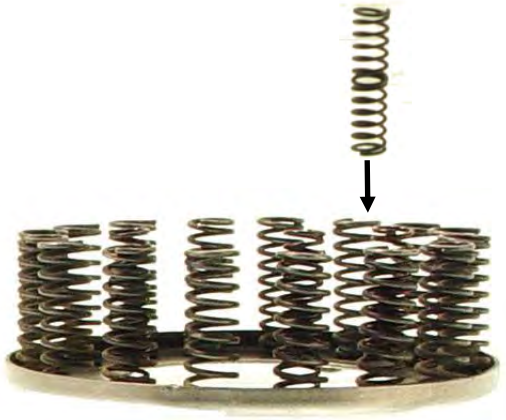
Remove old plastic or rubber seal on piston. Install new **"D" Seal** provided onto the 1-2 Accumulator Piston. Make sure the **rounded edge is** facing outward.

Lube housing bore with ATF & install Piston & New **Plain** Spring. Place new small Gasket on accumulator housing before assembling on transmission.

If Trans is on the Bench install 3rd Clutch Return Springs.

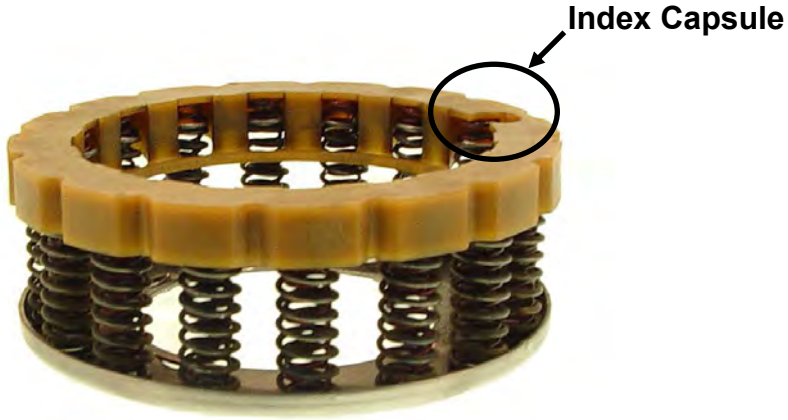
Step 1

Insert RED inner Springs into all Retainer Springs.
Retainer Spring count may vary.
High RPM Engines should use full Spring count Retainer.



Step 2

Install Spring Seat on Retainer.



Step 3

Install Retainer & Seat assembly together. Make sure the Spring Seat Capsule opening is lined up with the Capsule in the Piston.

TV Adjustment, This is *the correct* method for setting a factory TV Cable.

1) Disconnect TV Cable from Throttle Arm. Push Gas Pedal to the floor from inside the Car. Throttle Arm MUST be @ wide open against its stop. Make any needed corrections here before going to next step.

2) Release Throttle, Push Cable release Button & move Cable Housing towards front of Car as far as it will go. Hook TV Cable to Throttle Arm.

3) Transmission Pan off: Push Gas Pedal to floor from inside the Car. While Pedal is on Floor push release Button & push Cable housing away from Throttle Arm until it stops (push firmly). With Pedal on floor TV Plunger must be flush with Plunger Bushing **NO EXCEPTIONS**!

This is referred to as MAX TV**, leave Cable at this setting.** If Cable runs out of adjustment before Plunger is flush get a shorter TV Cable. Attempting to make shift timing or shift feel changes by adjusting Cable leads to loss of kick down, early or late shifts, over sensitive part throttle downshifts and overall poor performance & durability.

TV System Road Test.

1) At minimum Throttle let Trans make a few shift cycles.

2) From a minimum Throttle start, let Trans make 1-2 shift. Right after Trans shifts to 2nd, floor the Gas Pedal, **Trans must downshift back to 1st**.

If Trans has 2-1 kick down, TV System is functioning properly. If Trans does not kick down to 1st & the TV Plunger is flush with Plunger Bushing there is a TV system malfunction. Driving with no 2-1 kick down may cause Friction component failure and *will* cause other shift related complaints.

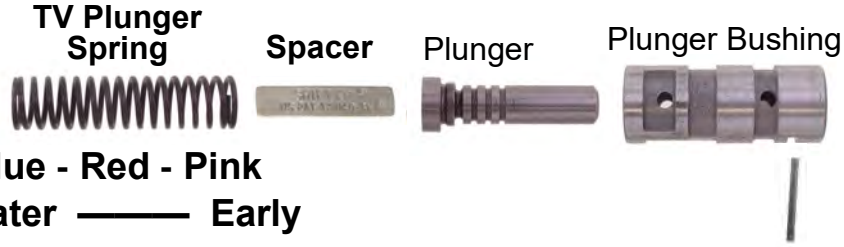
No 2-1 kick down: Attach 300lb pressure Gauge on Driver's side of Trans & give us call 626-443-7451.

Shift Timing Changes.

Do not attempt any adjustments if Trans has no 2-1 kick down!

(Always set shift timing before shift firmness)

If light to medium Throttle shift timing is to early or late install the alternate TV Plunger Spring (page 4 step 3) to alter shift timing.
NOTE: These changes will NOT effect Wide Open/MAX Throttle shift RPM. This change can be made with out removing the Valve Body.



Blue - Red - Pink
Later ——— Early

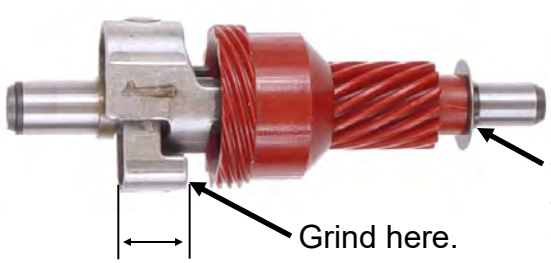
Adjusting MAX throttle shift timing.

To raise MAX throttle shift timing remove the **Yellow** TV limit Spring & install the **Green** Spring. (Page 4 Step 2) This will raise **MAX RPM** shifts **PROX 500 RPM**.
Road test and record current MAX RPM shift points before making any changes. There will be a 300 to 500 RPM difference in MAX Throttle RPM shift timing between the 1-2 & 2-3 when using a non hot rod VB. This kit does not address the difference and you will have to hunt the planet to locate a factory hot rod valve body.

TV Limit  **Green**

Raising MAX throttle up shifts with *Green TV limit Spring installed.*

Remove 1/16” from the length of the Secondary (small) Weight & road test. Grind as needed until desired MAX RPM shift is obtained. NOTE: Grinding Governor will raise the speed of all WOT forced throttle kick down shifts.



You can remove this clip and washer to remove the plastic governor gear if you need to grind the weight.
Be careful of governor spring(s).

Hard Launch’s off the Line

Trans will starve for Oil and drop line pressure. This shows up as a long or late MAX throttle 1-2 shift and will burn out the Band. (Can be a bad crimp on front seam of plastic/metal filter.)

Overfilling Trans 1.5 QTS helps. This complaint really comes out with High Stall Converters & Slicks.

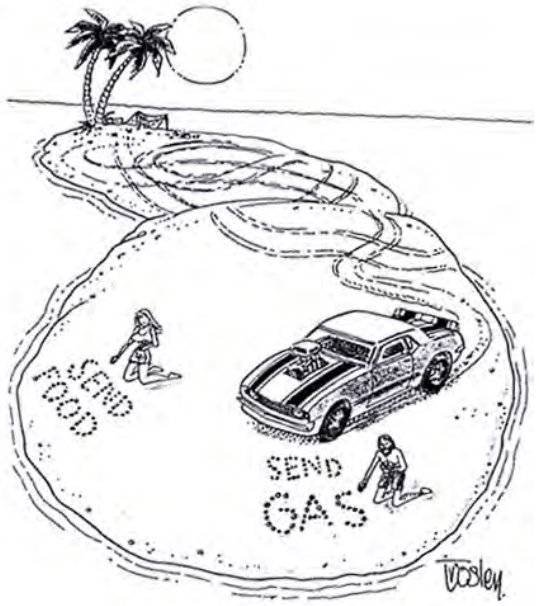
Look for this problem with a 300 psi gauge attached during hard acceleration launches.

If gauge needle drops or waves erratically (more than 20 psi) add more oil. If it helps, you have a pump starvation problem. Search the internet for a deep pan/filter combo.

Shift firmness

1-2 Shift too firm? Reduce hole “A”. Too soft? Increase hole “A”.
2-3 Shift too firm? Reduce hole “B”. Too soft? Increase hole “B”.

1-2 & 2-3 both too firm? Install Factory Servo Piston & Cover with last 3 digits of 141, 692 or 694 on Cover. Use **White** Servo return Spring with smaller Servo Piston.
Note: Installing smaller Servo Piston will reduce 2nd Gear Band Torque capacity.
3-4 Shift too firm? Reduce hole “C”. Too soft? Increase hole “C”.



Mr. Shift®

Thank you for using this product. We hope you enjoy it as much as we did making it!

2004R Governor Designs & Matching Valve Bodies

Always start with a combination that WORKS right from the get-go!

A High Output governor with a **matching** VB is a great place to start if you have one.
Standard Governor and **matching** VB will work as well, they just shift a little sooner at full throttle.
Don't use HO Governor and standard VB. You'll battle shift timing issues until you eventually give up tired & defeated.
For performance work, use either the **HO** combinations or the **Standard** combinations.
Codes are ink stamped on the VB.

HO Type

VB Codes that Match
High **O**utput Governor

BQ, BR, CQ, CZ, TT

HO Governors
Secondary weight
Measures .240

HO Governor and matching VB has
Max throttle shifts 5000 to 5500 RPM

Standard Type

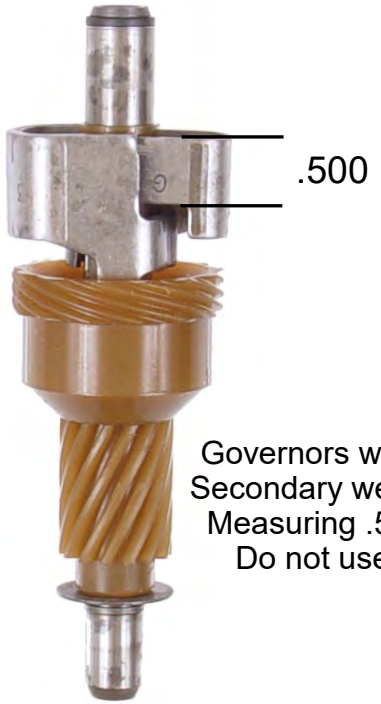
VB Codes that Match
Standard Governor

OZ, KZ, AA, BY, CR, CT

Standard Governors
Secondary weight
Measures .355

Standard Governor and matching VB
Max throttle shifts 4000 to 4600 RPM

Any VB codes **NOT** listed under
HO or **Standard** as well as this
Governor are not suited for
Performance Applications
Avoid them.



Governors with a
Secondary weight
Measuring .500
Do not use.

Do Not Use For
Performance Applications!