

SK® F4A-EL 1990-2002

CORRECT--REDUCE--PREVENT

Rough 1-2 Shift--3rd Clutch Failure
Fast Pump Wear-High Line-Low Line
Accumulator Seal Wear-Won't Move.

Hello Mechanic and Shop

This trans is going to work **BETTER** than **new**. Knowing what causes complaints and **correcting** those **causes** while the trans is apart allows both you and your **customer** a **successful** repair.

BUT: Even when you follow these **instructions**, and really do **fix** this **trans**, it may still leave a little vacant **mystery** spot in you because you don't know exactly what you did that caused it to work so well.

"That **Mystery** might follow you around **causing** you to **doubt** yourself or your abilities. If you are willing to **read** these words, you will **cure** the **mystery**."

Original Failure Sequence

Original Converter: The alum front sprag cap wears making **alum particles**. This wear allows the stator to move forward until it contacts the turbine, causing **steel particles**. This also reduces stall which kills performance.

Rebuilt Converter: During rebuild, a **bronze washer** or needle bearing is usually installed in the converter to **prevent** future metal **particle** problems.

However: The particles and **muck** are present throughout the cooling system and at least a million particles are also in the **valve body** passages and **bores**.

F4A-EL 4EAT-F FA4A-EL F4A-III

Escort--Tracer--Mazda Protégé-MX3-323

Kia: Rio--Rio Cinco--Spectra--Sophia

Upgrades: Pump, Valve Body,
Accumulator and Clutch Seals.

Cooling System

You will rarely get all of the **muck** and metal **particles** out of the **radiator**. To remove and send it out is too much work and makes you responsible for hoses and connections. It's **better, faster** and less expensive to install an **auxiliary cooler** and skip the radiator.

If you absolutely have to re-use the radiator, then please do this.

1. **Flush** the radiator cooler in **BOTH directions**.
2. **On Road test:** After you have seen that all the shifts are there, drive the car in **2nd gear** at 50 or 60 mph for **5 to 6 miles** and into the shop and on a **rack** and get wheels **off the floor**.
3. While **still hot** wedge a **match book** cover under **throttle arm** and run in **4th gear** at 50 to 60 mph for **20 minutes**.
4. Let it **cool**. Start and **run** it thru the gears to see if any **valves** are **stuck**.
5. Drop the **pan** and **clean** out all the **particles**. Also clean any stuck valves, if there was any.

HERE IS WHY

Running trans at speed with car **stopped** will allow most of the **particles** to settle by **gravity**, into the **pan**, instead of recirculating thru the trans on corners and during stop and go.

This also **cures** a replacement **band** so that the **1-2** shift will be **shorter** but still **smooth**. [More about this page 2]

Original VB Problems

Wear and cross leaks cause **high** line and accumulator **pressures** when warm. The **high** pressure causes **rough** shifts, especially the **1-2**. It also causes severe **2-3 bindup** which gradually burns the 3/4 clutches and the band.

Worst of all, it causes **cruise** pressure of **120 to 140 psi** which is why the **pump wears out** and the rings and **seals** shrink or **flatten** out.

Before you **fix** this trans it is not uncommon for hot start-off pressures to be **190 to 280**. When **FIXED** it will never be over **155** in **forward** gears.

With this **kit** installed **pressures** will **match** the Ford and Mazda **specs**---and will stay that way. **Min** pressure will be **50 to 60 psi** and **max** forward **150**. This kit also corrects **accumulator** pressures so that **shifts** will be **short** but still **smooth**.

Don't let all these pages "trick you out" mentally. Besides what you'd normally R&R or replace during major repair, you will be drilling two holes, carefully adjusting the **TV screw** as shown **page 4**, and installing a **spacer** under **PR** valve shown on **page 5**----It's just not a big deal.

Here's why you're doing it: Teflon rings resize or get stiff. The **wires** under them [**fluid deflectors**] will make them **seal quickly** every time.

The Hi-Temp, Low-Shrink Rings and the Hi-Temp seals on the transfer gear shaft, input shaft, will **stop** the **3/4** clutch **leaks** this trans usually has. You can easily **verify** this with **gauges** on line and **3/4** as shown on page 7. With trans **HOT** 3/4 clutch pressure should be **within 10 lbs** of line at all throttle openings and speeds in 3rd & 4th.

Page 3: Plate hole "**E**" increases **flow** to **3/4** clutch and works in **harmony** with the **band release spring** [page 7] to assure no light throttle 2-3 cutloose and a quality 1-2 shift. Enlarging hole "**F**" makes certain there is adequate **PR balance** to keep PR valve from **bottoming** out accidentally.

Page 3: Bell housing holes "**H**" will **prevent** front **seal blowout**, even with a worn support or hub bushing. It's important, **don't skip it**.

Page 4: Is all about the **TV system**. Two things here. The original TV spring **fades** [not the plunger spring] and the adjustment **screw** vibrates loose and **backs out**. This causes TV to be out of **synch** with engine **torque**.

New **ORANGE** TV spring (1) is fade resistant. The **short** spring (2) keeps the **screw** from backing out.

Page 5: The **PR valve** **pounds** into the bottom of **casting** and **shuts** off **balance** oil. This causes **high line**. The metal

shim "A" brings the PR valve to it's normal location and **prevents** further **pounding** into the casting.

A new **PR spring** with **OE specs "B"** replaces faded original.

Page 6: "A" allows **lockup**, even when the lockup **solenoid** is a bit **dirty** and not fully exhausting.

"**B**" increases **Lockup pressure**, during highway acceleration, to avoid **shudder**, slip and **slip codes**, even with a converter that is less than perfect.

"**C**" causes a **firmer 3-4** shift with heavy throttle. **You'll love it**.

Page 7: "A" New **band release spring** which gives a **tighter 2-3** shift at light to medium throttle, 22 to 38 mph.

Installing New or Relined band?

There's **no** band **adjustment**, but make sure the drum will turn inside the band. You may have to grind the pin just a little.

When a **replacement band** is installed the **1-2** shift will be **softer** than you like while it cures. You can **cure** the **band** right away by running hot **on the rack** at **50 to 60 mph** for **20 minutes**.

The rest of page 7 is tech and assembly information.

Self Cleaning Pump Valve Kit: Is in a separate package. This **reduces** the **overwork** of the **pump** and **prevents** **won't move** in either direction.

VALVE BODY ADVICE: Don't even think about "passing" the valve body or just flipping the valves a bit, it will bite you. This valve body requires **focused attention** and total cleaning.

To prevent mix up and speed up your work, the ID specs are given for the springs that are not replaced.

When the valve body is severely contaminated: Remove the 3-2 and 2-3 timing valve springs and place the **valve body** in the **freezer** for 30-45 minutes. While still cold, **whack** the **valves** around a bit with a short handled **screw driver**, and push them IN and OUT and they will be free when the valve body warms. Re-install the timing springs.

TV Adjustment--Listen Up: Fastest, best and safest way to get good shifts. While the trans is on the bench Install a gauge on line pressure, where shown on page 7. As soon as idle speed comes down to normal adjust TV to get 60 to 62 psi line. Road test with the gauge.

Page 8: Feedback, something you can do for us. Please mail or FAX it.

Thanks for listening and let us hear from you soon.

TransGo Tech Team



Gil Younger

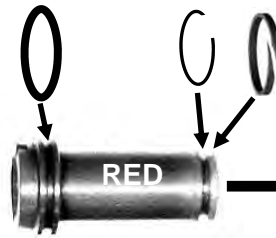
If you put Trans Jel in fridge at night it works better.

A. Rubber "D" Ring

B. Install wire then ring.

G. Important

In line with the notches, drill two 1/4" holes thru casting into the seal area.



2nd accum piston

Gently install rings with Trans Jel.

C.



Install wires, then rings.

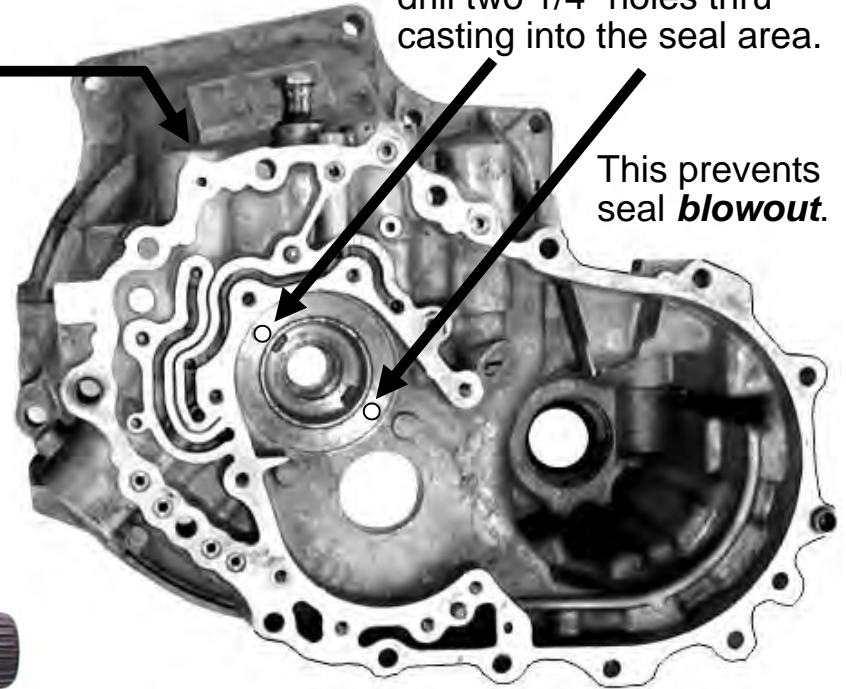


D. Install 2 O-rings.

O-Rings

With 5 Solenoid VB:
See additional pages for plate instructions.

E. Drill this hole with small drill furnished (.062).



This prevents seal **blowout**.

Do not air check 3/4 clutch through the bell housing. Air check 3/4 clutches, from the bottom, AFTER the case and pump is installed.

F.

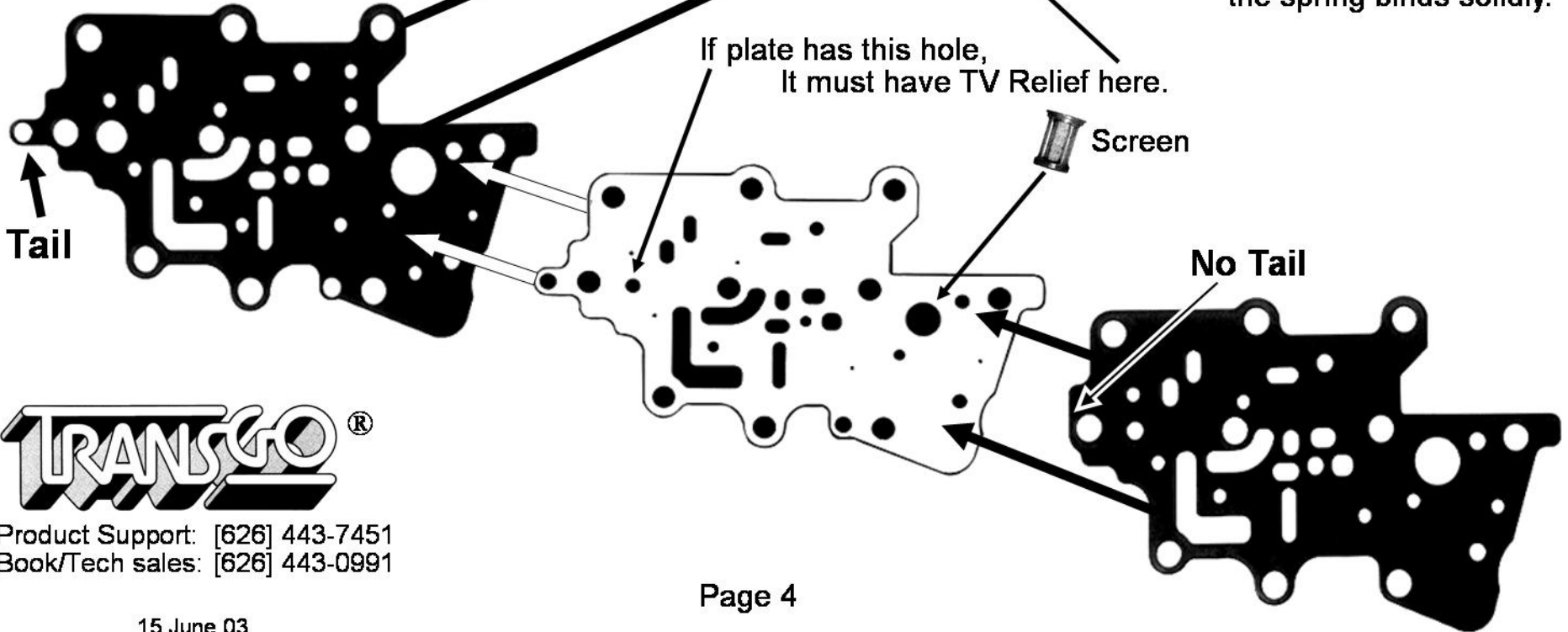
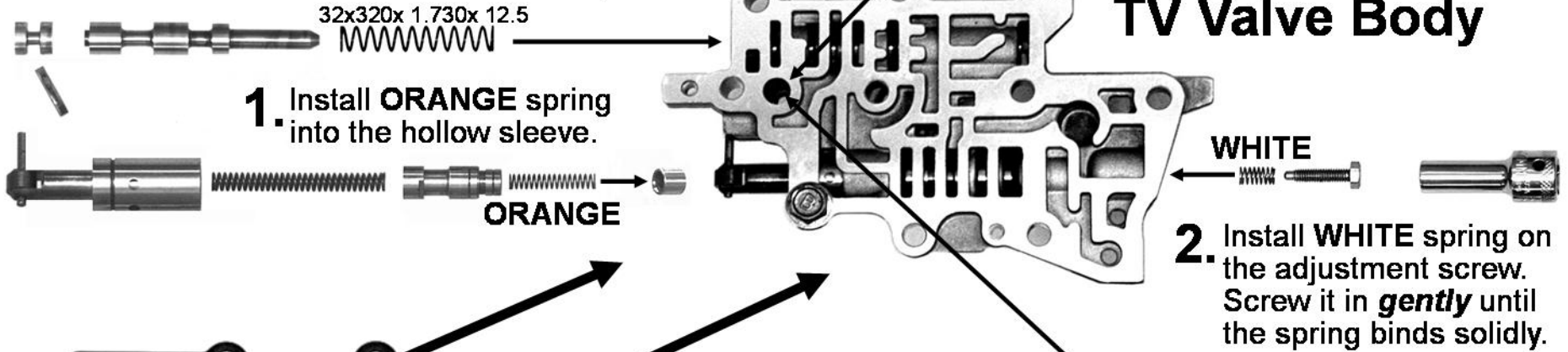
Drill this hole with the larger drill furnished (.078).

With 5 Solenoid VB: Skip this page.

Mechanic: TV valve must be free. If it's hangy put VB in freezer for 30 minutes and whack valves around to free'em up.

.250 Steel Ball
TV Relief Assembly
Not used some models.

TV Valve Body



Product Support: [626] 443-7451
Book/Tech sales: [626] 443-0991

15 June 03

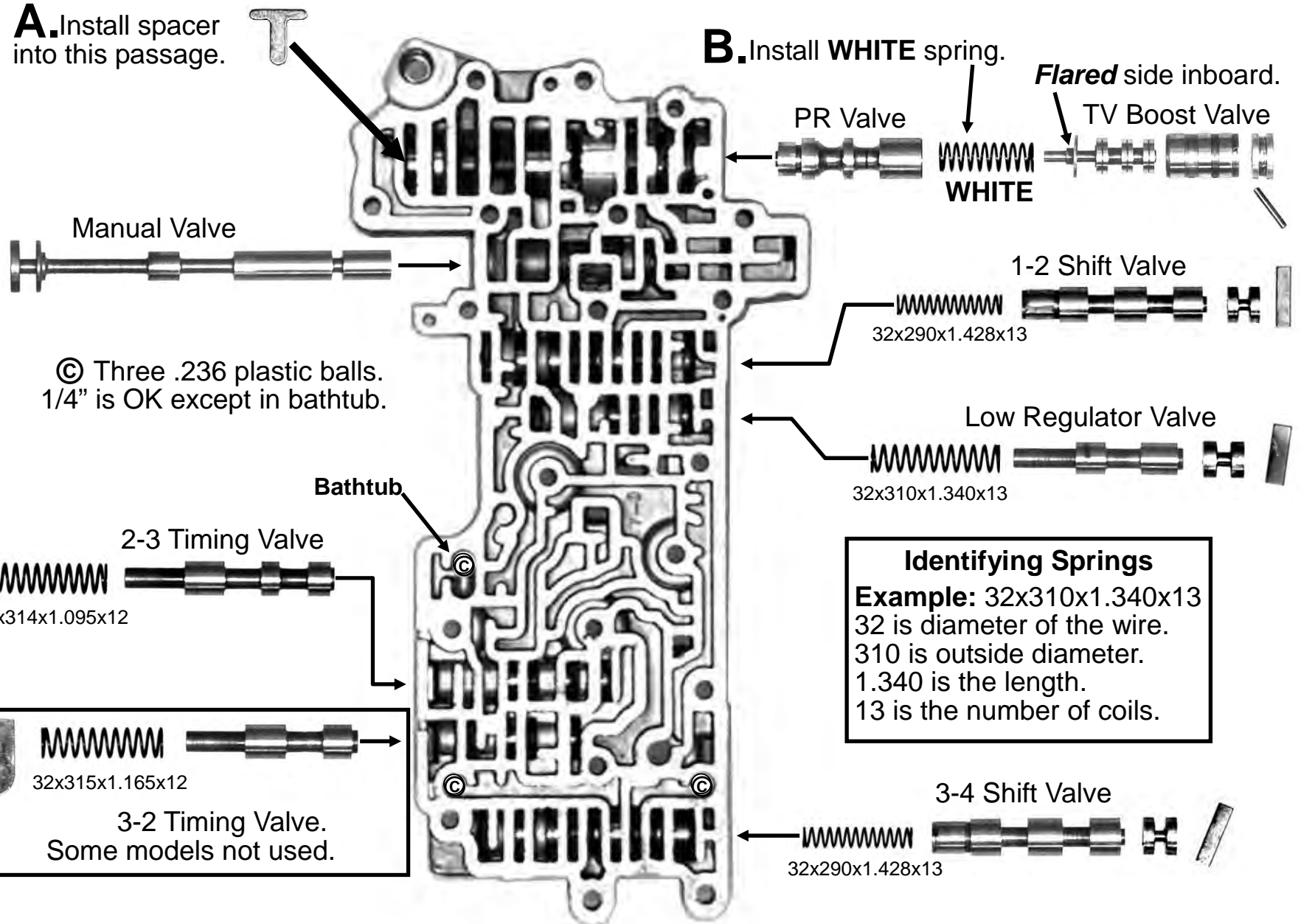
With 5 Solenoid VB: Skip Steps A & B

Main Valve Body

A. Install spacer into this passage.



B. Install **WHITE** spring.



© Three .236 plastic balls. 1/4" is OK except in bathtub.

Identifying Springs
Example: 32x310x1.340x13
 32 is diameter of the wire.
 310 is outside diameter.
 1.340 is the length.
 13 is the number of coils.

**Late Type Lockup Valve:
Skip Step A**

Lower Valve Body

**A. Early Type Only
Install RED spring.**

Early Type Lockup Valve **RED**

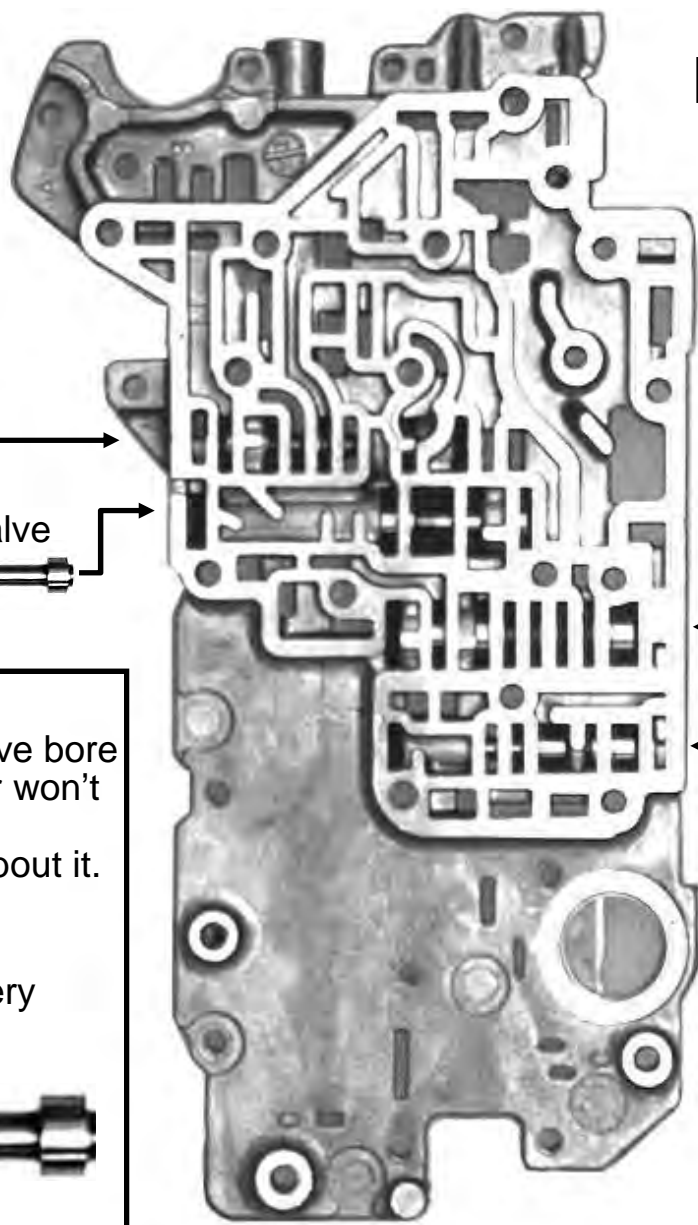
**B. Install ORANGE spring.
TCC Limit Valve**

Orange TCC Limit Valve

Tech Note:
You may find that the TCC limit valve bore has ridges and the valve doesn't or won't come out.
If it won't come out, don't worry about it. Just make sure it's free.

If it does come out, grind a very **small** chamfer on two edges.

TCC Limit Valve



C. Install WHITE spring

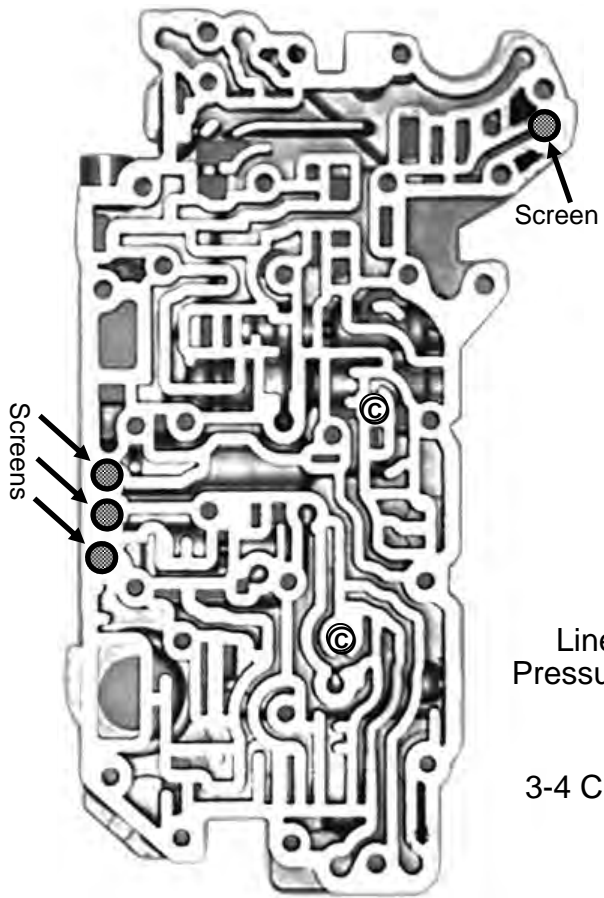
2-3 Shift Valve
22x288x1.417x13

3-4 Clutch Bypass
WHITE

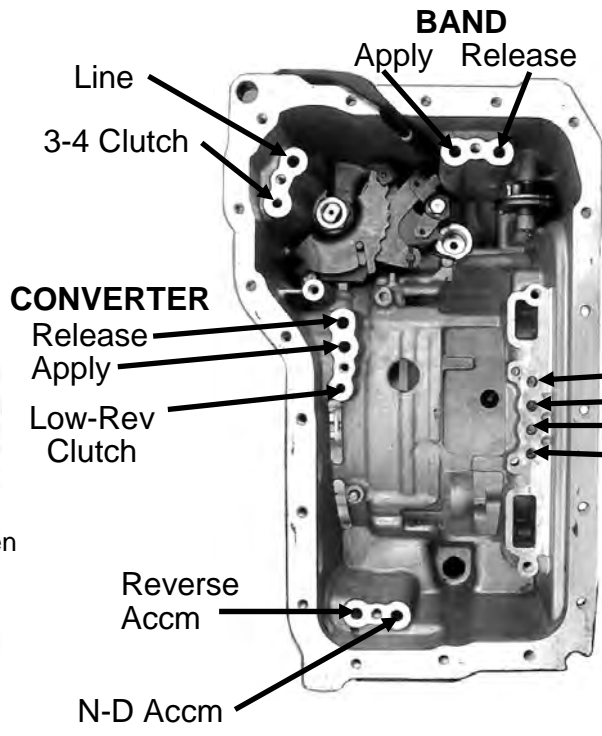
Hello Mechanic:
This page completes the Valve Body part of the kit installation. The next page shows the band release spring and helpful TECH.

Missing some .236 check balls?
 Don't worry. 1/4" plastic
 balls will work OK except in bathtub.

- © Two .236 or 1/4" plastic
- Four Flat Screens.



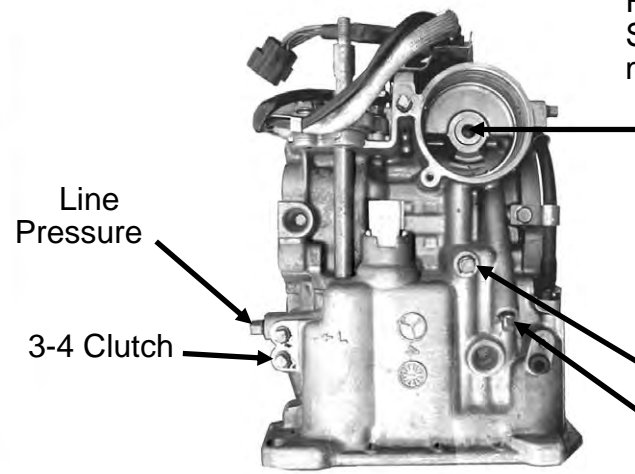
Lower Valve Body



Clutch and Band Air Check
 Squirt 10 pumps of fluid into circuit and apply with full pressure to seat the rings and seals.
 Then pump another 15 to 20 squirts into circuit and 35 psi regulated air must apply the clutches.



Remove rings one at a time. Clean the groove. Scrape the OD and sides of the ring to remove any metal particles. Then re-install it. "You'll Love it."



Pressure Taps

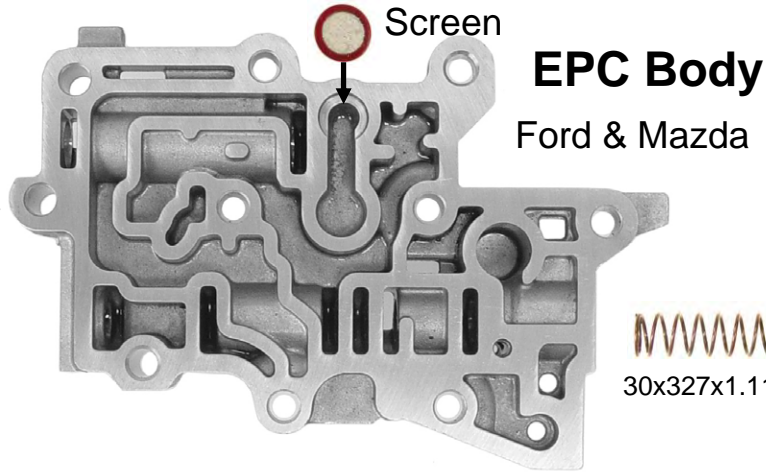
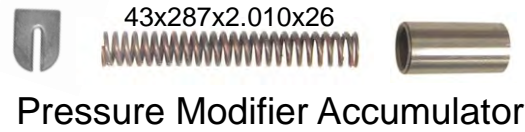


A. Install **WHITE** band release spring.

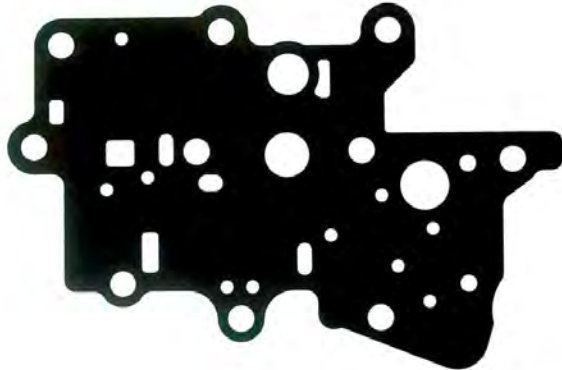
Band Apply
 Band Release

FA4AEL--5 Solenoid Ford & Mazda Type

Follow **main** instructions **and** both sides of this page.



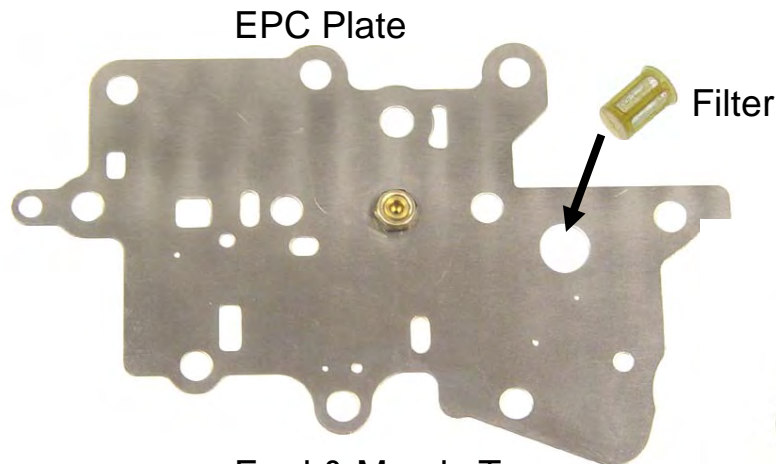
This gasket first on EPC body.



Ford & Mazda Type

Gaskets for EPC body are different for each side of plate.
Ford & Mazda gaskets are different from KIA.
5 solenoid models are different than cable controlled models.

Don't turn adjust-
ment screw



Ford & Mazda Type
Disassemble VB to clean.
Install new EPC solenoid.

This gasket last on plate.

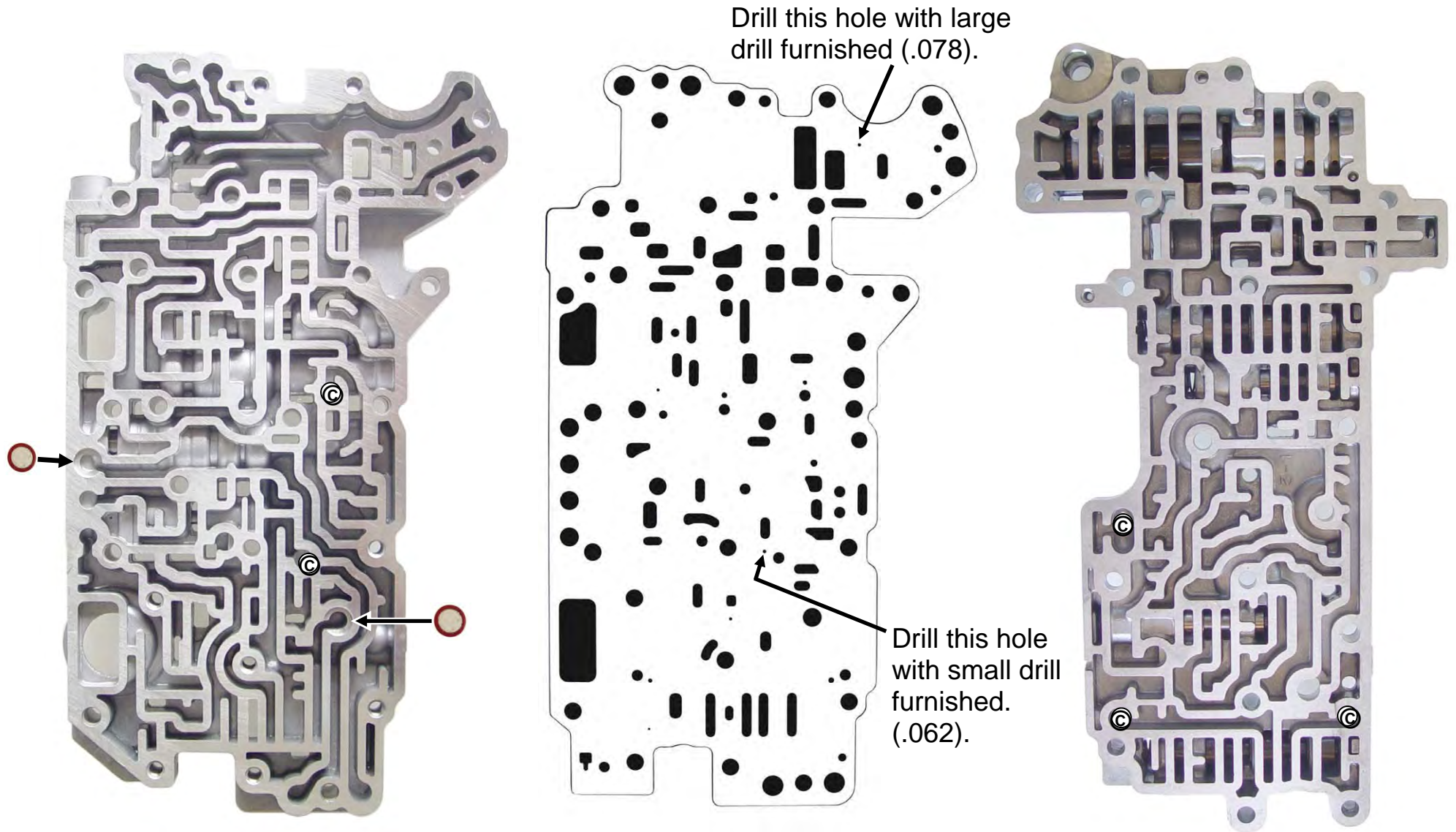


Ford & Mazda Type



Additional Info
5 Sol: Ford & Mazda

5 Solenoid Ford & Mazda Type



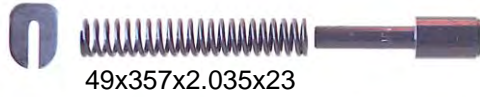
Install Five .236 check balls & Two Screens

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5 Solenoid KIA Type

Follow **main** instructions **and** both sides of this page.

Pressure Modifier Accumulator



49x357x2.035x23

This gasket first on EPC body.



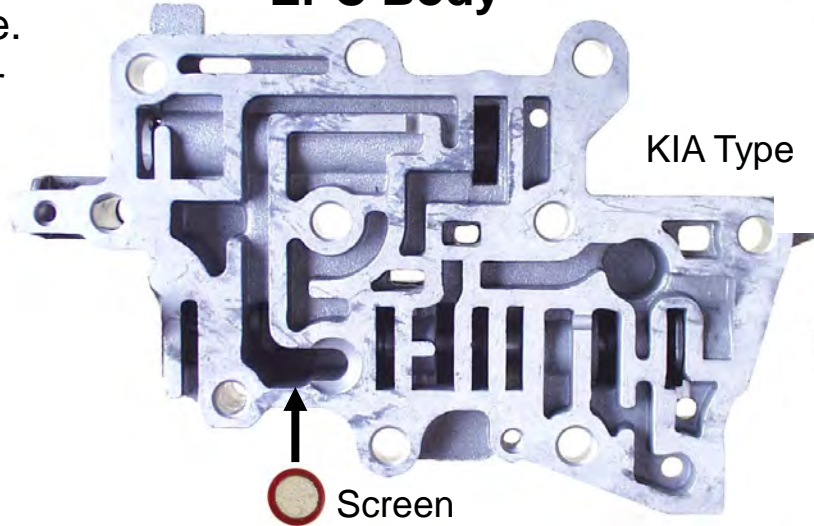
KIA Type



Additional Info
5 Sol: KIA Type

15 June 03

EPC Body

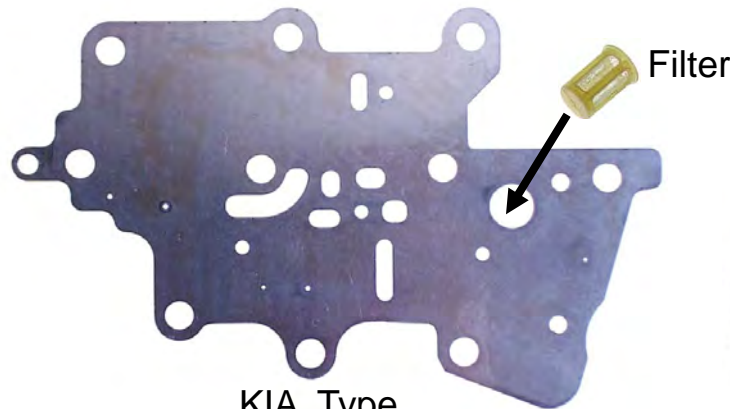


KIA Type

Screen

Gaskets for EPC body are different for each side of plate.
KIA gaskets are different from Ford & Mazda.
5 solenoid models are different than cable controlled models.

EPC Plate



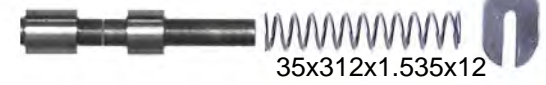
KIA Type

Disassemble VB to clean.
Install new EPC solenoid.

EPC Solenoid
KIA Type



Pressure Modifier Valve



35x312x1.535x12

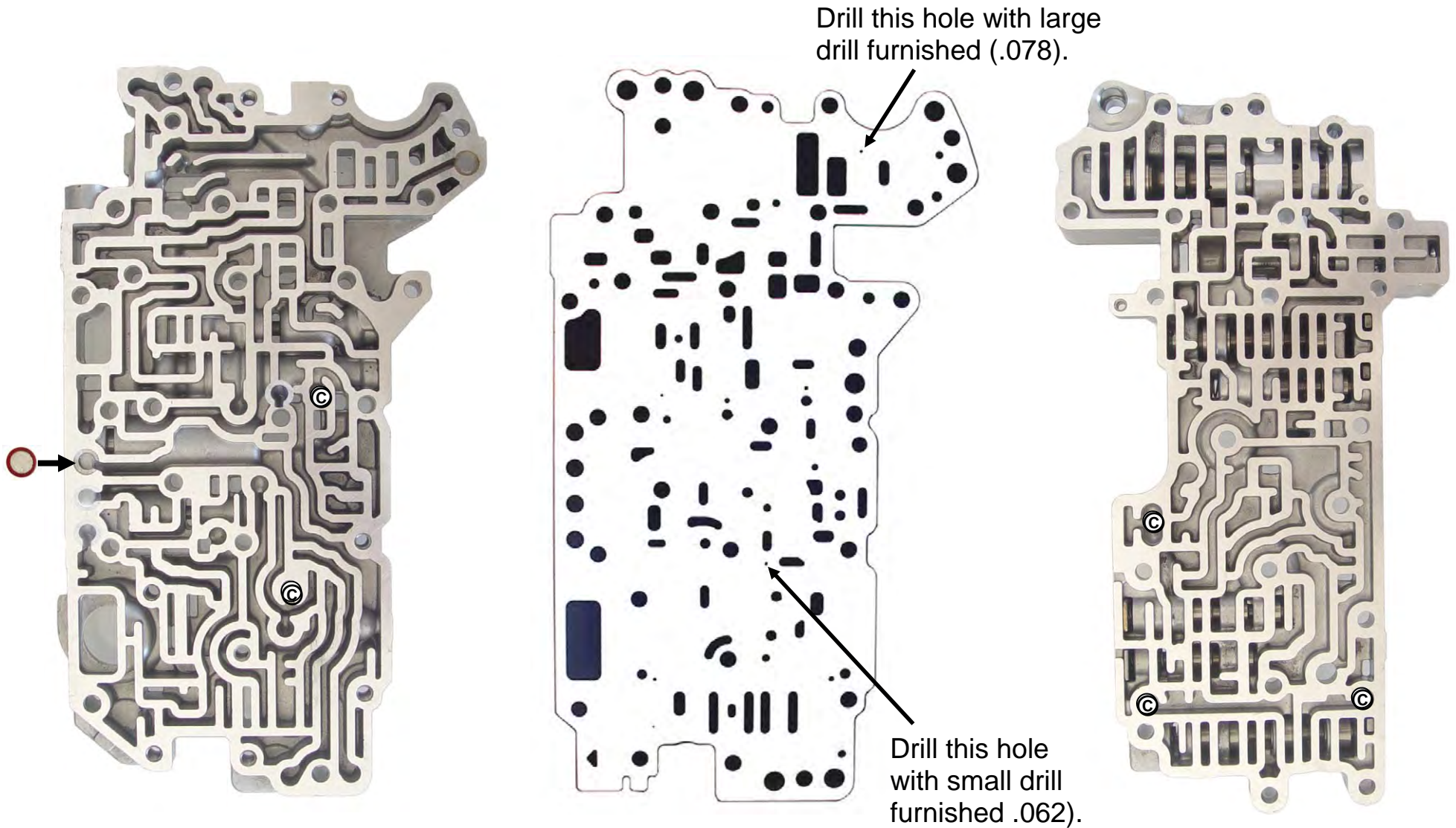
KIA Gaskets #
OK 2A2-21-112
OK 2A2-21-114

This gasket last on plate.



KIA Type

5 Solenoid KIA Type



Install Five .236 check balls & One Screen

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