

2010



**TECHNICAL
SEMINAR**

Whatever It Takes

Remember that Old-Time Service?

WIT
WHATEVER IT TAKES
TRANSMISSION PARTS, INC

"A Unique Name, A Unique Company!"

800-940-0197

www.wittrans.com



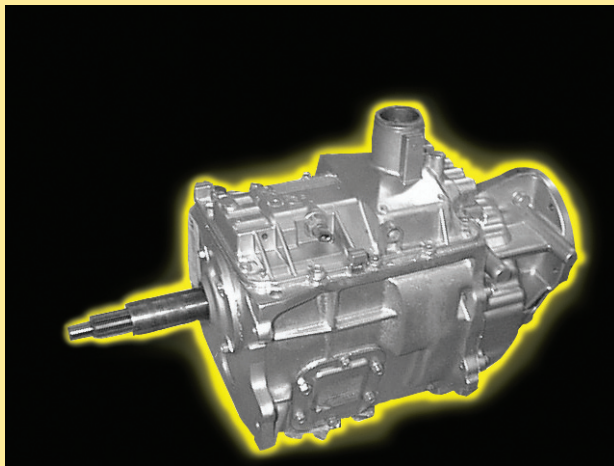
Whatever It Takes Does!!!

WIT distributes a complete line of quality new, used, & remanufactured Automatic & Standard Transmission Parts. Service is the Cornerstone of our Company!

Did You Know?

WIT offers
Manual Transmissions.
Each transmission is
Fully Dyno-Tested and
includes a
12 month/ Unlimited Mile
Warranty on Parts &
Workmanship.*

* Excludes Commercial &
Off-road Vehicles



New, Used, & Remanufactured Standard Parts

- Rebuilt Kits
- Bearing Kits w/ Syncro Rings
- Gasket Sets
- Gears & Shafts

Clutch Parts

- Sach's Clutch Kits (New)
- Forks
- Pilot Bushings & Bearings
- Clutch Alignment Tools

Transfer Case Parts

- Gasket & Seals Kits
- Overhaul kits
- Chains



TECHNICAL RESOURCES

Access to the automotive industry's master technicians by phone, fax, email, Internet and live chat! Plus, ATRA Members receive a discount off the cost of all bookstore sales.

BUSINESS SUPPORT

Learn the industry's trends and business success through the ATRA's on-going What's Working study.

NATIONWIDE WARRANTY

ATRA's Golden Rule Warranty is an inter-shop warranty plan that ATRA Rebuilder Members may offer the motoring public. Build trust with your customers by providing a nationwide warranty.

CONSUMER REFERRALS

Consumers sent to your shop through the ATRA Shop Finder search page online. ATRA's shop finder receives more than 5,000 consumer searches every month.

NETWORKING GROUPS

Have questions about tech? Business operations? Want to network with successful industry leaders? ATRA's forums are available for discussion topics about management, tech and industry news.

EVENTS DISCOUNTS

ATRA members receive substantial discounts for ATRA Technical seminars and conferences.

CERTIFICATION

ATRA encourages technical competency and a high standard of professionalism with it's own certification program, FREE to all members.

BENEFIT PROVIDERS

ATRA partners with a selective group of respected companies, like Citibank and FedEx to expand the value of your membership with valuable discounts on products and services you already use.

AUTOMATIC TRANSMISSION REBUILDERS ASSOCIATION

great reasons to join ATRA



The Automatic Transmission Rebuilders Association is your resource for tech support, business support, education, networking, and more. Join today by logging on at www.atra.com and get connected with your industry!

Call the Membership Department at 805.604.2000 or email membership@atra.com, if you have any questions.

www.atra.com | 805.604.2000





The
Automatic Transmission Rebuilders
Association

2400 Latigo Avenue
Oxnard, CA 93030

Phone: (805) 604-2000 Fax: (805) 604-2005

<http://www.atra.com>

This manual has been developed by the Automatic Transmission Rebuilders Association (ATRA) Technical Department to be used by qualified transmission technicians in conjunction with ATRA's technical seminars. Since the circumstances of its use are beyond ATRA's control, ATRA assumes no liability for the use of such information or any damages incurred through its use and application. Nothing contained in this manual is to be considered contractual or providing some form of warranty on the part of ATRA. No part of this program should be construed as recommending any procedure which is contrary to any vehicle manufacturer's recommendations. ATRA recommends only qualified transmission technicians perform the procedures in this manual.

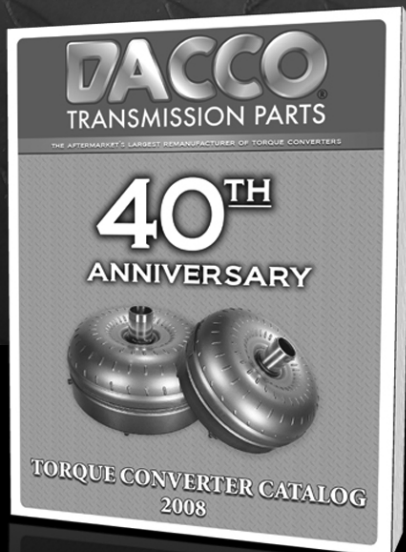
This manual contains copyrighted material belonging to ATRA. No part of this manual may be reproduced or used in any form or by any means — graphic, electronic or mechanical, including photocopying, recording, electronic or information storage and retrieval — without express written permission from the ATRA Board of Directors. Public exhibition or use of this material for group training or as part of a school curriculum, without express written permission from the ATRA Board of Directors is strictly prohibited.

ATRA and the ATRA logo are registered trademarks of the Automatic Transmission Rebuilders Association.

Portions of materials contained herein have been reprinted with permission of General Motors Corporation, Service Technology Group Agreement # 0610228.

Portions of materials contained herein have been reprinted with permission of Ford Motor Company.

Portions of materials contained herein have been reprinted with permission of Daimler Chrysler Corporation.



**EMPLOYEE POWERED
CUSTOMER DRIVEN
QUALITY FOCUSED**

DACCO

**TORQUE CONVERTERS
WWW.DACCOINC.COM**

1-800-443-2226



Lance Wiggins
Technical Director

Congratulations on attending ATRA's 2010 Technical Seminar!

These days, many shops are devoting more of their time to learning marketing and management techniques; concepts and practices designed to help shops bring more customers in the door.

That's important — we can't stay in business without customers. But bringing 'em in the door is only half the job: It doesn't mean a thing unless you have the skills and training to get 'em back out again.

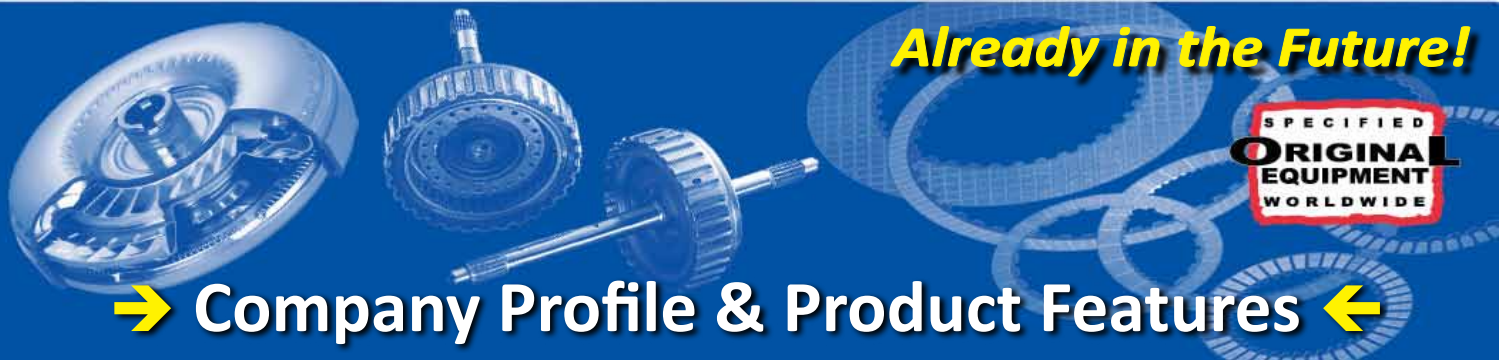
That's what the ATRA Technical Seminar program is all about: It's designed to provide you with the latest information and training, to help you fix today's transmission problems. So you can get 'em out the door again, with their transmissions working like new. Because that's what'll keep 'em coming back... again and again.

So, on behalf of the ATRA staff and the ATRA Chapters that have worked so hard to put this program together, I'd like to welcome you, and thank you for doing your part to keep our industry strong. We hope you have a wonderful day, and a terrific learning experience.

A handwritten signature in black ink that reads "Lance Wiggins". The signature is written in a cursive, flowing style.

Lance Wiggins
ATRA Technical Director

EXCELLENT & DYNAMIC



→ **Company Profile & Product Features** ←

Automatic Transmission Related

Friction • Damper • Fluid



OEM to GM & Ford in
Wet Friction & Torque
Converter Products.

*From the world's largest independent manufacturer of torque converters and
the world's largest manufacturer of combined wet and dry friction products.*

Exedy dominates the OEM market in the world over-fact!

Exedy is a powertrain specialist and tier one supplier to the automotive industry world wide. Exedy's products range: From wet & dry friction material, torque converters, complete transmission systems for highway, off-highway and industrial applications.

Exedy is responsible to all 11 OE automotive vehicle manufacturers in Japan. For the conception of powertrain product requirements and needs.

In the US Exedy supplies Ford-GM-Chrysler, powertrain needs such as torque converters, wet friction material and standard clutch systems.

Worldwide Exedy has evolved through developing and patenting the core technologies such as friction, vibration and fluid technology.

Exedy products have been recognized by vehicle manufacturers all over the world. As a premium brand in Japan, Exedy products are valued so highly that our products are renowned all over the world by car manufactures. Exedy continues to hold a large share of the OEM market both domestically and internationally.

CORE TECHNOLOGY

FRICION

Development of the highest quality FRICTION MATERIAL that can demonstrate the World's top level performance



F=FRICION TECHNOLOGY



D=DAMPER TECHNOLOGY

VIBRATION

We have developed the most efficient Damper that can absorb vibration from the engine more than ever.

FLUID DYNAMICS

Having analyzed the fluid dynamics inside Torque Converter, EXEDY has successfully developed the most efficient product in the market



F=FLUID TECHNOLOGY

*Excellent Capacity for
Development for Fluid Technics*

www.exedyusa.com

Available through all authorized Transmission WDs & Jobber Shops

ATRA Staff



Chief Executive Officer:	Dennis Madden
GEARS Managing Editor:	Rodger Bland
GEARS Magazine:	Frank Pasley Jeanette Troub
Events Manager:	Vanessa Velasquez
Event Services:	Kim Paris
Director of Membership and IT Services:	Kelly Hilmer
Membership Department:	Kim Brattin Deon Olmos Jim Spitsen
Accounting Manager:	Jody Wintermute
Accounting Department:	Rosa Smith Valerie Mitchell
Bookstore Manager:	Ron Brattin
ATRA Technical Department:	Lance Wiggins, Technical Director Shaun Velasquez, Project Manager Randall Schroeder, Senior Technician Mike Souza, Senior Technician Bill Brayton, Senior Research Technician Pete Huscher, Technical Advisor Mike Brown, Technical Advisor Jon Rodriguez, Technical Advisor

Table of Contents

Import



AW55-50SN

Pressure Control Solenoid Service.....	97
Shift Pressure Control Solenoid SLS.....	98
Shift Pressure Control Solenoid SLU.....	99
Shift Pressure Control Solenoid SLT.....	100
SLT PPressure Tap Location.....	101
In-Car Solenoid Adjustment.....	103
2-3 Flare After Overhaul.....	107
Slips/No 3rd After Repair.....	110

ZF5HP19/19FL

No Reverse After Overhaul.....	112
No Movement.....	113

5L40E

Intermittent and/or No Reverse.....	114
-------------------------------------	-----

RE4F04A

Chirp Noise During the 2-3 Shift.....	115
CKP and/or CAM Sensor Code.....	116

01M, 096, 01P

Bind in Reverse and 2nd Gear Starts.....	118
--	-----

01M, 09A

Staying in Neutral.....	120
-------------------------	-----

01M

TCC Slip.....	121
---------------	-----

01M, JF506E, 09G, ZF5HP19FL

Codes, Erratic Shifts and Adaptive Strategies.....	123
--	-----

722.3/4/5

Late Shifts.....	124
------------------	-----

F5A42/51

Erratic, Flare, Harsh 2-3 Upshift or 3-2 Downshift.....	125
---	-----

A240 1996 and Later

Code P0770.....	126
-----------------	-----

ALL 1996 and Later Toyota

Intermittent P0770 Code/Check Mode.....	128
---	-----

A750E/F

Introduction.....	129
Application Chart.....	130
ATF Sensor.....	131
Line Pressure Specifications.....	132
Accumulator Control Pressure.....	133
Primary Regulator Valve Setting.....	134
Upper Valve Body #1 Check Balls.....	135
Upper Valve Body #2 Check Balls.....	136
Lower Valve Body #1 Exploded View.....	137
Upper Valve Body #1 Exploded View.....	138
Upper Valve Body #2 Exploded View.....	140
Solenoid Location.....	141
Lower Valve Body #1.....	142

Honda 5 Speed

2-1 Coast Down Neutral when Cold or No Forward.....	144
---	-----

ALL Hondas

Case Wear.....	148
Shaft Bushing Wear.....	149
Shaft Bushing Replacement.....	150

BAXA, MAXA, B6VA, M6HA, MDWA, B7TA, B7VA, B7XA, B7ZA, M7ZA

Erratic 1-2 Shift and/or Stacked 2-3 Shift.....	152
---	-----

MDKA, BDKA, BWEA, MJBA, BJFA, MJFA, PVLA, PVGA

Feed Pipe Damage.....	153
-----------------------	-----

BYBA

Electronic Component Identification.....	154
--	-----

BMXA

Feed Pipe ID and Location.....	155
--------------------------------	-----

A4RA, B4RA, M4RA

Feed Pipe ID and Location.....	156
--------------------------------	-----

BYBA

Feed Pipe ID and Location.....	157
--------------------------------	-----

ALL Hondas

Clutch Clearances.....	159
------------------------	-----

B7XA

Marking ID Marks.....	162
-----------------------	-----

ALL Hondas

Handling the Electronics.....	163
Removing Pressed Gears.....	164
Bearing Alignment.....	165
Assembly Tips.....	167
Bearing and Gear Wear.....	168
Matching the Parts.....	169
Cleaning and Inspecting.....	170
Drum Assemblies.....	172
Helpful Rebuilding Tips.....	173
Case Preparation.....	174
Valve Body Reassembly.....	175
Accumulator Bores.....	178

PRECISION EUROPEAN

CIRCA INC. 1987



NOW ORDERING ONLINE!

visit our website www.PEius.com

Your car is only as good as its transmission . . .

Founded in 1987, Precision European Inc. (PEI) responded to the fast growing need in the United States for quality remanufactured automatic transmissions for BMW and Mercedes-Benz automobiles from 1960 to current models. As the market continued to grow, so did PEI's reputation for its high quality product and outstanding customer relations and support.

PEI continues to invest in the most current technology and test equipment and implementing the latest factory updates. Nation-wide, PEI has established its reputation as the largest supplier specialized in BMW and Mercedes-Benz automatic transmissions.

PEI's standard of quality and dedication is carried by a long time loyal team of employees, continuously educated through external and in-house training, prepared to face the challenge of the constantly changing technology in the industry.



**Transmissions
Starting as Low as
\$1275.00**

PRICED TO MAKE YOU PROFIT

AT PRECISION EUROPEAN WE SPECIALIZE IN
TRANSMISSIONS **ONLY** FOR **BMW** and **MERCEDES BENZ**

PEI offers a complete line of remanufactured BMW and Mercedes-Benz transmissions, assembled with quality craftsmanship to match or exceed factory standards.

PEI's in-house built and engineered dyno is capable of simulating all possible road conditions, giving the opportunity to test all transmissions to their maximum RPM and torque load specifications.

With 30 months unlimited warranty, Precision European Inc. offers the longest warranty in the industry.



Sales Team: 714.241.9657

FAX: 714.241.9659

E-mail: sales@peius.com

30 MONTHS UNLIMITED MILES WARRANTY



AW55-50SN

Pressure Control Solenoid Service

The following pages cover SLT (Line Pressure), SLS (Shift Pressure) and SLU (Lockup) solenoid servicing and adjustment during and after overhaul. Though these valve bodies have severe problems with wear, often times small bumps and clunks can be cured by cleaning and adjusting these solenoids. We highly recommend using an aftermarket calibration kit that contains the necessary components to fully dismantle the solenoids for cleaning.

Bench Service:

- Remove the adjustment detent clip at the tip of the solenoid.
- Measure the height of the adjustment screw and record measurements.
- Unscrew the adjuster.
- Remove the regulating valve and inspect for any signs of wear.
- When installed without the spring, the valve should move freely when shook.
- Reassemble the solenoid using the original height measurements.



**Measure distance
before disassembly**

AW55-50SN

Shift Pressure Control Solenoid (SLS)

Solenoid Duties:

- Reverse engagement
- All upshifts and downshifts
- The solenoid works with the shift pressure control plunger only. It is pulsed to control the feed rate of the clutch apply oil dependent on load.

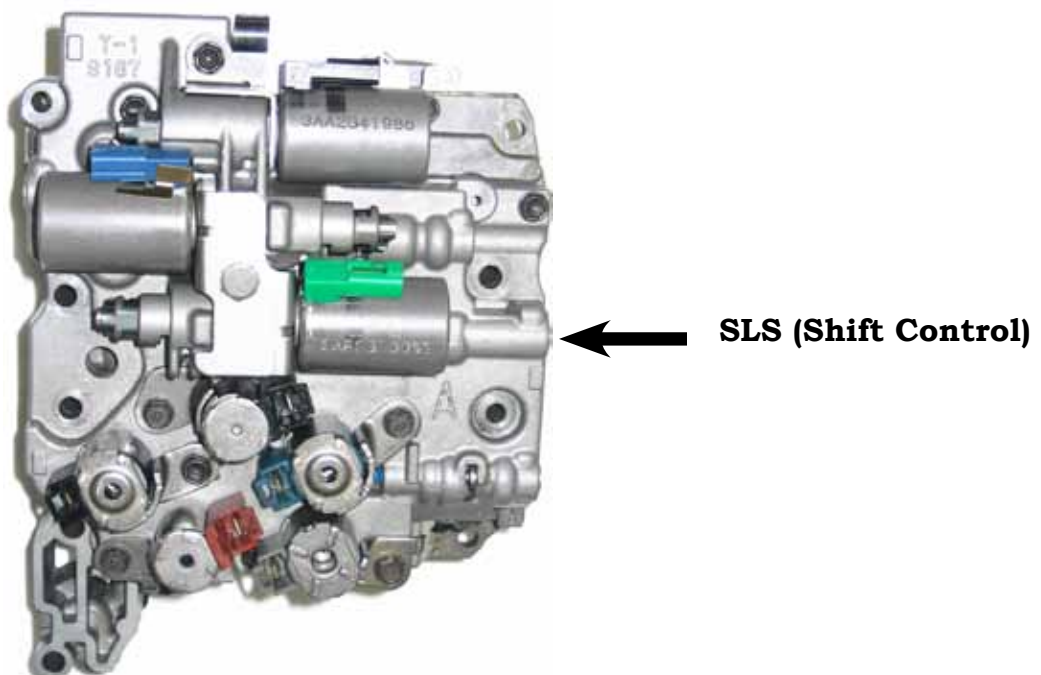
SLS Adjustments in the Vehicle:

- Turning the adjustment in (clockwise):
 - Decreases delay in reverse
 - Firms up all shifts (felt more on the 1-2 shift)
 - Helps repair 2-3 flair **NOTE: Proper band adjustment is crucial to 2-3 shift feel. Confirm adjustment before adjusting solenoid.**
 - Helps repair slight flairs on the 3-4 and 4-5 upshifts

CAUTION: Adjusting the SLS Solenoid too far in can cause a loss of TCC.

- Turning the adjustment out (counterclockwise):
 - Softens harsh reverse
 - Softens upshifts (felt more on the 1-2 shift)
 - Helps with forced 3-2 flair

CAUTION: Solenoid adjustments should never exceed 2 turns in or out.



AW55-50SN

PWM Lockup Solenoid (SLU)

Solenoid Duties:

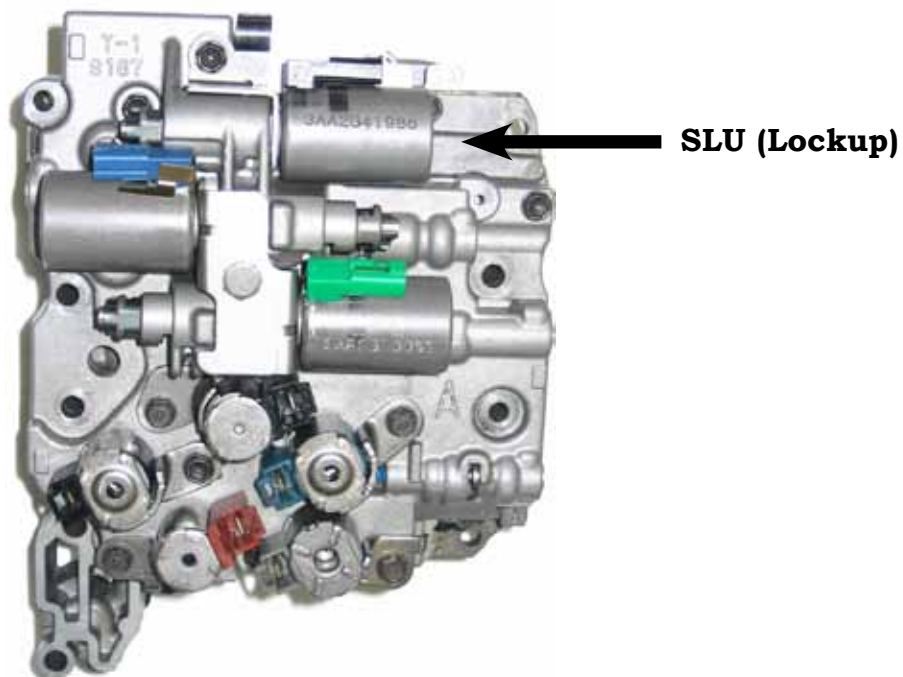
- 1-2 upshift feel
- 2-1 downshift feel
- TCC apply rate
- TCC release rate
- This solenoid works against the TCC valves for lockup rate of apply, and works the B-2 and B-5 control valves to control shift feel during the 1-2, 2-1, 2-3 and 3-2 shifts.

SLU Adjustments in the Vehicle:

- Turning the adjustment in (clockwise)
 - Increases firmness of the 1-2 upshift
 - Increases firmness of the 2-1 downshift resulting in a clunk
 - Increases TCC firmness
- Turning the adjustment out (counterclockwise)
 - Softens 1-2 shift feel
 - Reduces 2-1 downshift clunks
 - Softens TCC feel

CAUTION: Solenoid adjustments should never exceed 2 turns in or out.

NOTE: If the 1-2, 2-1 downshifts are OK, do not adjust this solenoid for 2-3 concerns.



AW55-50SN

Line Pressure Solenoid (SLT)

Solenoid Duties:

- Reverse and forward engagement feel
- Overall line pressure
- This solenoid not only works against the pressure regulator valves for line pressure control, but also works the C-1 control valve for forward engagements, the B-1 valve for 1-2/2-1 shifts and the B-4 valve for 2-3 shifts.

SLT Adjustments in the Vehicle:

- Proper SLT adjustments are performed with a 0-100 psi gauge on the SLT pressure tap
- Pressure readings are to be taken while the transmission is in the D position 0-6 psi at idle; 75-80 psi at WOT
- Pressure is increased by turning the adjustment screw in (clockwise)
- Pressure is decreased by turning the adjustment screw out (counterclockwise)
- If pressure is too high:
 - Harsh engagements, especially into D
 - Harsh upshifts
 - Harsh downshifts
 - 2-3 bind
- If pressure is too low:
 - Delayed engagements, especially N-D
 - 2-3 flair
 - Soft upshifts

Note: Proper band adjustment is crucial to 2-3 shift feel confirm band adjustment prior to adjusting the solenoid.

CAUTION: Solenoid adjustments should never exceed 2 turns in or out.

SLT (Line Control)



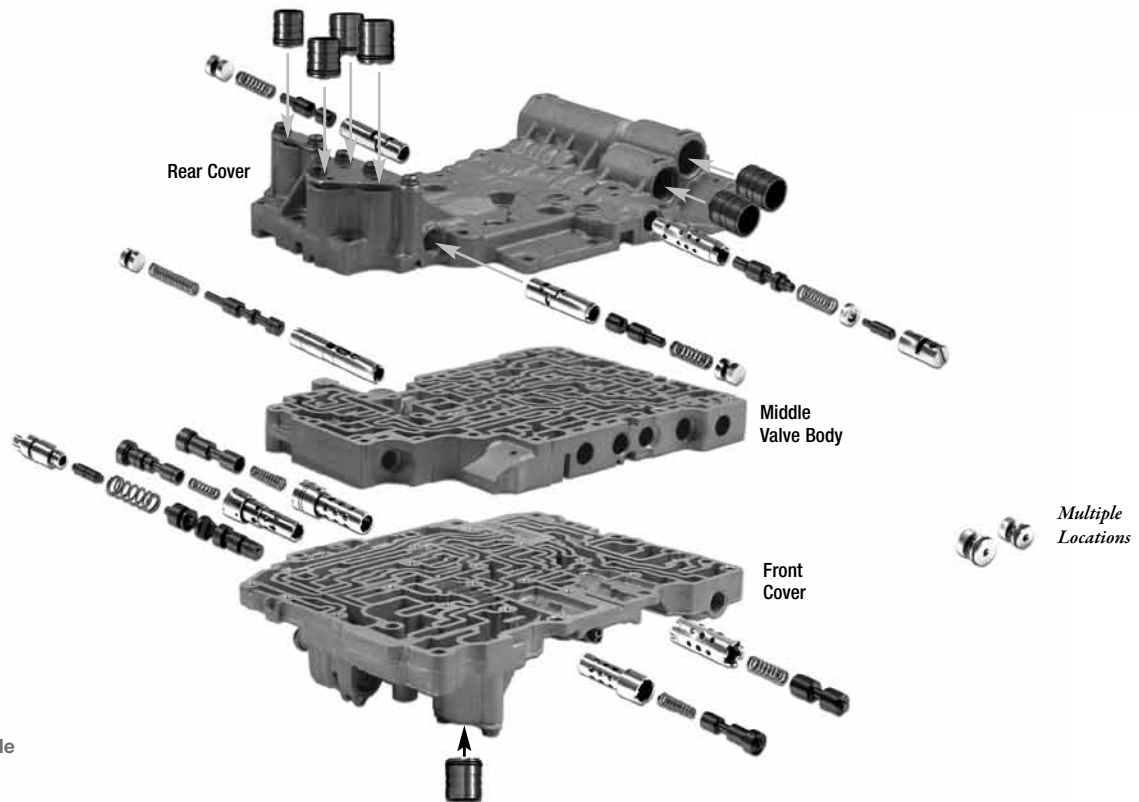
AW55-50SN

SLT Pressure Tap Location

Use a 0-100 psi gauge to monitor pressure at this location while making SLT solenoid adjustments. The pressure reading should be 0-6 psi at idle and 75-80 psi at WOT.



Sonnax AW 6 Speed Valve Body Repair Chart



TF-81SC Valve
Body is Pictured.

Parts for TF-80SC &
TF-60SN are also available
see chart below.

AW 6 SPEED SERIES	
Brand Designations	AW Designations
VW/Audi (09G, 09K, 09M); BMW/Mini (6F21WA)	TF-60SN
Ford (AF21); Mazda (AW6A-EL)	TF-81SC
Volvo (AM6); Opel (AF40); Peugeot (TF-80); Saab (AF40/6); Land Rover (TF-80)	TF-80SC

Part Name	Quantity per Unit	Part Number	Required Tool*	TF-80SC	TF-81SC	TF-60SN
Main Pressure Regulator & Boost Assembly	1	15741-01K	F-15741-TL			✓
K2 Clutch Control Valve Kit	1	15741-05K	F-15741-TL5			✓
K3 Clutch Control Valve Kit	1	15741-08K	F-15741-TL8			✓
Secondary Regulator Valve Kit	1	15741-11K	15741-TL11			✓
Accumulator Piston Kit	5	15741-14K	None	✓	✓	✓
Solenoid Modulator Valve Kit	2	15741-18K	F-15741-TL18 **			✓**
B1 Brake Control Valve Kit	1	15741-22K	F-15741-TL22			✓
C1/K1 Clutch Control Valve Kit	1	15741-25K	F-15741-TL25	✓	✓	✓
Lockup Clutch Control Valve Kit	1	15741-29K	F-15741-TL29 **	✓**	✓	✓**
End Plug Kit	5	15741-35K	None	✓	✓	✓
End Plug Kit	5	15741-36K	None	✓	✓	✓
Main Pressure Regulator & Boost Assembly	1	39741-01K	F-39741-TL	✓	✓	
C2 Clutch Control Valve Kit	1	39741-05K	F-39741-TL5	✓	✓	
C3 Clutch Control Valve Kit	1	39741-08K	F-39741-TL5	✓	✓	
Secondary Regulator Valve Kit	1	39741-11K	F-39741-TL11	✓	✓	
Solenoid Modulator Accumulator Piston Kit	2	39741-14K	None		✓	
Solenoid Modulator Valve Kit	2	39741-18K	F-39741-TL18	✓	✓	
B1 Band Control Valve Kit	1	39741-22K	F-39741-TL22	✓	✓	

*All "F-tools" require the use of the VB-FIX reaming fixture (not required for 15741-TL11). **F-15741-TL29PL Adapter Plate is required for TF-60SN & TF-80SC.



sonnax
TIME TESTED • INDUSTRY TRUSTED®



More information is available
at www.sonnax.com

Automatic Drive • Bellows Falls, VT 05101-0440 USA • 800-843-2600 • 802-463-9722 • F: 802-463-4059

©2010 Sonnax Industries, Inc.

AW55-50SN

In-Car Solenoid Adjustment

Use the following instructions to make a test pan that can be temporarily installed after overhaul to make solenoid adjustments without having to take the pan on and off for every adjustment.

During the test drives, simply cover the holes with duct tape or rubber plugs to minimize leaking and when the desired shifts are met, reinstall the original pan.



SLS Adjustment



SLU Adjustment



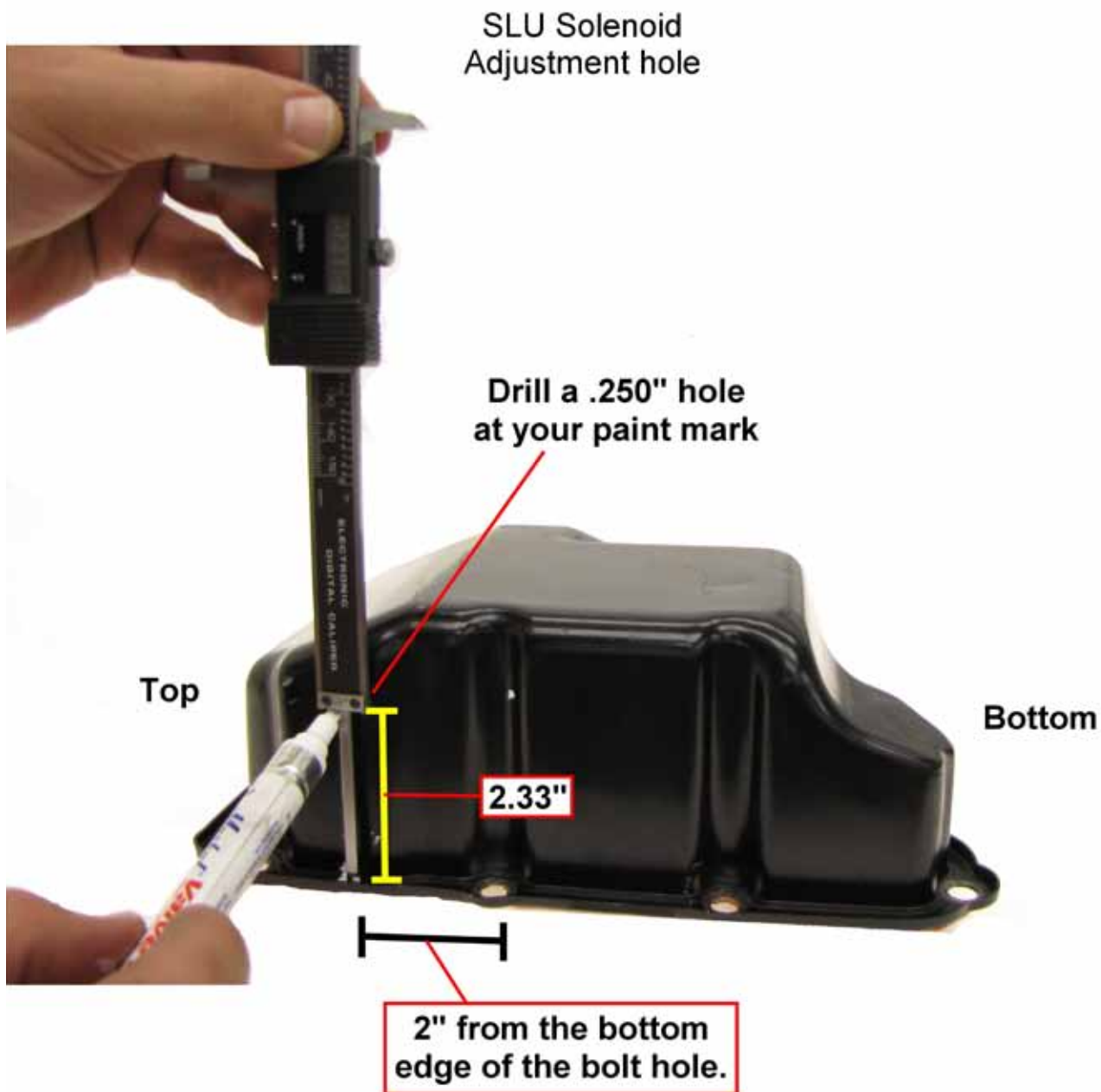
SLT Adjustment

A Special Thanks to Sonnax for the information.

AW55-50SN

In-Car Solenoid Adjustment (continued)

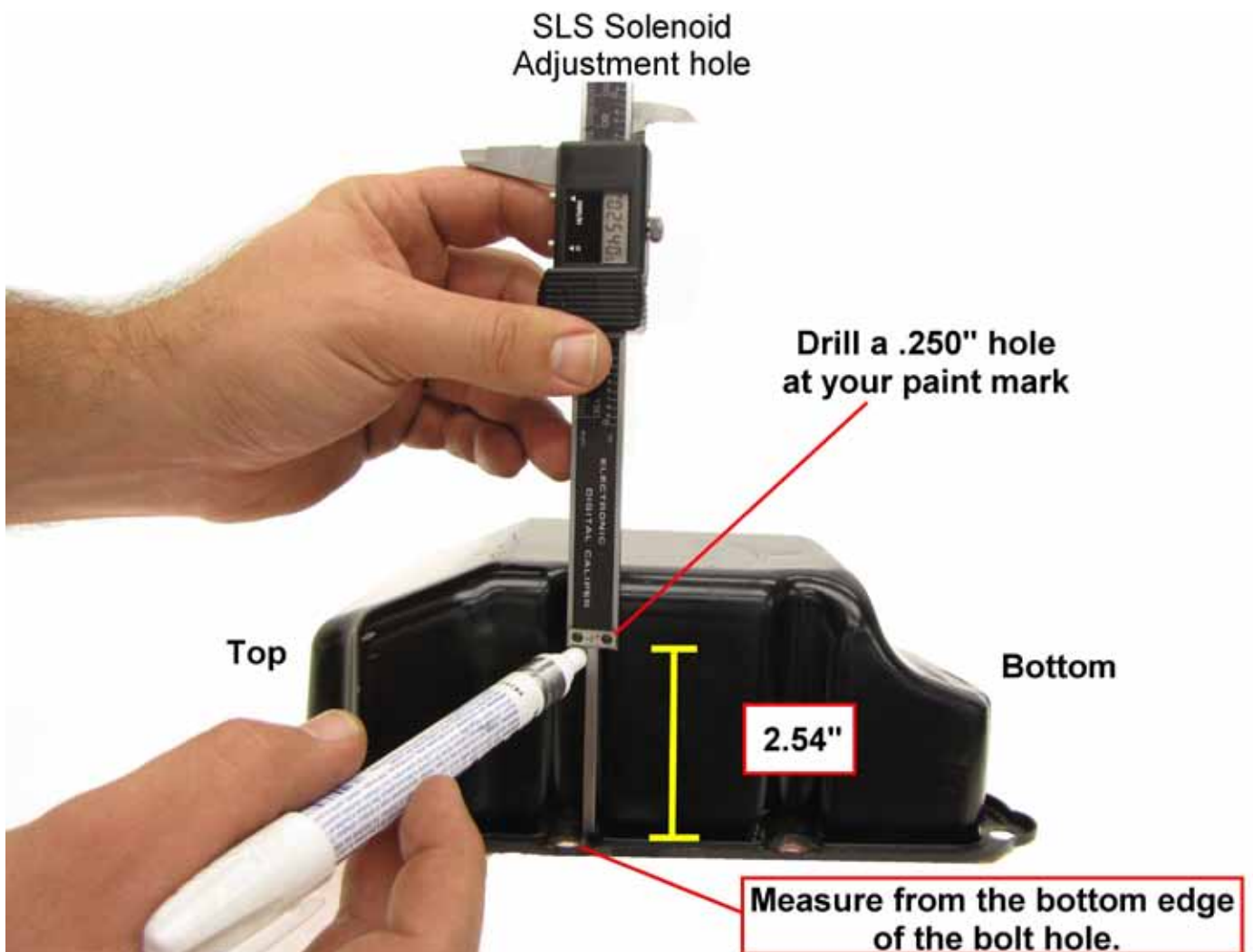
Use a core pan as your test tool. Clean all debris from the pan and make sure it is not damaged. Use a paint style marker to mark points of entry. Use the illustration below for the SLU solenoid adjustment location.



AW55-50SN

In-Car Solenoid Adjustment (continued)

Using the same paint style marker, use the illustration below for the SLS solenoid adjustment location.



AW55-50SN

In-Car Solenoid Adjustment Pan (continued)

Using the same paint style marker, use the illustration below for the SLT solenoid adjustment location.



AW55-50SN/AF33-23/RE5F22A

2-3 Flare After Overhaul

A 2-3 flair is a common complaint after overhaul. Usually the flair can be associated with valve body wear and pressure related issues. The third gear band clearance can also contribute to the flair condition. Install the servo and band anchor with the case half removed and adjust the servo travel to 0.250". The servos are selectable.

The servos shown are for all AW55 applications except Nissan



RE5F22A

2-3 Flare After Overhaul (continued)

Nissan Only



No Grooves
2.508"
Nissan# 31615 8Y005



1 Groove
2.528"
Nissan# 31615 8Y004



2 Grooves
2.547"
Nissan# 31615 8Y003



3 Grooves
2.567"
Nissan# 31615 8Y002



4 Grooves
2.587"
Nissan# 31615 8Y001

AW55-50SN/AF33-23/RE5F22A

2-3 Flare After Overhaul (continued)

All Others



Nissan



Nissan

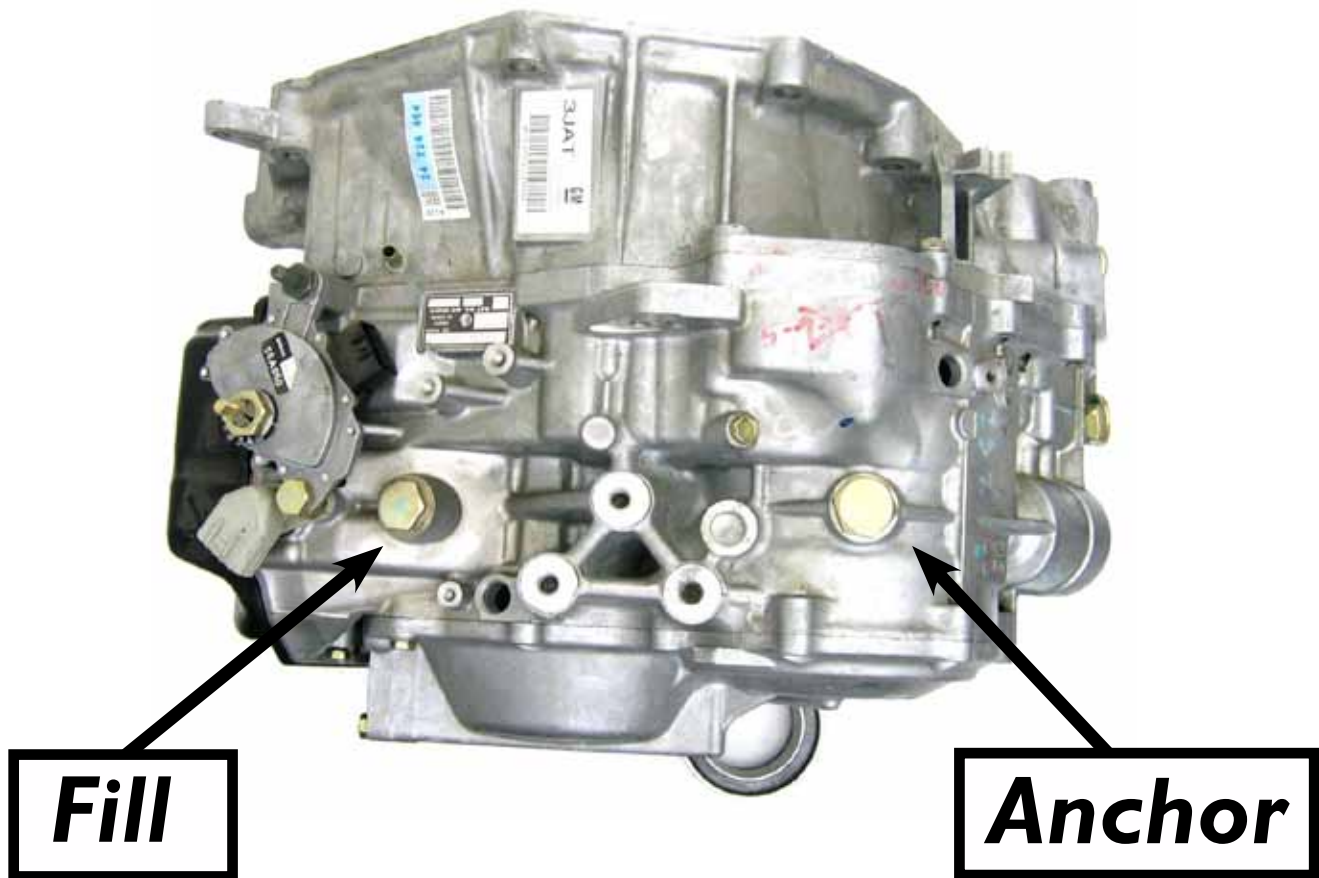


AW55-50SN/AF33-23/RE5F22A

Slips/No 3rd After Repair

The AF 23-5 used in the Saturn Ion and the AF 33-5 used in the Saturn Vue, Chevrolet Equinox and Buick Torrent applications may experience a slipping complaint or a no 3rd gear concern after the transmission fluid has been serviced or after an internal repair has been performed.

The technician may have removed the wrong bolt to adjust the unit's fluid level. If the technician removed the 3rd gear band anchor bolt instead of the fill bolt, it may allow the anchor to fall out of place leading to the concern. If the technician has removed the wrong bolt, the transmission will need to be disassembled to correct the concern.



WHAT WE DO AND WHY WE DO IT BEST

As you may know, there are many companies out there that are selling Valve Bodies, but we are different! How?

VBP believes in **110% Customer Satisfaction** and **Absolute Best Quality!**

And because of our quality, we are able to provide to you, our Customer, a **One Year Unlimited Warranty** on our Valve Bodies.

We Provide Unparalleled Pre and Post Product Support.

Valve Body Pro is an ATRA Preferred Provider.



We want to thank our customers for their support in making us the fastest growing Valve Body Remanufacturing Company in the United States.

V ALVE BODY PRO

BUILT BY THE PROS FOR THE PROS

1-877-611-PROS (7767)

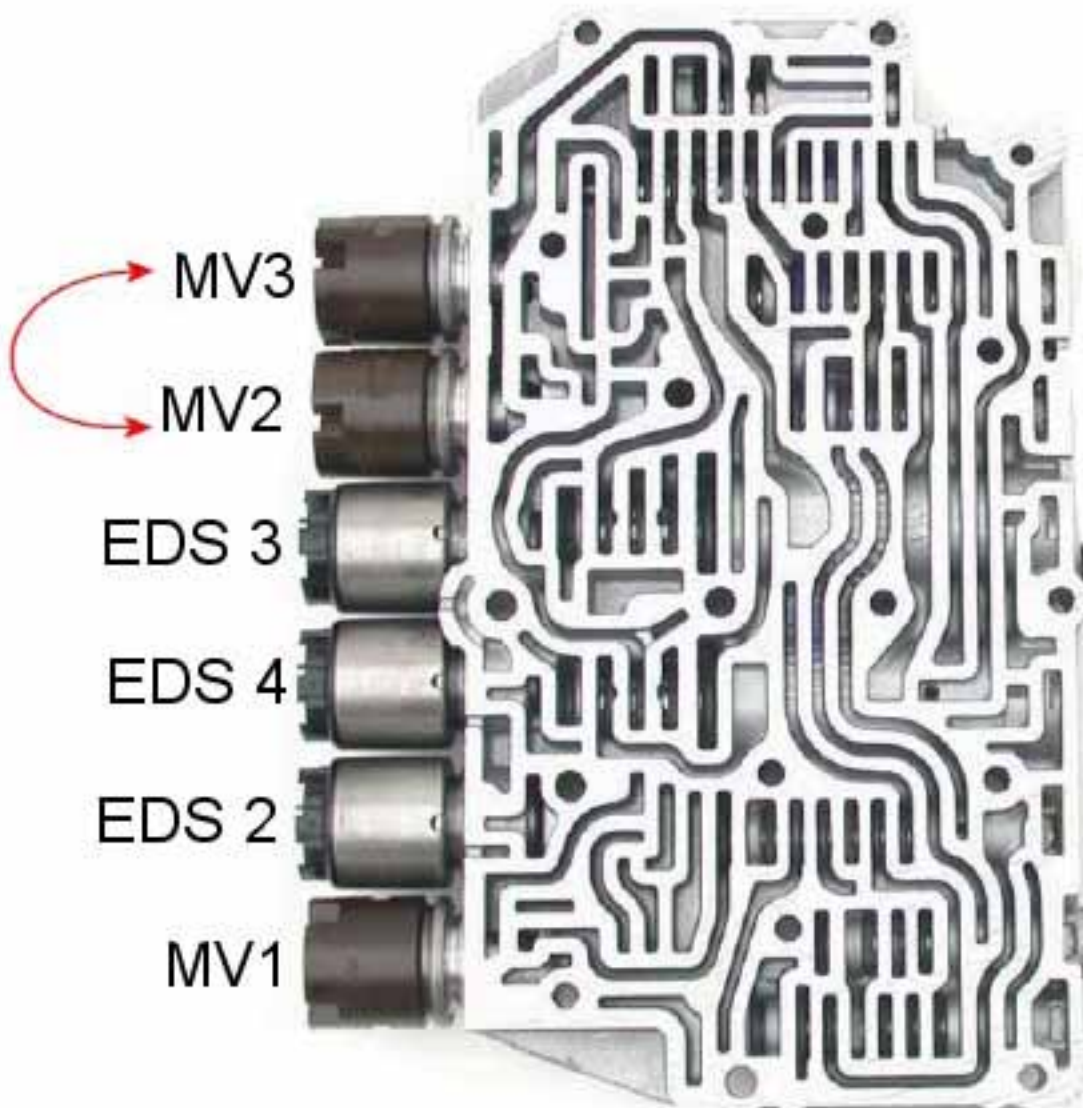
www.valvebodypros.com

16870 Joleen Way, Suite 4, Morgan Hill, California 95037

ZF5HP19/19FL

No Reverse After Overhaul

A ZF5HP19 experiencing a no reverse after overhaul may be caused by a faulty MV2 (N89) solenoid. The first step is to unplug the transmission harness. If reverse applies, it may be a bad tiptronic switch or inhibitor switch. If reverse fails to engage, switch the MV2 (N89) and MV3 (N90) solenoids with one another as a test. If reverse comes back, but forward problems still occur, switch the solenoids back and replace the MV2 with another solenoid.



ZF4HP22/24

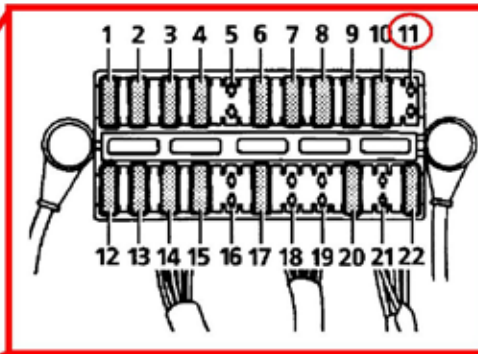
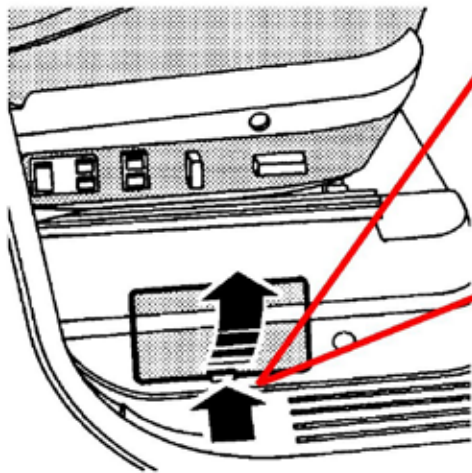
No Movement

A no movement concern after being towed may be caused by a fuse being installed into a transfer case neutral inducing space. The fuse space was designed to allow the vehicle for towing. Check to see if the fuse was installed, remove the fuse and test drive the vehicle. Fuse 11 is located on the right side fuse box. The message center will read "Transfer Neutral" when the fuse is installed.

1995-2002 Range Rover uses fuse 11

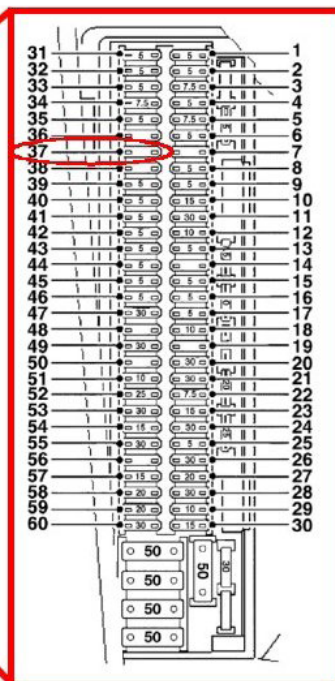
2003-up Range Rover uses fuse 37

**1995-2002
Range Rover**



A fuse in the #11 location will command the transfer case to neutral.

**2003-Present
Range Rover**

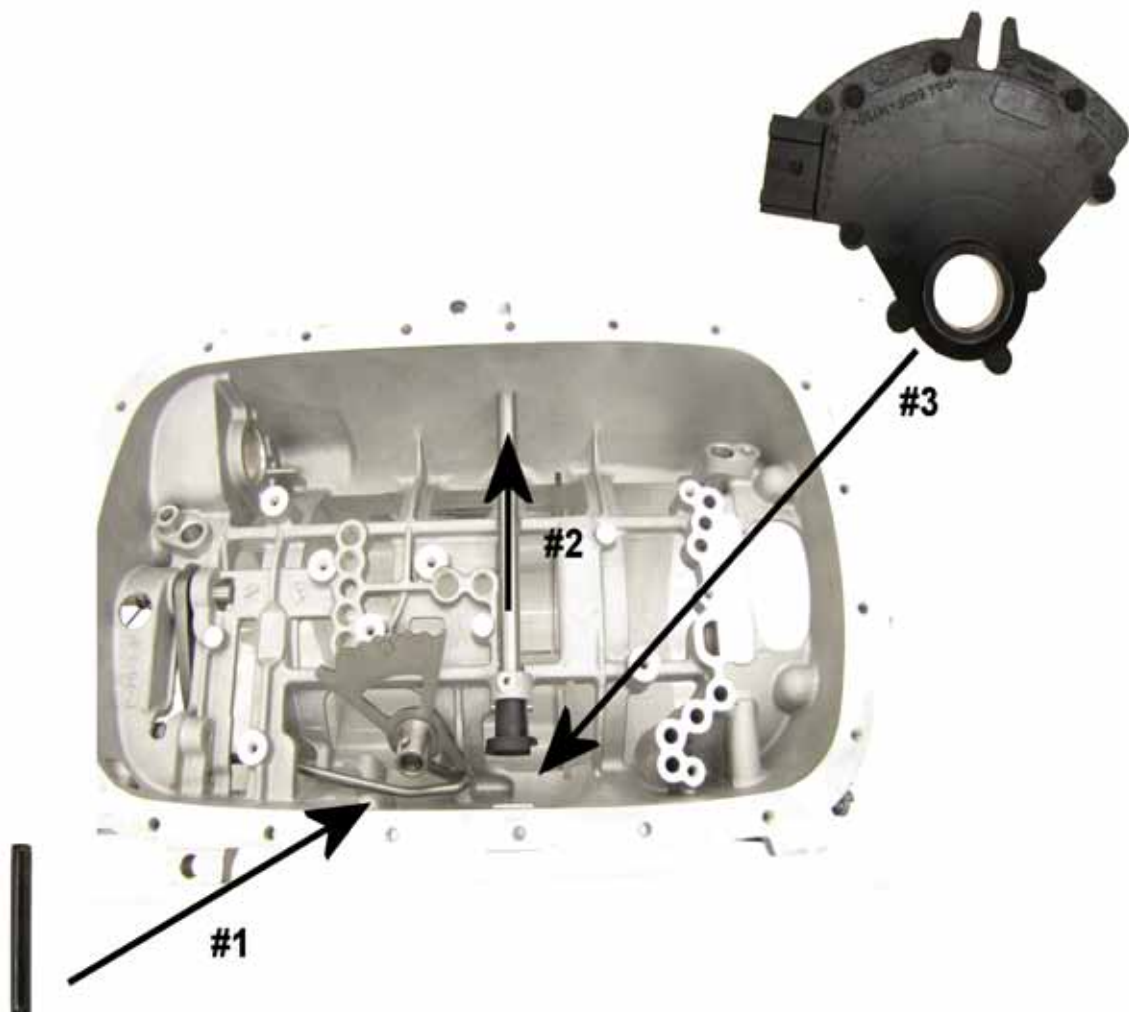


A fuse in the #37 location will command the transfer case to neutral.

5L40E

Intermittent and/or No Reverse

A 5L40E experiencing an intermittent no reverse may be caused by a faulty Internal Range Sensor most common in BMW vehicles. Use scanner data to see if range sensor readings are correct. If the transmission goes into reverse when the main connector is unplugged, reverse is being electronically inhibited. Replacing the Range Sensor will repair this concern.



1. Remove the roll pin.
2. Carefully slide the manual shaft out of the rooster comb/range sensor assembly.
3. Remove and replace the range sensor.

RE4F04A

Chirp Noise During the 2-3 Shift

1999-2000 Nissan Quest or Altima with a RE4F04A transmission may experience a chirp type noise coming from the transmission during the 2-3 shift at light throttle.

This chirp noise may be coming from the high clutch assembly. Adding two (200cc each) bottles of ATF Treatment to the transmission fluid will correct this problem. Nissan's ATF treatment part number is 31003-31X61P.



Caution! This is a metallic container and it is packed in oil absorbent material. Be sure to wipe the bottle clean to prevent ATF contamination.

RE5F22A

CKP and/or CAM Sensor Code

2004 & up Nissan Maximas with the RE5F22A transmission may be experiencing codes for the Crank and/or Cam sensor causing the transmission to go into failsafe. There will be no communication or codes set in the transmission module. The problem is usually a broken wire at the sensor. To correct the problem repair the wiring at the connector or replace the sensor.



The Crank Sensor is located under the vehicle between the transmission and engine, attached to the bottom of the bellhousing.

Cam Sensor 1 Bank 1



Cam Sensor 2 Bank 2



NEW FROM TRANSGO®



SK® AW55-50



Reduces/Corrects/Prevents

Delay or Bang into Drive
4-3 and 3-2 Coast Clunk
2-3 or 3-4 Cutloose
4-3 or 3-2 KD Runaway
Converter Slip/Shudder

Saves Cost of New Valve Body

Fits: 2001-08 Volvo, 2004-08 Nissan RE5F22A
AF33-5 - 2002-08 Saab - 2003-04 Saturn
05-06 Chevrolet Equinox - Pontiac Torrent



SK® 09D



Reduces/Corrects/Prevents

Rough shifts, flares during up shifts & kick down. Rough coast downshifts, no pressure rise, TCC slip/shudder.

Fits: VW Touareg/ Porsche Cayenne



SK® AWF21



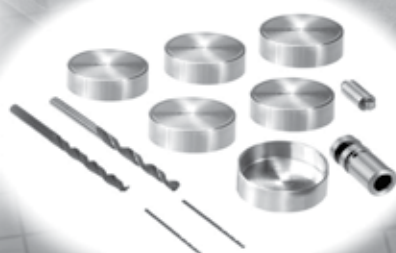
Reduces/Corrects/Prevents

Rough shifts, Bump-Bump downshifts above 30 mph hot, Part throttle downshift bang, Flares during up-shifts & kick-down, Rough coast downshifts. No pressure rise, TCC slip/shudder. Poor shift quality.

Fits: 05-06 Ford Fusion & 500, 05-06 Mazda 6
06 Lincoln Zephyr, 06 Mercury Milan,
05-06 Mercury Montego



SK® 09G



Reduces/Corrects/Prevents

Harsh Shifts, Cut Loose, Rough Coasting Downshifts, Slow Pressure Rise, TCC Slip

Fits: Audi A2, A4 06 2.0L, Audi TT 03-04 1.8L
BMW Mini Clubman 08 1.6L
BMW Mini Cooper 02 1.6L
VW Beetle 05 1.8-2.5L, Jetta 05 1.9-2.5L
Passat 06 2.0L & 3.6L, Touran 03 1.6-2.0L

It just ain't FIXED without it!

TRANSGO®

Product Support
626-443-7451



01M, 096, 01P

Bind in Reverse and 2nd Gear Starts

01M, 096, 01P New Beetle, Jetta, Eurovan vehicles with a bind in reverse and 2nd gear starts may be caused by the B2 clutch support not being indexed properly.

The notch in the support must key into the alignment “leg” at the 5 o'clock position on the center support. Once the pump is tightened, make sure the differential can be turned in the reverse direction.



The notch in the support must key into the alignment “leg”.

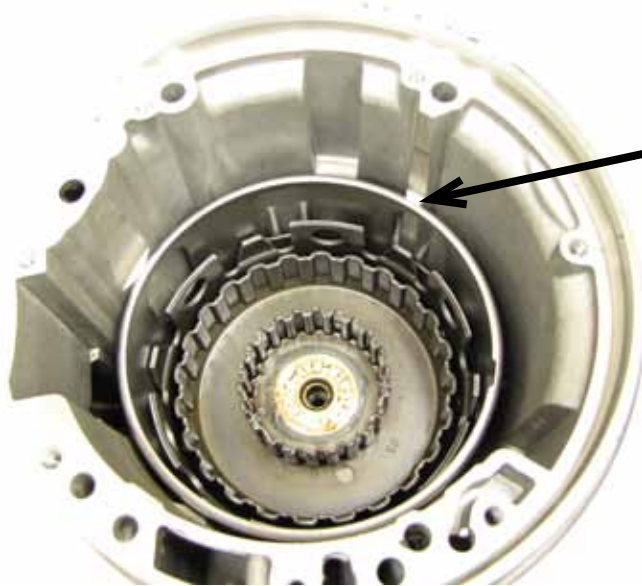
01M, 096, 01P

Bind in Reverse and 2nd Gear Starts (continued)

The reason this problem is so common is the clutch assemblies must be installed before the support tube is installed. When the technician installs the support tube, they have to slide it down against the case and it's impossible to see whether it's seated on the snap ring instead of on the alignment "leg". Another way a builder can tell the B2 clutch support tube is all the way down, is to install the support without the clutch packs installed. Make sure the support is down all the way. Place a reference mark in the case in line with the upper edge of the support tube. During reassembly, make sure the reference mark is visible. If not, the support tube is not down all the way.

If the vehicle still binds in Reverse after overhaul, try unplugging the transmission connector. If it backs up, the TSS and OSS wiring is probably installed backwards. If the vehicle still binds in Reverse with the wiring unplugged, turn off the engine.

Attempt to push the car backwards. If you cannot push the vehicle backwards the B2 clutch is mechanically stuck on.



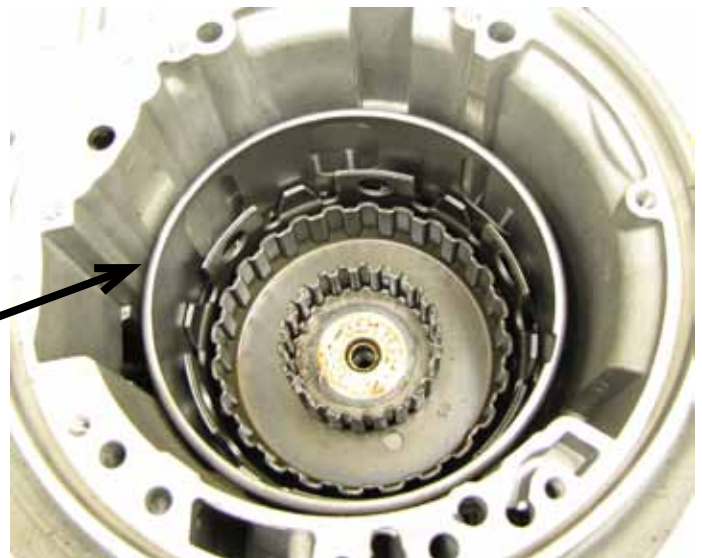
RIGHT!

The support is indexed correctly. A mark can be made on the case to easily identify the correct depth in the case.

NOTE: The input drum assembly has been left out for ease of illustration.

WRONG!

The B2 clutch support is NOT indexed correctly note the index mark is not visible.



01M, 09A

Staying in Neutral

A staying in Neutral (TCM commanded) problem with no codes that could effect 2001-2003 VW Jetta vehicles may be caused by the brake light bulbs or the brake switch. The brake light system is directly related to TCM function. Make sure to check the brake lights prior to diagnosing this concern. Replace the bulbs or brake switch if necessary.

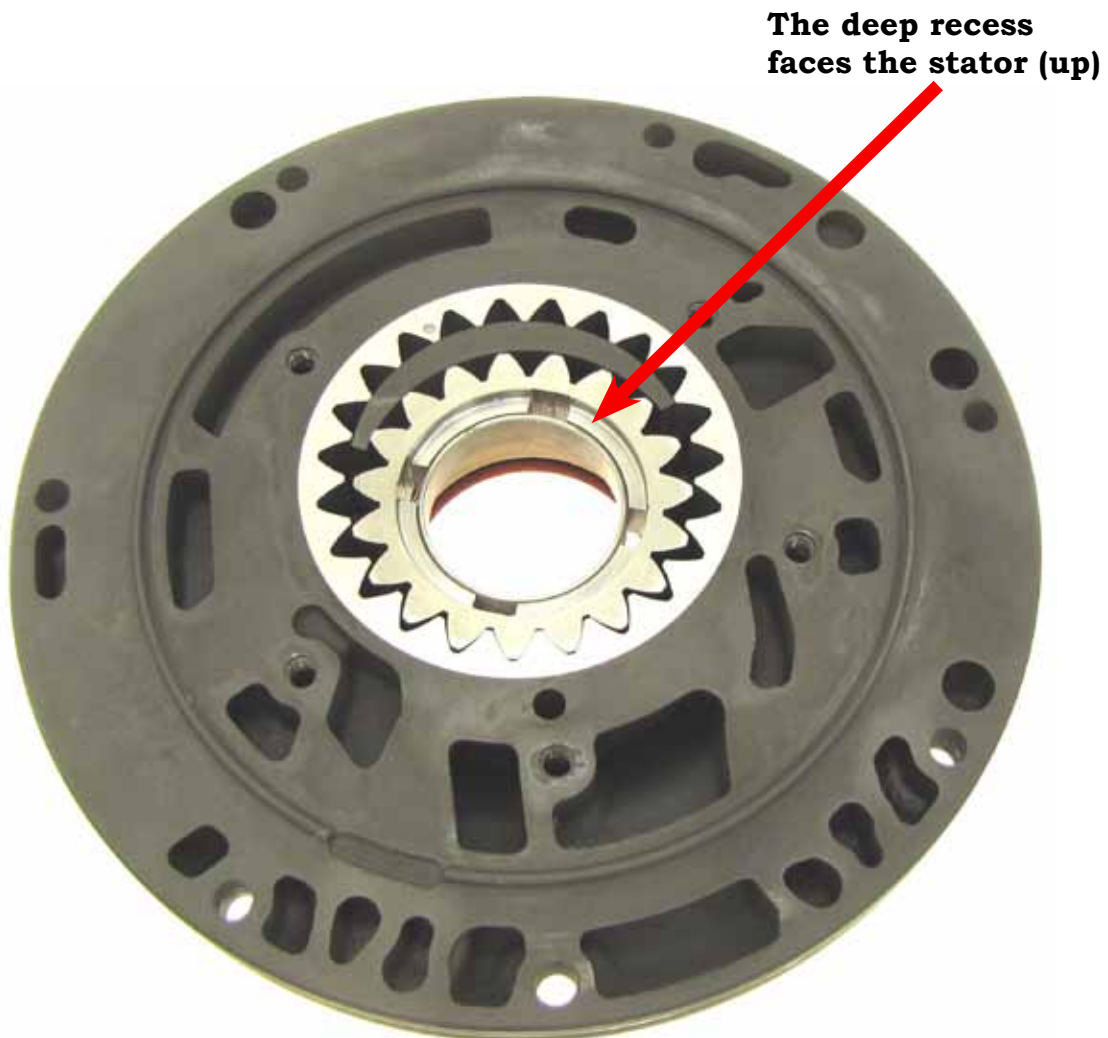


01M

TCC Slip Code 1192

Code 1192 may be caused by installing the inner pump gear incorrectly. The correct way to install the inner gear is to have the deep recess facing the stator support.

Also make sure the correct torque converter is used. Some vehicles built after 2000 used a needle bearing located in the support converter shell to support the input shaft. The other design did not have a needle bearing on the converter support. Refer to ATRA Bulletin #1090.



01M

TCC Slip Code 1192 (continued)



Technical Bulletin # 1090

Transmission: 01M

Subject: Converter Bushing Design

Application: 2000-up VW

Issue Date: May, 2007

01M

Converter Bushing Design

Starting in the model year 2000, some 01M transmissions started using a converter with a needle bearing between the turbine shaft and converter. The converters which include the needle bearing can be identified with D, H or J in the 4th digit of the converter code. See Figure 1.

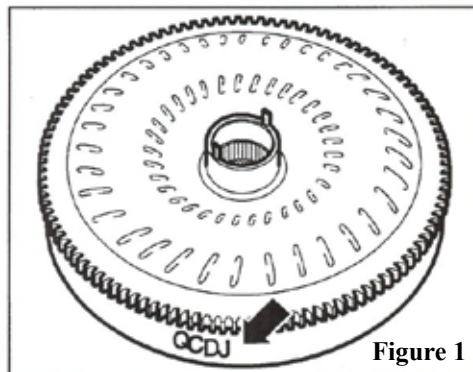


Figure 1

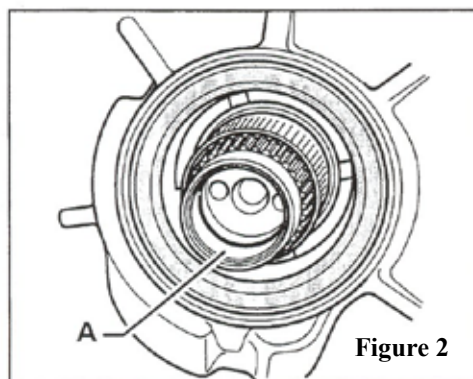


Figure 2

When a converter that includes a needle bearing is used, the bushing at the end of the turbine shaft MUST be removed

01M, JF506E, 09G, ZF5HP19FL

Codes, Erratic Shifts and Adaptive Strategies

Codes, erratic shifts, harsh engagements or any abnormal shift conditions may be caused by a disconnected or dead battery. Make sure no codes are present. Use the appropriate software and scan tool to set the adaptive strategy, throttle setting and/or base settings. Unless the base settings are performed, you may not be able to correct, troubleshoot or diagnose any other issues.



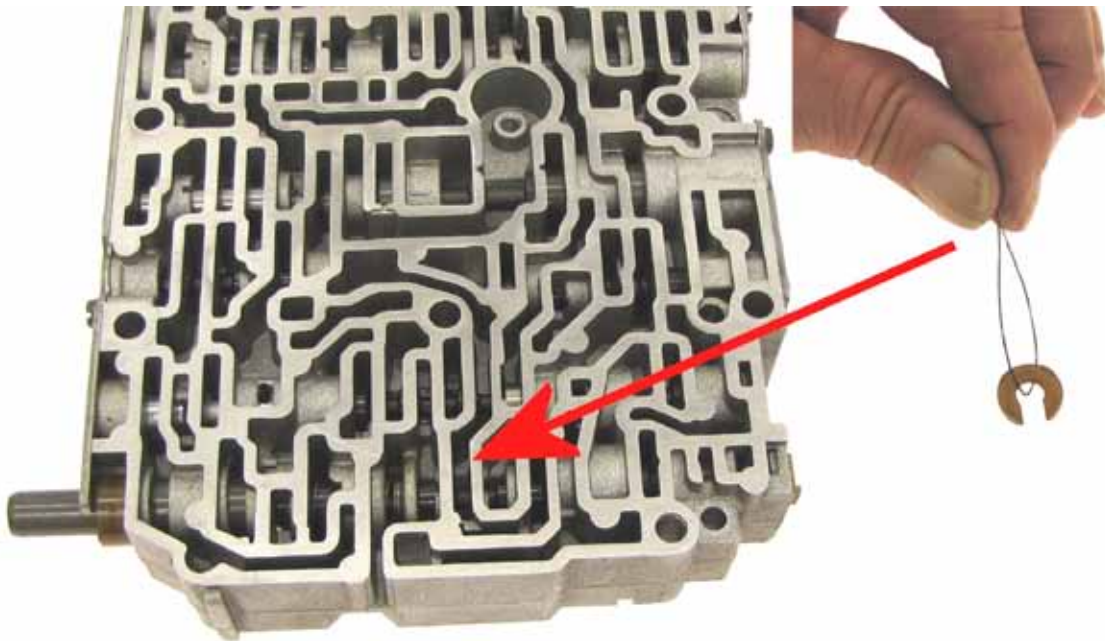
722.3/4/5

Late Shifts

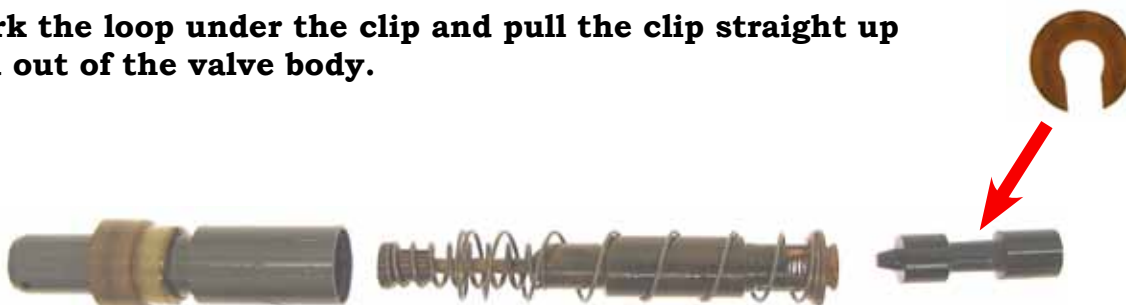
Most late shifts problems on the Mercedes 722.3/4/5 are caused by a sticking throttle valve in the main valve body. It may seem free if you're checking the valve while still in the valve body with a scribe or small screw driver.

You must remove the throttle plunger and throttle valve to verify the valve's movement. You won't be able to see the area where the throttle valve doesn't return to its correct location in the bore. You must remove the plastic throttle valve "E" clip, to gain access to the throttle valve.

The availability of this clip is almost impossible to locate. Luckily there is an easier way to remove the plastic "E" clip without breaking it with the use of fishing line. Thread the line under the clip, then simply pull up on both ends of the fishing line and remove the "E" clip.



Work the loop under the clip and pull the clip straight up and out of the valve body.



F5A42/51

Erratic, Flare, or Harsh 2-3 Upshift or 3-2 Downshift

Hyundai vehicles equipped with the F5A42/51 transaxle may experience an erratic 2-3 shift, 2-3 flare, harsh 2-3 or 3-2 shift. If clearing the adaptive learning does not repair the issue, check for a reflash on the computer.

Note: Prior to adaptive learning and reflashing make sure there are no engine related trouble codes or driveability issues that could interfere with normal transmission operation.

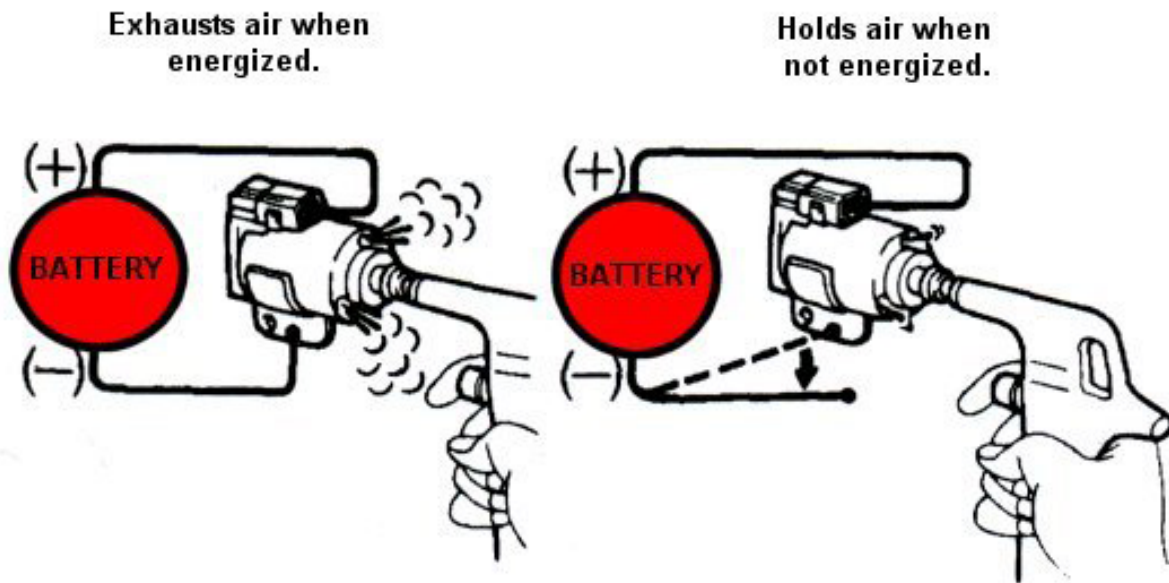
Model	Disconnect the battery, touch the terminals together and press on the brake pedal.	Use the GDS, Hi Scan or equivalent scan tool.
2006-On Azera		X
2001-2004 Elantra	X	
2005-On Elantra		X
2007-On Entourage		X
2001-2004 Sante Fe	X	
2005_On Sante Fe		X
1999-04 Sonata	X	
2005-On Sonata		X
2003-2004 Tiburon	X	
2005-On Tiburon		X
2005-On Tucson		X

A240E Series 1996-On

Code P0770

Code P0770 is a Shift Solenoid SL (TCC) malfunction and/or stuck off. Toyota has done a good job with keeping the lockup system simplified in most of their units. Even though P0770 mentions the TCC solenoid in the definition, rarely is it the problem.

The solenoid is a simple on/off type solenoid that can be tested on the bench by blowing air into the snout of the solenoid while turning the solenoid on and off with voltage. The valve bodies rarely have any issues with bore wear because the TCC valving is a simple on/off, switch valve type system. If the valve moves freely in the bore, then the issue is not likely in the valve body.

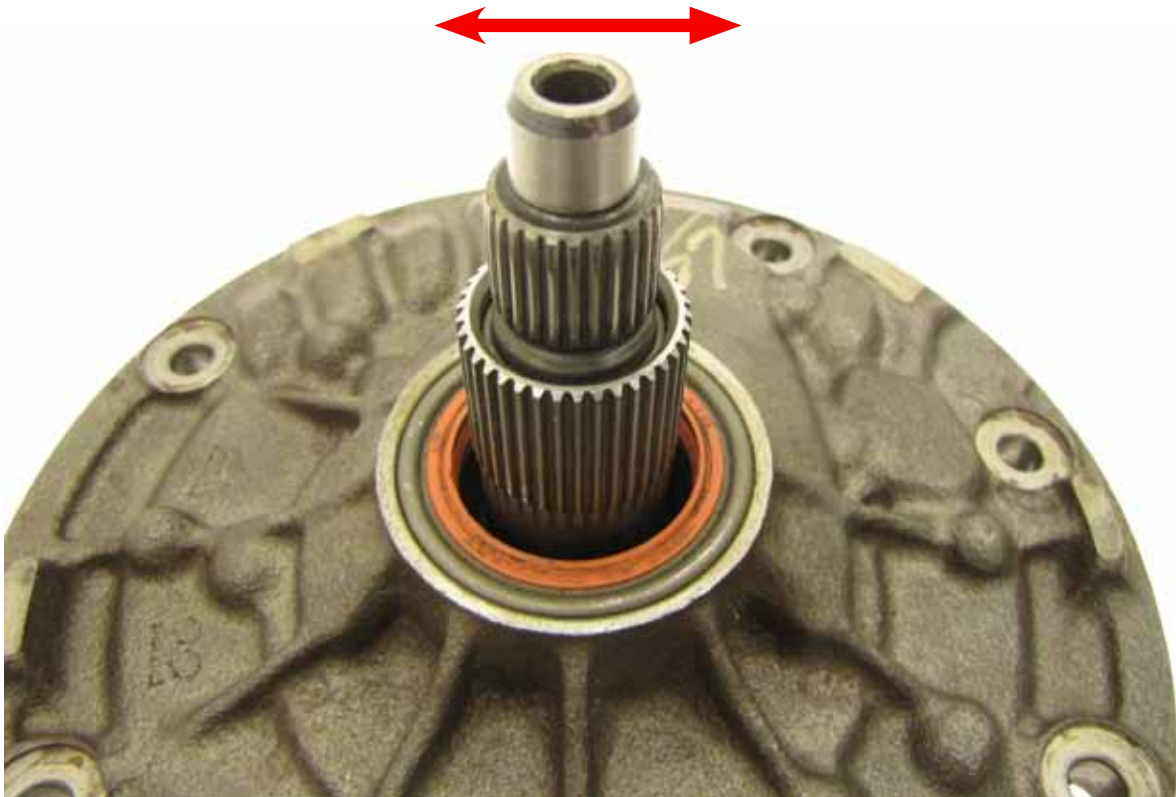


A240E Series 1996-On

Code P0770 (continued)

The most common cause for the P0770 is wear in the front Stator Support Bushing. This can cause premature failure of the lockup clutch. The bushing must have no more than .003" clearance around the input shaft. In most cases of a repeat P0770 code, over .020" of wear has been seen in this area.

Check for wear at the front Stator Support Bushing

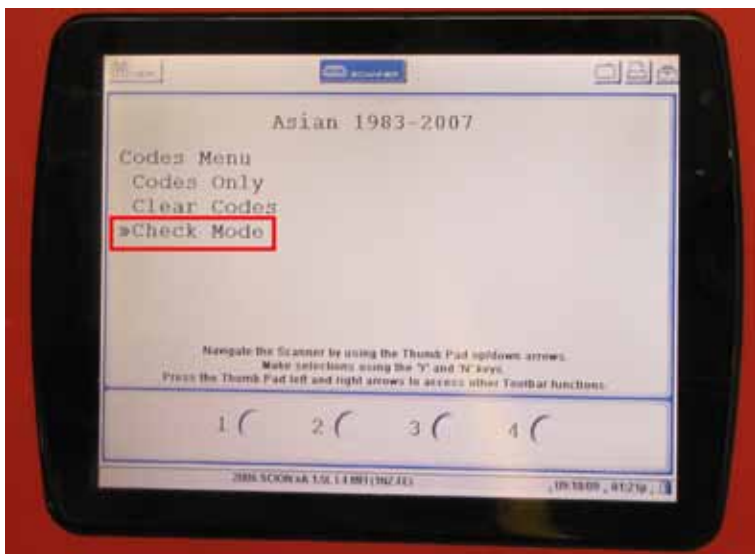


All 1996 and on Toyota

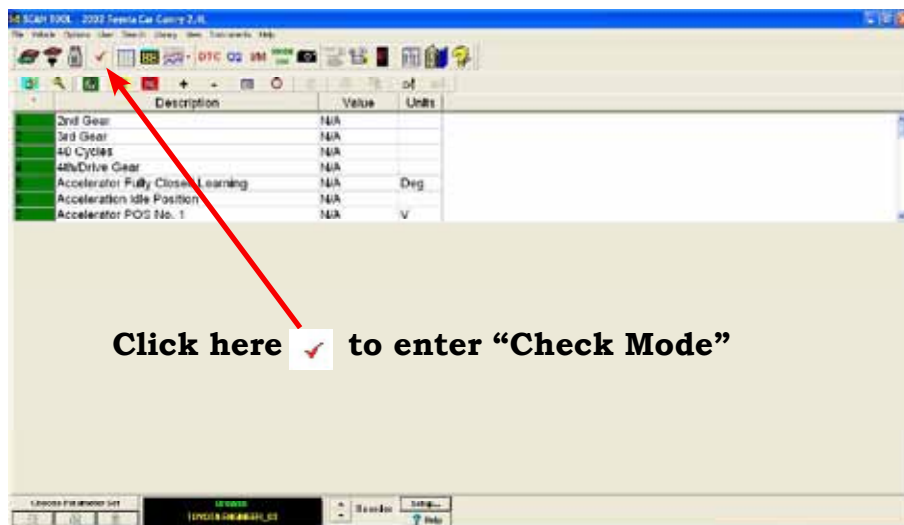
Intermittent P0770 Code/Check Mode

P0770 (Shift Solenoid E performance/stuck off) is a torque converter clutch ratio code. Toyota uses two trip logic for setting the P0770, even if lockup never works, it will take an entire day or two for the code to set. To properly diagnose the P0770, the ECM must be put into “Check Mode” so the code can be switched to one trip logic. Only in “Check Mode” will the computer set the code when the fault is present during the test drive. Consult your scan tool’s user manual to determine if your tool has the function available. Once “Check Mode” is selected the check engine light will flash rapidly to acknowledge “Check Mode” then turn off. The vehicle is now ready to be test driven.

CAUTION: Once “Check Mode” has been chosen, all codes in the vehicles memory will be erased. Make sure to record all code numbers in memory before entering “Check Mode”.



From the main menu select the codes menu to get to the “Check Mode”.



Click here  to enter “Check Mode”

A750E/F

Introduction



A750E

A750E(2WD)/A750F(4WD) Gear Ratios	
1st	3.52
2nd	2.042
3rd	1.4
4th	1
5th	0.716
Reverse	3.224

A750E/F Applications Toyota	
Year	Model
2003 – 2008	4-Runner
2007 – 2008	FJ Cruiser
2005 – 2008	Sequoia
2005 – 2008	Tundra
2003 – 2007	Land Cruiser
2005 – 2009	Tacoma
Lexus	
2003 – 2007	LX 470
2003 – 2008	GX 470

A750E/F

Application Chart

A750E/F Solenoid, Clutch, Brake and One-Way Clutch Application Chart																	
Shift lever position	Gear	Solenoid Valve						Clutch			Brake				One-Way Clutch		
		S1	S2	SR	SL1	SL2	SLU (TCC)	C1	C2	C3	B1	B2	B3	B4	F1	F2	F3
P	Park	ON				ON											
R	Reverse *	ON				ON				X	X			X	X		
N	Neutral	ON				ON											
D	1st	ON				ON		X									X
	2nd	ON	ON			ON		X				X		X	X		
	3rd		ON			ON		X		X			*X*		X		
	4th					ON	ON	X	X	*X*			*X*				
	5th			ON	ON		ON		X	X	X	X		*X*			
4	1st	ON				ON		X									X
	2nd	ON	ON			ON		X				X		X	X		
	3rd		ON			ON		X		X			*X*		X		
	4th					ON	ON	X	X	*X*			*X*				
3	1st	ON				ON		X									X
	2nd	ON	ON			ON		X				X		X	X		
	3rd *		ON					X		X	X		*X*				
2	1st	ON				ON		X									X
	2nd *	ON	ON	ON				X				X	X				
SHIFT-L Switch "ON"	1st*	ON						X						X			

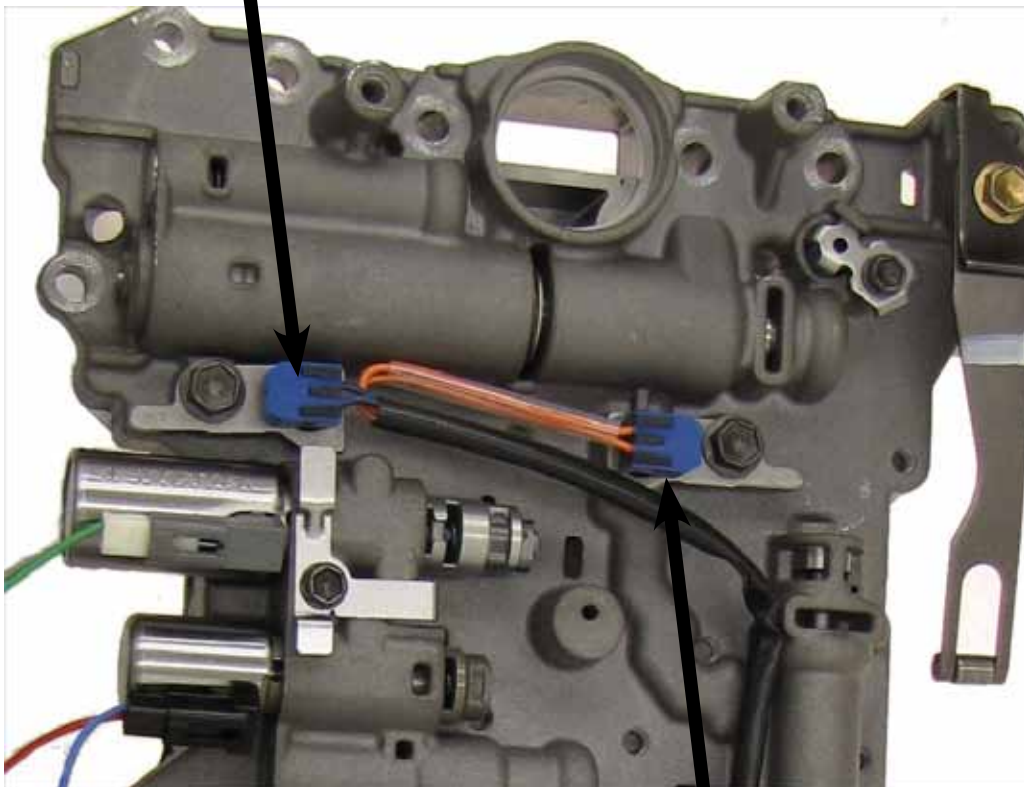
X: Applied
 X: Applied but is not transmitting power transmission
 *: Engine Braking

A750E/F

ATF Temperature Sensors

This transmission uses two temperature sensors, each with a different function. ATF Temperature sensor #1 is used by the ECM to modify pressure control of the clutches and brakes. If this sensor fails, fifth gear upshifts and flex lockup are prohibited. ATF Temperature sensor #2 is used for shift timing control when the ATF temperature is high.

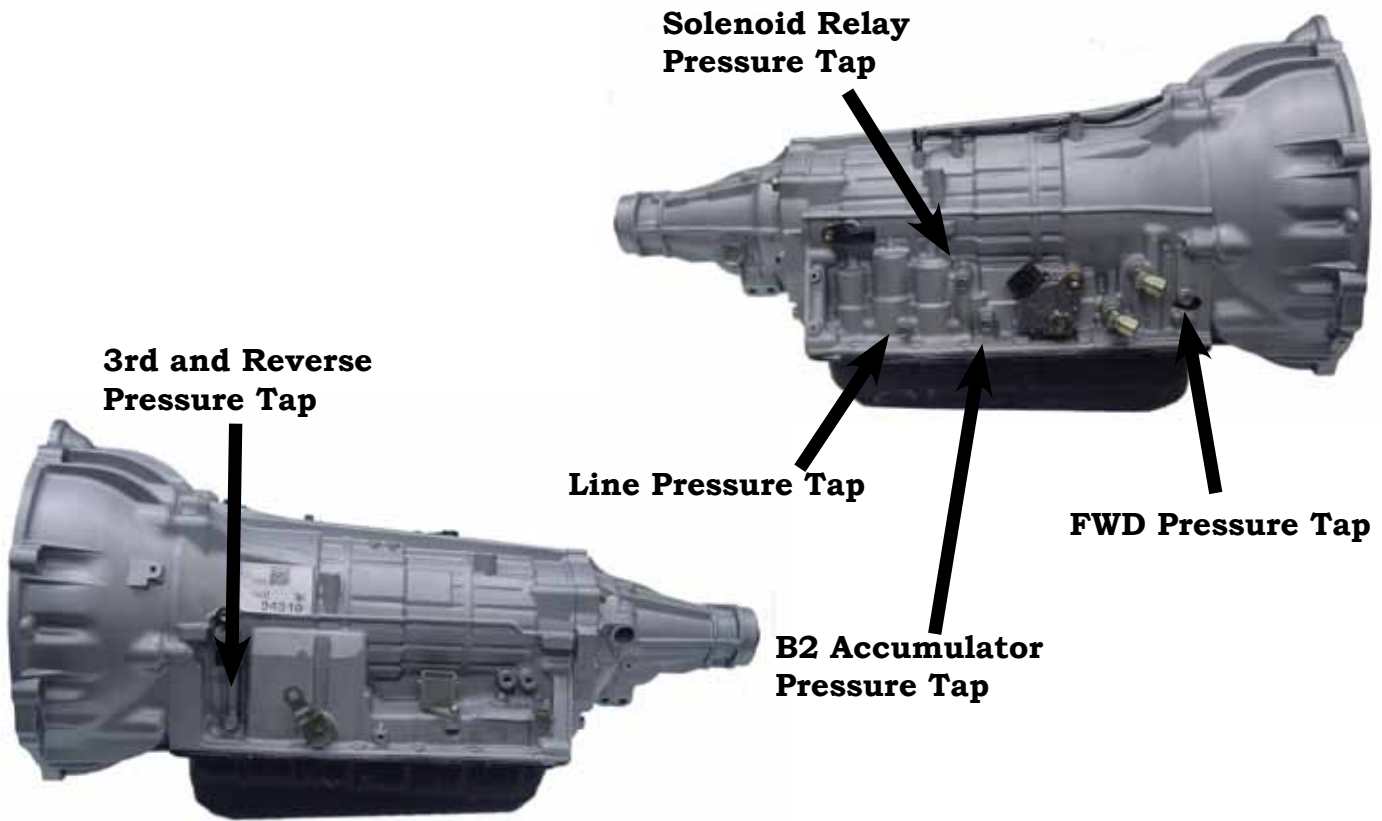
ATF Sensor #2 has two Blue wires



ATF Sensor #1 has two Orange wires

A750E/F

Line Pressure Specifications



A750E/F Line Pressure Specifications		
Condition	D Position	R Position
Idling	53-59 psi	73-84 psi
Stall	196-212 psi	188-205 psi

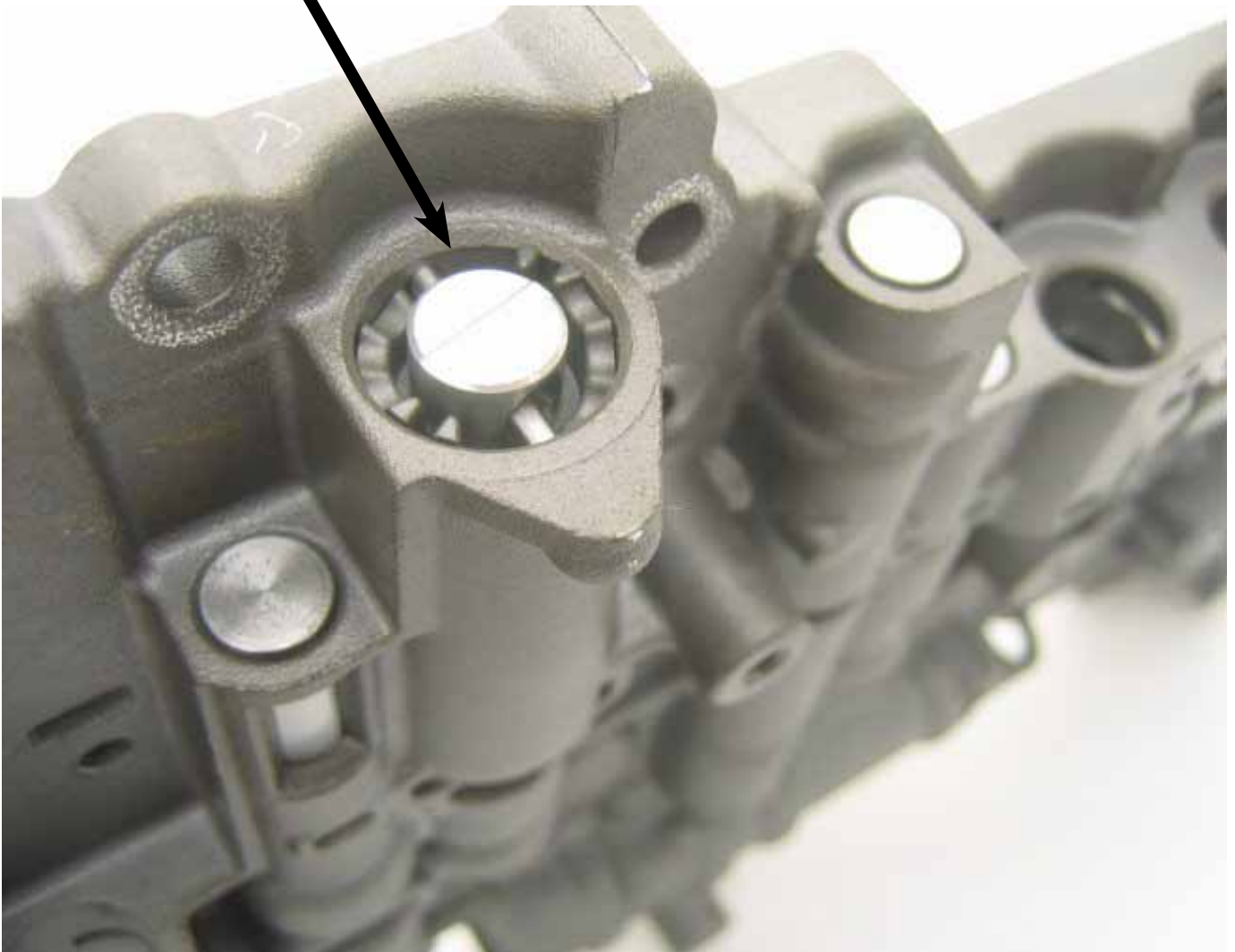
Pressure Evaluation	
Problem	Possible Cause
If pressure is too high in all positions	*Shift Solenoid SLT is defective *Pressure Regulator Valve sticking
If pressure is too low in all positions	*Shift Solenoid SLT is defective *Pressure Regulator Valve sticking *Oil pump is worn
If pressure is low in the D position only	*D position circuit fluid leakage *C1 clutch leakage
If pressure is low in the R position only	*R position circuit fluid leakage *C3 clutch leakage *B4 clutch leakage

A750E/F

Accumulator Control Pressure

Make sure you record the setting prior to removing the accumulator control valve assembly. There is no factory preset specification. From the factory setting, you can turn the stepper in to induce a firm shift feel. Backing the stepper out will induce a softer shift feel.

**Mark the sleeve and the valve body
before you remove the assembly**



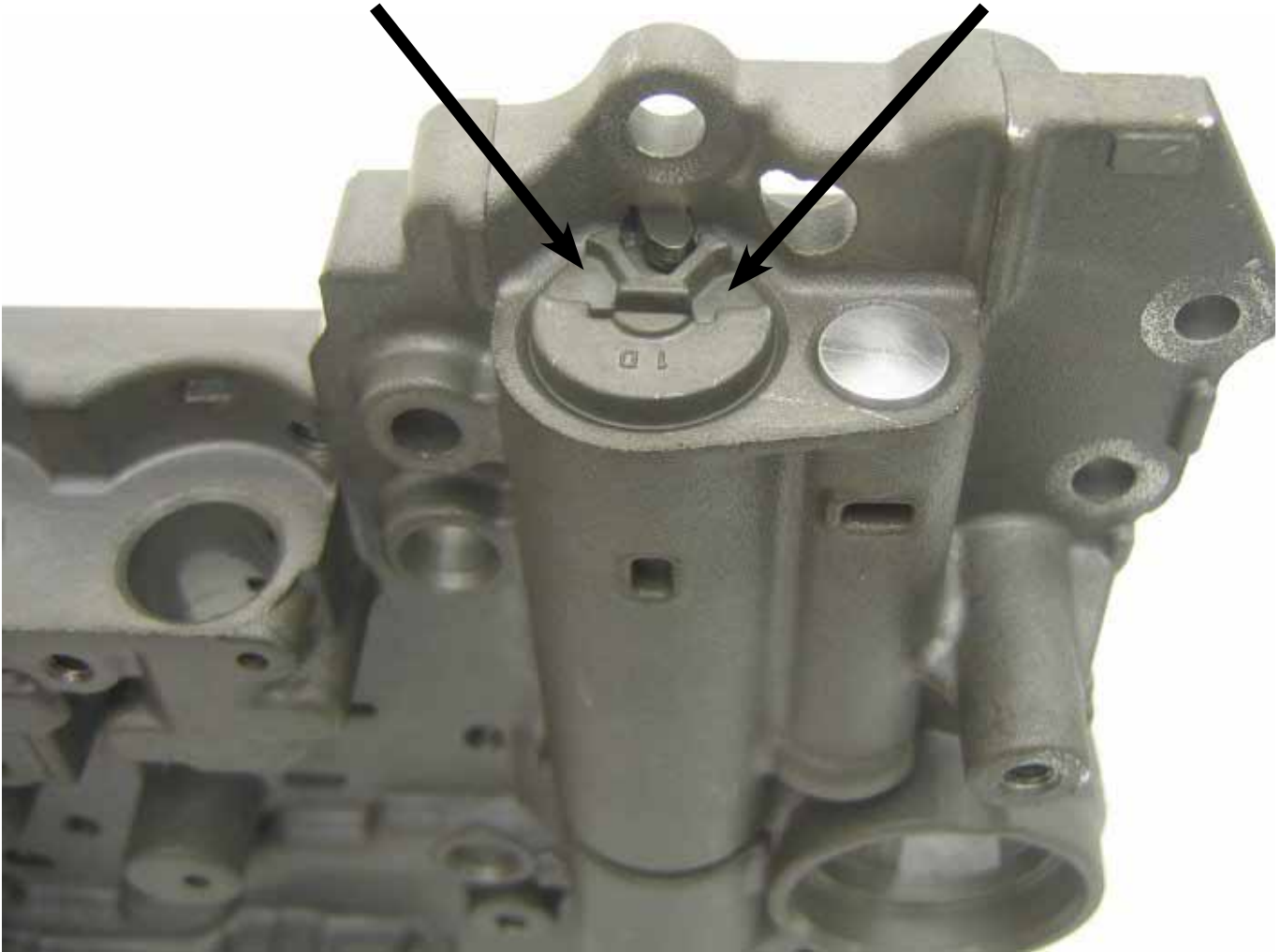
A750E/F

Primary Regulator Valve Setting

Make sure you record the setting prior to removing the Regulator control valve.

Tallest step will be the highest base pressure reading

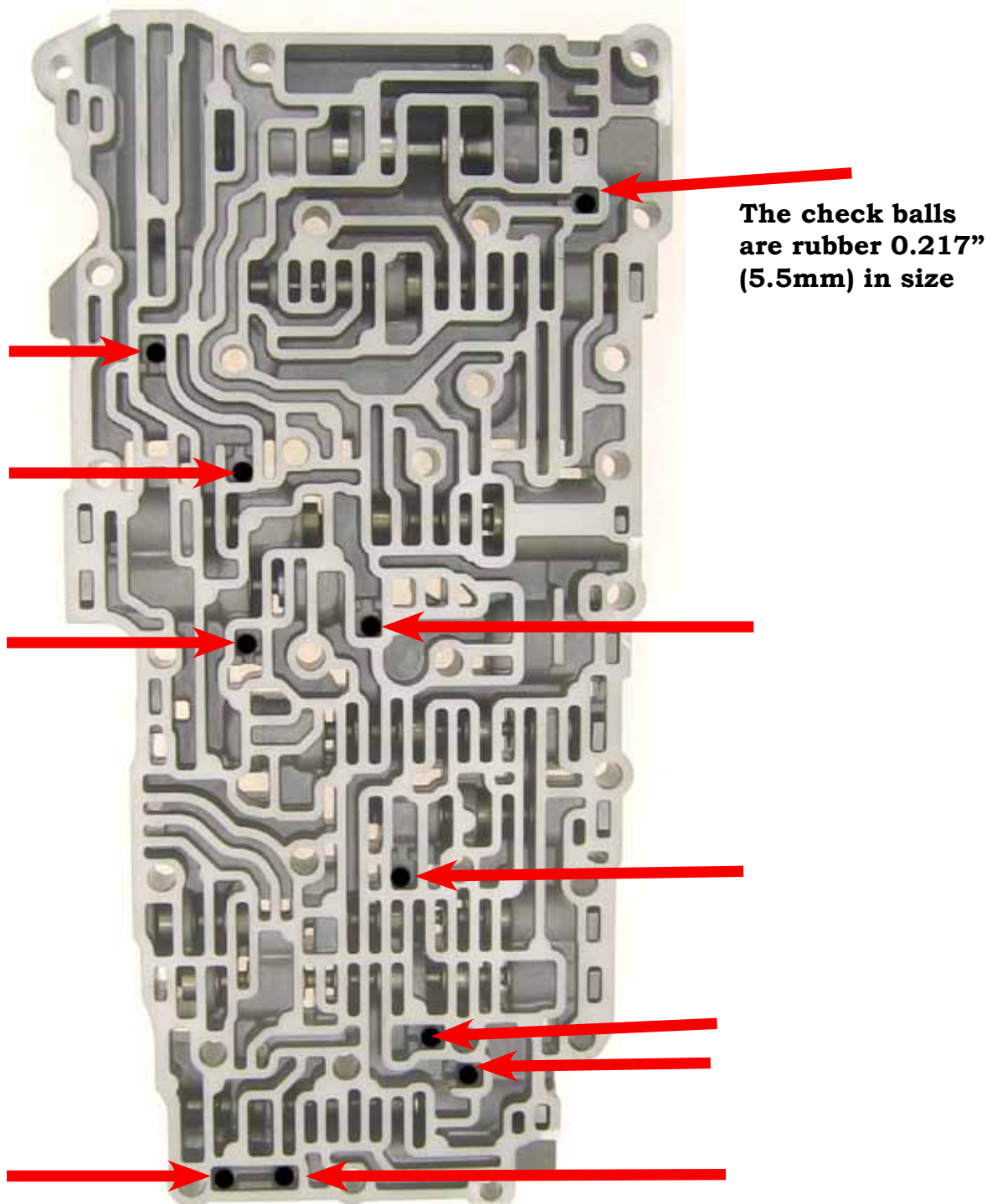
Shortest step will be the lowest base pressure reading



A750E/F

Upper Valve Body #1 Check Balls

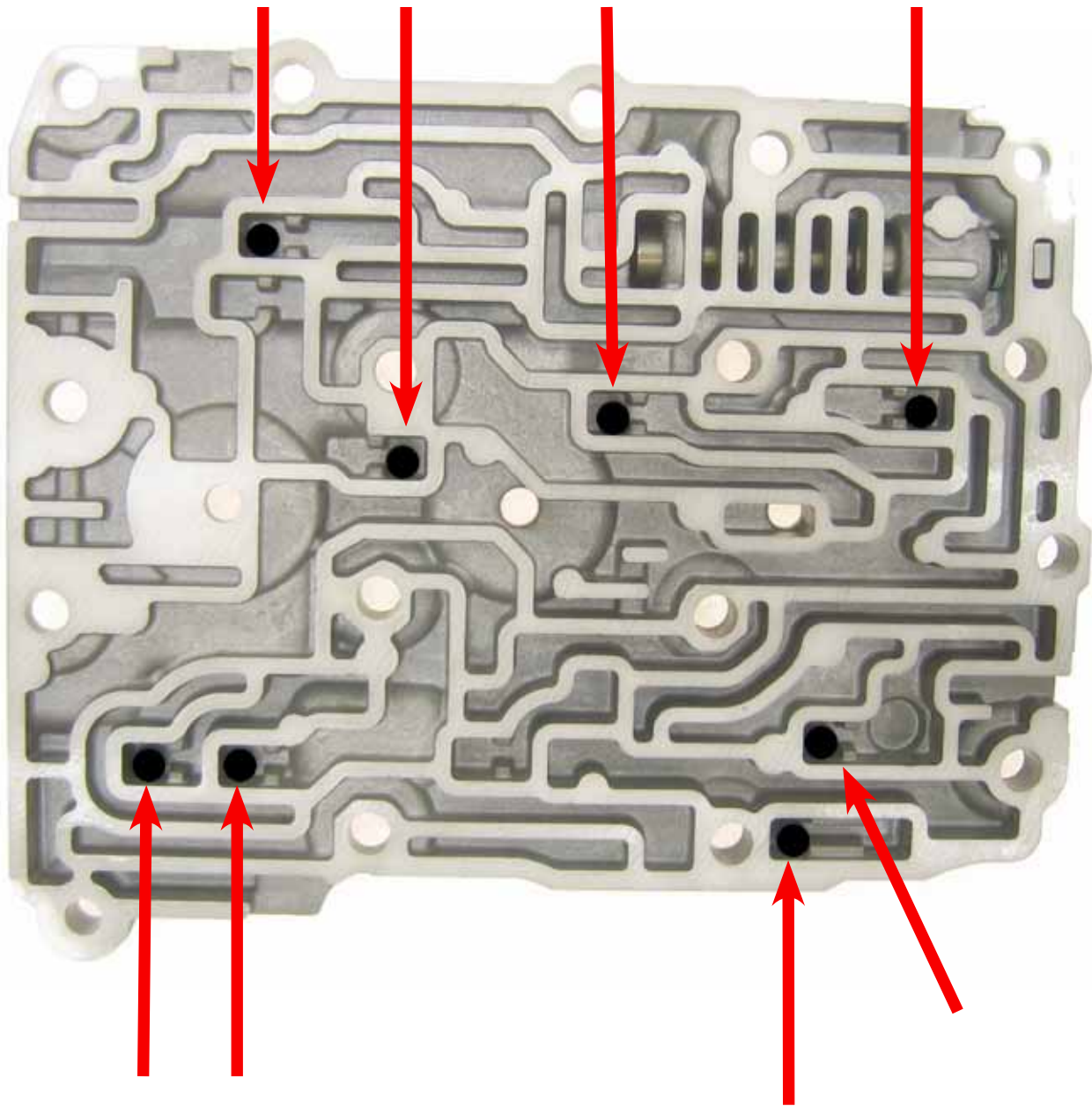
There are three sections to the A750E/F valve body. Upper valve bodies #1 and #2 are the only valve bodies with check ball locations.



A750E/F

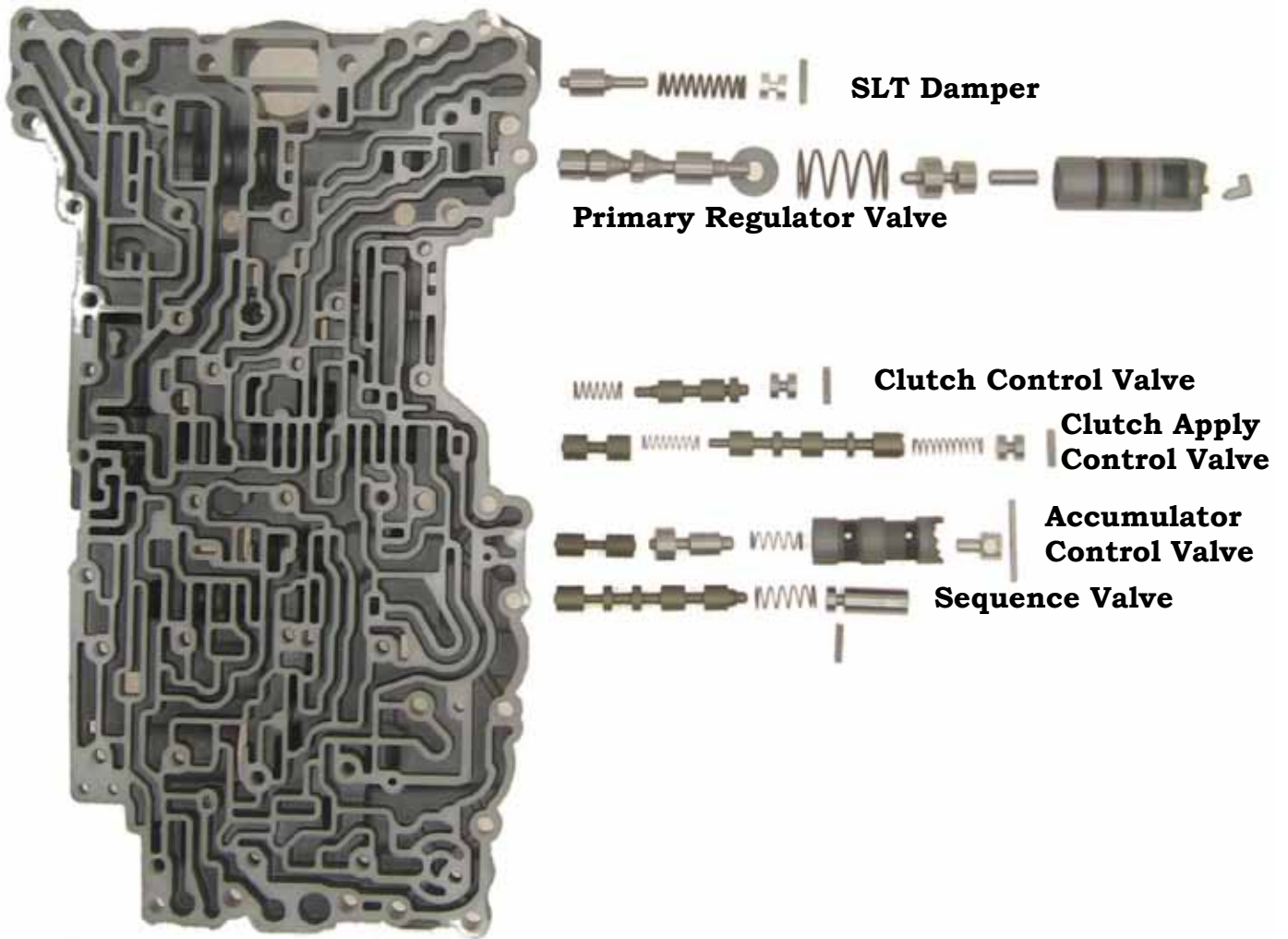
Upper Valve Body #2 Check Balls

The check balls
are rubber 0.217"
(5.5mm) in size



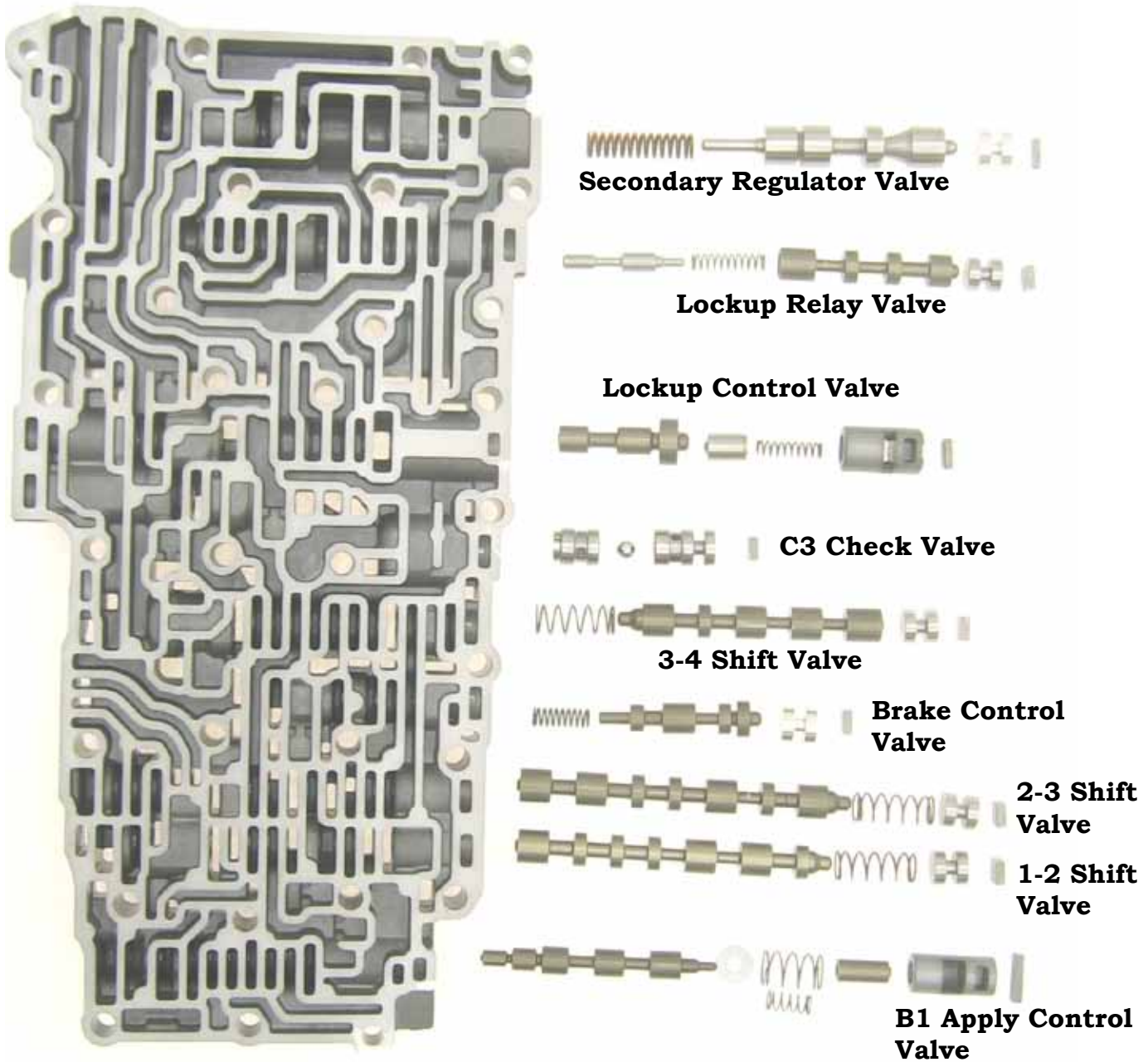
A750E/F

Lower Valve Body #1 Exploded View



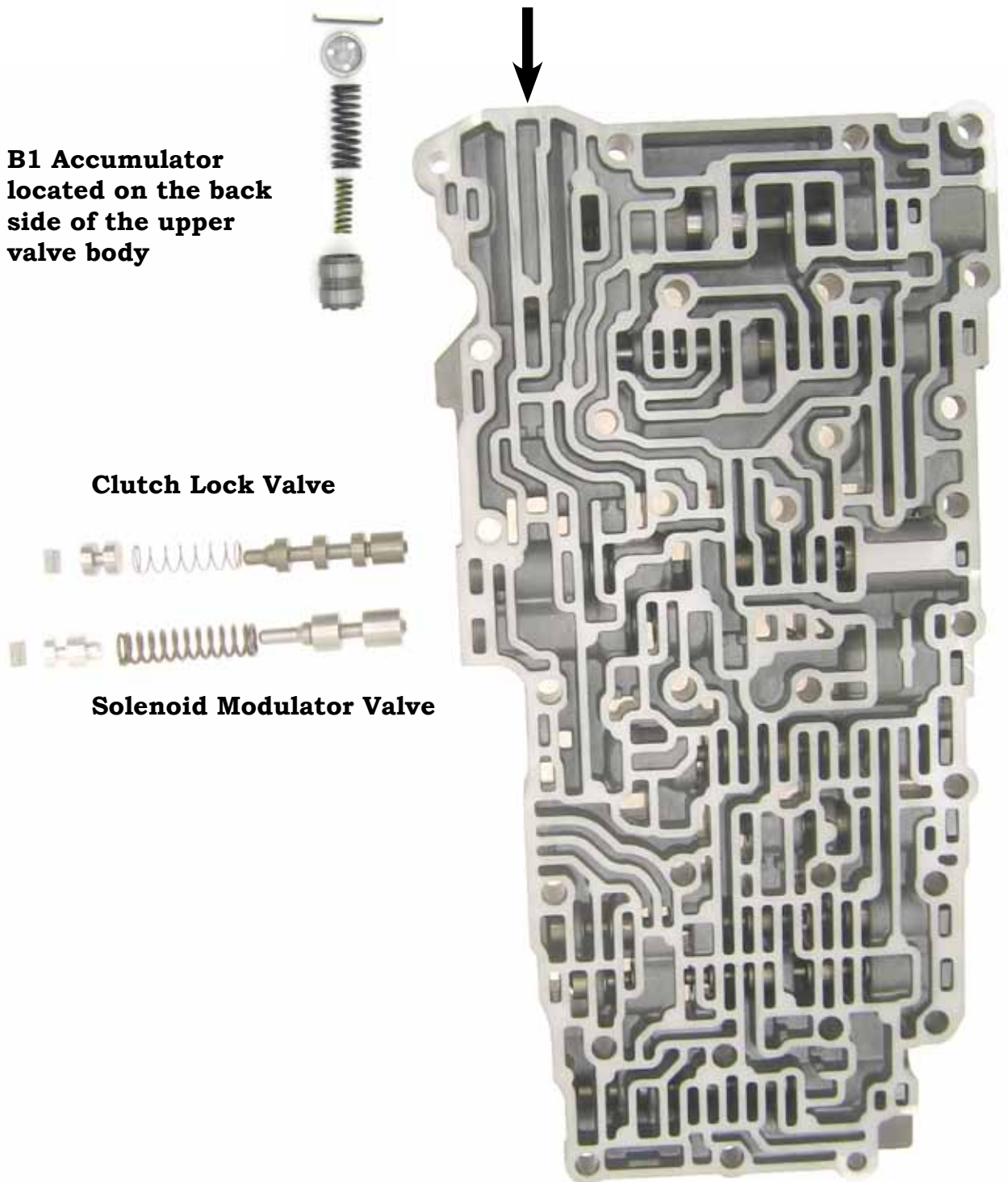
A750E/F

Upper Valve Body #1 Exploded View



A750E/F

Upper Valve Body #1 Exploded View (continued)



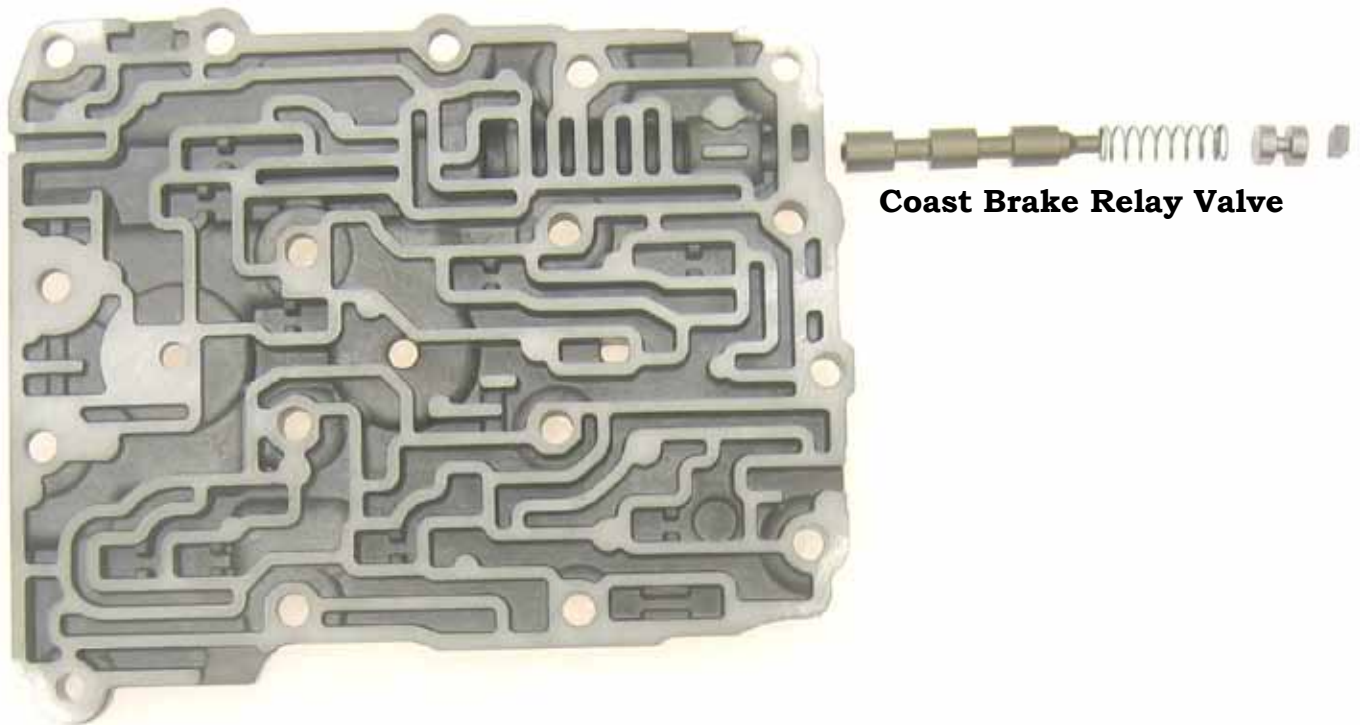
B1 Accumulator
located on the back
side of the upper
valve body

Clutch Lock Valve

Solenoid Modulator Valve

A750E/F

Upper Valve Body #2 Exploded View



A750E/F

Solenoid Location

**REPAIR
MANUAL**

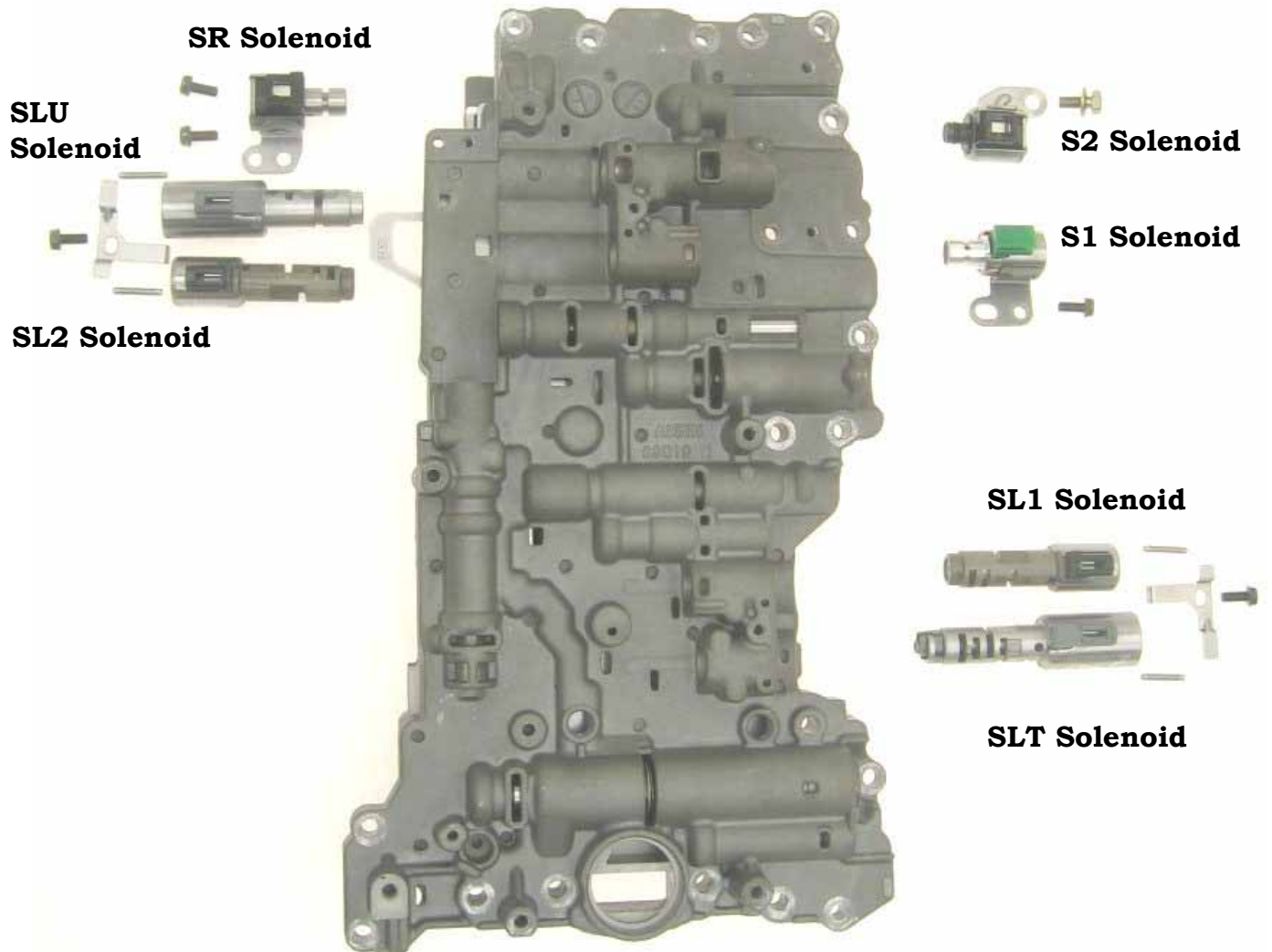
S1
S2
SR
SL1
SL2
SLT
SLU

**SOLENOID
NAME**

Shift Solenoid A
Shift Solenoid B
Shift Solenoid E
Pressure Control Solenoid A
Pressure Control Solenoid B
Pressure Control Solenoid D
TCC Pressure Control Solenoid

**PARTS CATALOG
PART DESCRIPTION**

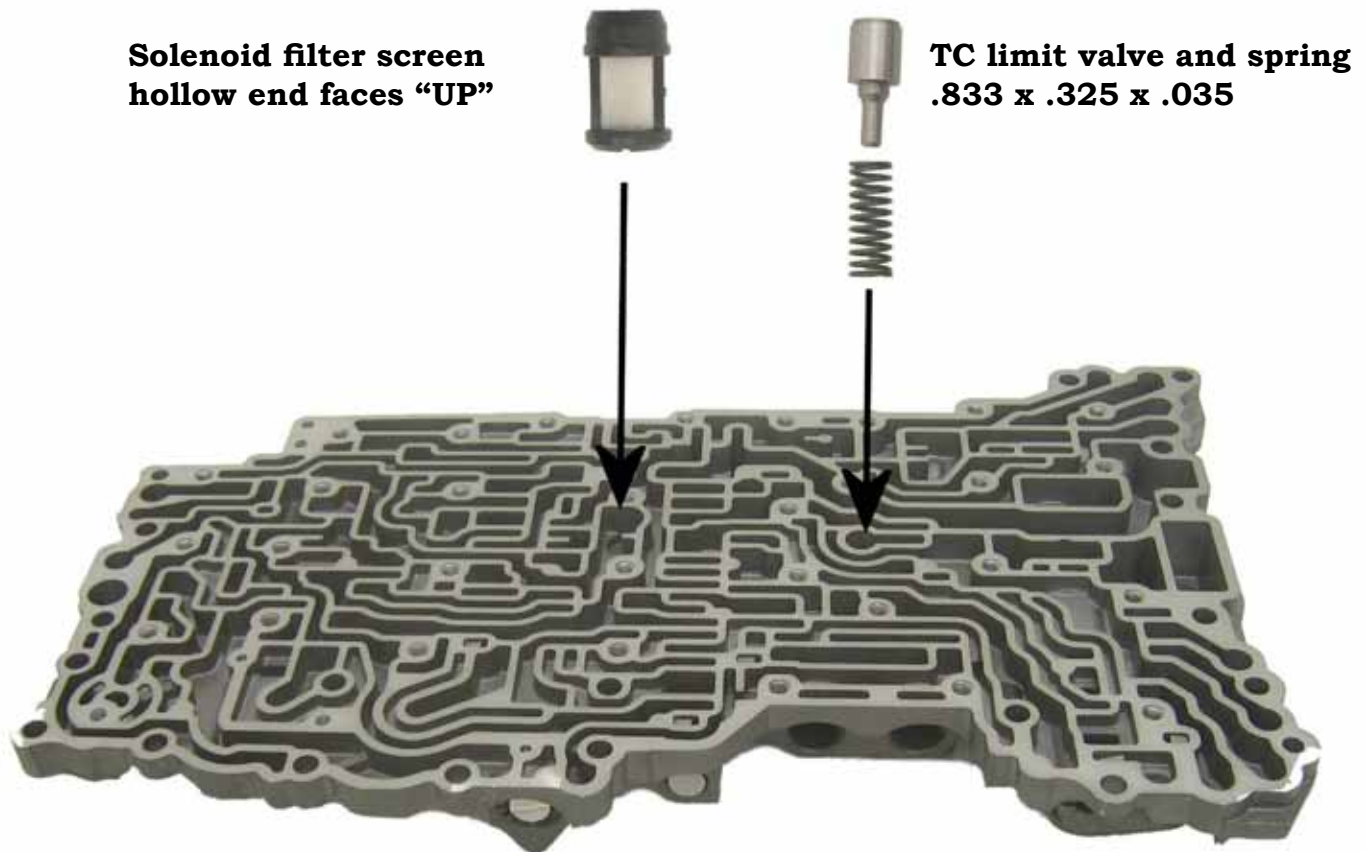
3 Way Transmission Solenoid
Transmission Solenoid #3
3 Way Transmission Solenoid #2
Clutch Control Solenoid #1
Clutch Control Solenoid #2
Line Pressure Control Solenoid
Lockup Control Solenoid



A750E/F

Lower Valve Body #1

The solenoid filter screen must be installed open end "UP". When properly installed the screen will snap into the separator plate. The torque converter check valve must be installed as shown.



A750E/F

Lower Valve Body #1 (continued)

The pressure limit check ball is used for exhaust purposes due to extremely high pressure. The limit check ball will blow off at approximately 300 psi.



Honda 5spd

2-1 Coast Down Neutral when Cold or No Forward

No forward after driving for a short distance and coasting to a stop. The transmission will engage forward when manual 2nd or low is selected. This symptom usually occurs when the transmission is cold. The next coast down stop the symptom is gone. This problem in time will escalate to a no forward movement in drive 4 or drive 3. The only vehicles affected by this complaint are equipped with V6 engines and listed on the chart.

Honda Models		
Year	Model	Unit
2005-2008	Accord	Hybrid MURA
2003-2007	Accord	BAYA/MAYA
2002-2004	Odyssey	BYBA
2005-2009	Odyssey	BGRA
2003-2009	Pilot	BVGA
2006-2009	Ridgeline	BJFA/MJFA

Acura Models		
Year	Model	Unit
2000	3.2 TL	M7WA
2001-2003	3.2 TL	BGFA/MGFA/B7WA
2004-2008	TL	BDGA
2007-2008	TL Type 5	BDHA
2001-2002	MDX	MGHA/BGHA
2003-2004	MDX	MDKA
2005-2006	MDX	BDKA
2007-2008	MDX	BYFA
2007-2009	RDX	BWEA
2005-2009	RL	MJBA

Honda 5spd

2-1 Coast Down Neutral when Cold or No Forward (continued)

Failure usually occurs in the low one way clutch (sprag) and/or inner sprag race (part of 1st gear). The outer sprag race (low clutch hub) in most cases may not need replacement.

Inner race inspection: The 1st hold clutch hub must be pressed out from 1st gear with 1st gear facing up. After the components are disassembled, 1st gear (inner race) can be inspected. Excessive wear on the 1st gear inner race will require replacement.

**1st Gear
(Inner Race)**



Check for wear here



**Low Clutch Hub
Assembly**



**Hub presses out in this
direction**



**First Hold Clutch
Hub**



Honda 5spd

2-1 Coast Down Neutral when Cold or No Forward (continued)

Outer race and sprag inspection: Removing the sprag element from the low clutch hub requires the snap ring holding the bearing in place. There is no need to remove the retainer on the other side of the hub assembly. The bearing must be pressed out in the direction towards the snap ring. The reason for this procedure is the extended lip on the sprag element shown will not pass by the stepped edge inside the outer race. The extended lip will only allow the sprag to be installed or removed in one direction.

Replace components as needed. If both races are fine then only the sprag element needs to be replaced.

The sprag element is only available from the dealer as a complete assembly with the low clutch hub and bearing (Low Clutch Hub assembly). An alternative is to use an early 1982-86 4L60 (700R4) narrow sprag element without the two brass washers. This will also require leaving out the spacer to allow the sprag to fit. The spacer will not be needed because sprag will rest next to the bearing outer race and not move out of place.

The 4L60 sprag has no extended lip, it can be installed incorrectly. After the sprag is placed into the low hub assembly; check the rotation with the 1st gear (inner race) before pressing the bearing back in place.

**1st Hold Clutch Hub
(HOLD)**

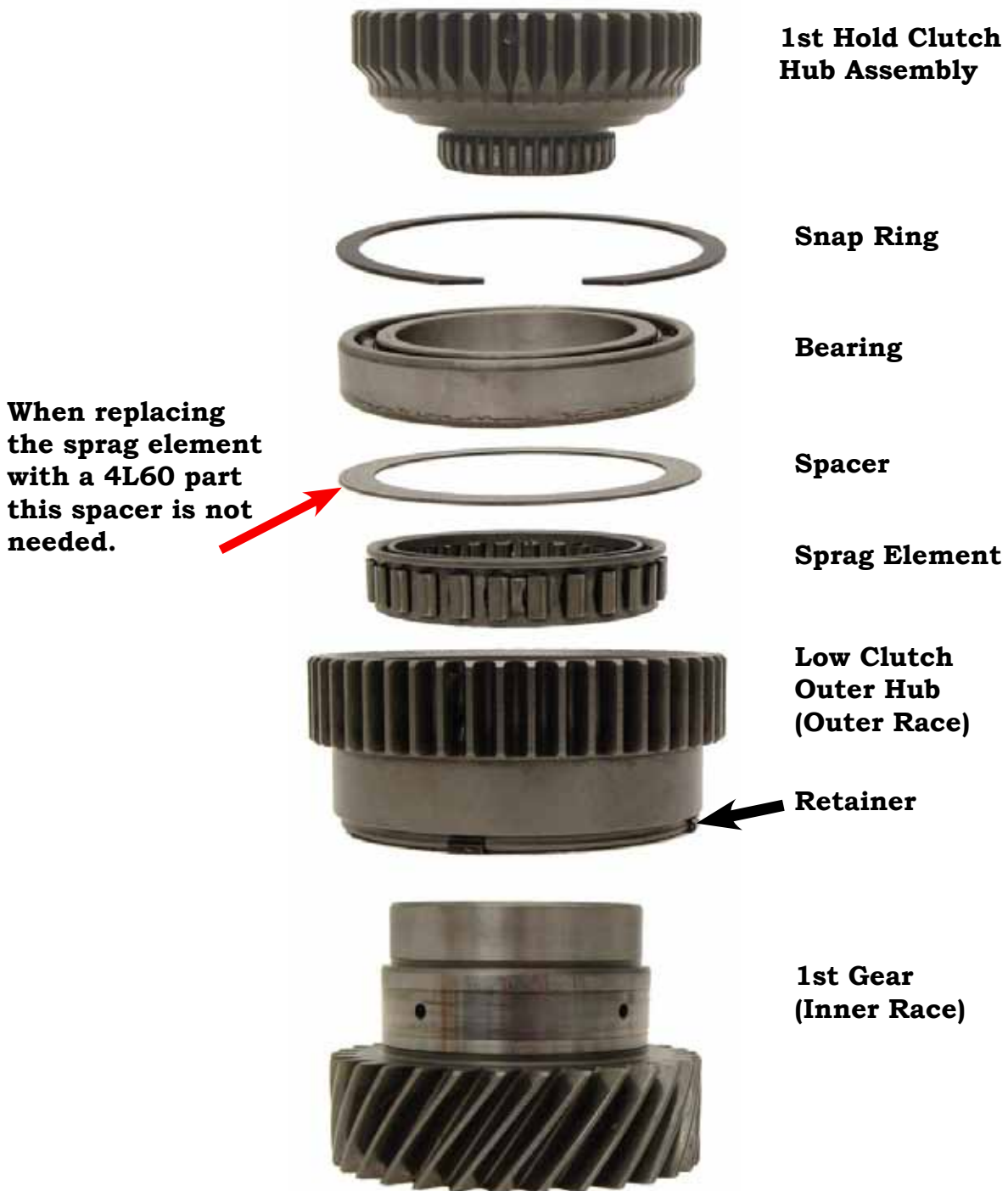
**1st Clutch Hub
(TURN)**

**1st Gear
(HOLD)**



Honda 5spd

2-1 Coast Down Neutral when Cold or No Forward (continued)



All Honda Units

Case Wear

Any movement of the bearings in the case is unacceptable. The wear seems to be most common on the Main (Input) shaft bearing pocket in the rear case half, but reports of wear on secondary and counter shaft bearing pockets have been made. Complaints from this wear can range from bind ups in reverse, whine noise and/or gear facing damage. There are machine shops offering case repair by boring and installing a sleeve in the worn pocket.

Note: Whenever case wear is present, the apply bushings in the shaft will be worn and must be replaced along with case replacement/repair.

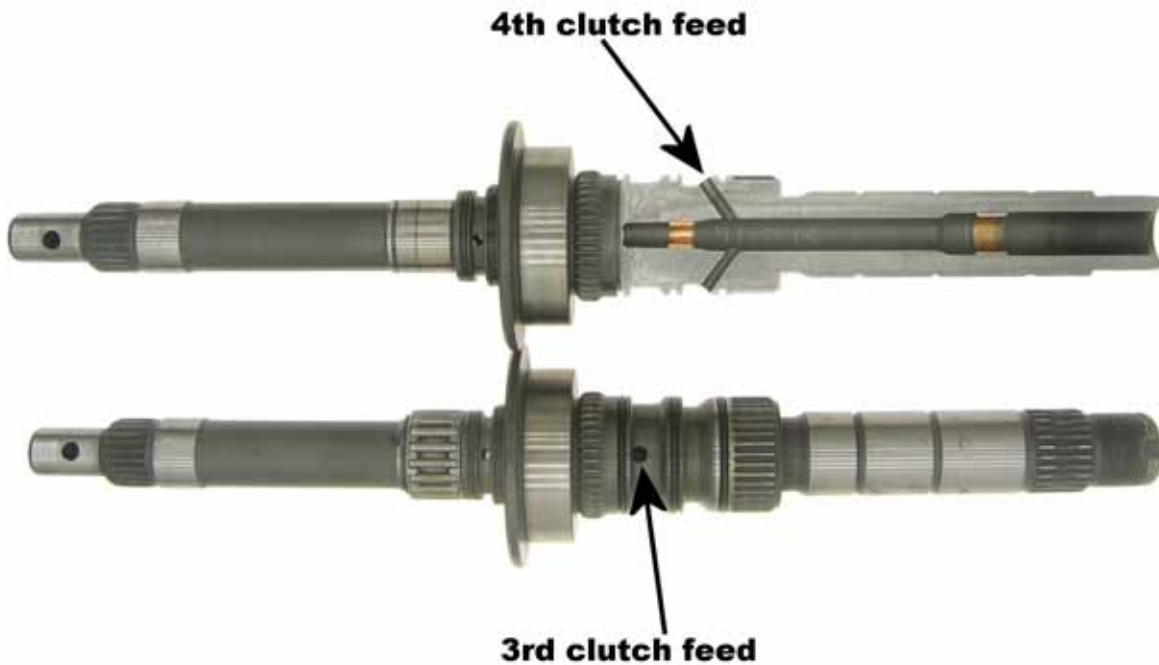
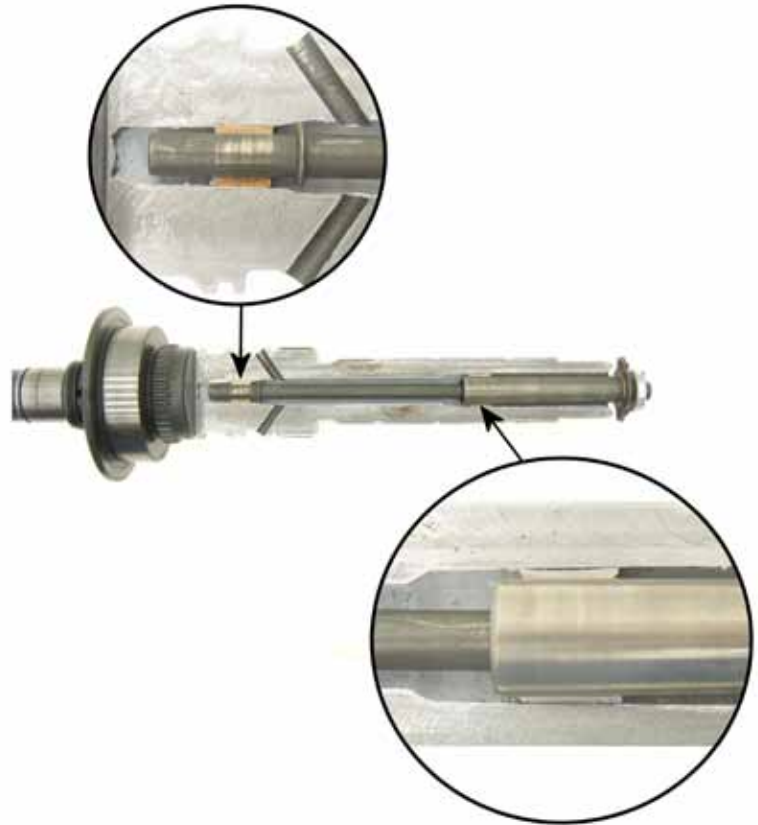


All Honda Units

Shaft Bushing Wear

Sealing bushings must be replaced if there is any failure with the shaft's bearings.

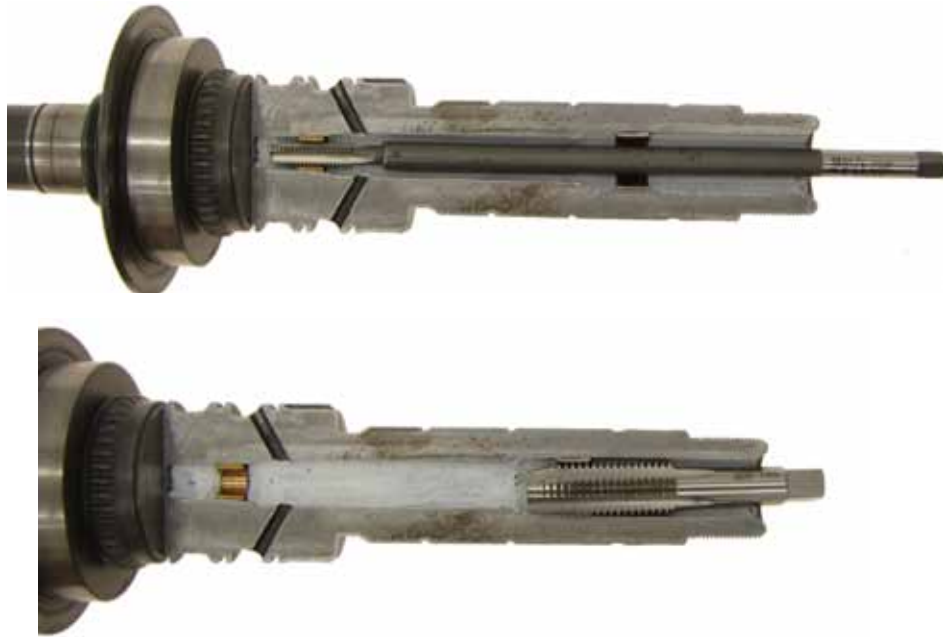
**BAXA/MAXA
Example**



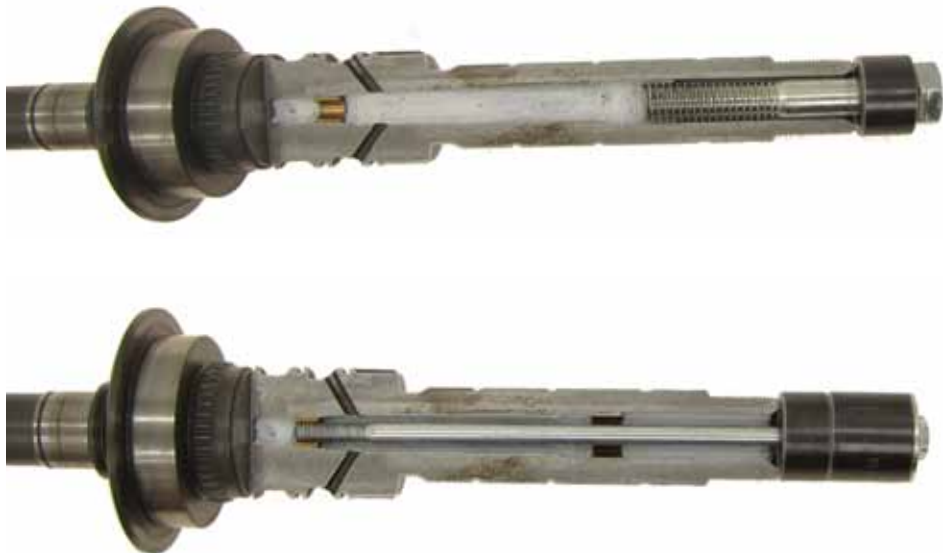
All Honda Units

Shaft Bushing Replacement

Use the special taps to thread the bushings.



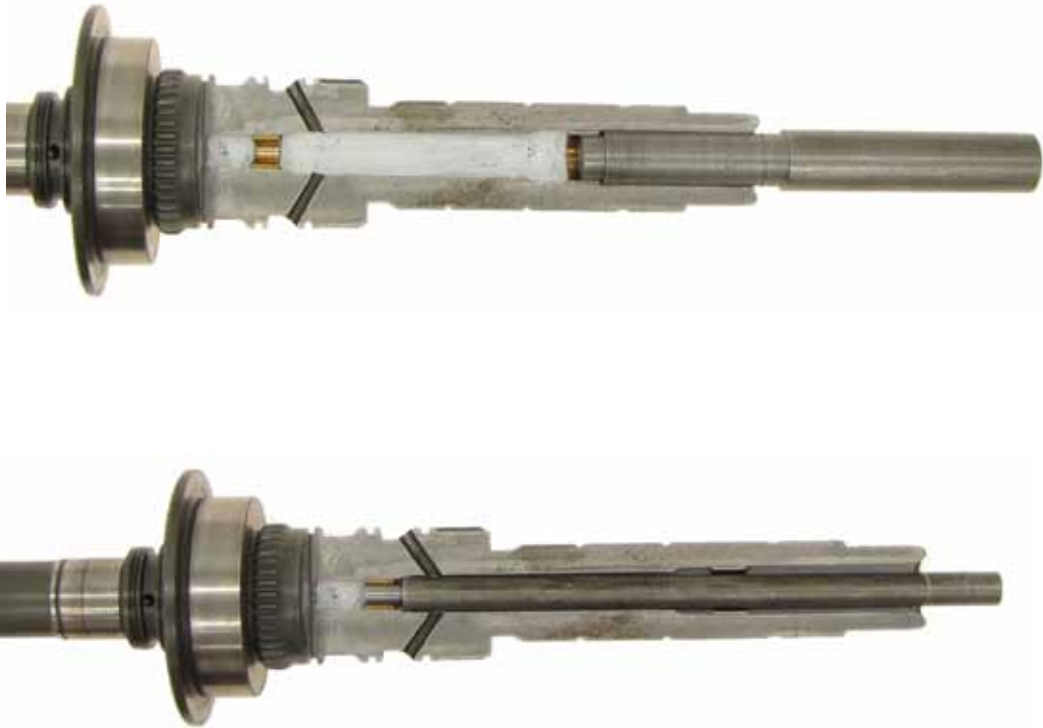
Thread the bolts into the bushing to remove them from the shaft.



All Honda Units

Shaft Bushing Replacement (continued)

The drivers provided have grooves to indicate when the bushing is driven in far enough.



Tool Kit provided by Mike Tilley at Arizona Transmission Machine Sales and Service

BAXA, MAXA, B6VA, M6HA, MDWA, B7TA, B7VA, B7XA, B7ZA, M7ZA

Erratic 1-2 Shift and/or Stacked 2-3 Shift

The second clutch pressure switch is a critical input to the TCM/PCM for clutch timing control and clutch overlap during the 1-2 shift. A faulty second clutch pressure switch can cause one or more of the following symptoms:

- Delayed 1-2 shift
- Long sliding 1-2 shift
- Harsh 1-2 shift
- Stacked 2-3 shift

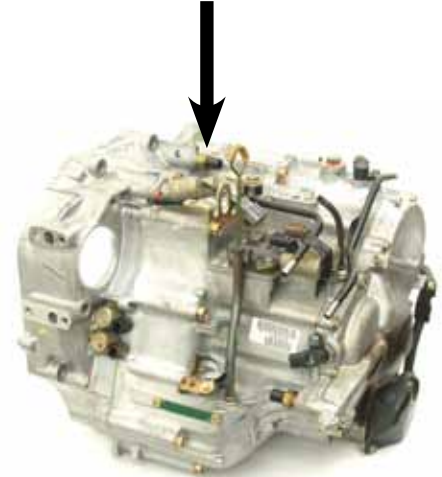
There are several different switch calibrations used on the different transaxle/vehicle combinations. The switches have different closing pressures, and are identified by the color of the plastic connector. It is recommended that the switches only be replaced with the correct color. If you are not certain of the switch application it is recommended to order the switches from the dealer using the vehicle information to ensure getting the correct switch.

NOTE: The second and third clutch pressure switches are very sensitive to moisture and chemicals. Do not wash them with a parts washer or solvents.

**2nd Clutch Pressure
Switch 4Cyl Unit**



**2nd Clutch Pressure
Switch 6Cyl Unit**



MDKA, BDKA, BWEA, MJBA, BJFA, MJFA, PVLA, PVGA

Feed Pipe Damage

Remove CPC C feed tubes prior to case separation to prevent feed tube damage. These tubes fit into the valve body inside the case. If the pipes are damaged they are available from the Acura dealer.

Pipe measurement

8mm X 53mm

8mm X 25.2mm

8mm X 36mm

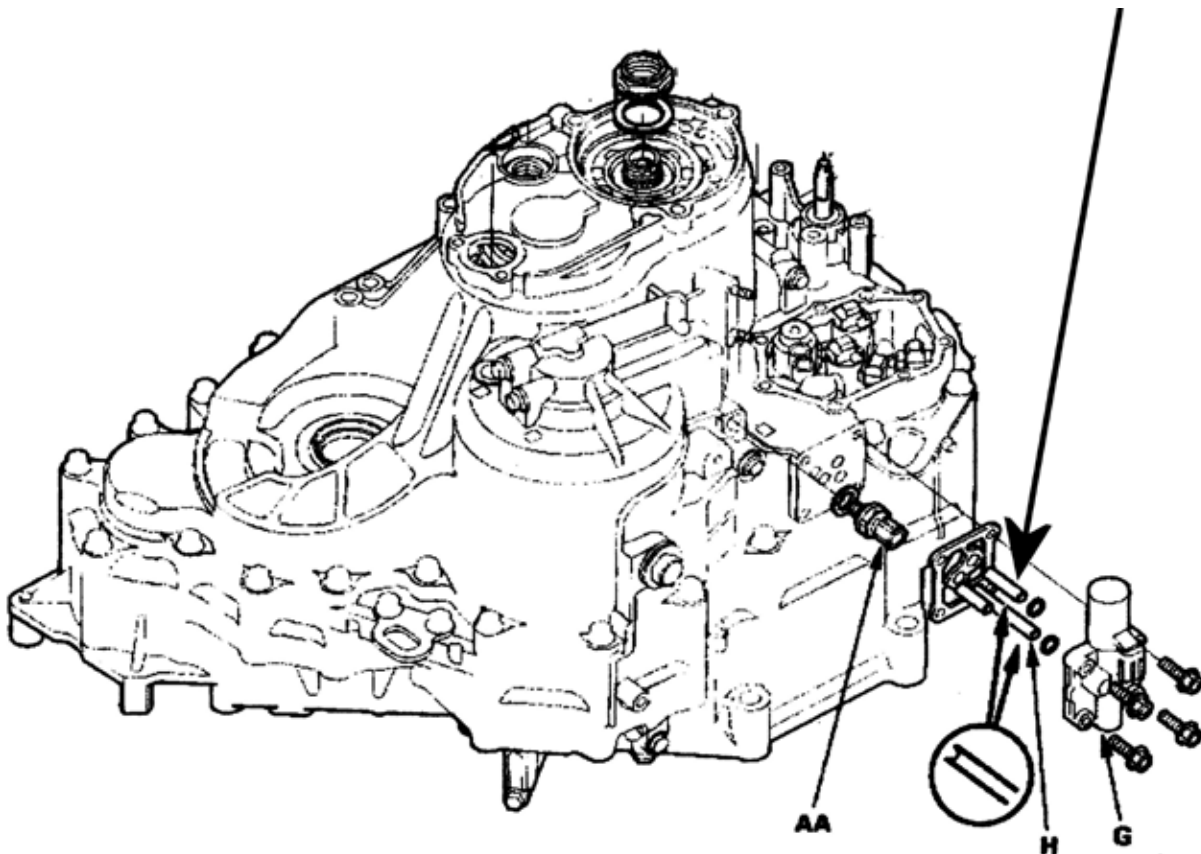
Part number

22750-RDK-010

22761-P7Z-000

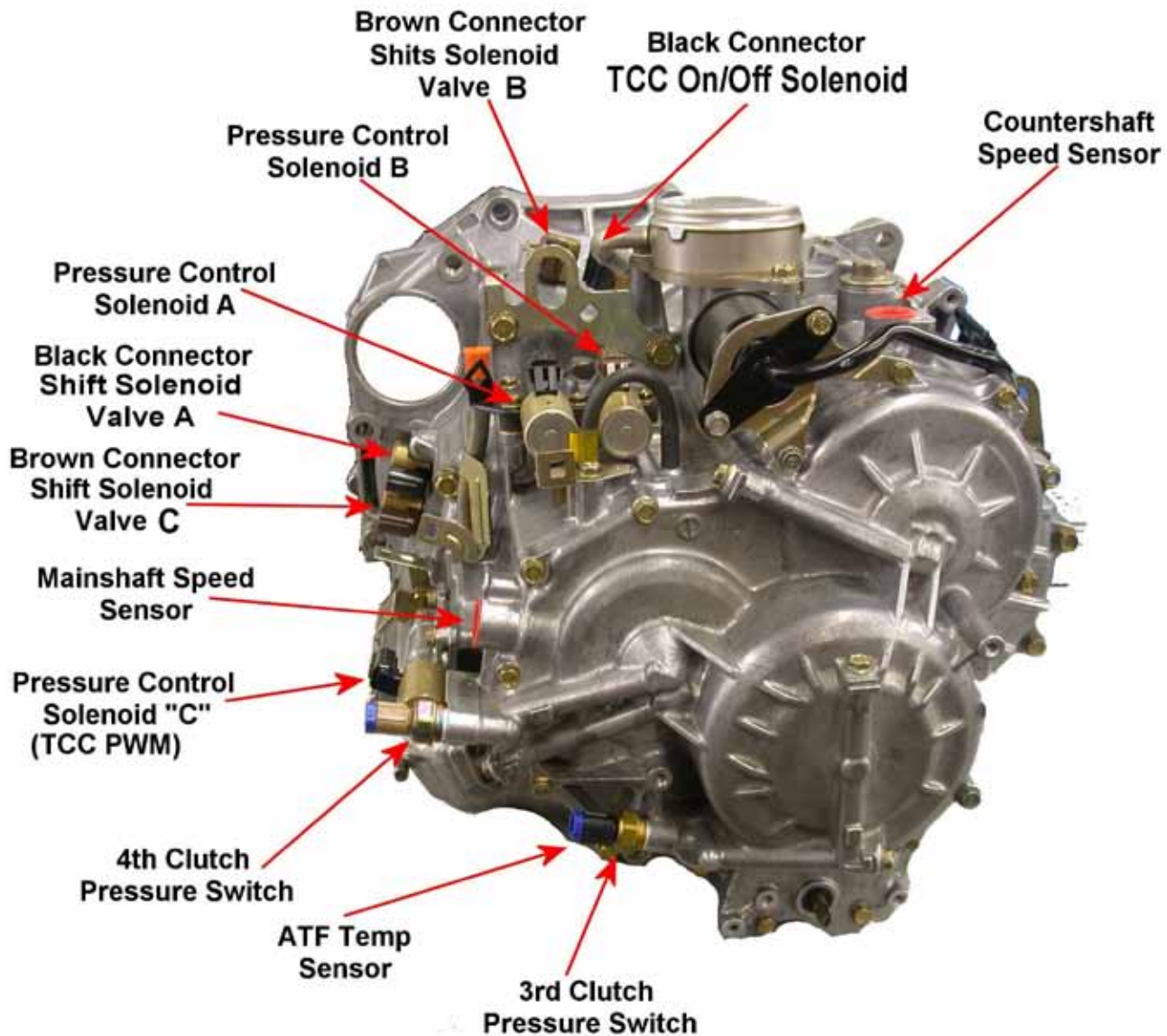
22770-P7Z-000

Always remove these 3
pipes before splitting the
case halves



BYBA

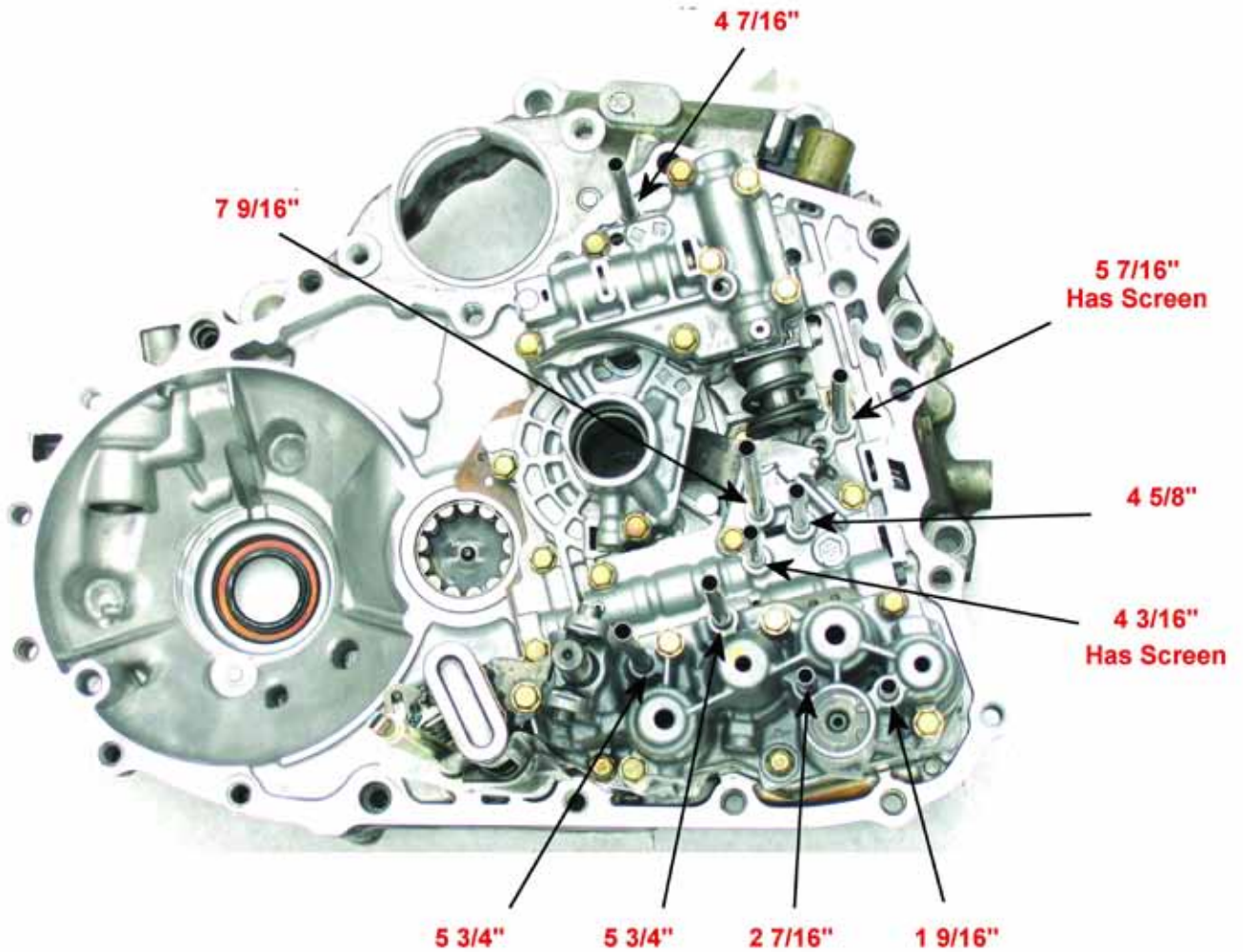
Electronic Component Identification



BMXA

Feed Pipe ID and Location

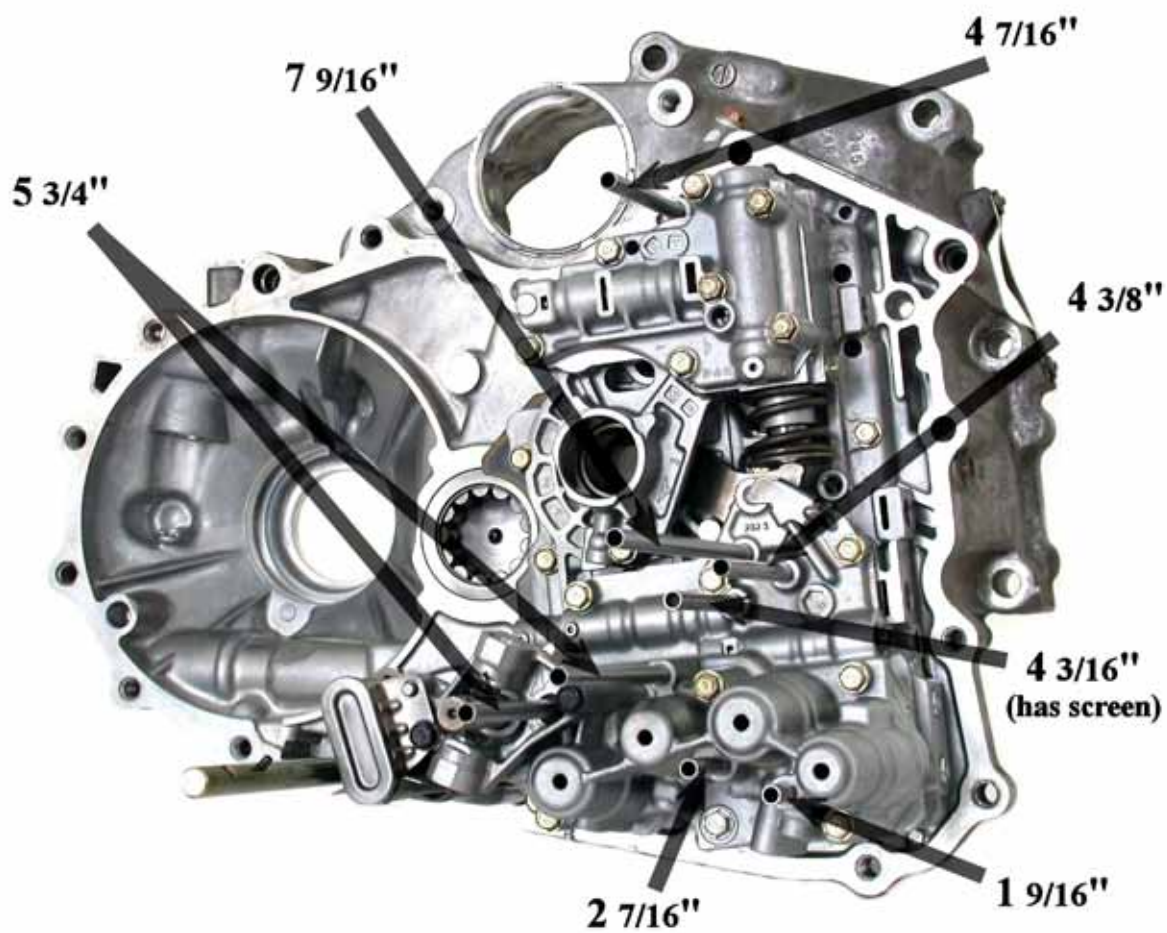
2001 and newer Honda Civic feed pipe ID's and locations. Use the picture to identify feed pipes and their correct locations.



A4RA, B4RA, M4RA

Feed Pipe ID and Location

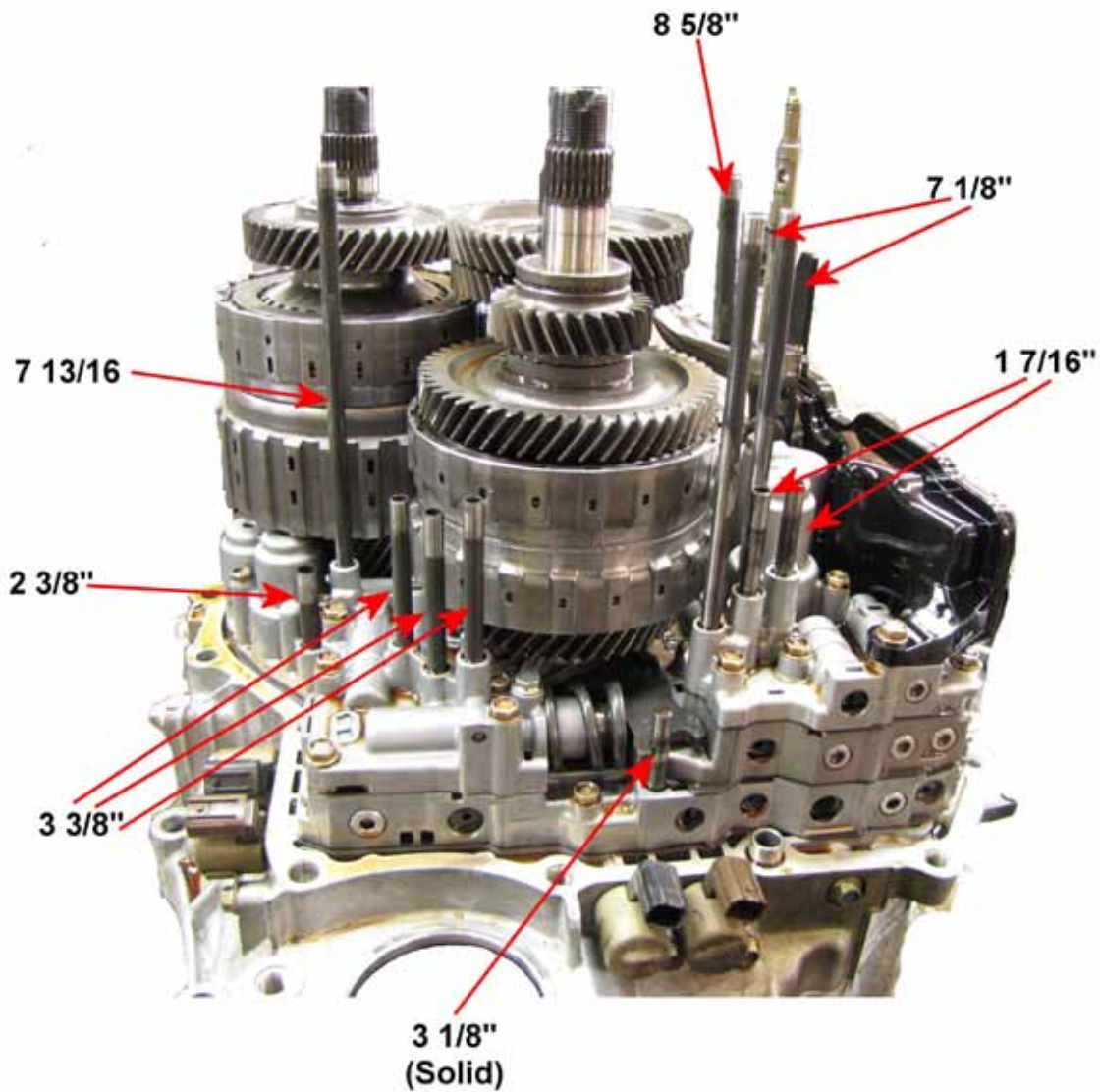
1996-2000 Honda Civic feed pipe ID's and locations. Use the picture to identify feed pipes and their locations.



BYBA

Feed Pipe ID and Location

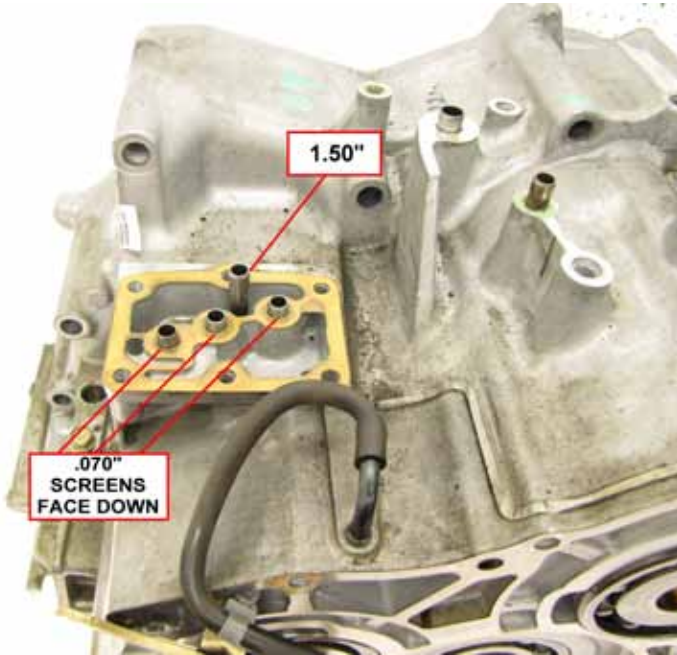
Use the picture to identify feed pipes and their locations.



BYBA

Feed Pipe ID and Location (continued)

Use the picture to identify feed pipes and their locations.



**Pressure control solenoid
CPC "C" (TCC) filter screen
location**



All Honda Units

Clutch Clearances

Proper clutch clearance adjustment is critical for proper transaxle operation. Too tight, and the clutch can drag and burn up; too loose, and you could end up with a flare or shift timing problem. The following charts list all of the Honda and Acura transaxles, and provide the clutch clearance specifications for each clutch pack. We've separated these units by the number of clutch packs in the transaxle: 4, 5 and 6 clutch units as well as by speeds. Find the unit you're working on and set the clutch clearances carefully, to make sure your rebuilds work—and last—the way they're supposed to.

Acura 4 Speed Clutch Pack Clearances (4 Clutch Models)				
Model	1st	2nd	3rd	4th
B6VA	0.045"-0.053"	0.028"-0.035"	0.024"-0.031"	0.016"-0.024"
M7ZA	0.047"-0.055"	0.033"-0.041"	0.022"-0.030"	0.022"-0.030"
B7VA				

Acura 4 Speed Clutch Clearance Chart (5 Clutch Models)					
Model	1st Clutch	1st Hold	2nd Clutch	3rd Clutch	4th Clutch
A6VA	0.026"-0.033"	0.031"-0.039"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
M1WA	0.026"-0.033"	0.031"-0.039"	0.022"-0.030"	0.022"-0.030"	0.022"-0.030"
MPMA/SP7A	0.026"-0.033"	0.020"-0.031"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
S4XA					
SKWA	0.026"-0.033"	0.020"-0.031"	0.016"-0.024"	0.016"-0.024"	0.016"-0.024"
MR9A	0.026"-0.033"	0.028"-0.035"	0.030"-0.037"	0.030"-0.037"	0.030"-0.037"

Acura 4 Speed Clutch Clearance Chart (6 Clutch Models)						
Mode	1st Clutch	1st Hold Clutch	2nd Clutch	3rd Clutch	4th Clutch	Reverse Clutch
M5DA	0.026"-0.033"	0.028"-0.035"	0.024"-0.031"	0.024"-0.031"	0.020"-0.028"	0.030"-0.037"
M5HA						
MPYA						

Acura 5 Speed Clutch Pack Clearances						
Model	1st Clutch	1st Hold Clutch	2nd Clutch	3rd Clutch	4th Clutch	5th Clutch
B7WA	0.043"-0.051"	N/A	Type S: 0.033"-0.041"	0.028"-0.035"	0.022"-0.030"	0.022"-0.030"
BGFA/MGFA			Other: 0.028"-0.035"			
M7WA						
BDGA	0.043"-0.061"	0.020"-0.035"	0.033"-0.041"	0.023"-0.035"	0.022"-0.030"	0.022"-0.030"
BDHA	0.045"-0.053"	0.024"-0.039"	0.041"-0.049"	0.031"-0.039"	0.030"-0.037"	0.030"-0.037"
BDKA	0.043"-0.051"	0.024"-0.039"	0.039"-0.047"	0.028"-0.035"	0.022"-0.030"	0.022"-0.030"
BGHA/MGHA	0.043"-0.051"	0.020"-0.035"	0.033"-0.041"	0.028"-0.035"	0.022"-0.030"	0.022"-0.030"
BWEA	0.045"-0.053"	0.024"-0.039"	0.041"-0.049"	0.031"-0.039"	0.030"-0.037"	0.030"-0.037"
BYFA	0.045"-0.053"	0.024"-0.039"	0.041"-0.049"	0.035"-0.043"	0.030"-0.037"	0.030"-0.037"
MCTA (2004-2005)	0.032"-0.040"	N/A	0.035"-0.043"	0.032"-0.040"	0.037"-0.044"	0.037"-0.044"
MCTA (2006-0N)	0.032"-0.040"	N/A	0.046"-0.054"	0.039"-0.044"	0.037"-0.044"	0.037"-0.044"
MDKA	0.043"-0.051"	0.024"-0.039"	0.039"-0.047"	0.028"-0.035"	0.022"-0.030"	0.022"-0.030"
MJBA	0.047"-0.053"	N/A	0.043"-0.049"	0.033"-0.039"	0.030"-0.035"	0.031"-0.037"
MRMA	0.048"-0.056"	N/A	0.030"-0.037"	0.033"-0.041"	0.029"-0.037"	0.029"-0.037"

All Honda Units

Clutch Clearances (continued)

Honda 4 Speed Clutch Pack Clearances (4 Clutch Models)				
Model	1st Clutch	2nd Clutch	3rd Clutch	4th Clutch
A4RA/M4RA	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
AK	0.016"-0.028"	0.016"-0.028"	0.016"-0.028"	0.016"-0.028"
AS	0.016"-0.028"	0.026"-0.031"	0.016"-0.023"	0.016"-0.023"
BDRA/B4RA/S4RA	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
B6VA	0.045"-0.053"	0.028"-0.035"	0.024"-0.031"	0.016"-0.024"
B7VA/B7XA/B7ZA B7TA/B7YA	0.047"-0.055"	0.033"-0.041"	0.022"-0.030"	0.022"-0.030"
BAXA/MAXA	0.045"-0.053"	0.028"-0.035"	0.024"-0.031"	0.016"-0.024"
BMXA/SLXA	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
BZKA/MZKA	0.050"-0.058"	0.033"-0.041"	0.029"-0.037"	0.029"-0.037"
CA	0.026"-0.033"	0.026"-0.031"	0.016"-0.023"	0.016"-0.023"
F4	0.026"-0.033"	0.020"-0.028"	0.016"-0.024"	0.016"-0.024"
G4	0.026"-0.033"	0.020"-0.028"	0.020"-0.028"	0.016"-0.024"
K4	0.030"-0.037"	0.016"-0.024"	0.016"-0.024"	0.016"-0.024"
L4	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
L5	0.026"-0.033"	0.020"-0.028"	0.020"-0.028"	0.016"-0.024"
M6HA	0.045"-0.053"	0.039"-0.047"	0.024"-0.031"	0.016"-0.024"
M7ZA	0.047"-0.055"	0.033"-0.041"	0.022"-0.030"	0.022"-0.030"
MDWA	0.045"-0.053"	0.028"-0.035"	0.024"-0.031"	0.016"-0.024"
ML4A	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
MPRA	0.026"-0.033"	0.020"-0.028"	0.016"-0.024"	0.016"-0.024"
MY8A	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"	0.016"-0.024"
P1	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
PL5X	0.026"-0.033"	0.020"-0.028"	0.020"-0.028"	0.016"-0.024"
PY8A	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"	0.016"-0.024"
RO	0.026"-0.033"	0.020"-0.028"	0.016"-0.024"	0.016"-0.024"

All Honda Units

Clutch Clearances (continued)

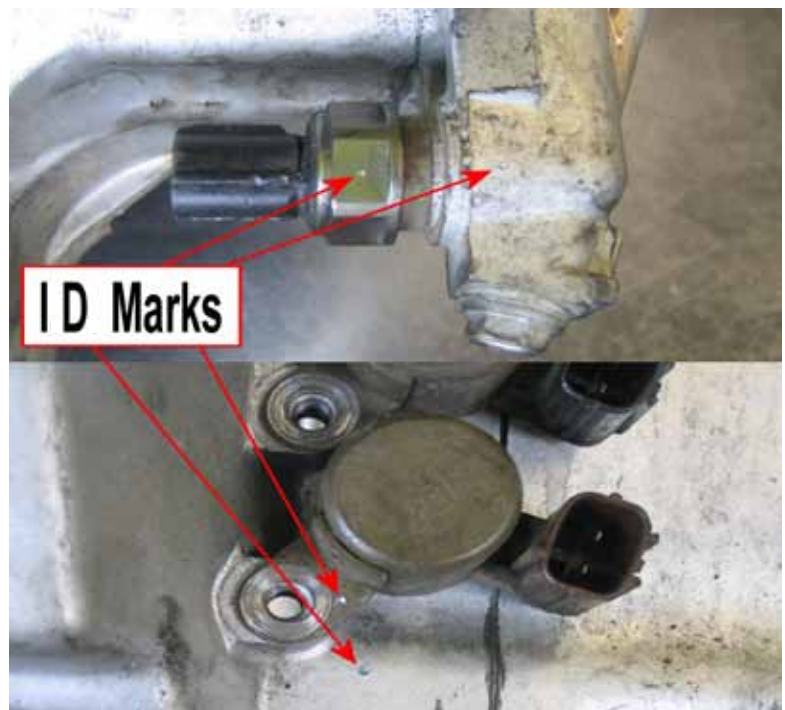
Honda 4 Speed Clutch Pack Clearances (5 Clutch Models)					
Model	1st Clutch	1st Hold Clutch	2nd Clutch	3rd Clutch	4th Clutch
A0YA	0.026"-0.033"	0.031"-0.039"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
A6VA					
APX4	0.026"-0.033"	0.028"-0.035"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
B0YA	0.026"-0.033"	0.031"-0.039"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
M1WA	0.026"-0.033"	0.031"-0.039"	0.022"-0.030"	0.022"-0.030"	0.022"-0.030"
M24A	0.026"-0.033"	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
MDMA/M4TA/MRVA	0.026"-0.033"	0.020"-0.031"	0.016"-0.024"	0.016"-0.024"	0.016"-0.024"
MDLA/MCVA					
MPOA	0.026"-0.033"	0.031"-0.039"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
MP1A					
MP7A	0.026"-0.033"	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
MPJA	0.026"-0.033"	0.031"-0.039"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
MPSA	0.026"-0.033"	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
MPWA Acura	0.026"-0.033"	0.031"-0.039"	0.022"-0.030"	0.022"-0.030"	0.022"-0.030"
MPWA Honda	0.026"-0.033"	0.028"-0.035"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
MPXA					
MPZA	0.030"-0.037"	0.024"-0.039"	0.028"-0.035"	0.026"-0.033"	0.022"-0.030"
PX4B	0.026"-0.033"	0.031"-0.039"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
S4XA	0.026"-0.033"	0.026"-0.033"	0.026"-0.033"	0.016"-0.024"	0.016"-0.024"
S5					
SP7A					

Honda 5 Speed Clutch Pack Clearances						
Model	1st Clutch	1st Hold Clutch	2nd Clutch	3rd Clutch	4th Clutch	5th Clutch
BAYA/MAYA (03-05)	0.043"-0.051"	0.020"-0.035"	0.028"-0.035"	0.028"-0.035"	0.022"-0.030"	0.022"-0.030"
BAYA/MAYA (06-ON)	0.043"-0.051"	0.020"-0.035"	0.033"-0.041"	0.028"-0.035"	0.028"-0.035"	0.028"-0.035"
BCLA/MCLA (03-04)	0.050"-0.058"	0.020"-0.035"	0.035"-0.043"	0.037"-0.044"	0.029"-0.037"	0.029"-0.037"
BCLA/MCLA(2005)	0.050"-0.058"	0.020"-0.035"	0.035"-0.043"	0.037"-0.044"	0.037"-0.044"	0.037"-0.044"
BCLA/MCLA(06-ON)	0.054"-0.062"	0.020"-0.035"	0.046"-0.054"	0.048"-0.056"	0.037"-0.044"	0.037"-0.044"
BJFA	0.045"-0.053"	0.024"-0.039"	0.041"-0.049"	0.031"-0.039"	0.030"-0.037"	0.030"-0.037"
BGRA	0.043"-0.051"	0.020"-0.035"	0.033"-0.041"	0.028"-0.035"	0.028"-0.035"	0.028"-0.035"
BVGA	0.043"-0.051"	0.020"-0.035"	0.033"-0.041"	0.028"-0.035"	0.028"-0.035"	0.028"-0.035"
BVLA	0.045"-0.053"	0.024"-0.039"	0.041"-0.049"	0.031"-0.039"	0.028"-0.035"	0.030"-0.037"
BYBA	0.043"-0.051"	0.020"-0.035"	0.028"-0.035"	0.028"-0.035"	0.022"-0.030"	0.022"-0.030"
MKYA/GPLA	0.050"-0.058"	N/A	0.035"-0.043"	0.033"-0.041"	0.037"-0.044"	0.037"-0.044"
MKZA/GPPA						
MNZA/MZKA	0.054"-0.062"	N/A	0.045"-0.053"	0.048"-0.056"	0.037"-0.044"	0.037"-0.044"
MURA	0.047"-0.053"	0.024"-0.039"	0.043"-0.049"	0.033"-0.039"	0.031"-0.037"	0.031"-0.037"
MZHA/MZJA	0.054"-0.062"	N/A	0.046"-0.054"	0.048"-0.056"	0.037"-0.044"	0.037"-0.044"
PGVA/PVLA	0.045"-0.053"	0.024"-0.039"	0.041"-0.049"	0.031"-0.039"	0.030"-0.037"	0.030"-0.037"
SMMA	0.064"-0.072"	N/A	0.020"-0.028"	0.029"-0.037"	0.028"-0.035"	0.029"-0.037"
SPCA	0.064"-0.072"	N/A	0.028"-0.035"	0.037"-0.044"	0.028"-0.035"	0.037"-0.044"

B7XA

Making ID Marks

Use a center punch and small hammer to make a “neat” ID Mark on the pressure switches and solenoids. Pressure switches can be interchanged, but are calibrated for specific gears. A mismatch can produce shift feel concerns.



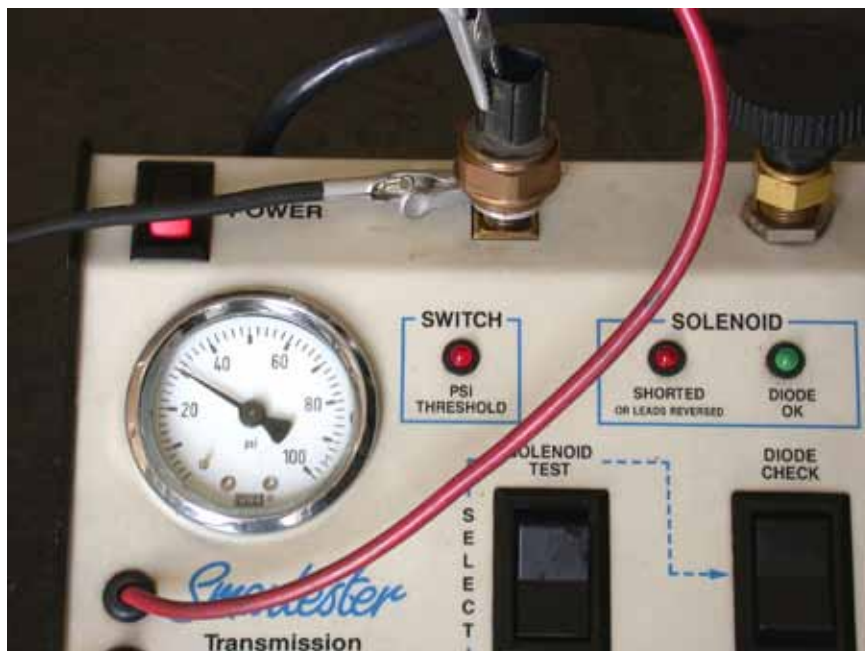
All Hondas

Handling the Electronics

Do not allow electronic parts to soak in solvent; this can create after overhaul problems. If the valves in the linear solenoids show signs of scratching or galling, they should be replaced.



Switch “CLOSES” at 36 psi or greater

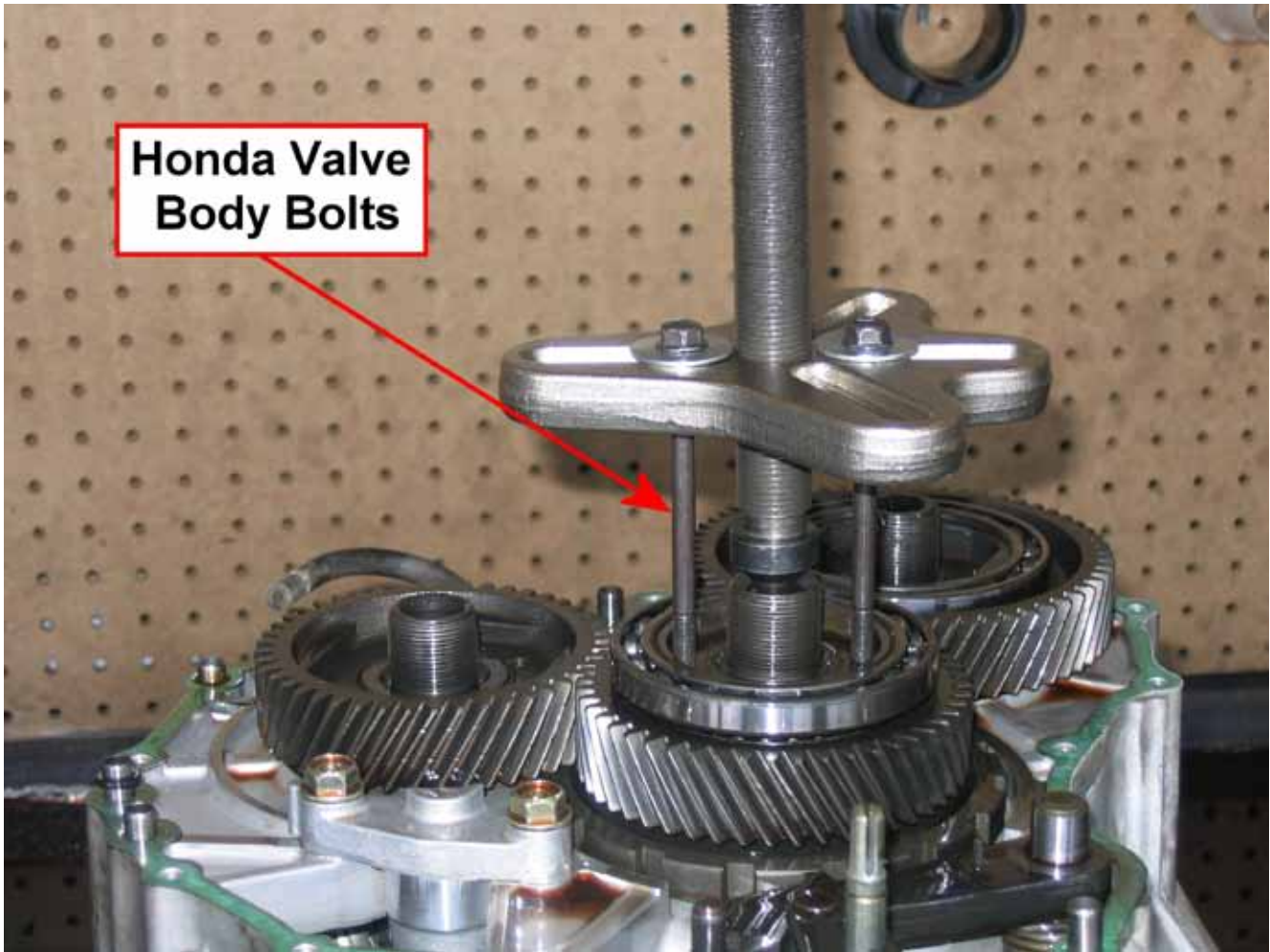


Switch “OPENS” at 35 psi or lower

All Honda Units

Removing Pressed Gears

Always use a steering wheel puller to remove pressed on gears. Using a screw driver or prybar will chip the gears everytime and can cause “drive thru” clicking sounds. On some models there may be a bearing under the gear being removed. Do not over extend the puller bolts or bearing damage may occur.



All Honda Units

Bearing Alignment

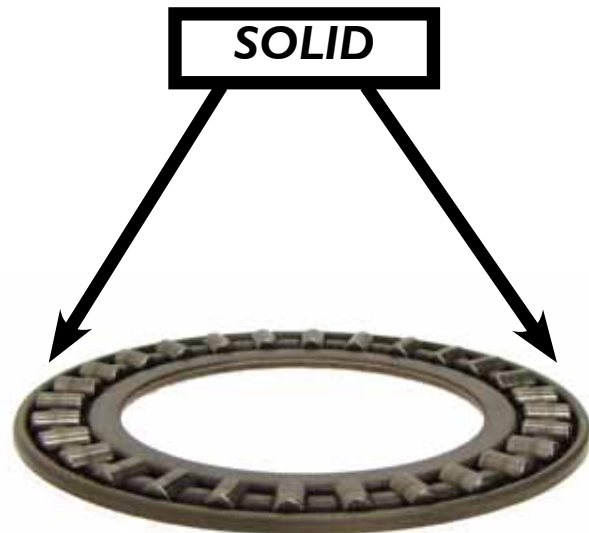
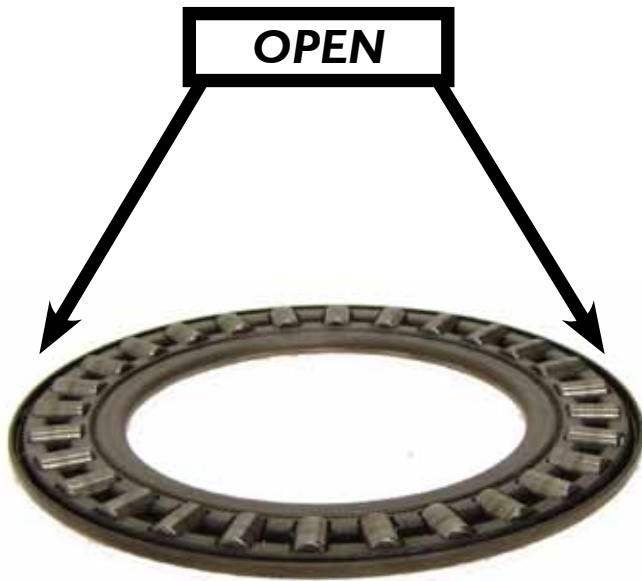
Most applications are forgiving when it comes to bearing position, but some later model units are critical with bearing direction.



All Honda Units

Bearing Alignment (continued)

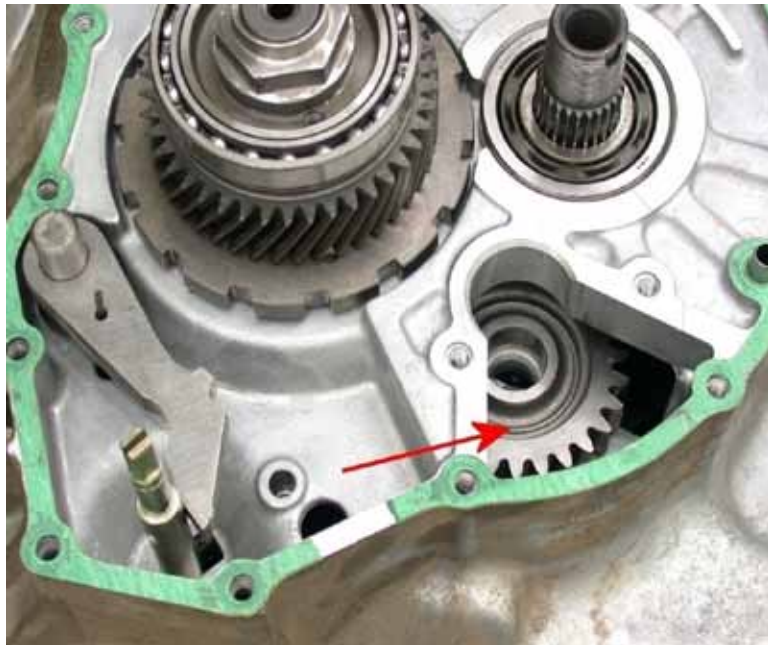
Note the direction of the outer lip of the bearing, the solid portion of the lip of the bearing faces the bottom of the gear when aligned from the outside.



All Honda Units

Assembly Tips

Note the position of parts on paper. Some units will allow the reverse idler to be installed upside down. This will create a noise or grinding complaints.



All Honda Units

Bearing and Gear Wear

Closely inspect needles and bearings for pitting. It is common for the needles to pit, but not damage the races.



Gear facing should be inspected for galling when any bearing or case wear at the bearing pockets occur.



All Honda Units

Matching the Parts

Use a center punch and a small hammer to mark the drums, pressure plates and pistons with each other. Use a zip tie to keep the pressure plate, steels, snap ring and cushions together.



All Honda Units

Cleaning and Inspecting

Thoroughly clean the reed valves in the pistons. Pistons must be replaced when grooved at the seal surface.



All Honda Units

Cleaning and Inspecting (continued)

Debris can build up and stick to the sides of the drum, using solvent to loosen the material before placing the drum in the hot tank will help clean the debris out while in the washer. Skipping this step will cause the debris to come loose while you're blowing them dry with compressed air, or even worse, when the clean, fresh transmission fluid starts circulating through the unit on the test drive.



All Honda Units

Drum Assemblies

When reassembling the drum assemblies, set up all of the marked components on the bench (drums, pistons, and steel/pressure plate packs). Replace all of the old steels with new steels and pre-soak all of the clutches in Honda fluid. Use the clearance charts to set up the packs if any hard parts within the drum were replaced.



All Honda Units

Helpful Rebuilding Tips

Always loosen and torque valve body bolts in a circular or star pattern...Just as it is important to tighten valve body bolts in an even pattern to prevent warping, loosening valve body bolts evenly will reduce the amount of problems related to warped castings.

Note the check ball and small parts locations by taking pictures or with light “dimple” markings...Honda is very generous with repair information, but sometimes the drawings showing small parts locations can be confusing. Make sure to flat file any markings that are made during disassembly before reassembly.

Remove all valves and springs during valve body repair...Especially after failures that create excessive material (torque converter or bearing failure), all valves must be removed and cleaned individually. Use valve organizing trays from your local parts supplier to keep the valves and springs in the right direction and order. Not only are Honda valve bodies one of the pickiest when it comes to stuck valves, they're also the hardest valve bodies to get to once in the vehicle. Take the time to do it right the first time.

Use a spray cleaner and compressed air to clean valve bodies...Compressed brake clean out of a can does a great job of lifting debris out of the nooks and crannies in the castings. When blowing dry with compressed air, look for dark colored smudges to come out of the casting. If a smudge appears, give it another shot of brake clean and blow dry until clean.

Stay away from dirty solvent...Unless the solvent is continuously ran through filters, it is not recommended to use a solvent tank to clean Honda parts. The floating debris from other failed transmissions floating in unfiltered solvent will stick to your parts and can cause the valves to stick once back in the car.

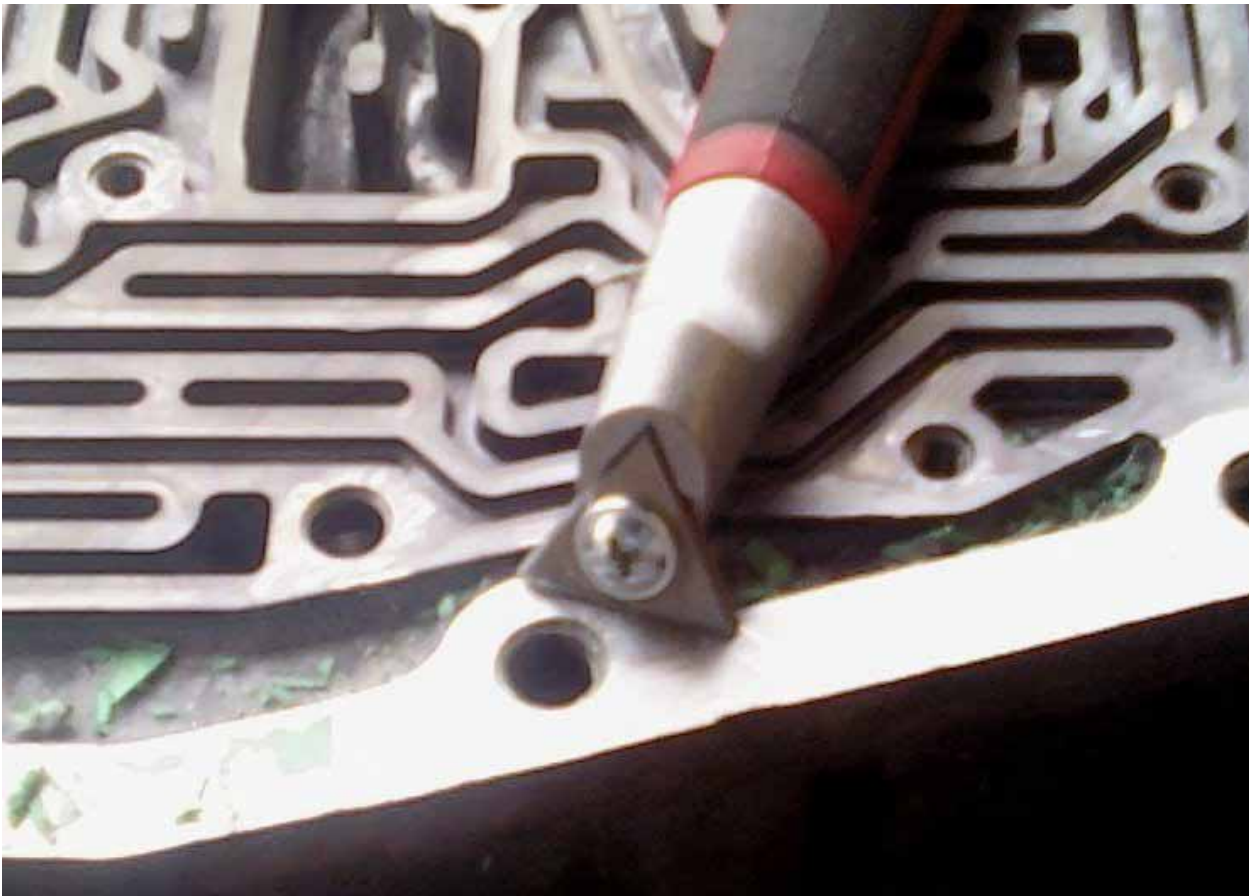
Never guess when it comes to parts locations or specifications...Honda does a good job of sharing detailed repair information with technicians. Most rebuild kits come with pamphlets containing most general rebuilding information. Repair software like Mitchell and All-data have all the detailed information that a technician needs to get the job done right.

All Honda Units

Case Preparation

Honda case gaskets are extremely difficult to clean off of the case. Fight the urge to clean them off the easy way with angle grinders and abrasive pads. The channel casting for the valve body is too close to the gasket surface and can easily be damaged using any power tools.

Power tools will start to grind on the aluminum once past the gasket and cause excess debris to contaminate the case and your work area. Take the time and care to remove the bulk of the gasket with a razor blade and then use a carbide tipped scraper like the one shown below to get those stubborn pieces off.



All Honda Units

Valve Body Reassembly

Lubricating the separator plates will help seal the plates against the worm tracks and will help prevent shifting problems at first start up.



- **Use plenty of ATF when reassembling**
- **Saturate all of the valves before placing back in the bores**
- **Wet all mating surfaces with ATF**



All Honda Units

Valve Body Reassembly (continued)

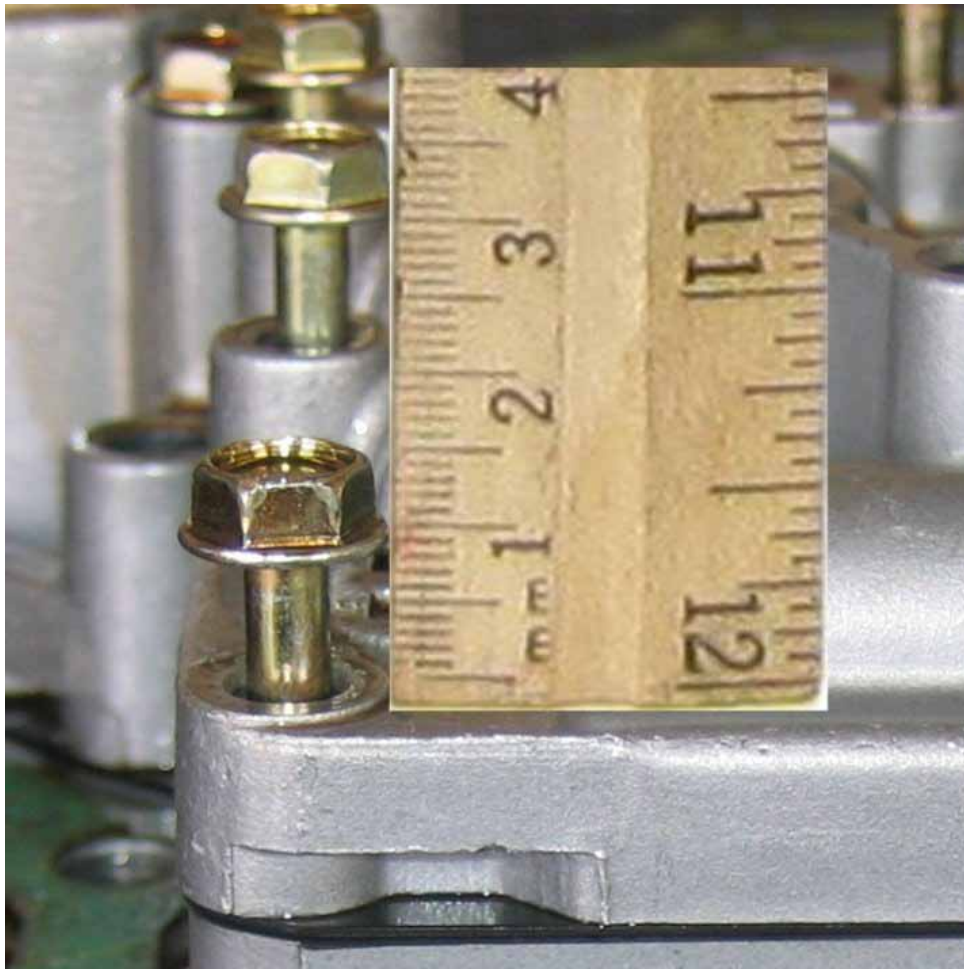
Lubricating the valve body and pump components helps with fluid pick up at the first start up.



All Honda Units

Valve Body Reassembly (continued)

- Always torque the valve bodies in a circular pattern.
- Use a speed handle to run the bolts down.
- Lay your bolts out in order by length.
- All Honda valve body bolts stick up approximately 10mm when installed in their correct locations.



All Honda Units

Accumulator Bores

Use Scotch Bright™ general purpose hand pads to surface the accumulators and reverse servo bores.



WE HAVE A TRANSMISSION SOLUTION FOR ANY VEHICLE.



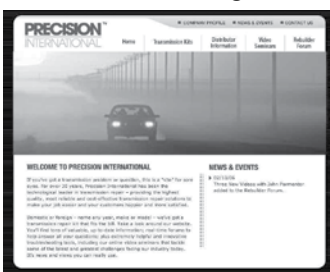
(WELL, ALMOST ANY)

AS THE TECHNOLOGICAL LEADER,
PRECISION INTERNATIONAL'S REPAIR KITS ARE TRULY STATE OF THE PART.

Name any year, make or model. Give us any transmission problem. Chances are we've got a solution. Not just any solution, but one that will really work and keep on working – backed by solid engineering, the latest specs and our reputation for giving you and your customers reliable performance and the utmost peace of mind. When you see the Precision International name on one of our transmission repair kits, you can feel confident you've got the very best. All are cross-checked against OEM specs. All changes are noted and made. And we always use OE parts or better. Plus, our huge inventory virtually assures immediate delivery.

THE BEST ADVICE ON THE PLANET

As the technological leader in transmission repair for over 30 years, you can also count on Precision for outstanding tech assistance and support, including our hot new website www.transmissionkits.com. Just a mouse click away is a wealth of information, including continually updated video seminars from leading transmission expert John Parmenter, question and answer forums, complete parts information and much more – that can help you troubleshoot and solve virtually any transmission repair problem.



Spaceships? No, we haven't helped repair one of those yet. But who knows what tomorrow will bring. For more information, give us a call.

www.transmissionkits.com

PRECISIONTM
INTERNATIONAL
The Problem Solvers.



14 Todd Court Extension, Yaphank, NY 11980
(631) 567-2000 • Fax (631) 567-2640 • Toll Free: 800-872-6649
Florida Office: 6790 Hillsdale Point, Boynton Beach, FL 33437
(561) 734-2332 • Fax (561) 734-2375
E-mail: sales@transmissionkits.com www.transmissionkits.com

TECHNICAL RESOURCES

Access to the automotive industry's master technicians by phone, fax, email, Internet and live chat! Plus, ATRA Members receive a discount off the cost of all bookstore sales.

BUSINESS SUPPORT

Learn the industry's trends and business success through the ATRA's on-going What's Working study.

NATIONWIDE WARRANTY

ATRA's Golden Rule Warranty is an inter-shop warranty plan that ATRA Rebuilder Members may offer the motoring public. Build trust with your customers by providing a nationwide warranty.

CONSUMER REFERRALS

Consumers sent to your shop through the ATRA Shop Finder search page online. ATRA's shop finder receives more than 5,000 consumer searches every month.

NETWORKING GROUPS

Have questions about tech? Business operations? Want to network with successful industry leaders? ATRA's forums are available for discussion topics about management, tech and industry news.

EVENTS DISCOUNTS

ATRA members receive substantial discounts for ATRA Technical seminars and conferences.

CERTIFICATION

ATRA encourages technical competency and a high standard of professionalism with it's own certification program, FREE to all members.

BENEFIT PROVIDERS

ATRA partners with a selective group of respected companies, like Citibank and FedEx to expand the value of your membership with valuable discounts on products and services you already use.

AUTOMATIC TRANSMISSION REBUILDERS ASSOCIATION

great reasons to join ATRA



The Automatic Transmission Rebuilders Association is your resource for tech support, business support, education, networking, and more. Join today by logging on at www.atra.com and get connected with your industry!

Call the Membership Department at 805.604.2000 or email membership@atra.com, if you have any questions.

www.atra.com | 805.604.2000

