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2013

Buyer's Guide Inside

***Toyota's U660E:
First Things First***

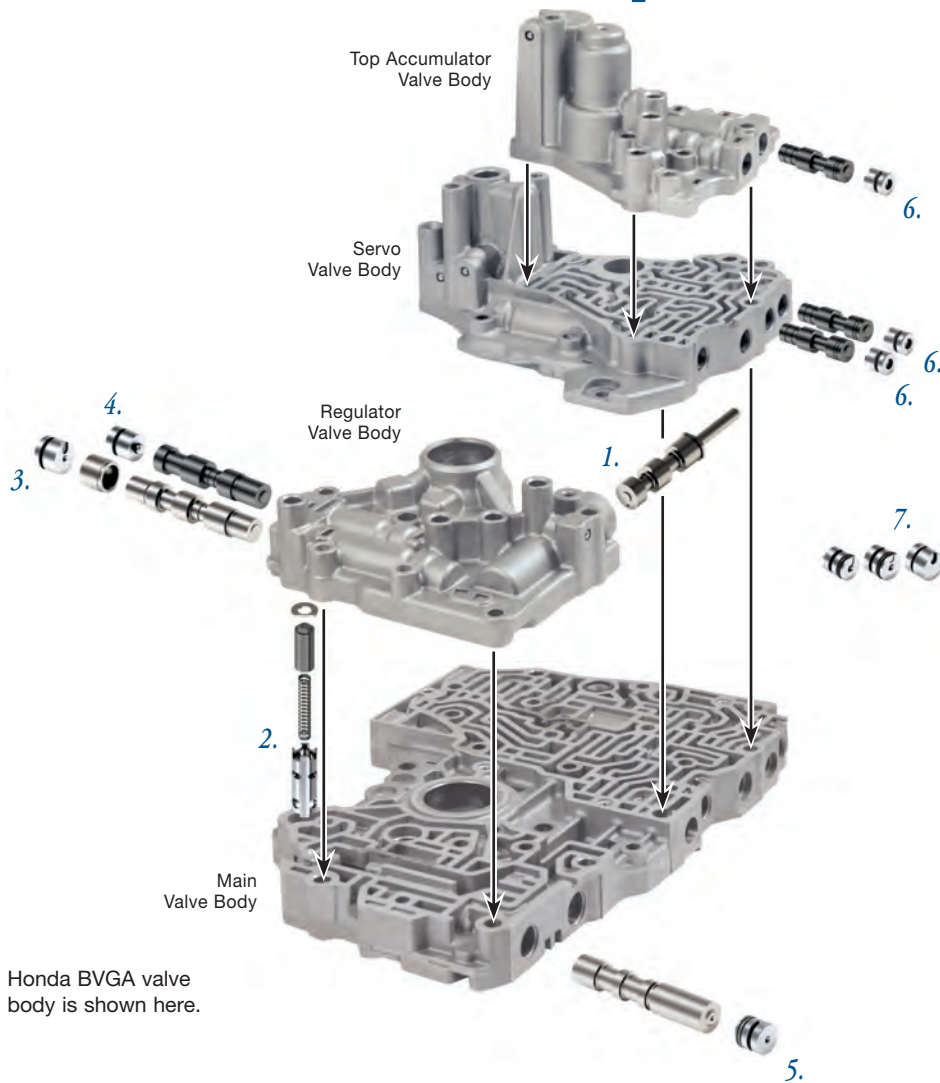
***A Closer Look at the
4ET50 Transmission***



**JANUARY / FEBRUARY
2013**

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Note: These kits fit various Honda/Acura 4/5-speed models. Verify applications online at www.sonnax.com.

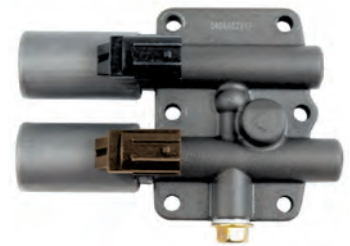


Honda BVGA valve body is shown here.

View Honda/Acura 4/5 Speed Application Chart



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<ul style="list-style-type: none"> Overheated converters TCC slip code P0740 	2. TC Check Valve Kits <i>4- & 5-Speed, See Application Chart</i> <i>5-Speed, See Application Chart</i>	98892-06K 98892-10K	
<ul style="list-style-type: none"> TCC slip code P0740 Low cooler flow 	3. Oversized Lockup Control Valve Kits <i>4-Speed, See Application Chart</i> <i>5-Speed, See Application Chart</i>	98892-17K 98892-27K	F-98892-TL17 F-98892-TL27 & VB-FIX
<ul style="list-style-type: none"> Overheated converters TC lining failure 	4. Oversized Lockup Timing Valve Kits <i>See Application Chart</i>	98892-22K 98892-24K	F-98892-TL22 & VB-FIX
<ul style="list-style-type: none"> Overheated converters TCC slip code P0740 	5. Lockup Shift Valve Kit <i>5-Speed, See Application Chart</i>	98892-16K	
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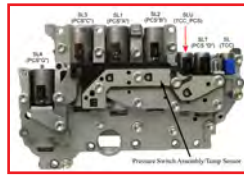
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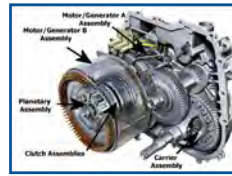
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Fake It Till You Make It



by Dennis Madden
members.atra.com

The first election I voted in was 1976 between Gerald Ford and Jimmy Carter. The outcome wasn't too big of a deal to me; I was only 18. Over the years I've seen the economy go up and down and I've had "my guy" win elections and lose. Still, I had a sense that if things weren't going well the American people would recognize it and fix it at the next election. But this election was different.

Since that first election in '76, I've seen gas lines, double-digit inflation, high unemployment, and other economic maladies. When you've lived through something you can recognize it. That is, I know what a good economy looks like and this isn't it. Many of you are probably thinking the same thing.

On election night I was glued to the TV set, anticipating the outcome. As the night drew on I began to be less enthusiastic and then around 7:30 I knew it was over. I went to bed that night not knowing what type of country I'd wake up to. To me, this was not just another election. It was a watershed moment that would define the direction of this country for years, if not decades. I was heartbroken.

I spent the next couple of days in a somber state, still in disbelief that my fellow Americans actually *wanted* this new America we were headed for. I had to come to grips with the fact that the American people weren't fooled or tricked into their election choice but they actually *do* want a different America; one that looks nothing like the America I grew up in.

As I looked out among my friends and neighbors it seemed that, for many of them, this election meant no more



than who won the 2012 roller derby championship. "How could we have gotten to this?" I asked myself.

The fact is there are millions of Americans that share my views but this perspective comes with a dangerous consequence. The danger is apathy; thinking that nothing matters anymore. But it does matter. And I found that, whether I liked it or not, my attitude affects others at work. I had to keep a positive attitude *for them*. It wasn't easy, and sometimes I had to fake it.

I'm not sharing this to make a political statement but rather to share how important it is for you — the leader of your business — to keep a positive attitude. Sure, the economy stinks, but our attitude may do more harm than the economy itself. Every business leader is faced with adversity from time to time and sometimes a problem appears insurmountable. But there are ways to tackle them and prevail, even if at this very moment you don't know how.

What to do? For me I knew it had to be dramatic. So I decided to turn off the news (that was about three hours a night). I also get several news

papers and publications delivered at home. For now, into the trash. I changed my toolbars and internet home page so I don't receive any "breaking news." I found myself with so much free time on my hands that I began to revisit some old hobbies and spend more time with my family.

The next part is to spend more time around positive people. An alternative would be not to hang around negative people; it's a "no duds" approach. This is an area where ATRA can help. At the last ATRA Powertrain Expo we had a terrific guest speaker, Larry Winget. He brought the house down with his positive, no-excuses approach. Larry's agreed to write some articles for *GEARS* readers and he'll be back when we take the show to Washington, DC later this year.

Jim Cathcart is one of the top business trainers in the country and one of the most positive people I've ever met. Look for his articles in *GEARS* and as a guest speaker at the show as well. Jim has a terrific message for building relationships.

I know these are tough times, but as you look for ways to bring positive energy and satisfaction into your life, there's less room for the negative. It's not always easy and sometimes you might have to fake it. Make it a fantastic 2013. Your customers deserve it, your employees deserve it, and *you* deserve it.





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KEEP THOSE TRANNYS ROLLING

A Closer Look at the 4ET50 Transmission



by Pete Huscher
members.atra.com



The 4ET50 transmission is an electronically controlled, front wheel drive transaxle for the Chevrolet Volt. This transmission has two internal electric generator/drive-motor assemblies: generator/drive-motor A (rated at 55kW) and generator/drive-motor B (rated at 111kW) (Figure 1).

Generator/drive-motor A is primarily used to start the engine, charge the onboard battery systems, and assist generator/drive-motor B with vehicle propulsion when needed. The engine is only used to charge the batteries when they reach a specified low point and help keep the system fully charged during driving conditions that cause a load. Generator/drive-motor B is primarily used to propel the vehicle down the road.

The TCM is located on the valve body assembly. The power inverter module, or PIM, is located on top of the transmission assembly. The TCM controls shift timing and feel by controlling the two shift solenoids, six variable bleed pressure control solenoids, and a torque dampener pressure control solenoid, which are all located on the TCM/valve body assembly.

The TCM, solenoids, and valve body are only available as an assembly. The TCM is capable of adaptive learning, which ensures consistent shift feel and transmission durability. The PIM controls the two generator/drive-motors, located in the transmission.

The 4ET50 transmission offers five gear ranges: park, reverse, neutral, drive, and low. The solenoid and application chart shows the normal configurations for proper shifts.

Internal Components of the 4ET50

Torque Dampener — The torque dampener is used in place of a torque converter. The torque dampener contains internal torsional springs, fluid,

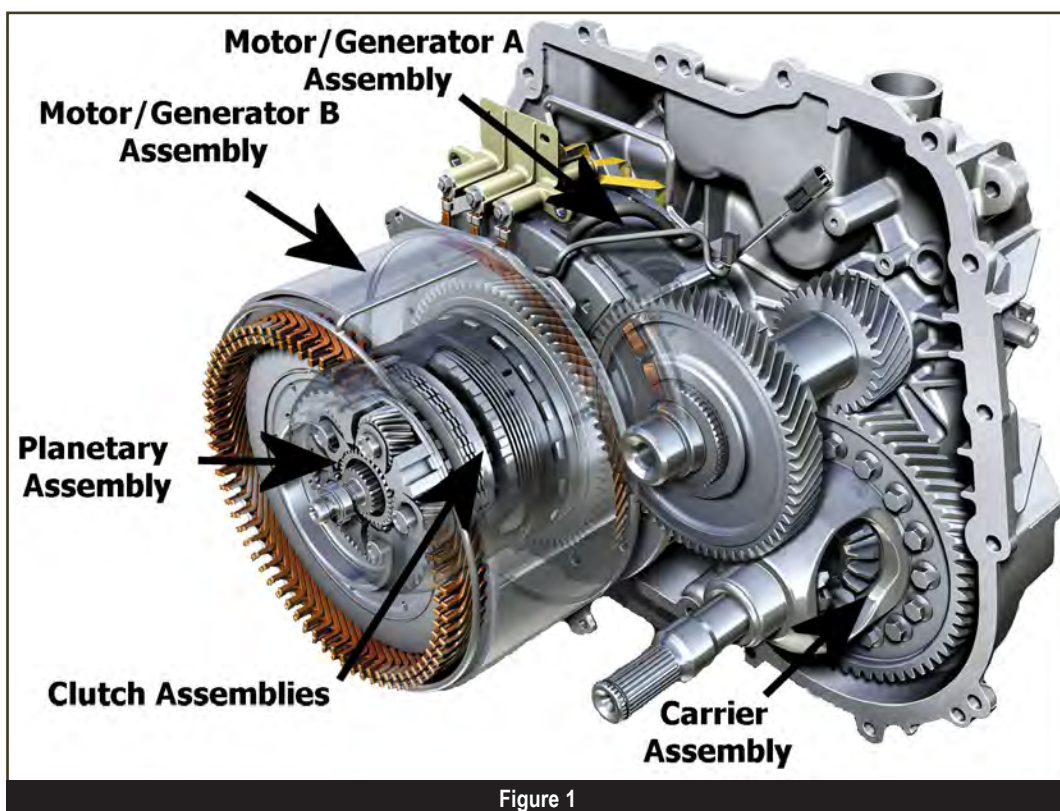


Figure 1

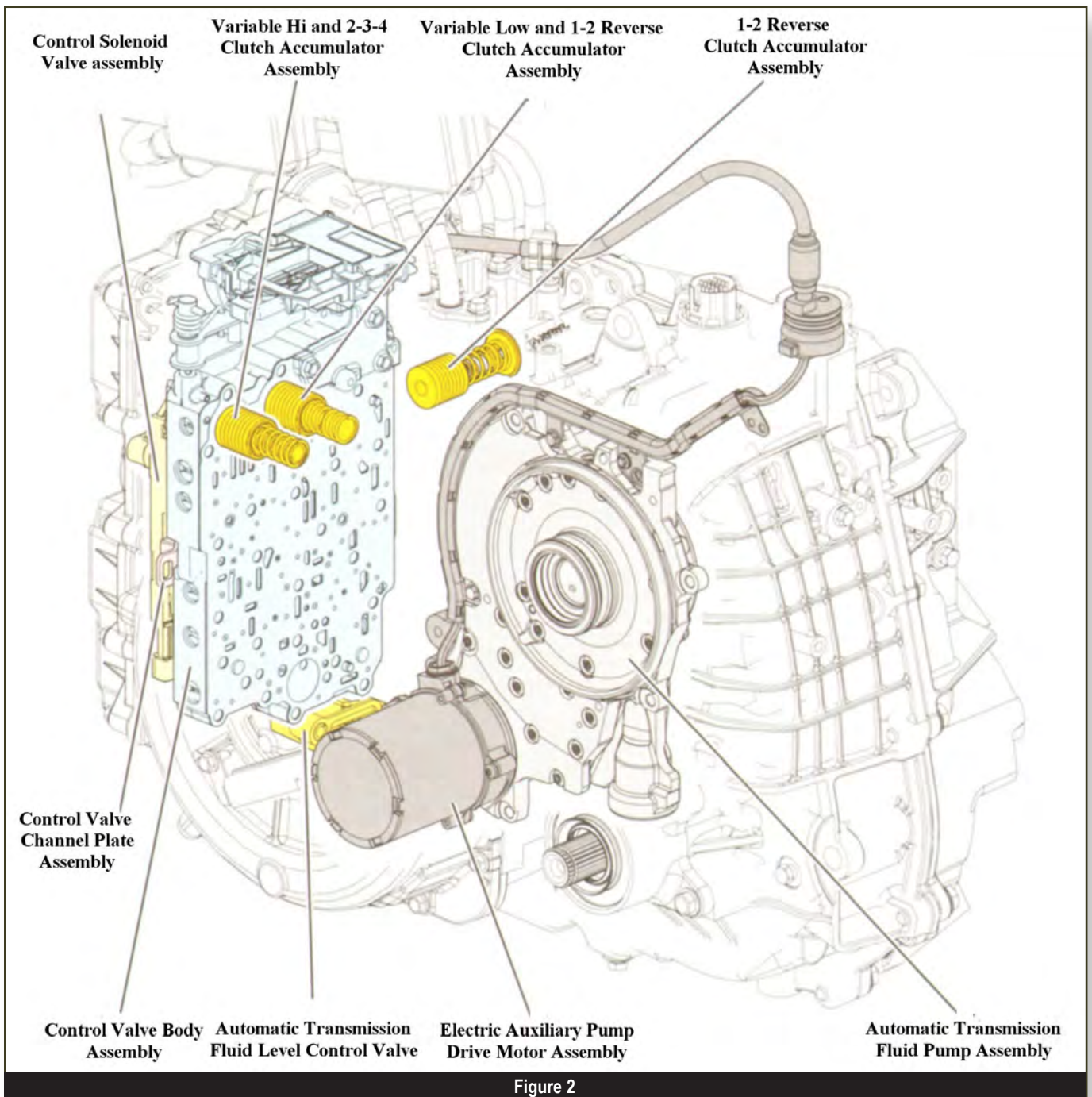


Figure 2

an input shaft, and a clutch. The torque dampener assembly acts as a spring-loaded coupling to transmit torque smoothly from the engine to the transmission.

The torque dampener provides a mechanical, direct-drive coupling between the engine and transmission. The internal clutch is only applied during engine starting and stopping.

Integrated Main and Auxiliary Pumps — The integrated main fluid pump and auxiliary pump (figure 2) are located in the pump cover. The main pump is mechanical and is used

to maintain hydraulic system pressure while the internal combustion engine is operating.

The electric auxiliary pump is controlled by the HPCM (Hybrid Power Control Module) and is primarily used to maintain hydraulic pressure while the engine is off (Figure 3).

Planetary Gearset — The planetary gearset is used to provide gear reduction only.

Clutch Assemblies — The 4ET50 transmission is equipped with three clutch sets

1. Variable High and 2-3-4 clutch

2. Variable Low and 1-2-Reverse clutch

3. 1-3-Reverse clutch

The multiple-disc clutches combine with the planetary gearset and an electric drive motor to deliver the different ratios in forward and reverse.

Hydraulic Control System — The hydraulic control system includes the main fluid pump, auxiliary fluid pump, TCM, valve body, and the solenoid pack assembly. The base pressure in the hydraulic system is controlled by the pressure regulator valve located in the pump housing. Each individual

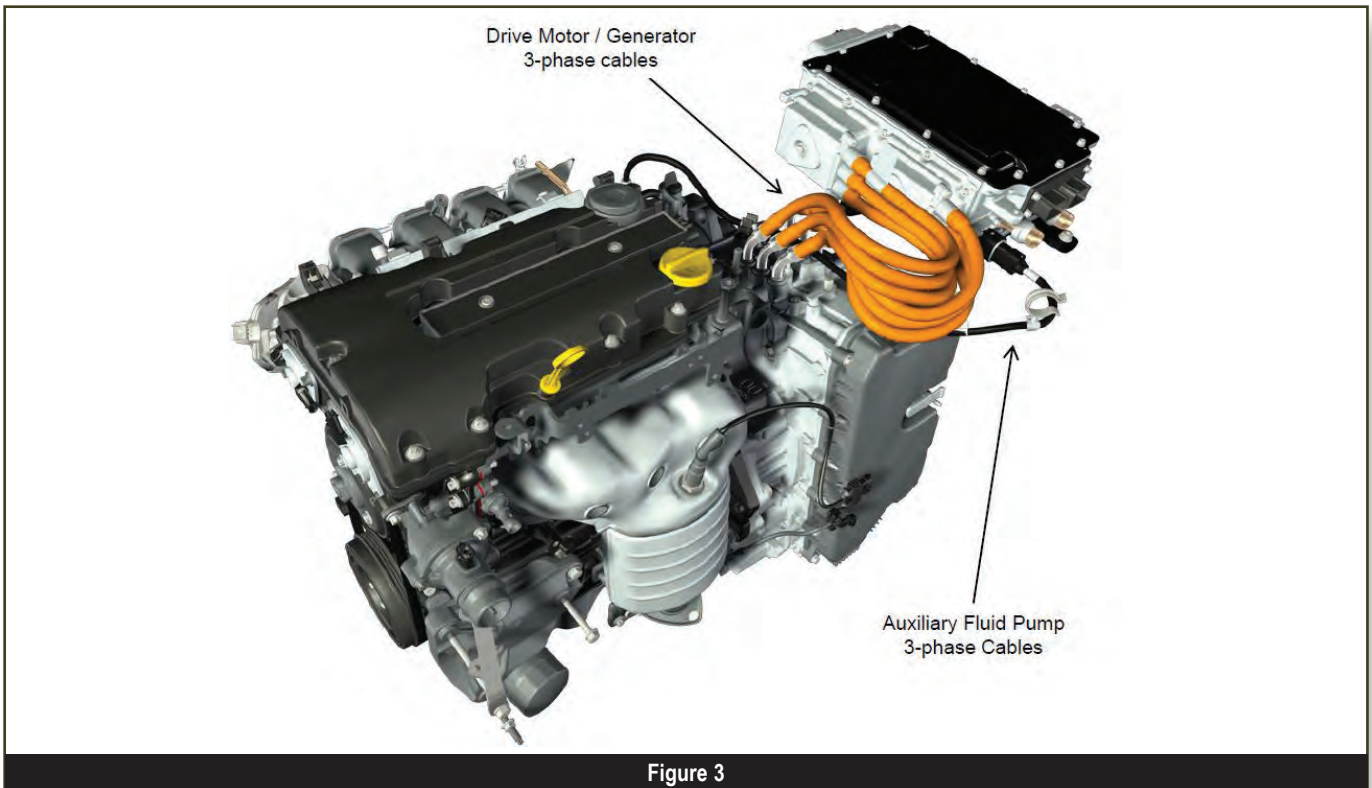


Figure 3

clutch has its own accumulator circuit to cushion shift feel.

Electric Generator/Drive-Motor Assemblies — At the heart of the 4ET50 transmission are the two electric combination generator/drive-motor assemblies. These assemblies are referred to as generator/drive-motor assembly A and generator drive-motor assembly B.

As previously stated, Generator/drive-motor A is rated at 55kW and generator/drive-motor B is rated at 111kW. Generator/drive-motor A is primarily used to start the engine, provide charging voltage to the high-voltage battery system, and assist generator/drive-motor B during high torque demands. Generator/drive-motor B is primarily used for vehicle propulsion. Both generator/drive-motors are used during regenerative braking.

There are seven modes of operation:

1. Electric Only (Electrical Motor B)
2. Electric Only Combined (Electrical Motor A and/or B)
3. Electric Only (Engine Charging)
4. Electric Only Combined (Engine Charging)
5. Regenerative Braking
6. Engine Start
7. Reverse

Electric Only means the transmission will operate in full electric mode on electric motor B for about 25-50 miles depending on temperature, terrain, and driving behavior.

Electric Only Combined depends on driving conditions; the vehicle enters a combined mode where electric motor A and/or B and the 2-3-4 clutch are operating.

Electric Only (Engine Charging) happens when the battery charge drops to a predetermined level and causes the engine to start. After the engine starts the system operates in a variable mode, using an input split between the engine and the motor/generator.

Electric Only Combined (Engine Charging) depends on driver and road conditions. During this mode the engine electrical power is combined with the battery electrical power to provide the output torque required to move the vehicle.

Regenerative Braking is when the driver releases the accelerator pedal and applies the brake pedal; the electric drive motors apply negative torque to the output shaft and generate electricity to charge the battery.

Engine Start mode is where generator/drive motor—unit A starts the engine while variable low and 1-2 reverse are applied.

Reverse mode is when the vehicle is placed in reverse and the variable low and 1-2 reverse clutch applies. Unit B spins backwards and provides output torque to the wheels.

There are four possible transmission operating states:

1. One Motor Vehicle — The variable low and the 1-2 reverse clutch is applied and unit B drives the wheels; unit A is idle.
2. Combined Electronic Vehicle — The variable high and 2-3-4 clutch is applied; unit B and unit A are both driving the wheels.
3. Series, Engine On — The variable low and the 1-2 reverse and 1-3 reverse clutches are applied; unit B drives the wheels while the engine runs unit A.
4. Combined, Engine On — The variable high and the 2-3-4 and 1-3 reverse clutches are both applied; unit B and unit A both drive the wheels.

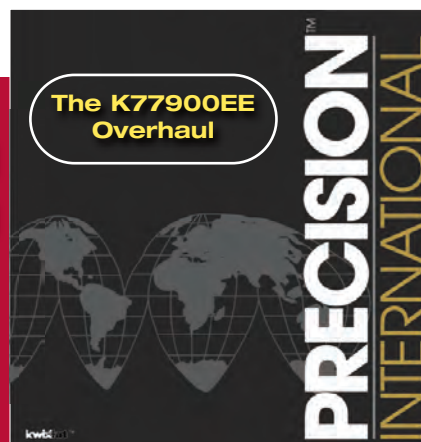
As with most hybrid units, it's only a matter of time before you'll be elbows deep into repairing them. With this brief look at the inner workings of the 4ET50 transmission and a better understanding of how it operates, you should have no problem *keeping those trannys rolling*.





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by Mike Brown
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Toyota's U660E: First Things First

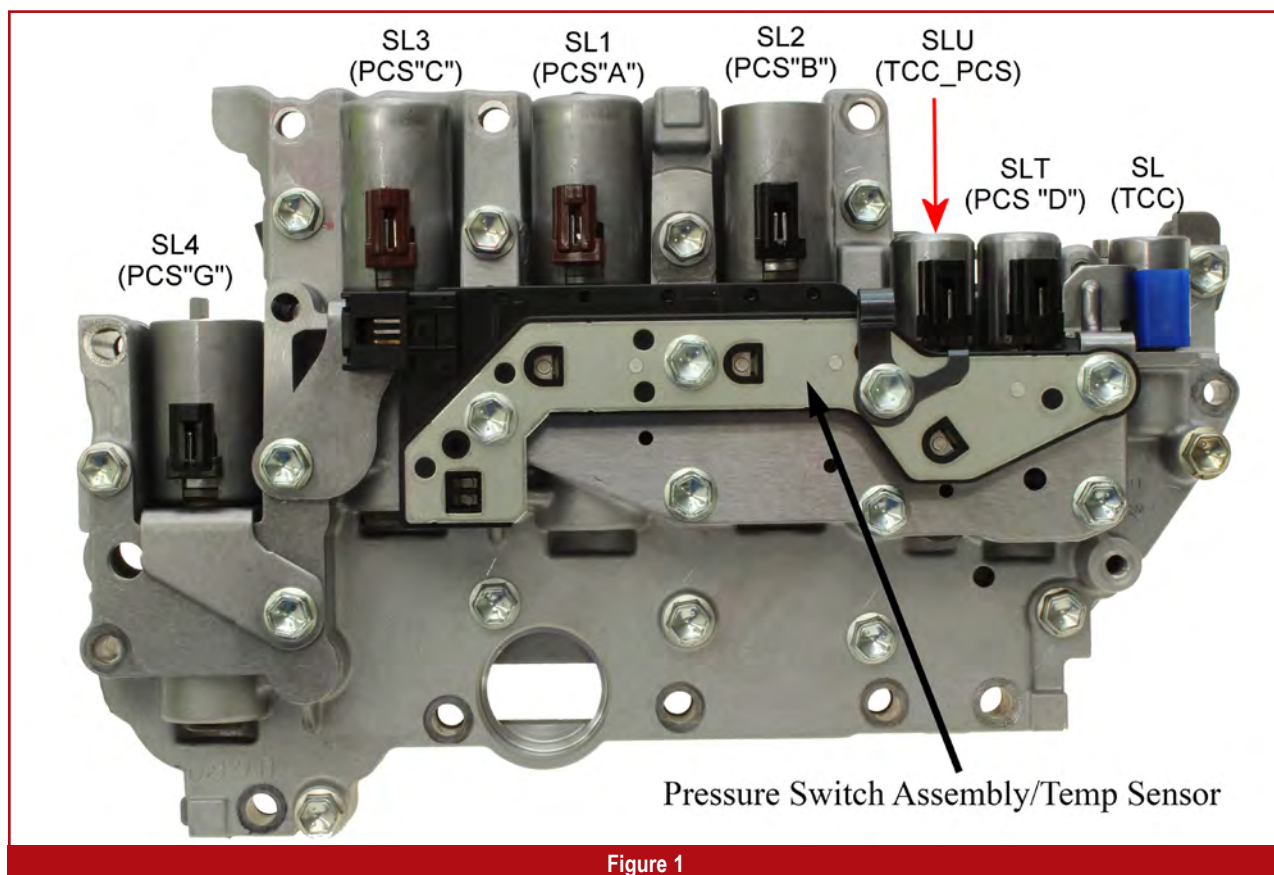


Figure 1

The U660E first appeared in the Lexus ES350 and the Toyota Camry in 2007, and was followed by five additional models in the U.S. over the next four years:

- RX350 2010-13
- Avalon 2008-12
- Highlander 2008-12
- Sienna 2010-13
- Venza 2009-13

Since then we've starting to see recurring problems with this unit; such as shifting and solenoid issues, to name a few. In this issue of *Street Smart*,

we'll cover problems plaguing the U660E valve body and solenoids.

Toyota and Lexus have a large number of computer system failures. Most diagnostic procedures only involve inspecting one circuit at a time. Others require replacement of the TCM, which has a history of failures.

Wrong Fluid Causes Shift Feel Problems

One of the biggest problems with this unit appears when someone doesn't use the right type of transmission fluid. This transmission requires ATF WS.

Using the wrong type of transmission fluid can cause many types of problems, such as a shift flare, harsh shifts, and TCC shudder. Similar to ZF, Mercedes, and Chrysler units, it just makes sense to have the correct fluid for the transmission.

SLT Solenoid Causes Multiple Shift Problems

This transmission has six linear-type solenoids, one on/off solenoid (figure 1) and typical for Toyota solenoids, the SLT (line pressure control) is one to watch. It's the most common

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Toyota's U660E: First Things First

solenoid to fail, and when it does, you're likely to experience symptoms such as falling out of gear while coming to a stop, slamming back into gear, or a long slide-bump on the shift.

Look for these codes to set: P2714 (SLT performance fault) or P2716 (SLT electrical fault).

TCC Shudder or No Lockup

The second solenoid likely to fail is the SLU torque converter clutch pressure control. When this solenoid begins to fail you can have a uncontrolled or no lockup, along with codes P2757 (SLU performance) or P2759 (SLU electrical).

An easy way to check these solenoids is through a scan tool; but if you don't have a scan tool that can communicate with the Toyota computer system, you can still check them the old fashion way. Disconnect the TCM from the transmission. The transmission connector pin ID (figure 2) will help you isolate the failure.

Measure the solenoid resistances: SLT, SLU, SL1, SL2, SL3, and SL4 should each be between 5.0–5.6 ohms; the SL should be between 11–15 ohms. If the solenoids aren't within specs, replace them.

Valve Body Assembly

Let's take a look at the valve body. As with most Toyota or Lexus transmissions, there are no exploded views of the valve body or checkball locations readily available.

So we created our own: With this information you could take these valve bodies completely apart, put all the pieces in a box, and have no problem putting them back together correctly later.

Middle Valve Body, Valve ID, and Spring Locations

(figure3, page 12)

1. Solenoid modulator valve
2. B2 control valve/relay valve
3. B2 apply control valve/apply control relay valve
4. C2 clutch apply control valve
5. Clutch control valve
6. Sequence valve
7. Primary pressure regulator valve
8. B1 apply control valve/B1 apply boost valve



TERMINAL	FUNCTION
1	Turbine Speed Sensor Ground
2	Turbine Speed Sensor Signal
3	Counter Gear Speed Sensor Ground
4	Counter Gear Speed Sensor Signal
5	"SLU" Ground
6	"SL" Positive (This solenoid is internally grounded)
7	"SLT" Ground
8	"SL2" Ground
9	"SL2" Positive
10	Pressure Switch Number 1
11	"SLU" Positive
12	"SLT" Positive
13	"SL1" Ground
14	"SL1" Positive
15	"SL3" Ground
16	"SL3" Positive
17	Transaxle Fluid Temperature Ground
18	Transaxle Fluid Temperature Signal
19	Pressure Switch Number 3
20	Pressure Switch Number 2
21	"SL4" Ground
22	"SL4" Positive

Figure 2

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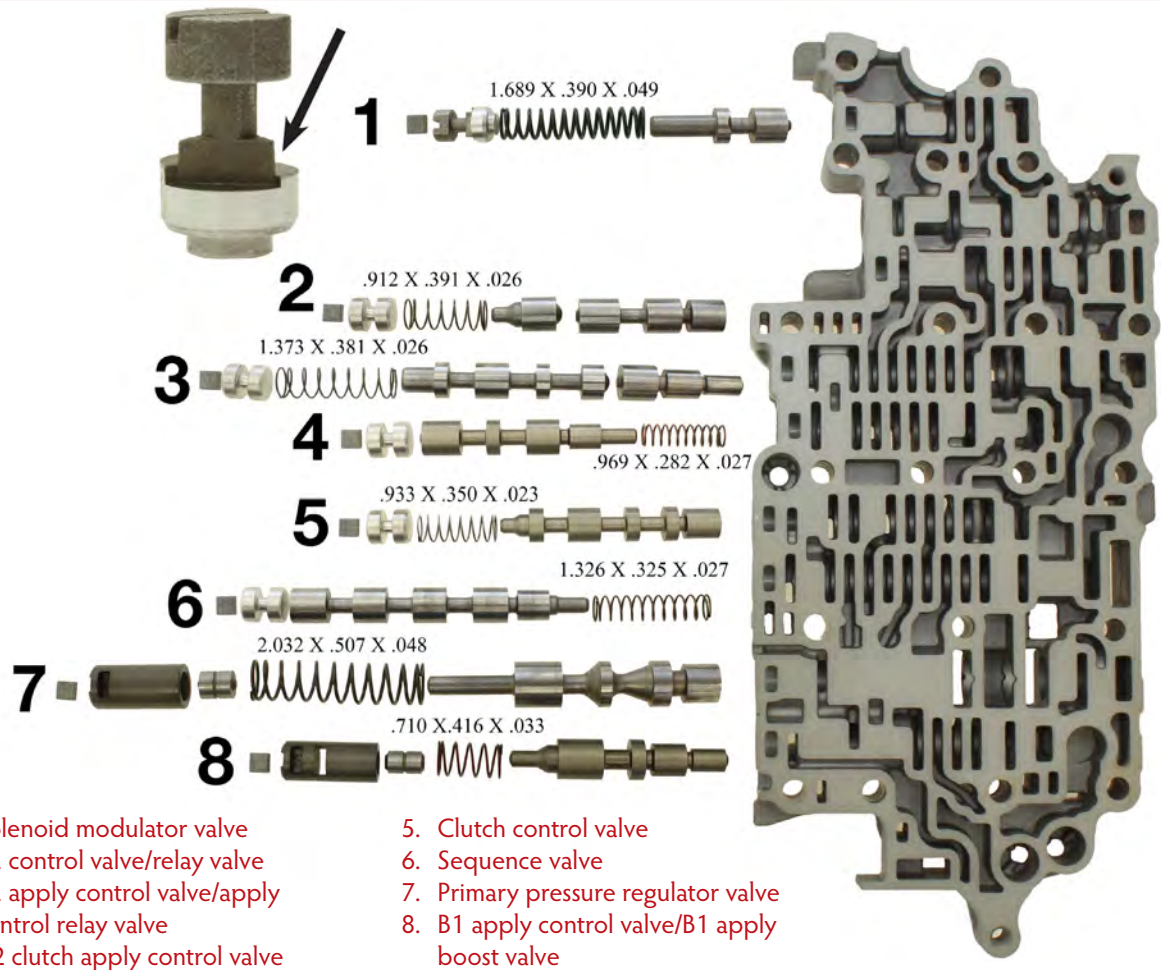


Figure 3

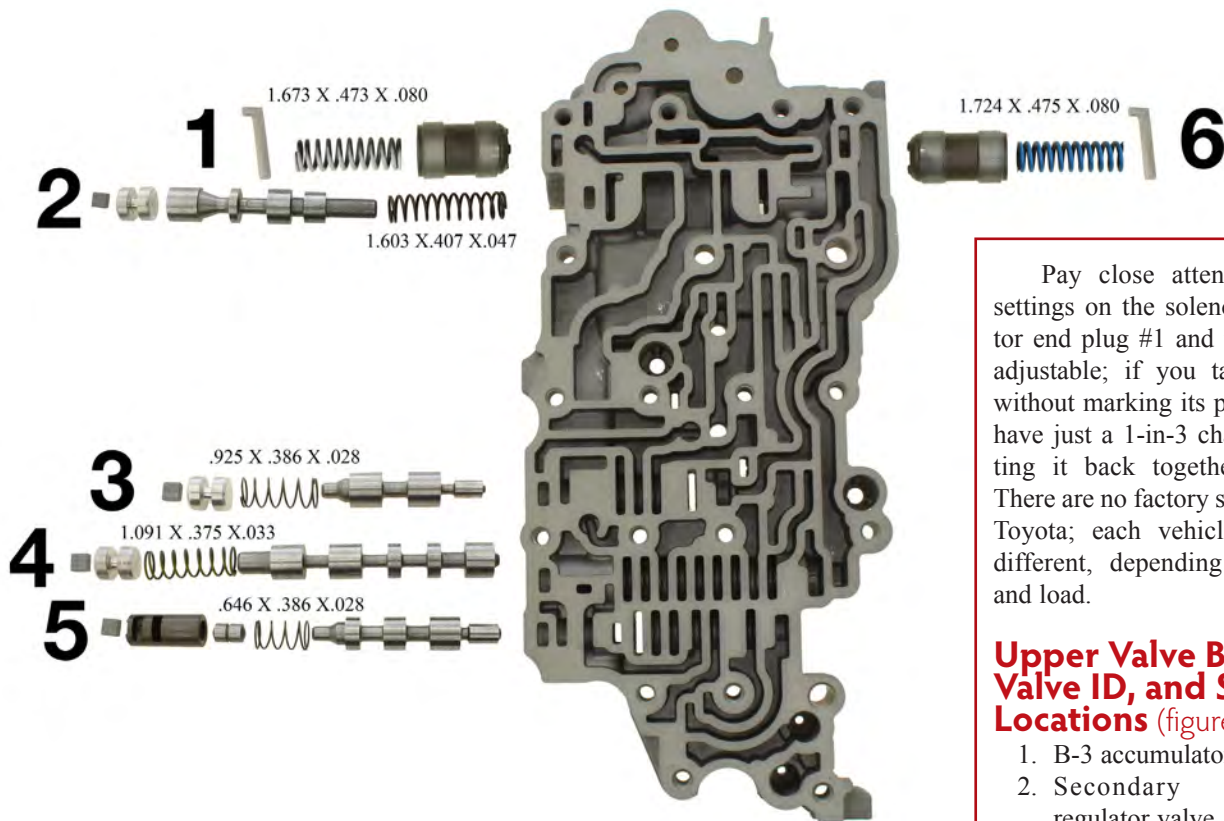


Figure 4

Pay close attention to the settings on the solenoid modulator end plug #1 and mark it. It's adjustable; if you take it apart without marking its position, you have just a 1-in-3 chance of getting it back together properly. There are no factory settings from Toyota; each vehicle model is different, depending on engine and load.

Upper Valve Body, Valve ID, and Spring Locations (figure 4)

1. B-3 accumulator
2. Secondary pressure regulator valve
3. Reverse sequence valve



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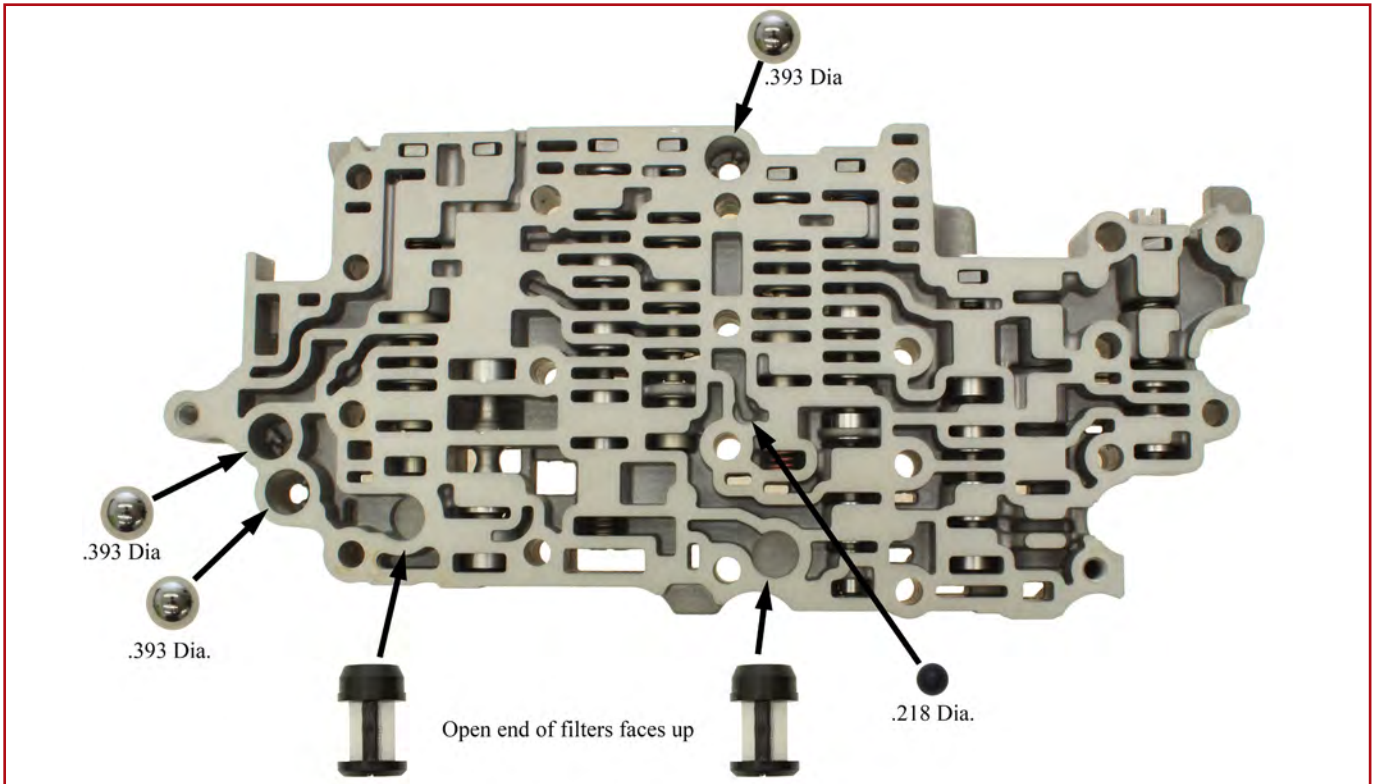


Figure 5

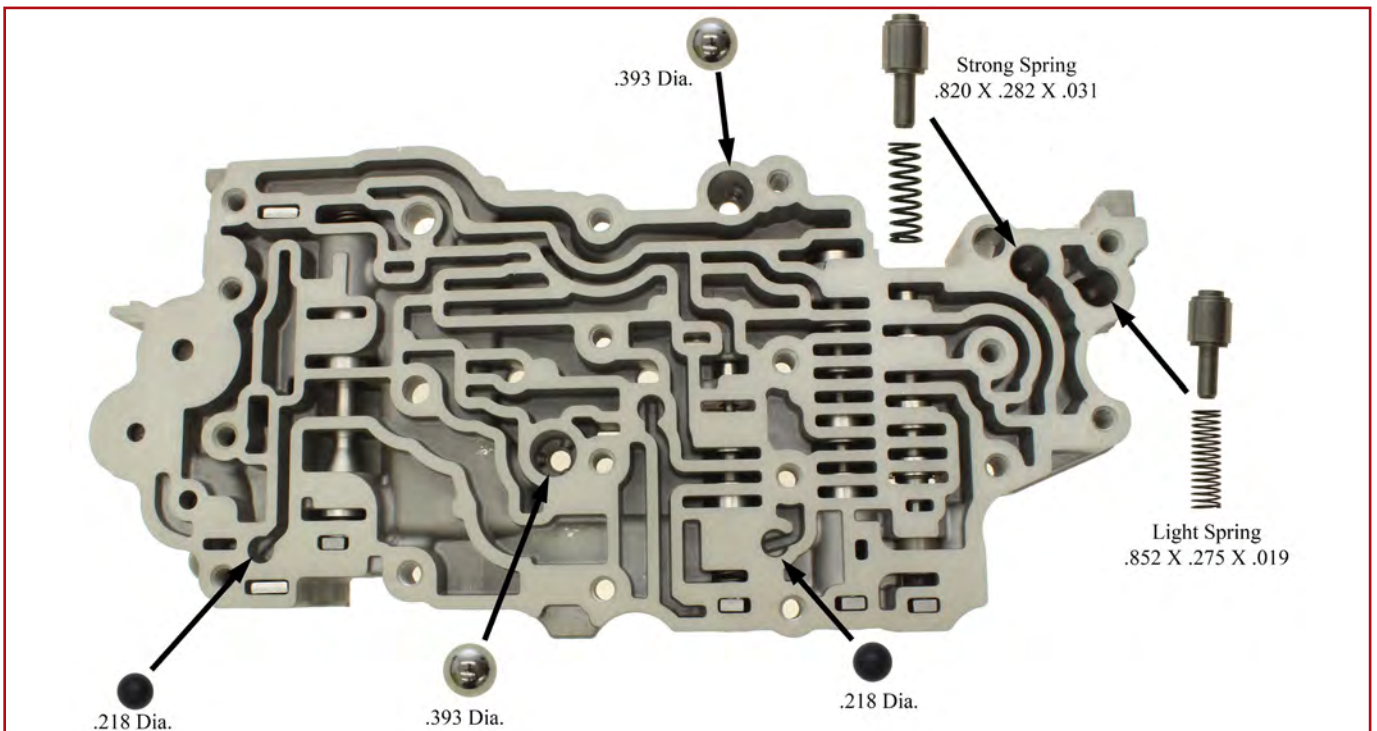


Figure 6

4. Lockup relay valve
5. Lockup control valve and lockup control boost valve
6. C-2 accumulator

In this part of the valve body look closely at:

- #3 reverse sequence valve and bore
- #4 lockup relay valve and bore
- #5 lockup control and boost valve

Middle Valve Body, Checkballs, and Filter Locations

During your disassembly, make sure the filter open end faces up. Unlike the A340, these filters don't snap into the plate. They sit in the channel casting with the open end facing up (figure 5).

If these filters are installed incor-

rectly it will cut off oil that specific location.

Upper Valve Body, Checkballs, and Check Valve Locations (figure 6)

Pay close attention to the separator plate and checkballs for wear (figure 6).



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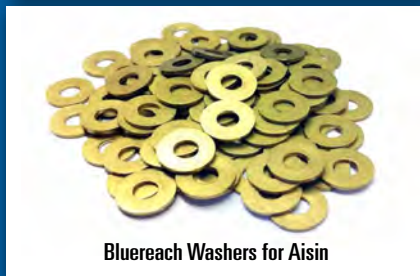
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Figure 7



Figure 7A

Like most Toyotas, this is a pretty normal failure. When you turn over the upper valve body you'll see the C-1, B-1, and B2 accumulator pistons and spring locations (figure 7).

This is also the location of the input and output speed sensor assembly.

Installation

During installation, the valve body bolt locations are specific (figure 8). First, temporarily tighten the two bolts marked by (*) in figure 8. These bolts are used for positioning and will assist you in aligning the rest of the bolt holes. That'll make this an easy install, and that's not just smart... that's *street smart!*

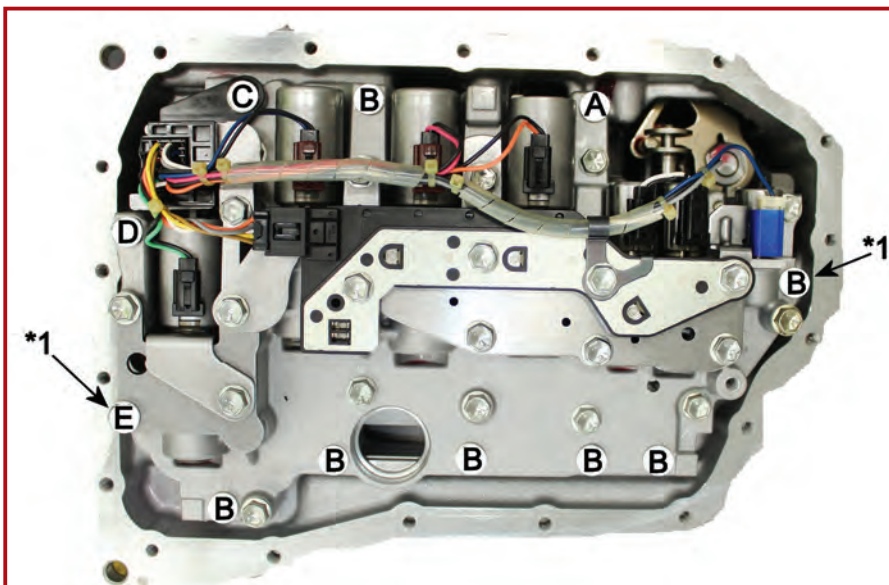
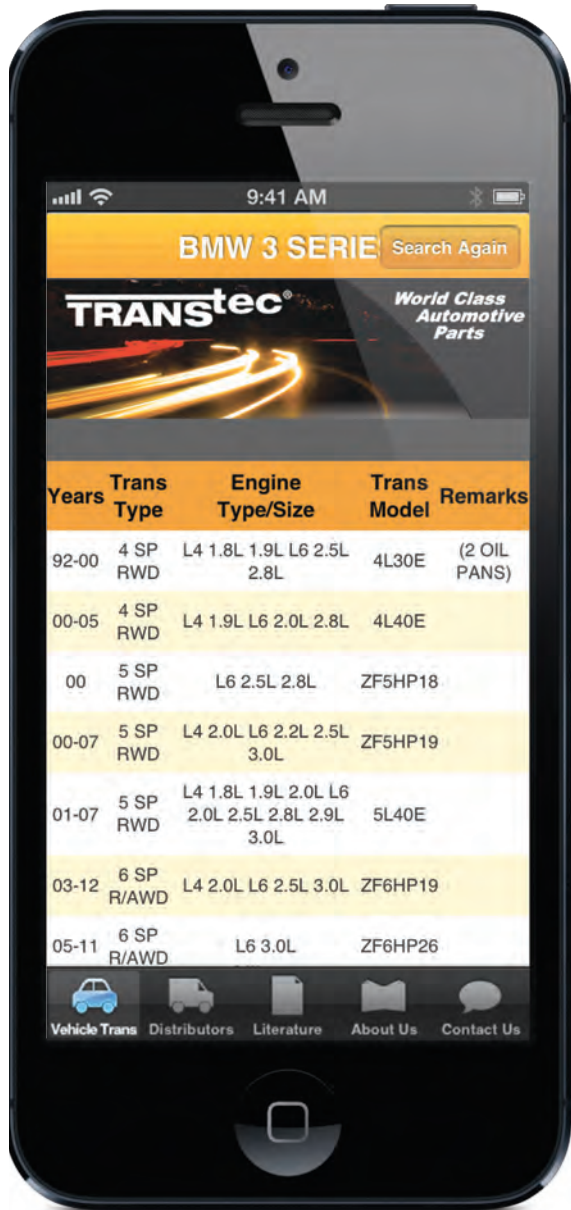


Figure 8

BOLT	BOLT LENGTH
A	25mm (0.98")
B	30mm (1.18")
C	35mm (1.38")
D	45mm (1.77")
E	55mm (2.17")
Torque: 11 N•m {112 kgf•cm, 8ft•lbf}	

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by Mike Souza
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Kia Now Has a Trans All Its Own



Figure 1

The A6LF1 transaxle is the first six-speed automatic transmission manufactured by Kia (figure 1). Kia now joins Mercedes Benz as the only other import company to develop and manufacture its own automatic transmission.

According to Kia, the company secured 300 patents during the development of this transmission. The 6-speed automatic transmission, applied to the

new Sorento in Korea, has 62 fewer parts, is 41mm (1.6") shorter, and 12kg (26.5 pounds) lighter than the 5-speed. It's one of the most compact six-speed automatic transmissions found in today's market.

The new 6-speed transmission improves gas mileage 10%, is 14% faster accelerating zero to 100 km/h (0 to 62 MPH; 10.0 seconds), and has 24% quicker passing performance 60

km/h to 100 km/h (37 to 62 MPH; 5.0 seconds). These figures were obtained from a Sorento diesel R-2.2 2WD.

The 6-speed automatic transmission will also be available in the Mohave (Borrego), Opirus (Amanti) and Grand Carnival (Sedona) models. Based on Engine size there are three versions of this transmission: the A6LF1/2/3, A6MF1/2 and A6GF1.



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The cutaway view of the transmission (figure 2) shows the clutch layout.

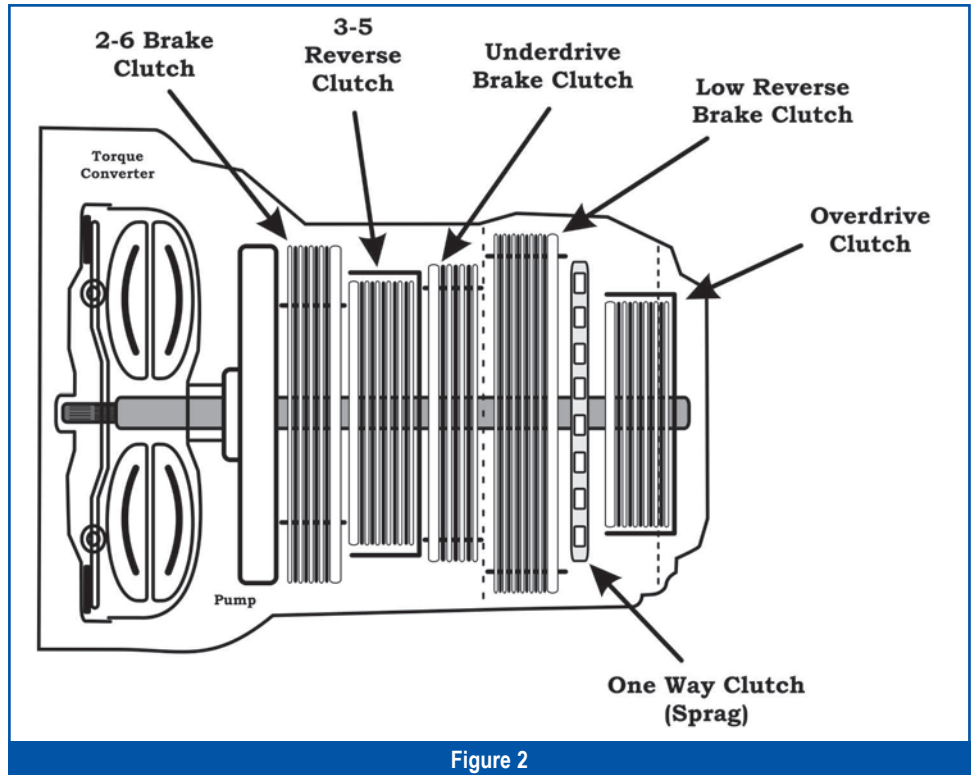


Figure 2

The cutaway view of the transmission (figure 2) shows the clutch layout. When used with the application chart, it allows you to determine which clutches apply through all six speeds (figure 3).

Although this transmission is just now hitting the shops, one known problem is the inner underdrive piston lip seal wears prematurely (figure 4). This causes a delay or slip in drive. This is similar to low clutch lip seal wear found in the 1999-on Subaru 4EAT Phase II, except this drum may be too rough to sand and must be replaced (figures 5 and 5A page 22).

There are 8 solenoids used in the A6LF1 transmission. They consist of:

- 2 normally low, variable force solenoids
- 4 normally high, variable force solenoids
- 2 on/off normally low solenoids

Gear	Clutch		Brake			O.W.
	35R	O/D	2-6	U/D	L/R	Low
P/N					X	
R	X				X	
D1				X	O	X
D2			X	X		
D3	X			X		
D4		X		X		
D5	X	X				
D6		X	X			

O = Speeds below 5 km/h (3 mph)

Figure 3

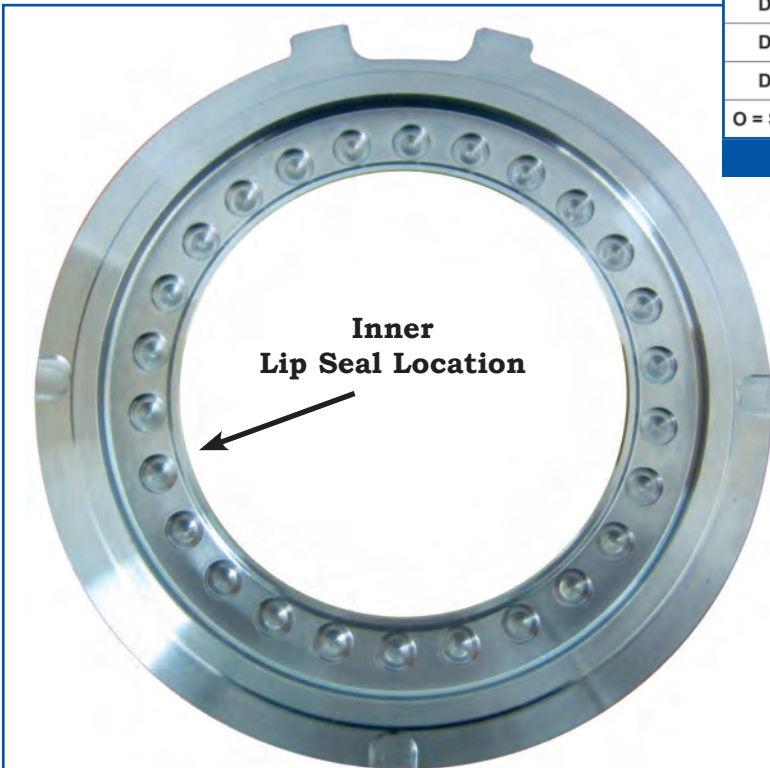


Figure 4

Although this transmission is just now hitting the shops, one known problem is the inner underdrive piston lip seal wears prematurely (figure 4).

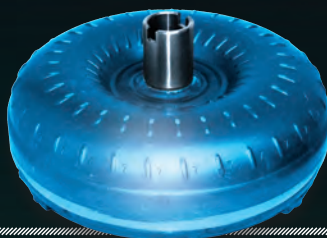
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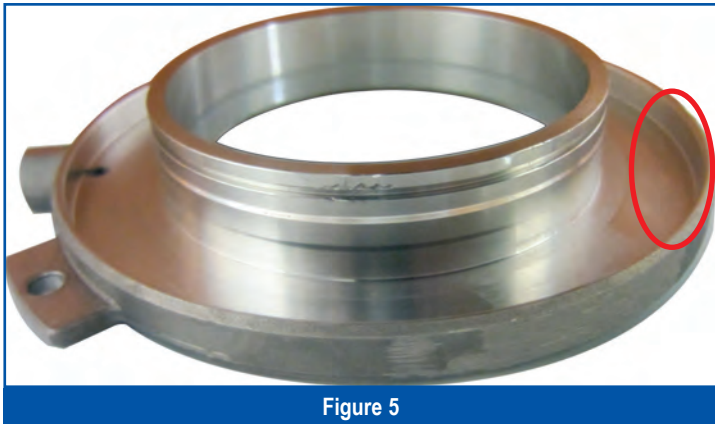


Figure 5

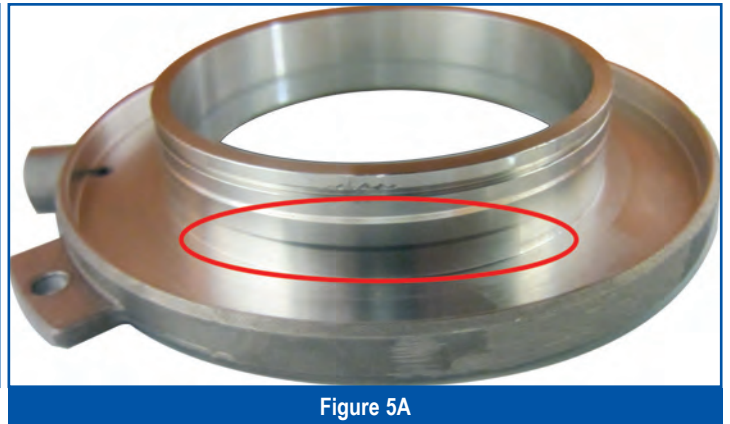


Figure 5A

IMPORTANT: Many of the variable force solenoids — both normally low and normally high — have the same color connector.

Shift solenoid A (SSA) and shift solenoid B (SSB) are the on/off, normally low (N/L) solenoids. When the solenoid is off, pressure in the circuit is low. When the solenoid is energized (system voltage), pressure in the circuit is high (71 PSI). The solenoid resistance is about 10–11 ohms. Look for solenoid identification and solenoid apply chart in figures 6 and 7.

IMPORTANT: Many of the variable force solenoids — both normally low and normally high — have the same color connector. But each solenoid has a specific part number stamped into them. To avoid crossing the solenoids, mark each solenoid location prior to removal, so you can be sure to get them back in their original locations. If you have your cell phone handy, take a picture of the solenoid locations for reference during reassembly.

Stay tuned for future articles and seminars on Kia's very first transmission that's all its own.

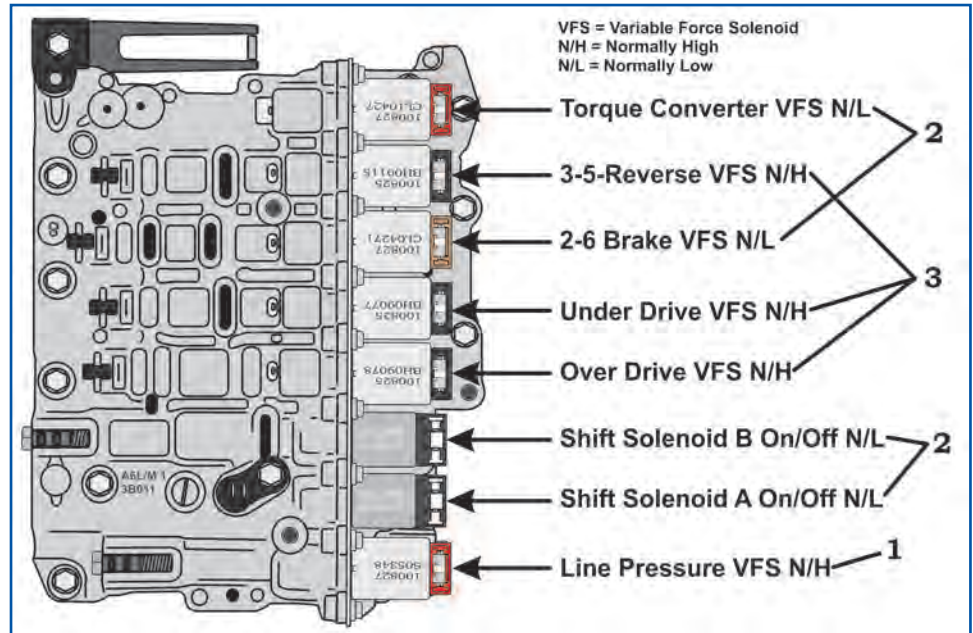


Figure 6

Solenoid Gear	SS A On/Off	SS B On/Off	UD VFS N/H	OD VFS N/H	35R VFS N/H	2-6 VFS Brake N/L	Lockup N/L	Line Pressure N/H
N / P	X		X		X			Varying
1	O			O	X			Varying
2				X	X	X	Varying	Varying
3		X		X			Varying	Varying
4					X		Varying	Varying
5		X	X				Varying	Varying
6			X		X	X	Varying	Varying
L	X				X			Varying
R	X	X	X					Varying

O = Vehicle speeds above 8 km/h (5 mph)

Figure 7

General Specifications

Torque Converter type: 3 element, 1 stage,
2 phase type.
Torque Converter size: 236 mm (9.3")
Oil pump system: Fixed rotor design;
trademarked by Kia as Parachoid
Friction elements: 2 clutches; 3 brakes;
1 one-way clutch
Planetary gears: 3
Fluid pressure balance pistons: 3
Accumulators: 4
Solenoid valves: 8 (6 variable force; 2 on/off)
Shift lever positions: 4 ranges (P, R, N, D)

Oil filter: 1 internal (no external access; the
transmission case has to come apart to reach the
filter).
Transaxle fluid type: SK ATF SP-IV, MICHANG ATF
SP-IV, NOCA ATF SP-IV, Hyundai Genuine ATF SP-IV
or other brands meeting Kia's specifications.
Transaxle fluid capacity: 7.8L (2.06 U.S. gallons,
8.24 U.S. quarts, 6.86 Imperial quarts)
Sealant: rear cover, torque converter housing and
valve body cover: LOCTITE FMD 546 or THREE-
BOND TB1281B

Applications

Hyundai

2009-12 Avante/HD/MD FWD L4 1.6L/1.8L	A6GF1
2010-12 Avante/MD F/AWD L4 2.0L	A6MF1
2011-12 Azera FWD V6 3.3L	A6LF1
V6 3.8L	A6FL2
2012 Elantra FWD L4 1.6L	A6GF1
F/AWD L4 2.0L	A6MF1
2009-12 Grandeur FWD L4 2.4L V6 2.7L	A6MF1/2
V6 3.0L/3.3L/3.5L/3.8L	A6LF1/2/3
2011-12 i30 FWD L4 1.2L/1.6L/1.8L/2.0L	A6MF1
2010-12 ix35 FWD L4 2.0L/2.4L	A6MF1
2009-12 Santa Fe F/4X4 L4 2.0L V6 3.3L/3.5L	A6LF2/3
L4 2.4L/2.7L	A6MF1/2
2009-12 Sonata FWD L4 2.0L V6 3.5L	A6LF2
F/AWD L4 2.0L/2.4L	A6MF1/2
2009-12 Tucson ix F/4X4 L4 2.0L	A6FL1/2
L4 2.0L/2.4L	A6MF1
2011-12 Veracruz F/4X4 V6 3.0L	A6FL3
2011-12 Verna FWD L4 1.6L	A6MF1

Kia

2011-12 Carens FWD L4 1.7L/2.0L	A6MF1/2
L4 1.6L	A6GF1
2011-12 Forte FWD L4 1.6L	A6GF1
L4 1.8L/2.0L/2.4L	A6MF1/2
2010-12 K5/K7 FWD L4 2.0L/2.4L V6 2.7L	A6MF1/2
2010 Lotze FWD L4 2.0L/2.4L	A6MF1/2
V6 3.5L	A6LF2
2009-11 Opirus (Amanti) FWD V6 2.7L	A6MF2
V6 3.3L/3.8L	A6LF1/2
2010-12 Optima F/AWD L4 2.0L/2.4L	A6MF1
2012 Pride FWD L4 1.6L	A6GF1
2009-12 Sorento F/4X4 L4 2.0L/2.2L V6 3.3L/3.5L	A6LF1/2/3
L4 2.4L V6 2.7L	A6MF2
2011-12 Soul FWD L4 1.6L/2.0L	A6MF1 or A6GF1
2010-12 Sportage F/4X4 L4 2.0L/2.4L	A6MF1
L4 2.0L	A6LF1/2



Meet the ATRA Technical Department



by Lance Wiggins
members.atra.com



LANCE WIGGINS



BILL BRAYTON



MIKE BROWN

The goal of the ATRA technical department is to provide you with the assistance you need to get your customers' cars fixed and *get 'em out the door*.

As we begin the New Year, we thought it would be a great idea to take a few minutes to introduce you to ATRA's technical team:

Lance Wiggins; Technical Director

Lance Wiggins joined the ATRA Tech Department in 1999 as a technical specialist; he was promoted to the director's position in 2001. He oversees the department to make sure the bulletins, articles, seminar, and Expo materials are relevant, timely, and help ATRA Members resolve the pressing technical problems they see every day.

Lance got his start at a local Ford dealership back in 1986 as a general technician. There he attended 98 Ford classes and became certified as a special-

ist in every aspect of their line. He began working on transmissions in 1991.

Lance has won a number of awards for his articles in *GEARS*, and has been the technical editor for *GEARS* for more than a decade. And he's been the publisher for ATRA's seminar books since 2001.

Bill Brayton; Senior Research Technician

Bill Brayton earned his degree in automotive technology from Rio Hondo College in Whittier, CA, and got his first job in a transmission shop back in 1979.

In 1997 Bill joined the ATRA Technical Department, where he's been ever since, handling calls, writing articles, and creating and delivering technical seminars all across the country. He's currently working on a series of rebuild books, available through the ATRA BookStore.

Bill brings more than 30 years

of experience to the ATRA HotLine. While he's comfortable with most common units, he specializes in Honda transaxles. Bill's a regular contributor to *GEARS*, and his column — *Fun with Transmissions* — is popular in shops everywhere.

Mike Brown; Senior Technical Specialist

Mike Brown came by his love of auto repair the old fashioned way: He inherited it. Both his father and brother helped influence his formative years.

Mike got his first job in the auto repair business in 1974, right out of high school. 16 years later he went to work for his brother at *Brown's Transmissions*. Today he boasts almost 40 years of auto repair experience, doing everything from brakes and exhaust work to engine and transmission rebuilds.

Mike's byline is a familiar sight on the pages of *GEARS*, and he regularly

contributes to ATRA's technical bulletins. He's very well versed in all the common domestic lines. And he has a special place in his heart for Toyota transmissions, having written a rebuild book for the Toyota A761E, and developed and delivered seminars on the A750E and A761E.

Pete Huscher; Senior Technical Specialist and Golden Rule Warranty Specialist

Pete Huscher got his start in auto repair like so many of us did; working on his own car in the driveway. But that experience was just enough to help him secure a spot in the Army motor pool, where he rose through the ranks to Motor Pool Sergeant.

After leaving the Army, Pete earned a degree in marine biology from the University of California Santa Barbara. While his degree fed his mind, it wasn't very helpful for feeding his family. So he took a job working for a local Ford dealership, starting as a lube technician and working his way up to service



PETE HUSCHER



MIKE SOUZA

Mike Souza; Senior Technical Specialist

Mike Souza went into transmission repair in 1982 at the urging of his brother, who was a general repair technician. He started as an installer trainee and worked his way up until he owned his own transmission shop. This year is his 30-year anniversary in the business.

Over the years Mike has provided his expertise to a large part of the industry, as a tech advisor to various

manager. Along the way he learned to diagnose and repair transmissions, a skill that serves him well at ATRA.

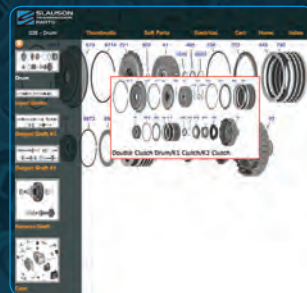
Pete came to work for ATRA in 2001. He's developed and presented a number of technical seminars, and has won multiple awards for his articles in *GEARS*. He brings with him over 40 years of experience in automotive technical and customer service.

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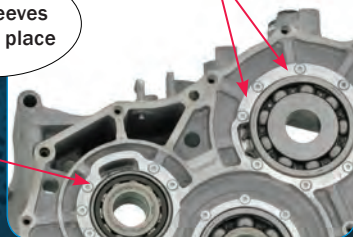
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STEVE GARRETT



ROLANDO ALVAREZ

suppliers and a member of the Sonnax TASC Force. He also worked with ATSG and wrote articles for *Transmission Digest* for over five years.

Mike came to work for ATRA in September, 2008, and has handled thousands of technical problems in his four years on the HotLine. He's a veteran author for *GEARS Magazine*, and has delivered countless tech seminars since coming on board. And he just completed his section for the 2013 ATRA Seminar book.

Steve Garrett; Service Engineer

Steve Garrett is an automotive service engineer with a long history in the industry. He holds a Bachelors

degree in automotive technology and a Masters degree in business management. Steve has worked as a college instructor and was a 20-year service engineer for GM.

Steve has written several automotive manuals for both GM and ATRA, and a college textbook for Glencoe-McGraw Hill Publishing. And he's been a featured author for two magazines, including *GEARS*.

Over the years Steve has developed and delivered over 300 seminars all around the world. He's also the chairperson for his local school district and the community college boards. And he's a member of the US Department of Agriculture's Resource Advisory Council.

Rolando Alvarez; Technical Specialist

Rolly Alvarez is one of the newest additions to the ATRA Technical Department, coming on board October 1, 2012. He brings with him 35 years of experience in a wide — and fairly unusual — range of specialties.

After earning a degree in business administration from Miami Dade College, Rolly continued his education in electronics and mechanical engineering. He took a job in a transmission shop back in 1978, first as an installer and later as a rebuilder.

Over the course of his career, Rolly worked for a Rolls Royce dealership and later a Lamborghini dealership. He's become versed in most European

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MARK PUCCINELLI



JARAD WARREN

vehicles, from the common to the exotic, such as the Mercedes, Ferrari, Porsche. He spent 10 years on the ATSG hotline.

Mark Puccinelli; Technical Specialist

Mark Puccinelli began his auto career when he was just 14 years old. He bought a '66 GTO with a blown trans and got it back on the road again. While still in high school he already had earned his state certifications for smog, lamp, and brake repair.

Mark reinforced his knowledge with courses in auto technology, welding, and machine shop at the local community colleges. He began working on cars professionally in 1975. At 25 he

took a job in the research department at TransGo, and spent 10 years developing their well-respected fixes and Shift Kit® recalibration kits, and answering technical questions from the field.

Mark joined the ATRA HotLine in 2010, where he answers calls and writes technical articles for *GEARS*. And, in his spare time, Mark still helps out in local transmission shops as a diagnostician and rebuilder.

Jarad Warren; Technical Specialist

Jarad Warren grew up in the transmission business; "While other kids were playing with toys, I was playing with valve bodies," he says. His father was a rebuilder, and when Jarad was 12

years old, his dad had him tearing down 350s for five bucks a piece.

At 16 he was working in a transmission shop part time. By the time he graduated high school he had a job as an installer. It wasn't long before he was working at the bench full time.

Over the last 20 years he's been a rebuilder and a shop foreman for a number of transmission shops. He's had experience in all areas of the business, but, when pressed, admits that his most valuable asset may be the work he's done with valve bodies. Jarad joined the ATRA Technical Department in June, 2012.



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Kevin Pryor; Technical Specialist

Kevin Pryor is the newest member of the ATRA technical team; in fact, as of this writing he hasn't quite started working with ATRA. He's scheduled to take his place on the HotLine in January, 2013.

Kevin got his start back in 1973; his father was an auto damage appraiser, and Dad knew the owner of a local transmission shop who was looking for help. Kevin took a job as an installer and worked his way up to the bench.

Kevin owned his own transmission shop for 23 years, provided hands-on training for students attending the Brooklyn Automotive High School, was a member of the Sonnax TASC Force, and was a member of Precision International's Advisory Board for 25 years. And he's looking forward to bringing his varied experience to work for ATRA.

Shaun Velasquez; Technical Project Manager

Unlike the rest of the guys in the ATRA Technical Department, Shaun Velasquez isn't a technician. He came onboard with ATRA back in 1999 to help with the move from Ventura to Oxnard. He continued working in the BookStore, and recently moved into the Tech Department.

So what does he do there? Shaun is the detail guy. The article you're



KEVIN PRYOR



SHAUN VELASQUEZ

reading? He followed it through every step of the production cycle to make sure it made it into this issue of *GEARS* on time. Shaun collects the bulletins and gets them cataloged and organized in the Tech Center Online System. Whether the information is destined for print, on line, or somewhere in between, Shaun's makes sure it gets through all the steps until it's where it belongs.

You may never speak with Shaun directly or need his help to get a car off your lift and back on the road. But if it came through the ATRA Technical Department, he's the guy who made sure it was there for you.

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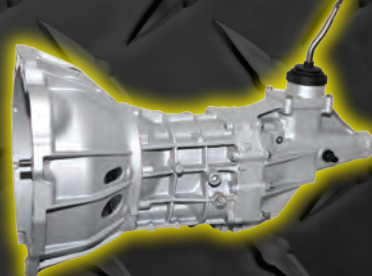
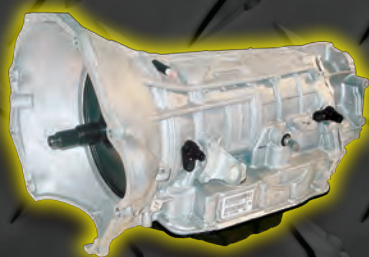


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by Bill Brayton
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ZF's New 8-Speed Hits the Market

How do they get eight gear ranges out of this thing?

The ZF8HP45 is a new 8-speed unit. It uses four planetary gearsets and just five clutches to achieve eight forward speeds. In this edition of *Fun With Transmissions*, we'll showcase the insides of this lightweight, low-drag transmission and look at how they achieve those eight different ratios.

The 8HP45 appears domestically in the 2011 Chrysler 300 series, the 2012 Dodge Charger/ Challenger, and the 2011/12 Jeep Grand Cherokee. The 2013 Ram 1500 pickup will get a larger version called the 8HP70. The two units will be very similar and a few parts will be interchangeable.

Currently these units are built by ZF in Germany and assembled into the vehicles here in the USA. Dodge bought the rights from ZF to manufacture this transmission in its Kokomo, Indiana plant. The unit built in this plant will be designated the 845RE.

ZF8HP45 Clutch Apply Chart						
Gear	Holding		Driving			Ratio
	A	B	C	D	E	
1	X	X	X			4.69:1
2	X	X			X	3.13:1
3		X	X		X	2.10:1
4		X		X	X	1.67:1
5		X	X	X		1.29:1
6			X	X	X	1.00:1
7	X		X	X		0.84:1
8	X			X	X	0.67:1
Reverse	X	X		X		3.30:1

Figure 1

Application Chart

One of the truly unique features of this unit is the clutch apply chart (figure 1). There are three driving clutches and two holding clutches, or brakes. The brakes are splined to the case. Two of the driving clutches are splined to a sun gear drum and one is splined to the D clutch drum (figure 2).

As the application chart shows there are only two friction elements released in any gear. The fewer released components, the less parasitic drag, and with less drag we get better fuel economy. Remember its all about fuel efficiency.

The wide ratio range allows for quick acceleration, and with two overdrive ratios, the Chrysler Pentastar V-6 can cruise at about 1400 RPM at 70 MPH.

Internals

Keeping with the fuel economy theme, the internal components are light weight and yet sturdy where they need to be.

The P1, P2, and P4 planets are stamped-steel construction. The P3 planet, D clutch hub, and P4 annulus drum are aluminum components.

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How the Planetary Gearsets Work Together

This may seem strange; you're probably thinking, "I already know how a planetary gearset works." While this may be true, the way the planets are used in this unit is way different than what you're used to.

First, we all know that by driving and holding a combination of two of the planet components we get different ratios. There are some planet arrangements where the sun gear may even spin backward when the ring gear is driven (think old school three speeds here).

We also know that if we drive the planet and hold the sun gear, the result will be an overdrive ratio. These output ratios will always be constant because only one part of the planet is always driving. With these early arrangements, if we wanted more speeds we had to add more planets. If we want an 8- to 10-speed transmission, the unit might have to be 6 feet long!

Think about the A4LD or the 4L30E for a minute. These two units were around for the longest time as the C-3 and the THM 180, respectively. Ford and General Motors simply added a two-speed transmission with overdrive output ratios to the front of these venerable units to make them into four-speed units.

The fact is these old workhorse units have been capable of six forward speeds and two reverse speeds from the moment they were first put into a vehicle. All the OEMs had to do was to bring on the OD band in every gear. How many other early units were built like this? The Aisin-Warner A40D and the Mazda N4AEL are a couple that come to mind.

Another Approach

There is another approach to getting more speeds out just four planetary gearsets. The way to get more ratios from the Simpson-type planetary gearset is to have two and sometimes three different input speeds instead of just one. What this means is that the simple gearset is now capable of multiple output ratios instead of just one.

That is to say, we can drive the sun gear at one speed and the ring gear at another speed to get a unique output ratio. We can drive the planet at one speed and the ring gear at another speed to get another different output ratio. We can drive the sun gear at one speed and the planet at another to come up with yet another output ratio.

Keep in mind that the only limiting factors to the output ratios are the

speeds at which we drive the ring gear, sun gear, and planet.

Before we check out how all this gets done inside the ZF8HP45, it's important to recognize that all eight speeds are accomplished by using one planetary gearset. The P1, P2, and P3 planets are all used to drive the different elements of the P4 planet at different speeds.

Two of the driving clutches are splined to a sun gear drum and one is splined to the D clutch drum (figure 2).

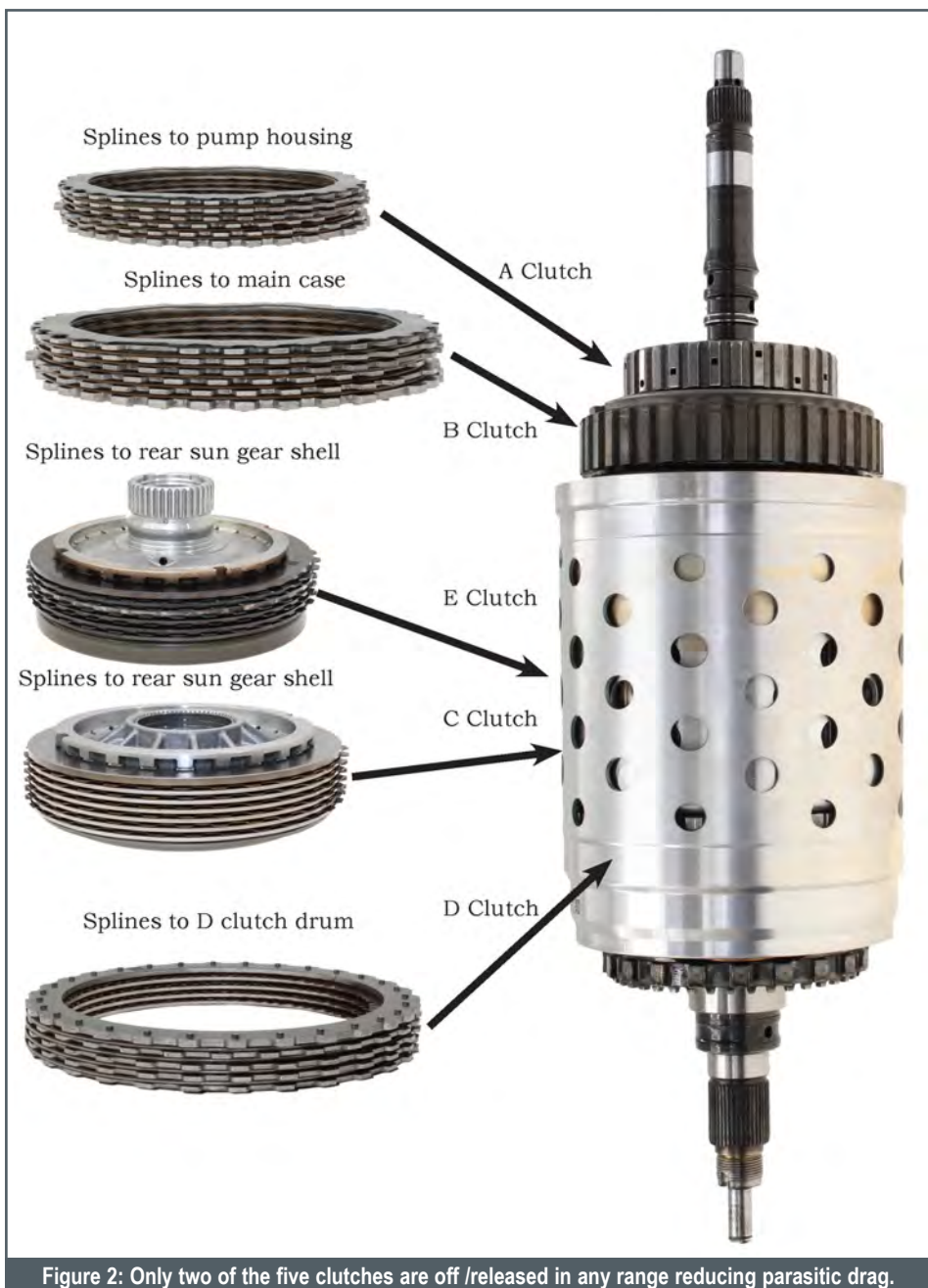


Figure 2: Only two of the five clutches are off /released in any range reducing parasitic drag.

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Figure 3: Two clutches splined to the sun gear shell means the sun shell can be driven at two different speeds.

There are two clutches inside the sun gear shell (figure 3). The rear clutch (clutch C) is splined to the input shaft. When this clutch applies, the sun gear turns at input shaft speed.

The front clutch (clutch E) is splined to the P2 ring gear and can be driven at two different speeds, depending on the application of the A and B brakes. This is how the P4 sun gear is driven at

different speeds, independent from the other planet components.

The rear planet can be driven by the D clutch hub, which is driven by the P3 planetary gearset (figure 4).

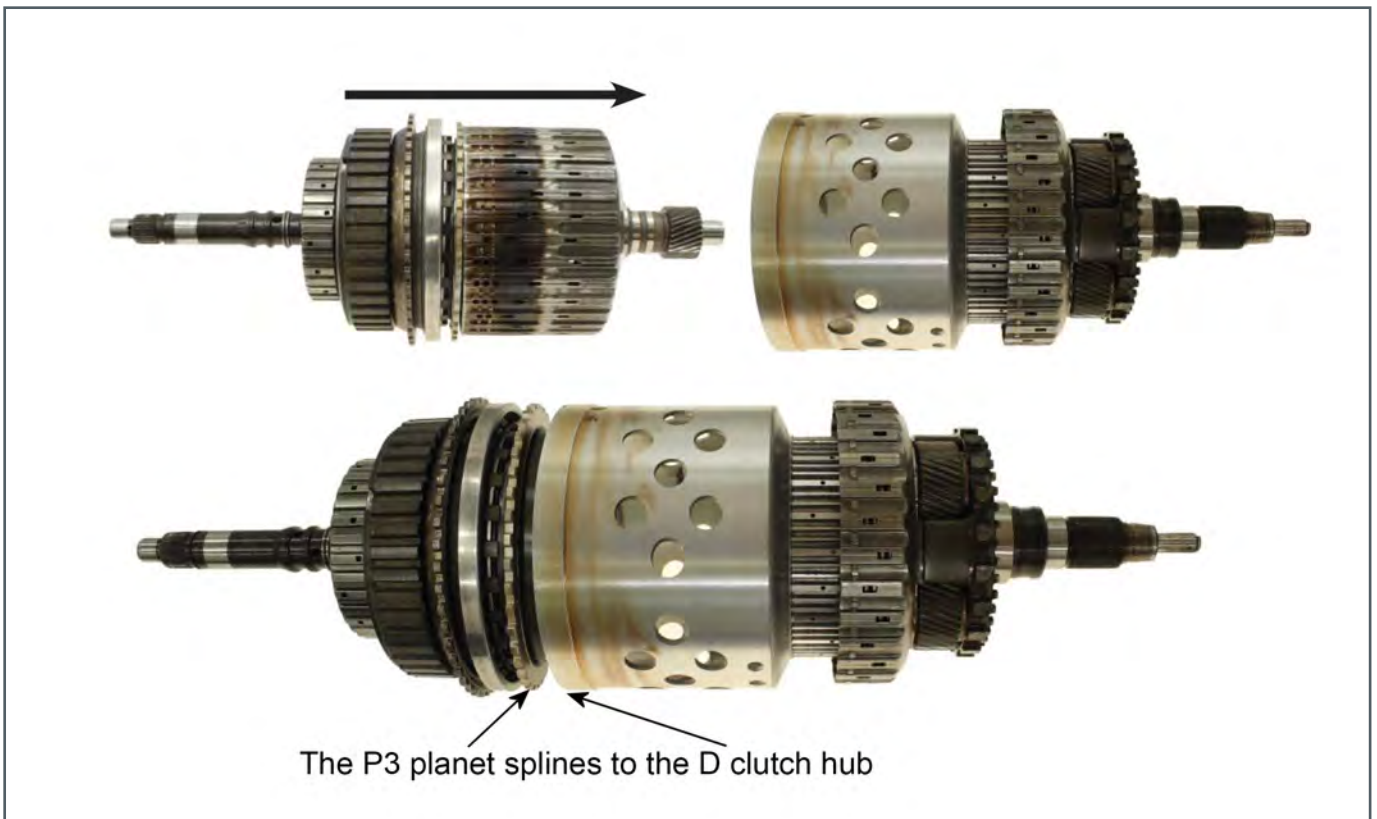
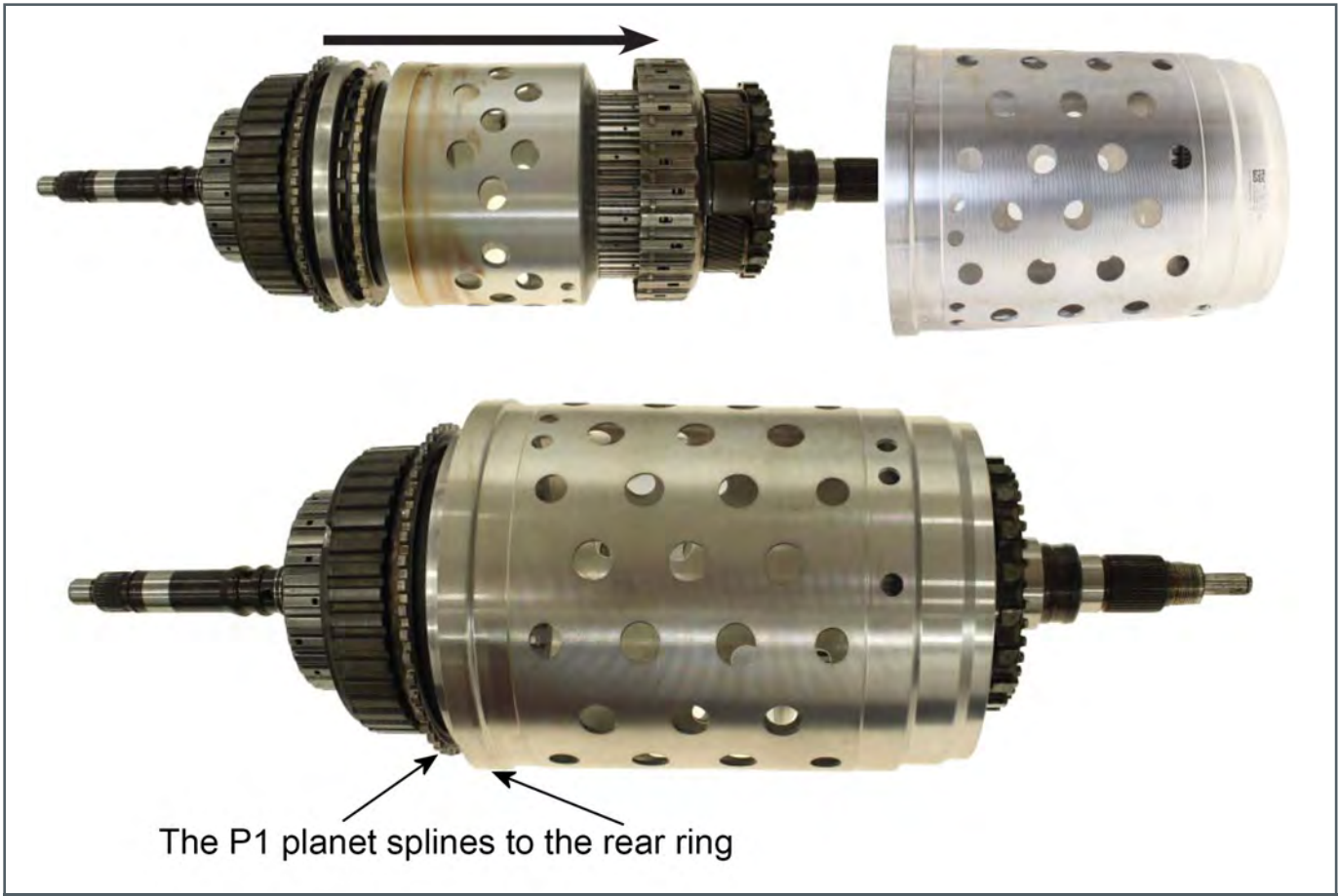


Figure 4: When the D clutches apply the rear planet is driven by the P3 planet.



The P1 planet splines to the rear ring

Figure 5: In 3rd, 4th and 5th gears the P1 planet drives the rear ring gear.

The rear planet can also be driven by the rear ring gear, which can be driven by the P1 planet (figure 5).

The rear planet can also be driven by the rear ring gear, which can be driven by the P1 planet (figure 5).

As you can see, we have planetary gearsets driving all three components of the rear planet separately at any given time, depending on the gear ratio required.

The cool thing is that, for the first time I can remember, all three components of the planetary gearset can be driven at once and at different speeds, creating a wide variety of ratios.

It's hard to believe at one time we had 4-speed transmissions... then-5 speeds... then, before long, we had 6-speeds. This 8-speed transmission is just another step in that progression. And that's just the beginning: there are 10-speed automatics in the not-so-far-off future.

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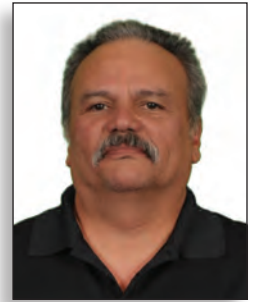
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There's a Profit to Be Made

Working on the Ford CFT 30!



by Hank Blair
members.atra.com

I've heard from shops who claim the Ford CFT 30 is too hard to work on or they can't get parts. Well, things are changing; the parts are becoming more available. So the big question is: Do we work on them or not?

The factory says the diagnostics for the unit are pretty straightforward.

1. Replace the transmission
2. Replace the Mechatronic unit (Figure 1)

3. Replace the valve body

The reality is there are many more repairs that can be done. Let's take a minute to get a better understanding of how this unit works.

The unit is constructed of two *variators*, which are pulleys driven by a chain (Figure 2). It has a unique oil pump that uses eight pistons with springs (Figure 3), that are located radially around the circumference of the pump eccentric (Figure 4). The pistons are driven by the torque converter.

The valve body has five solenoids (Figure 5): a main pressure control solenoid (PCA-A), torque converter clutch solenoid (PCE), primary pulley pressure solenoid (PCB), secondary pulley pressure solenoid (PCC), and forward and reverse clutch apply solenoid (PCD).

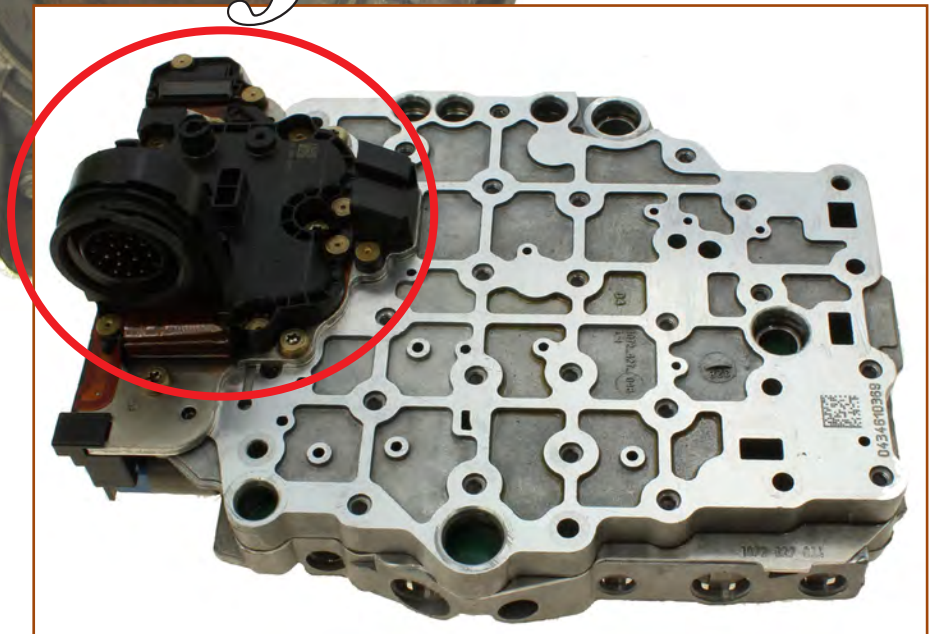


Figure 1

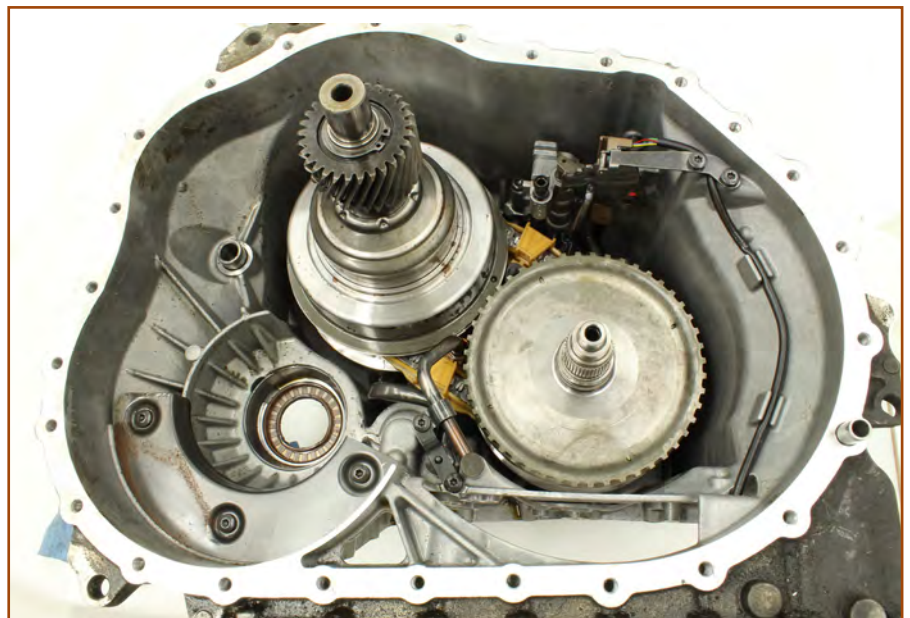


Figure 2



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Figure 3



Figure 4

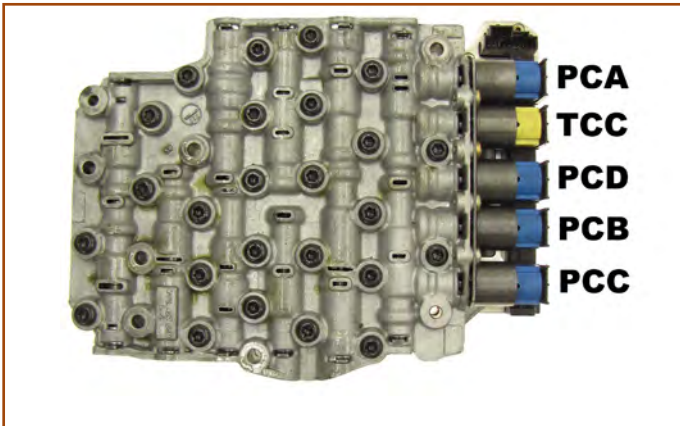


Figure 5

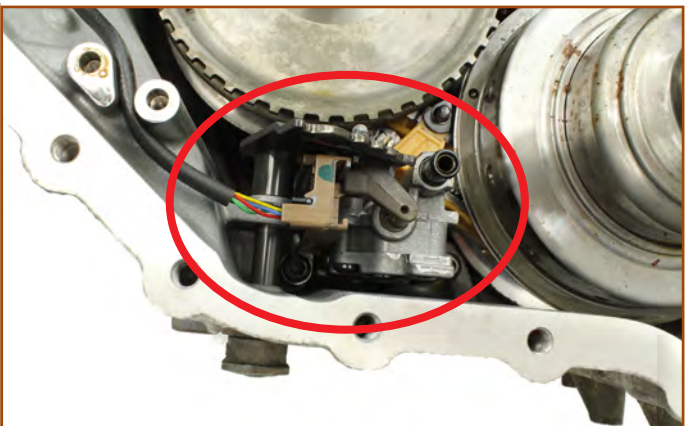


Figure 6

The transmission has a transaxle range sensor (TRS) located internally; attached to the case (Figure 6). There are two pressure switches: one for the primary variator and one for the secondary variator.

This transmission has two speed sensors located on the Mechatronic unit. They monitor the primary variator and the turbine speed sensor. An output speed sensor is located internally and bolts directly to the case.

Diagnostics

This transmission has about 54 trouble codes associated with it, all of which end up with replacing the transmission, valve body, or Mechatronic unit.

Recently we had the opportunity to work on three different repairs that didn't require the factory repair. One of the units was a Ford Five Hundred with codes P0701, P0871 and P0961.

Code P0701 indicates the TCM has a problem; simply put, there's something wrong with the transmission but the computer doesn't know what it is. Code P0871 is a secondary fluid pressure sensor failure, and P0961 (PCA) pressure control solenoid A is out of range.

Code P0961 will set if mainline pressure is lower or higher than expected. This indicates a defective pressure sensor or a leak in the hydraulic system.

Code P0871 DTC will be set if the secondary variator pressure is lower or higher than expected. This indicates a defective pressure sensor or a leak in the hydraulic system.

Unfortunately this transmission doesn't have any external pressure ports. To check the pressure readings on this unit use a scan tool. There are PIDS for pressure readings in the data stream. In fact, there are 45 PIDS to choose from: in this example we're



Figure 7



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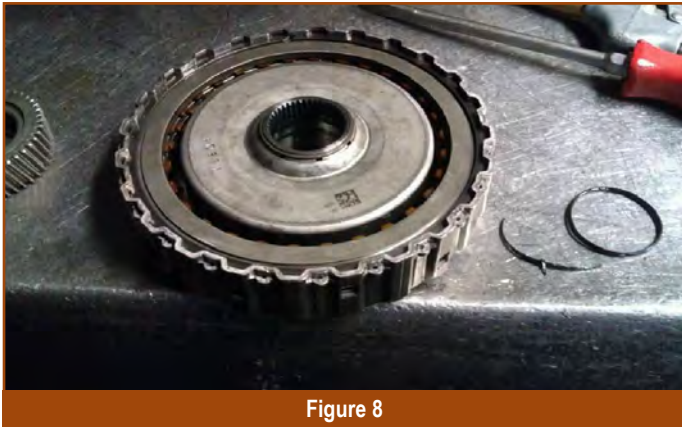
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going to monitor PCA-A, PCA-MES, PCC-C, and PCC-MES. Normal pressures should be between 220-250 PSI. If the PCC_MES PID pressures drop below the specified pressure, you have a leak in the system. Shortly after this happens the vehicle will go into limp mode.

Sometimes when the transmission is cold the unit will work pretty well, but as it gets hot it starts having issues. This isn't a Mechatronic unit problem because there is no command for low pressure. This is a valve body or sealing issue.

After disassembling the unit we found the forward clutch drum O-rings were cut and damaged (Figure 7 & 8). There are aftermarket companies offering seal kits and replacement parts for this unit. Replacing the seals fixed this unit, and resealing the transmission was simple with no hassles.

More Pressure Issues

There are other pressure issues that are associated with pressure codes. One common problem we're starting to see is variator tube failure.

We have two covers on the end of the unit: one is the primary variator (pulley) cover (Figure 9); the other is the secondary variator (pulley) cover (Figure 10). There are five feed tubes under the valve body. These feed tubes supply pressure to the variators. This unit had feed tube damage: the secondary variator feed tube in the cover had sheared, causing a massive pressure leak (Figure 11).

You can replace the feed tubes without taking the variators and belt out of the case, as long as the variators are in good shape.

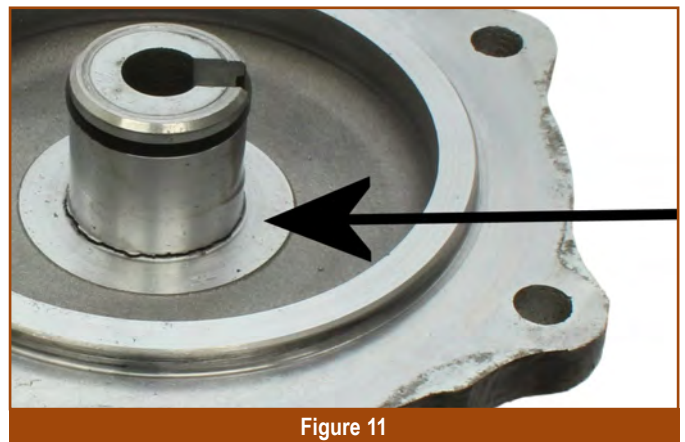
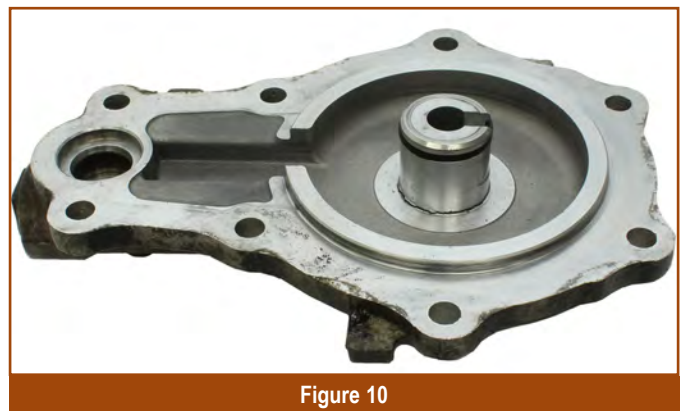
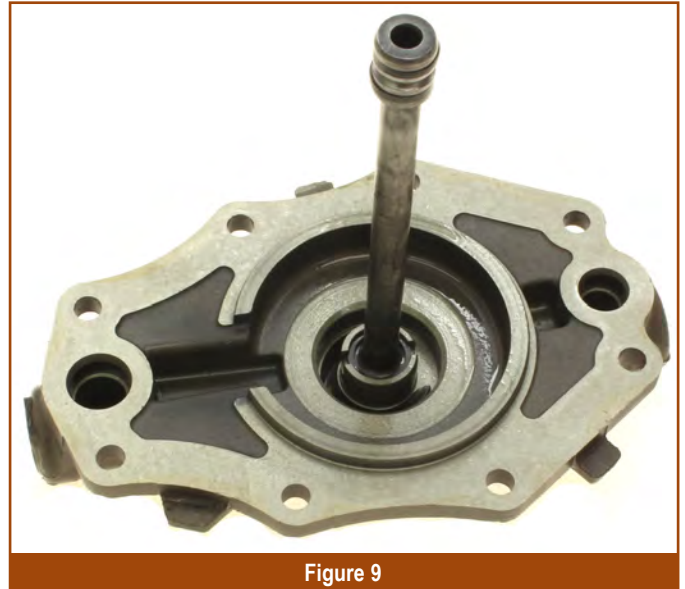
Noise with Low Pressures and Codes

A noise concern that may be accompanied with low pressure and codes that sounds like a flexplate failure may be caused by the pump assembly. As with any noise, you need to verify the conditions.

Does the noise change with wheel speed? Does the noise happen all the time? Does the noise get louder or softer in different ranges? Obviously, if it's hard to tell or undetermined you have to start removing components.

In this case it sure sounded like a broken flexplate or flywheel. We removed the transmission and inspected the flexplate: There was no damage. So what could be causing the noise?

The CFT 30 has springs in the pump rotor area, so we decided to remove the pump and inspect them. We found a



broken spring in the pump rotor. You have two options for repairing this: replace the pump assembly or replace the spring. The spring dimension free length is 1.715", the diameter is 0.553" and the coil diameter is 0.083".

The factory says you can't repair the CFT 30 without replacing the transmission, valve body, or Mechatronic unit. Well, they're wrong. There's a great opportunity to profit from these CVT units. It's just a matter of diving in head first!



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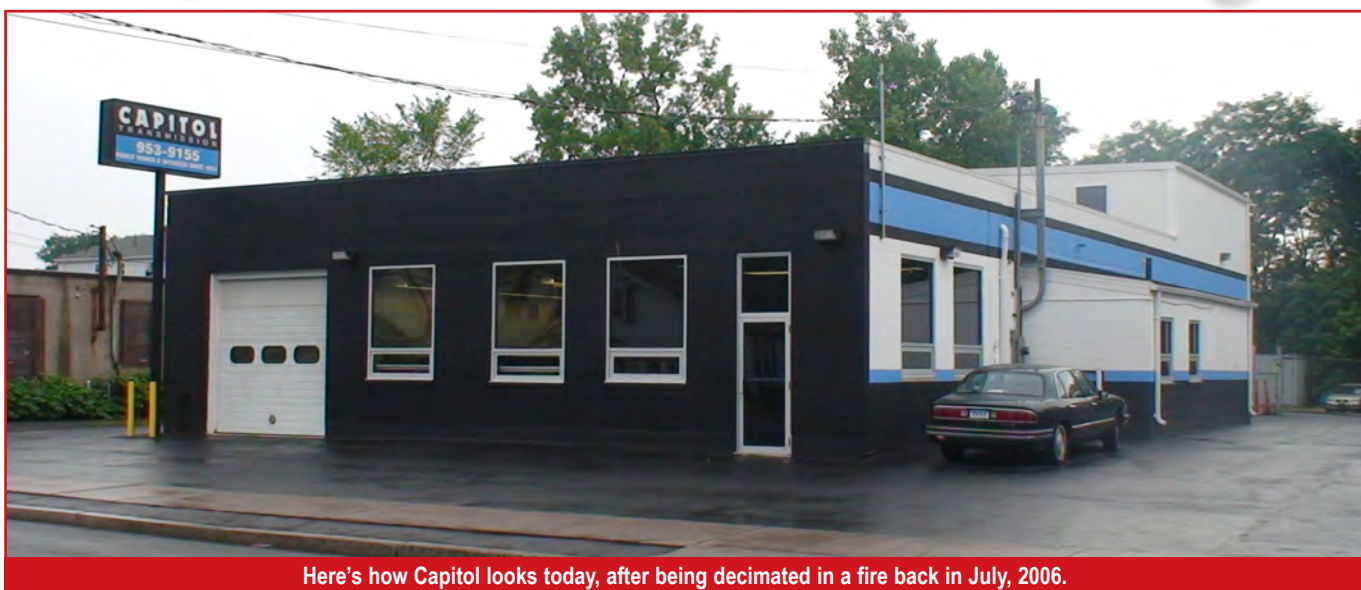
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feel good about driving



by Steve Bodofsky
members.atra.com

Capitol Transmission and Auto Care: *79 Years... and Counting!*



Here's how Capitol looks today, after being decimated in a fire back in July, 2006.

Over the last few years we've visited a lot of longtimers... shops with 40... 50... even 60 years or more fixing cars. That's a long time to be in this business... or any business for that matter.

But no shop we've talked to has come close to the folks at Capitol Transmission and Auto Care in Hartford, Connecticut. They first opened their doors back in 1934: 79 years ago this year!

Think about that: 1934. The country — in fact, the world — was in the middle of the Great Depression. People were lining up for soup and bread; few were worried about getting their cars fixed. Not a terrific time to start a business. But Paul Cordilico Sr. had a vision and the desire to fix cars. So he opened his shop — Paul's Garage, then a general repair shop — and took his



The fire completely gutted Capitol's original building, leaving nothing but a crumbling shell.

first steps as a business owner.

After World War II, the first automatic transmissions started showing up on the road. And Paul Sr. saw those automatics as the road to success. So he went from general repairs to transmission-only, and in hindsight it was probably one of the smartest decisions

he could've made.

Today the shop is called Capitol Transmission and Auto Care. "From about 1945 to 2000 we were strictly a transmission shop. We didn't add general repair again until 2000," explains current owner Paul III; Paul Senior's grandson. "But even now, that 'Auto Care' is the second half of the name. We're still predominantly a transmission shop."

Generations Follow Gens

One of the more interesting points about the family dynamic at Capitol is one of timing: Their family generations follow the different business generations for our industry that we've discussed in the past.

Paul Sr. operated his business during Gen I, when it was about bringing the craftsman's approach to the



Here's how things looked after the debris was carried away.



Then construction began in earnest. The old walls were torn down and new ones took shape.

industry. "He was from the first generation of technicians to get involved with automatics," explains Paul III. "For years, the secret to the transmission business was that the rest of the industry was afraid of the automatics." And his grandfather took full advantage of that, by becoming versed in the technology from its earliest days.

Paul Jr. took over in the '70s and operated it through most of the '90s. This follows the time period assigned as Gen II, when sales became the driving force of the transmission repair business.

Paul III took over in the late '90s, as the business was changing once again into a more service-oriented model, where the goal was to "create a customer," rather than simply about sales.

How did this generational alignment affect the business model at Capitol? For one thing, it means that there was no real overlap in business strategies. Since the business passed from one family member to the next as the business environment was changing, there was no need to abandon a previously successful business model in favor of a new strategy. Each family member was able to approach the business from a unique perspective: One that was tailored to meet the requirements of the current business climate.

And Paul III's background was well suited to his new role in this industry. Paul was never a technician; he never really worked in the shop, preferring to attend Clark University in Worcester, MA where he earned his Master's degree in business. He spent five years in market research before returning home to take over the family business.

In fact, Paul III never really wanted to get involved in the auto repair business. But in the late '90s his mother became ill, and his father was torn between running the business and taking care of his wife. So in 1997, Paul stepped up and returned to take the reins of the business.

What makes Paul a successful business owner? "The gift of gab... that's all I have. All I'm doing is selling myself and building a rapport with customers. It's the part of the business that I enjoy most."



Today the shop boasts two huge doors out back, allowing Capitol to service large trucks as well as cars.



A look from inside the newly renovated building reveals a clean, spacious work area.

A Capitol Reputation

One thing that's followed the Cordilico family from one generation to the next has been their desire to serve their customers. "We've always taken care of our customers," says Paul. "We like to help people and we aren't focused on the money end of the business. If you take care of the customers, the money follows naturally."

Paul is quick to acknowledge that his family history and



Capitol even included a large truck lift, to take full advantage of their roomier, open space. Brian Risor is putting the truck up on the lift - he is Capitol's center manager and has been a company employee for 28 years.



Grand Reopening: Getting ready to open the new doors for the first time: from left to right: 1) Lew Brown (advisor to Mayor), 2) Paul Jr., 3) Paul's cousin James Battaglio and 4) former Mayor Eddie Perez

reputation in the community are valuable assets when it comes to building those relationships. And that reputation can carry over for years. “We recently had a customer in for a transmission problem for a second time. Her first visit was to my grandfather’s shop, back in 1965!”

Today a lot of people consider transmissions to be a commodity. But according to Paul, that’s just part of the story: “Sure, transmissions have become a commodity... to a point. But they don’t diagnose themselves, and I can show you some units that can take even the most experienced technician a day and a half to install. There’s still a demand for a quality transmission repair shop.”

And although Paul isn’t a technician, he considers that a benefit when dealing with customers. “It allows me

to relate to customers from their perspective. When I’m talking to customers, I don’t lose them in technical jargon. I can speak to them at their level, and I can understand their concerns because I’m in the same situation they are.”

He’s also quick to give small repairs away. “If the job would’ve cost under a hundred bucks, I’d rather give it away for nothing and hand them a stack of business cards. I don’t want to waste time writing up a tiny invoice, and that free job does wonders for generating referrals... referrals that often turn into major repairs.”

Marketing Capitol

As with most shops, Capitol has reduced its presence in the Yellow Pages over the last several years. This year may be its last for a listing there.

That marketing budget has migrated to the internet. Their site, www.capitoltransmission.com, provides them with substantial marketing support. The site is designed and maintained by Autoshop Solutions, Inc., and Paul can’t praise their work enough. Danny Sanchez, the owner, has provided his knowledge and support to the industry through *GEARS* and at Expo for a number of years.

“I used to spend about \$20,000 a year for advertising in the Yellow Pages and got back maybe \$50,000 to \$75,000 on my investment,” says Paul. “Today I spend about \$15,000 a year on internet

advertising, between my web site and Google, and that’s returning about a quarter million a year in business.

“The phone keeps ringing and we source everyone who calls. ‘How did you hear about us?’ ‘Internet,’ ‘internet,’ ‘internet.’ ‘You came up right away.’ I’m in the top three listings, so that’s Danny doing his thing. Or ‘you came up on my phone. I was able to click through... it was easy,’ and so on.

“Then there are the shops that just create their web site and that’s it. No marketing... no SEO. How do people find them? They don’t... because they’re on the 12th page. That’s why Danny’s my guy for everything on the web.

“We also send an e-newsletter that goes to about 1200 people a month. It’s a real tidy newsletter, colorful and short; it has car tips... not too technical.

“Danny got us into social media recently; we’re on Facebook and Twitter. And he sends out marketing tools that you can put into your shop, such as posters that ask customers to follow us on Twitter. I can’t say enough about how much online marketing has benefited us.”

Then again, even the best SEO can have its downside. “For a few weeks we were getting calls asking about used tires. One guy called looking for a used tire for his motorcycle. So I emailed my rep at Autoshop Solutions and asked him to take out the tires reference. And those calls stopped pretty quickly.”

Capitol still receives a lot of referrals from the general repair industry; they have strong relationships with several shops in the area. “They send a lot of work our way,” says Paul. “These are terrific general repair shops that are just too busy to get involved with remans. They prefer to stick with their bread-and-butter — engine jobs or timing belts — and refer their transmission problems to us.”

Paul’s dad keeps his hand in the business through outside sales, visiting shops in the area to keep Capitol’s name in front of them. And it works well: Today they have about 20 shops that use them regularly for transmission repairs.

How does Paul handle those referrals? That depends on the referring shop: Some shops like to take the job in themselves and farm it out to Capitol.



The next generation of success: Shop owner Paul Cordilico with his son, Paul IV.



Paul, Irene and Paul IV celebrating Irene's birthday.

Others are happy to refer the customer directly.

“Those referrals are great, because the customers are already sold before they reach our shop. We’ve been referred by a guy they love, so we’re pre-approved.

“Of course, it’s understood that we won’t take them as a general repair customer. It’s important that we never ruin their relationship with the referring shop.”

How does the referring shop profit from sending their work to Capitol? “What they get most is a satisfied customer. Sure, we have an arrangement with each shop... maybe they get a gift card or a commission... but the main thing they’re looking for is to keep their customers happy. It’s relationship based and it’s about trust,” says Paul.

Remans and Rebuilders

Capitol doesn’t use remans. Not that Paul has anything against them; he just prefers rebuilding his own units for now. But he recognizes how remans have changed the game.

“Before remans, it was nearly impossible to find a qualified rebuilder. They were like high-priced free agents. Then companies like Certified showed up. Suddenly the rebuilders I’d been chasing showed up at my door, looking for a job. I chose the two best guys, and they do a terrific job for me and my customers.”

Paul tried remans for a short time. Back then he dealt with smaller reman companies, and the comeback rate was

just too high. So for now he’s sticking to the custom rebuild route.

But Paul knows Peter Fink from Certified personally, and he’s happy to acknowledge how Peter has changed the industry. And if he were ever to make the switch to remans, he’d contact Certified first.

Fire at Capitol

In July 2006, there was a fire at Capitol; the building basically burned to the ground. For many shop owners, it’d have been the perfect excuse to close the doors and walk away for good.

Paul had a different idea: He moved a trailer onto the lot and operated his business from there. He met customers and took in jobs, right from the location they were familiar with. Meanwhile, he rented space in a shop nearby. He transferred the cars to that shop, handled the repairs there, and then delivered them from his trailer “office.”

“The trailer worked out great, because it allowed me to maintain my location while keeping an eye on the new building construction.” It wasn’t long before Capitol was up and running in a beautiful new building. And thanks to Paul’s foresight, his business was never interrupted.

Capitol and ATRA

Capitol has been an ATRA Member since about 1999. And Paul has attended *Expo* several times since joining ATRA. It’s been a valuable relationship for providing technical and business

support, and for building relationships within the industry.

Paul pays particular attention to the articles and information that ATRA provides in *GEARS* for shop management. He’s worked directly with many of the management advisors who’ve been an integral part of the management track at *Expo*. And he’s put a lot of what he’s learned to use.

While he’s not as well-versed in the technical end of the business, Paul is also well aware of the value that ATRA’s technical support brings to his business, and the industry as a whole.

In fact, it was Capitol Service Manager Brian Rizor who worked hand-in-hand with ATRA Technical Advisor Bill Brayton to identify a parts problem that labeled the wrong shift solenoids for the Honda Odyssey (*GEARS*, October/November 2012).

Brian was the “eyes and ears” for the ATRA HotLine, and his tireless efforts working with Bill to identify the root cause of the problem helped provide valuable data for the entire Association. These are the types of problems and solutions that allow ATRA to provide “the experience of thousands of technicians, right at your fingertips.”

79 years... a long time to be in this business. But Capitol isn’t afraid to change with the times, and that change is keeping them profitable. Who knows? Maybe in a few years we’ll do a profile on Paul IV, as he takes the shop into its next generation of success.



“You’ve Got to Be Kidding!”



by Thom Tschetter

This month’s story came to mind while I was attending the *What’s Working* management sessions at the ATRA Powertrain EXPO in Las Vegas. I thought this year’s sessions were lively, challenging, and thought-provoking. If you weren’t there, be sure to order the CDs and handouts from ATRA.

One session had to do with managing customer expectations. The key point was, if left to draw their own conclusions, customers will often have unrealistic expectations. But, no matter how unrealistic their expectations, they’re still the customers’ realities. It’s up to us to set realistic expectations and then go about exceeding them to ensure that our customers have an outstanding experience.

The following story definitely fits the title of this article — *You’ve Got to Be Kidding!* — but I swear to you, this really happened.

The Details

1. The customer dropped off her 2001, 2-wheel drive, half-ton pickup for a “\$19.95 Transmission Service Special” the shop was offering in a coupon. (I’m not judging the offer... just reporting what happened.)

2. She dropped it off while the shop was closed. She completed and signed an *Early Bird* envelope authorizing the service special and deposited the envelope together with her keys and the coupon in the drop box.

3. The coupon offer included the following:

- Road Test to Check Transmission Performance
- Check for Transmission Leaks
- Check U-Joints, CV Joints and Axles

- Remove and Clean the Transmission Pan
- Clean or Replace the Transmission Filter
- Replace the Pan Gasket
- Check and Perform External Adjustments
- Replace Fluid as needed; up to 8 quarts
- Note: This offer is valid on most 2-wheel drive cars and light pickup trucks. This service can only be performed on otherwise sound operating transmissions.

4. The shop’s diagnosis included a road test, undercar checks, and a pan examination. The fluid level didn’t even register on the dipstick so the tech topped it off before performing the road test. The truck had 95,000 miles. The road test confirmed the transmission worked well but it had some mild whining noise. There was a fluid leak from the front area and the pan gasket. The pan exam revealed abnormal amounts of metal and friction material.

5. The service writer called the customer and reviewed the results of the diagnosis. He advised the customer that the leak from the front could only be repaired by removing the transmission. He further advised her that, even though the unit was performing normally, the noise combined with the metal and friction material in the pan indicated that the transmission had been damaged internally from being driven low on fluid. So rather than just fixing the leaks, while the unit was out of the truck, it made good sense to “go through it” to put it back into “tip-top shape.” He told her that this would come to “twenty-four ninety-five, plus tax.”

6. The customer approved the work and asked what time she could pick it up. The service adviser told her it wouldn’t be ready until 5:30 pm the next day because of the additional work they were doing.

7. When the customer came to pick up her truck, the service writer reviewed the repair order and went over everything they had done. The total was \$2,495.00 plus \$204.59 sales tax for a grand total of \$2,699.59.

8. The customer literally broke out in tears and became hysterical. To make a long story short, she thought it was going to be \$24.95 plus tax. The customer was shocked... but not as shocked as the service writer. He immediately went on the offensive, stating that it should have been obvious to her that you can’t rebuild a transmission for \$24.95... that’s only \$5 more than the price of the “service special.” She explained that she honestly had no idea what was involved: She’d trusted him and was just going along with his advice. You can imagine the exchange of words between the two of them. They both became irrational in their heated exchange.

9. The shop owner was a friendly competitor just a few miles from my shop. He knew I was an arbitrator, and while the customer was still in the shop, he called me to ask if I would make an unofficial third-party attempt to resolve the matter. Since we were already closing for the day, I agreed to stop by his shop on my way home, and they agreed to wait for me.

10. Putting on my unofficial mediator’s hat, I talked to each of them privately. Honestly, based on the telephone conversation with the shop owner, I was thinking, “You’ve got to be kid-

ding me.” I expected the customer to be a “b***h” or someone trying to pull a fast one on the shop. To my surprise, after she calmed down and answered my questions, I became absolutely convinced that she was being totally honest with her expectations. She was truly confused and ill-equipped to understand what she was authorizing.

Likewise, the service writer was honest with me. He didn’t deny that he was always somewhat folksy in his conversations with customers, and that he frequently didn’t go into a great deal of detail to explain the repairs. He thought people liked him to keep it simple. He said this was the first time anyone misunderstood what he meant when he quoted prices like “twenty-four ninety-five plus tax” to “go through the unit and put it in tip-top shape.” He and the shop owner felt the customer was being unreasonable and trying to take advantage of the shop.

11. I told the shop owner that I felt there had been a serious and unfortunate lack of clarity. I added that I always believed it to be the shop’s responsibility to communicate clearly and in this case his service writer’s folksy approach was the root cause of the mix-up. I felt it was unlikely that the customer was going to come up with the money because she wouldn’t have had the work done if she’d known what the service writer meant. Though she didn’t say so, I also felt she didn’t have the money.

12. I suggested that he might consider writing this one off because he had no documentation to support his position. Other than her authorization for the \$19.95 service special, the entire transaction was handled by phone. His service writer admitted what he said, and, as unlikely as it seemed, it was possible that an uninformed person could misunderstand.

13. He decided to let her take the car and informed her that he would pursue getting a small claims court judgment to collect the money. He sued for \$2,750 — the entire amount of the repair, sales tax, and costs of certified mail and small claims court filing fees.

Three Questions

Here are three questions for you to consider before I reveal the results of

this case.

1. What could the service writer have done differently?
2. Were there any clues that the customer didn’t understand what was going on?
3. I told you what I advised the shop owner to do; what do you think?

My Thoughts on Questions 1 and 2

With respect to question #1:

- If the folksy approach works for him, I don’t have a problem with the service writer using it. However, he still needs to respect that this is a large purchase and he needs to treat it as such. Once he makes the sale, he should review the details of what will be done and get the authorization in writing, or, if by phone, get some form of identification to confirm the agreement.

- In this case, if he’d quoted the price with dollars and cents or with sales tax, the confusion would have been eliminated. It’s not likely that she would have missed the point if he had said “twenty-four hundred and ninety-five dollars plus tax.” Or if he had said “twenty-six, ninety-nine, fifty-nine with tax.” Based on the customer’s statements to me, the sale would likely have been lost, but losing this sale would have been preferable to what happened.

Regarding question #2:

- Perhaps the first clue to handle this differently would be that it was a coupon customer. I’m not throwing all coupon customers under the bus, but, for the most part, they are bargain hunters and the sale went too easily from \$19.95 to \$2,495.

- I think the most obvious clue was when the customer asked what time she could pick up her truck. She clearly wasn’t expecting it to be a day or two. That was the perfect time to make sure she understood what was being proposed by the service writer.

- Any time a customer leaves their vehicle after hours, the entire transaction needs to be handled more carefully. The opportunities to establish rapport, to demonstrate professionalism, and to build value, are greatly diminished without face-to-face interaction.

The Ruling

Unfortunately, a small claims court judge isn’t obligated to cite reasons for his decision. In this case the judge did braid some reasons into his decision. Here is a paraphrase of his ruling. For clarification, the shop is the plaintiff because they are suing for payment and the customer is the defendant.

“I find in favor of the plaintiff. The customer is ordered to pay \$54.50 to the plaintiff. This is \$24.95 for the amount of the repairs she believed she authorized, plus sales tax and half of the court costs and fees.

“In this case the shop was negligent in protecting itself and the customer. The terminologies used by the service writer — things like ‘go through’ and ‘tip-top shape’ are, at best, vague and confusing. They do not form a basis for a contractual agreement — whether verbal or in writing.”

What We Learned

I chose this particular case because I felt it was a great example of how easily even a well-intentioned, customer-centric shop can find itself in a “you’ve got to be kidding me” situation. It really makes the point that we need to manage the expectations of our customers carefully.

Outstanding customer service is best defined as exceeding the customer’s expectations. Unless expectations are clear to both the shop and the customer, there is little hope for exceeding them.

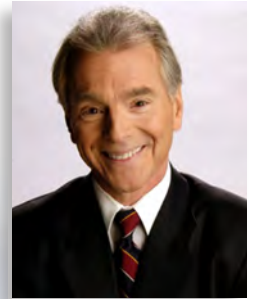
It’s very difficult to hit a target you can’t see, but it’s impossible to hit a target you don’t even have. Establish clear expectations and then get to work exceeding them, and your customer will have an extraordinary customer service experience with your business.

Up Your Business is an exclusive *GEARS Magazine* feature. Due to confidentiality constraints, the names of the parties won’t be mentioned, and some of the stories may be slightly modified.

Thom is always eager to help members of our industry and continues to be active in his retirement. You can contact him by phone at (480) 773-3131 or e-mail to coachthom@gmail.com.



Optimists and Pessimists



by Jim Cathcart

HALF EMPTY

HALF FULL

It's been proven that optimism can be learned. It starts with a decision to change the way you talk about challenges and people, and it continues with the transformation of your workspace into an encouraging place for people to work.

My car's factory radio/CD player got stuck one day and I took it to the dealer to extract the CD. He told me, without even looking at the mechanism, "You'll have to replace the unit or stop using the CD player." What!?! One glitch and it's ready for the trash heap? How about checking first to see if something is loose or it just needs cleaning?

Think about your own team. When challenges arise, who among them, including yourself, tends to assume that a solution can be found, and who assumes that the problem is too big, so you should give up? "It can be fixed," versus, "just replace it"?

Those who instantly default to a "replace it" mentality think that they are just being "realistic." But they are the same people who have led us to a throwaway society, where most things don't get fixed, they just get discarded. That's an expensive way to live.

In a recent discussion about optimism, one of my friends told me, "I'm not an optimist or a pessimist. I'm a realist."

You've probably heard that, too. Almost nobody deems him or herself a pessimist. But they often avoid being labeled an optimist as well. Why? Because many think of optimists as

dreamers who are out of touch with reality.

I've done a lengthy study of these mindsets. Over several years I've observed that realists are never optimistic. In fact, here's what I've concluded: *A realist is simply a pessimist who won't admit it!*

There are patterns in how people think and what responses they show to challenges. We learn these patterns early in life and seem to retain them indefinitely. But they can be changed.

My friend and colleague, Dr. Terry Paulson, is a psychologist and author of the recent book, *The Optimism Advantage*. He has studied these mindsets extensively, and the payoffs of each of them.

His research has concluded that *optimists are more likely to succeed than pessimists*. Here's why: When you think there is a solution to your problem, you'll be more likely to stay in the game and keep on pursuing that solution. If you don't think there's a solution, somehow, somewhere, then you'll give up early, to cut your losses.

Likewise, when you see a brighter future being possible, you'll be more likely to endure discomfort, confusion, or difficulty, because you know it won't last.

Years ago a long-distance swimmer was swimming across the English Channel... and gave up just two miles



from the coast! All that effort, preparation, and difficulty in those cold North Atlantic waters, and she quit within two miles of her goal! Why?

In an interview after she got out of the water, she expressed shock that she was so close to her goal. There was a fog in the air and it obscured the coastline. She couldn't see her goal, so she assumed it was still a long way off. Had she known how close it was I suspect she'd have made it, no matter how much it hurt at the time.

When we intentionally form the habit of assuming that there's always an answer or a solution somewhere, then we increase our chances of success. At the same time we retain our ability to give up or pursue another path, but we do so with a much healthier mindset.

So where do we learn optimism?

We learn it from each other and from the patterns we follow day to day. If you start today to make optimism a

priority in your shop, others will pick up on that mindset, and before long you won't be the only one who is encouraging it.

Take a look at the posters on your walls: the calendars, the slogans, and sayings you display. If they're encouraging and positive, they'll have a good impact on the people who see them each day. Yes, you'll get some ribbing and complaints at first, but stand your ground. Just create a more positive environment for everyone to work in.

Consider the difference between a poster that says, "Life sucks and then you die!" versus one that says, "It may not be obvious yet, but there is a better way and you can find it." The first one might get an occasional laugh, but the second might bring about some extra efforts and new ideas.

Next, consider the way you talk about things. Are your own comments positive and productive, or negative

and critical? How often do you say you "can't" do something, when you *mean* that you just haven't figured out how to do it... yet? There is a difference.

It's been proven that *optimism can be learned*. It starts with a decision to change the way you talk about challenges and people, and it continues with the transformation of your workspace into an encouraging place for people to work.

Pick up a copy of Terry Paulson's book, *The Optimism Advantage*, and Martin Seligman's book, *Learned Optimism*, and see how you can expand your own possibilities. Your coworkers will be glad you did.

And share your ideas and actions with us here at *GEARS*. We'd love to know what's working for you.



The Will to Listen



by Dennis Madden
members.atra.com

What's Working 2012 was focused on the dealer customer. The reason, primarily, is that this segment has a better ability to pay for quality repairs, so it's in your best interest to understand what they want from an auto repair shop.

Consider the number of times you've lost a job because your customer couldn't get financing or their credit cards were maxed out. How many check guarantee programs have you tried, only to find the cost of using them was too high? How about those GPS systems? You know: the ones that disable the car if the customers are late with their payments.

All of those programs are designed to help you get business from people who can't afford your work. After a while you begin to think that's the makeup of the entire market. Nobody has any money, you think.

Recently, I did a *What's Working* presentation to a group in Baltimore. It was just a couple of weeks after Expo, so I presented information from the dealer study. Mind you, this was a study of 500 people who prefer the dealer. Some use the dealer exclusively.

Toward the end of the presentation several people in the audience struck up a discussion on various selling practices. A lot of it had to do with personal situations they found themselves in with some of their customers and what they would do under certain scenarios.

This went on for about six or seven minutes when it hit me: These discussions were centered on the customers they were familiar with; the ones they have to find creative financing for or do the work at a discount.

The information I had just presented about dealer customers made no impact. That is, they didn't hear the things that

Top Reasons for Choosing an Independent Shop

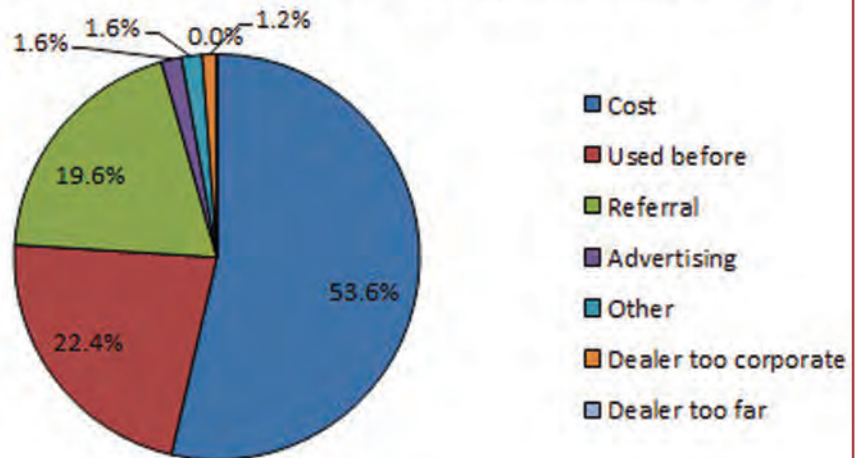


Figure 1

the dealer customers said were important to them. For that matter they probably didn't even register as valid. After all, those considerations were never raised by their customers, so why discuss them?

It was about that time I interrupted and said "This is a fantastic discussion and you've made some great points, but these are the rules for your current customers. Dealer customers operate with different rules."

Think about that for a moment: What you know about customers in terms of their needs, attitudes and ability to pay for quality repairs is based on the exposure you've had to your current customers. This knowledge doesn't transfer, or have value to, the dealer customers.

What that means is, if you apply what you know about customers, *your customers*, you won't attract the high-end market you're after. Or, if you happen to reach them, you risk losing them. It's like feeding dog food to a parakeet.

Let's get a bit more specific: In 2012 we surveyed 500 consumers with a preference for the dealer. To get a sample of 500 you have to screen out

individuals who *don't* prefer the dealer from the entire pool. That is, you may go through 1000 or 1500 individuals before you get a total of 500 who prefer the dealer. Which means there were 500 or so individuals who preferred an independent transmission shop who were screened out.

For an "exit question," we asked them why: Why do you prefer an independent shop? Here's what we found: Over half the people in the independent group selected cost as their reason (figure 1).

This supported information from a 2011 study of 1000 consumers, which showed consumers who preferred an independent transmission for transmission repair had the *lowest* household income of the entire pool from the survey (figure 2A and 2B) — even lower than those who chose "not sure" as their response. Is it any wonder that pricing and financing is a big topic among shop owners in our industry?

Now let's look at some of the dealer-customer information. We had several attributes we asked them to rank based

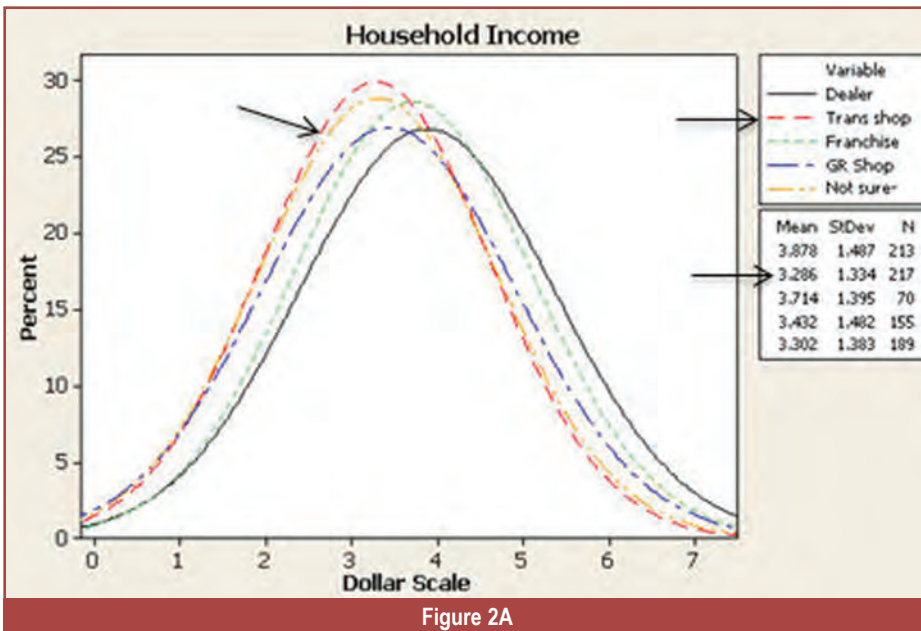


Figure 2A

on *their* perception as it relates to the dealer versus an independent shop (figure 3). The programmer for the study randomized the questions so the participants didn't all receive them in the same order.

The highest ranking came from question #1: The participants thought the dealer was better at repairing their car in a timely manner (figure 4). Previous studies showed that consumers believe a reasonable amount of time for a transmission rebuild is two days. And dealer customers are willing to pay more to get that.

The second highest response came from question #6: more likely to offer loaner cars (figure 5). Over the past couple years we've shared the two-day time frame comment regarding rebuilding time with shop owners, and that providing a rental car was a good way to resolve this problem.

We've heard back from several shops that have tried it, and all came back with the same response: Their customers are ecstatic. All of a sudden the two-day issue becomes a *non-issue* because they have transportation. Something else too: a lot of times customers don't want the rental car because they have another car at home they'd prefer driving. The beauty here is you *offered*. The dealer scored well with the remainder of the questions so we don't need to go over them.

The high point of the dealer survey came from the write-in answers. Two questions had a write-in response. That is, we didn't give them several answers to select from; rather, they wrote the

answers in their own words. The two questions were:

1. Why do you prefer the dealer?
2. What would influence you to consider taking your vehicle to a transmission shop over the dealer?

Since these were write-in answers, there are 1000 unique answers, so we can't list them all here. The top answers to the first question had to do with trust, well-trained technicians, and reliable service. No one mentioned price.

For the second question price was an important factor — but not in exchange for a reduction in service. They also listed referrals and reputation. Some said nothing would influence them but the *majority* said they'd consider it. An interesting point is that about a third of those surveyed were not always dealer customers but then switched to the dealer.

The bottom line? There's a perception among dealer-preferred customers that they'll receive better service from the dealer. They're willing to pay a premium for that service, and, as it stands right now, they don't know of an independent shop they can trust to provide that service.

The only question now is, do you prefer looking for creative financing for many of the customers you see now? Or would you prefer offering a higher level of service for customers that are willing to pay for it? They're *telling* us what they want. All we need is the will to *listen*.



1. Under \$25,000
2. \$25,001-\$50,000
3. \$50,001-\$75,000
4. \$75,001-\$100,000
5. \$100,001-\$150,000
6. More than \$150,000

Figure 2B

•On a scale from 1 to 5 where 1 is Strongly Agree and 5 is Do Not Agree please indicate your level of agreement with the following dealer qualities. (Programmer Note: N/A Allowed, Randomize Responses)

1. The dealer repairs my car in a timely manor.
2. The dealer is generally more professional than the other shops.
3. The dealer's waiting area is cleaner than most other shops.
4. I trust the dealer is using better parts than other shops.
5. The dealer has better trained technicians compared to other shops.
6. The dealer offers loaner cars for major repairs. Most other shops don't.
7. Work performed at a dealership is usually more expensive than the same work performed at an independent repair shop. It's worth the extra cost because I know they'll fix it right.

Figure 3

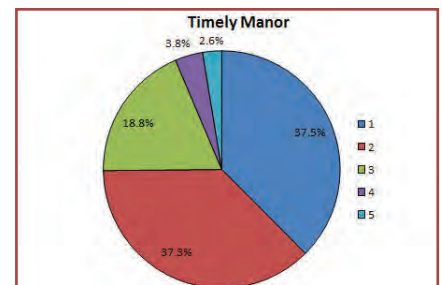


Figure 4

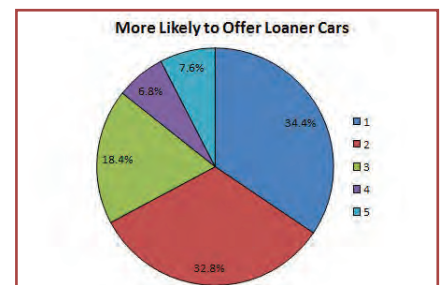


Figure 5

Check Out *the New,* 2013 GEARS Buyer's Guide!

by Steve Bodofsky
members.atra.com

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It's here! The all-new, 2013 *GEARS* Buyer's Guide, totally updated and redesigned. A complete and up-to-date listing of every business that serves the transmission repair industry.

Make no mistake about it: These are the folks who make your business possible. They provide the parts... the tools... and the equipment necessary to operate today's transmission shop.

And not just the "tangibles" — the things you can hold in your hand. We're also talking about the services you need, each and every day. From uniforms to insurance to marketing, these are the companies who've built their businesses around you. They're here for one reason: To help you open your doors and remain profitable.

Page through for a minute. Need a new parts supplier? They're in here. Looking for a new source for torque converters? Yeah, we got 'em. Want to upgrade your web site? Sure, they're here too. In fact, virtually every service

or product necessary to run your business will show up on these pages.

Sure, you can find a lot of these resources on the internet. Chances are every one of these companies has its own web site. So what makes the *GEARS* Buyer's Guide so valuable?

Focus: These are the companies who focus on serving your business model. Sure, you can find dozens of tool suppliers on line. But the ones listed in the *GEARS* Buyer's Guide are the companies who specialize in serving you. No digging through hundreds of general listings to find the one who specializes in your business requirements. We've handled the search, to make sure the listings here are just the companies you've been looking for.

Pay particular attention to the companies listed in bold: They're the ATRA Supplier Members. These are the companies that not only provide the equipment and services you're looking for; they also help support your industry.

Their backing helps make it possible for us to continue to offer the programs and services you've come to count on from ATRA. Remember that when you're looking for a new equipment or service supplier: Support the ones who support you and your industry.

Of course, this is just the printed Buyer's Guide. We update this every year. But the *GEARS* Buyer's Guide is also available on line at www.gearsmagazine.com. And the online version is constantly being updated, directly by the suppliers themselves, so you can be sure you'll always have the most up-to-date contact information available.

So, whatever you're looking for to help keep your business running, make the *GEARS* Buyer's Guide your first stop. Support the companies who help support your business... and your industry.



GEARS Magazine's 2013 Buyer's Guide

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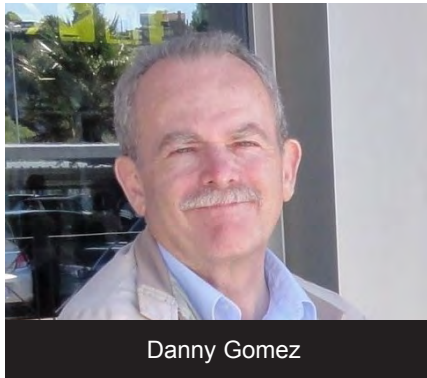
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(pages 54-108)
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Industry Mourns the Loss of Danny Gomez



Danny Gomez



ATRA and the transmission repair industry lost a dear friend: Danny Gomez of North Weymouth, Massachusetts, passed away on August 28, 2012 after a lengthy illness.

Danny worked as a rebuilder for Jim's Transmissions in Quincy, MA., and later became an instructor, teaching automatic transmissions at UTI Technical Institute in Norwood, MA. Danny took pride in his work as a rebuilder, diagnostician, and instructor.

Danny was always there at the Boston ATRA seminars. He was active in ATRA's Northeast Chapter since its very early years.

At the Boston seminar early last spring, Danny was optimistic that he was going to beat his illness. He was excited about his summer trip to Spain (his home country) with his family. He passed away shortly after returning.

Danny was a devoted husband and father. He loved his boys and enjoyed playing soccer with them. He was an integral part of the Boston seminar team, and he leaves an empty seat that will be hard to fill.

Transtar Industries Inc. Enhances Standard TransProduct Offering

Transtar Industries, Inc., the premier provider of world-class drive-line solutions, announced that it has enhanced its standard transmission product offering by expanding inventory throughout its nationwide distribution network. More customers will now have access to standard transmission products from All Transmission Parts (ATP) with same-day service.

"The combination of our industry-leading brands gives us the ability to provide additional solutions for our customers," said Neil Sethi, president of Transtar's Driveline Distribution Group. "This move makes the most comprehensive line of quality powertrain products accessible to even more transmission repair specialists."

"We are truly excited at the opportunity this brings to our customers," says Tom DeMille, vice president of Sales and Branch Operations at Transtar. "With same-day delivery of parts to repair manual transmissions, shops can complete those jobs and get their customers back on the road in record time."

Corteco Introduces Aisin TF-60/61/62SN, VW 09G, 09M and 09K

Corteco is pleased to announce the availability of TransTec® overhaul kits for Aisin TF-60SN, TF-61SN and TF-62SN; and Volkswagen 09G, 09M and 09K applications that include the newly released TransTec® branded bonded pistons.

The new kit numbers are 2571, 2605 and 2606. In addition to the overhaul kits with pistons, TransTec

will continue to offer the original kits without pistons and the piston-only kit.

G-TEC Introduces Its New Family of SL Products



New Family of SL Products

G-TEC Inc. announces the immediate availability of its new family of AW SL solenoid cleaning and rebuilding products!

We're now your one stop shop for all your SL rebuilding and repair needs, from our Aisin Warner solenoid rebuild kits, complete with How-To DVD.

With our kits you will cut costs because they allow you to reuse solenoid cans and will reduce your inventory by using our universal bushings and sizing reamers.

G-Tec also offers the popular, self-lubricating thrust washers and 55-50 solenoid adjustment templates and sealing rivets to fine tune the job.

Prices? Always competitive! Give us a call at 417-725-6400 or visit www.g-tec.com.

Overhaul with Pistons	Overhaul with Pistons	Overhaul without Pistons	Piston-Only Kit (4 bonded pistons)
Aisin TF-60SN/VW 09G	2571	2526	4853
Aisin TF-61SN/VW 09M	2605	2596	4853
Aisin TF-62SN/VW 09K	2606	2553	4853

Sonnax Roadshow 2013: More Cities, More Seminars



Transmission rebuilders are taking their skills to the next level at the Sonnax Roadshow, a free series of valve body testing and reaming seminars touring the U.S. As the popular event enters its third year, Sonnax is offering more Roadshows than ever before.

Sonnax technical experts show you how to identify the root cause of transmission problems, and demonstrate repair techniques to restore or upgrade units.

The Roadshow's live testing and reaming station is the cornerstone of the seminar. Attendees see valve bodies tested and repaired, plus get a bird's-eye view of the details thanks to a large overhead video screen zoomed in on the equipment.

Most seminars will be held Tuesday and Thursday evenings at facilities provided by an authorized Sonnax distributor. A free dinner is served at 5:30 p.m., and seminars typically run from 6:30 to 8 p.m. Lots of technical handouts, testing materials, a vacuum test kit raffle, t-shirts, rebates and more will be given out.

Recon™ True Blue Certified Converters Featured in Video

Transtar Industries, Inc., the premier provider of world-class drive-line solutions, announced that it has released a new video that features Recon True Blue Certified torque converters. Backed by the industry-leading, three-year, 36,000-mile warranty, Recon by Transtar True Blue Certified torque converters are the best in the

business.

Transtar's new video highlights the state-of-the-art torque converter remanufacturing process that takes place at its two Recon manufacturing facilities in McKees Rocks, Pennsylvania and Rancho Cucamonga, California. Viewers can observe first hand the advanced process which certifies that each torque converter is the highest quality available — providing customers with peace of mind.

"Many of our customers have asked us exactly what 'True Blue



Certified' means," says Mike Cargill, product manager at Transtar. "Our new video defines True Blue Certified to a tee. Each True Blue Certified torque converter must pass our demanding, multistep series of tests and is built to outperform any other converter on the market."

"By utilizing the industry's most advanced rebuilding methods, we are able to offer the highest quality converter available," says Jim Berry, vice president of Marketing at Transtar. "This gives our customers confidence that when they install a True Blue Certified converter, they are installing the best."

Toe view Transtar's new video, visit the Transtar web site, Transtar1.com/torque, or Transtar's YouTube channel, youtube.com/transtarindustries. For further information on Transtar's torque converter product line, customers should contact their Transtar representative or call 855-Transtar.

The Tragic Loss of Scott Wayte Stuns Industry

Scott Wayte passed away on Friday, December 28, 2012, the victim of a hit-and-run driver. He was married to Denise Wayte for 26 years and had two daughters: Brooke (24) and Allie (19).

Scott was a longtime industry veteran who worked for his father-in-law, Dennis Marshall, at Precision International for over 15 years. He moved on to VTP Trans Parts in Brooklyn, NY in 2005, where he spent the last seven years as general manager.

"Scott was a great friend, co-worker, and father, who worked tirelessly for the benefit of VTP and his family," says Danny Apice of VTP Trans Parts. "Without him, I could not have achieved the success that we have. I was blessed with the experience of working with him for the past seven years. He was a special person who will be sorely missed by all that knew and loved him."

TransTec Introduces New Overhaul Kits for Hyundai A6MF1/2

Now available from Corteco, TransTec® overhaul kits DP2601 and DP2607 for the 6-speed, front wheel drive Hyundai A6MF1/2 transmission.

Model	Engine Type/ Size	Years
Hyundai		
Grandeur	2.4L, 2.7L	2009-on
Sante Fe	2.4L, 2.7L	2009-on
Tucson ix	2.0L, 2.4L	2009-on
Avante MD	2.0L, 3.5L	2010-on
ix35	2.0L, 2.4L	2010-on
Verna	1.6L	2010-on
i30	1.2L, 1.6L, 1.8L, 2.0L	2011-on
Elantra	2.0L	2012-on
Kia		
Oprius	2.7L	2009-on
K5, K7	2.0L, 2.4L, 2.7L	2010-on
Lotze	2.0L, 2.4L	2010-on
Optima	2.0L, 2.4L	2010-on
Sportage	2.0L, 2.4L	2010-on
Sorento	2.4L, 2.7L	2010-on
Carens	1.7L, 2.0L	2011-on
Forte	1.8L, 2.0L, 2.4L	2011-on
Soul	1.6L, 2.0L	2011-on

All of these kits and components are in stock and available for immediate delivery.

For more information, visit TransTec.com line at www.transtec.com.

New TransTec® iPhone App Simplifies Identifying Transmissions by Vehicle



New TransTec® Transmission-by-Vehicle iPhone app identifies automatic transmissions in virtually any vehicle in the world.

Transmission professionals can now identify automatic transmissions in virtually any vehicle in the world with a new, TransTec® Transmission-by-Vehicle iPhone app now available on the App Store.

Developed specifically to eliminate confusion over look-alike transmissions, the iPhone app identifies transmissions by vehicle make, model, year, and engine.

The Transmission-by-Vehicle app includes global coverage through the 2012 model year, so you can select BMW, for example, to learn that a 2007 BMW 3 Series with a L6 3.0L engine has a 5-speed, rear wheel drive transmission (model 5L40E). The new iPhone app is continually updated so users always have access to the most current and comprehensive vehicle listings.

The new TransTec® Transmission-by-Vehicle app is free of charge and can be used on any iPhone, iPad, or iPod Touch. To download the Transmission-by-Vehicle app, visit: <https://itunes.apple.com/us/app/corteco-transmission-by-vehicle/id548638200?mt=8>.

JASPER Announces New Corporate Leadership Positions

Jasper Engines & Transmissions is pleased to announce these changes

within the company's leadership positions:



John Schroeder



Joe Haug



Mark Balsmeyer

John Schroeder has been named vice president of Drivetrain Manufacturing. John will coordinate the Transmission Divisions at Jasper and Crawford County, Indiana, and Willow Springs, Missouri, along with the Differential Division at the Jasper facility. He has served in the People Department (Human Resources), and was division manager of Crawford Transmission and the Jasper Production System (JPS) over his 12 years with JASPER.

Joe Haug has been named manager of the Transmission Division at the Crawford County facility. Joe spent many of his 33 years within the Transmission Division prior to becoming a group leader at Crawford many

years ago.

Mark Balsmeyer has been named director of the Jasper Production System (JPS). JPS is a combination of JASPER's workforce and the processes and systems that guide the company's remanufacturing procedures. Mark will lead a workshop team in early 2013, along with coordinating future workshops and Continuous Improvement initiatives. During his nine years with JASPER, Mark has managed the Willow Springs and Crawford County Transmission divisions.

"As JASPER continues to grow and diversify into other opportunities, we will continue to look for leaders with cross functional experiences within our company to take on additional responsibilities," says Zach Bawel, JASPER president and chief operating officer. "These individuals have proven themselves within other roles with JASPER."

With these changes, JASPER Vice President of Production Mike Schwenk will shift his focus to spend more time leading several support divisions within the company.

Sonnax 48RE Six-Tab Planetary Thrust Washer



Sonnax 48RE Six-Tab

The rear planet thrust washers in Chrysler 48RE transmissions are high-wear items, which generate large amounts of debris.

Sonnax Kryptonite, six-tab thrust washer, 22700GT-01, is a PTFE-coated, drop-in replacement part that's more durable and creates less break-in wear debris than bi-metal thrust washers.

Visit www.sonnax.com for more information.

TEMCO Announces the New Large Capacity T60 Parts Washer



TEMCO Industrial Parts Washing Solutions of Oklahoma City, OK, has announced the introduction of its newest generation of large capacity industrial parts washers.

The TEMCO Model T60 has an amazing working height of 96" and a 60" diameter turntable that will support a load capacity of 5000 lbs. TEMCO has released this new model T60 in either carbon or stainless steel.

The T60 pictured is the 100% stainless steel version and is bound for TIMKEN Bearing of Canton, OH. TIMKEN Bearing plans to use their new T60 to degrease large steel die rollers and other large steel manufacturing components.

To learn more about the new T60, or any of TEMCO's growing family of industrial parts washing solutions you can contact TEMCO directly and talk to an industrial parts washing solutions specialist at 800-245-1869 or email any questions at temco@washparts.com.

Trans Tool, LLC Purchases A To Z Tools

Continuing its strategy of delivering exceptional and innovative tools for the transmission, engine, and exhaust repair industry, Trans-Tool, LLC has agreed to acquire A to Z Tools. A to Z Tools is 100% owned by Trans-Tool, LLC of San Antonio, Texas.

"A to Z Tools reflects the extraordinary passion, vision, and belief in qual-

ity products delivered to the marketplace by its late founder, Bill Schultz," said Bob Safstrom, president and owner of Trans-Tool, LLC. "This transaction combines a solid portfolio of equipment, tools, aqueous washers, and shop equipment, with additional complimentary engine and exhaust repair tools, to generate sustained growth and drive significant, long-term value.

"For 25+ years, Bill Schultz and I were not only strong business colleagues, but, most importantly, friends. One of my greatest pleasures has been to see A to Z Tools passed from one generation to the next. I am excited about this transaction, and proud to own and carry on the name of A to Z Tools for my friend," said Safstrom.

Trans-Tool, LLC will proudly continue to serve A to Z Tool's customers, including mobile tool dealers, warehouse distributors, and private label accounts. All future A to Z Tool orders should be sent to Trans-Tool, LLC directly for fulfillment.

Trans-Tool LLC is located at 110 Connelly, San Antonio, Texas, 78203; phone 800-531-5978. Or visit them on line at www.trans-tool.com.

Damaged Input Reluctor Sets P0716 or P0717 on 4L70 Transmission

Be extremely careful handling the forward drum/input shaft on a 4L70 series transmissions. These input shafts now include a reluctor for the input speed sensor, and that reluctor is made of a soft metal; it's easy to dent or scratch the reluctor.

If you damage the input shaft reluctor, it could cause the computer to set one of these codes:

P0716 — Input speed out of range

P0717 — Loss of input speed signal

Early units didn't have an input speed sensor in the pump stator, so damaging the reluctor during a rebuild or repair wasn't an issue.

For more, visit Precision International at www.transmissionkits.com.

Precision Kits Include Updated 4L65/4L70 Separator Plate

GM had an issue with debris — usually case aluminum flashing —

getting to the shift solenoids on their 4L65 and 4L70 transmissions. This would set code P0756: shift solenoid B performance. And it could occur on transmissions with fewer than 5000 miles on them, while still covered under warranty.

In earlier units, the separator plates included two flat screens. The new plates now include a third screen to protect the shift solenoids. These screens aren't serviceable separately, as they and the gaskets are bonded to the separator plates.

Precision International has released a separator plate to fit all 4L65/4L70 models. Look for this separator plate in our newly released KP33900N and KP33900NX overhaul kits.

For more, visit Precision International on line at www.transmissionkits.com.

Transtec Introduces New Kit for Jatco JF613E 2007-up

Just released! TransTec® brand overhaul kit DP2594. This kit services the 6-speed Jatco JF613E transmission found in these vehicles:

Model	Years
Outlander	2007-up
Nissan X-Trail	2007-up
Murano	2007-up

DP2594 includes original equipment NOK axle seals that are available only from Corteco.

Featured Components

TransTec#	Description	Years
B11580	Duraprene pan gasket	07-UP
B29231	Converter hub seal	07-UP
B37204	Left and right axle seal	07-UP
3565	Sealing ring kit	07-UP

All of these kits and components are in stock and available for immediate shipment.

Duraprene® is a registered trademark of Freudenberg-NOK Sealing Technologies.



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Precision of New Hampton Inc	(641) 394-5955
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Miami Transmission Kits	(305) 885-7355
ART Auto Sport Unlimited Remanufactured Transmissions	(616) 748-5725
Weller Auto Trucks	Has many different shop locations
Instaclean	(928) 680-4445
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Trans-Pac Motor Parts	(310) 637-9156
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HELP WANTED: Due to increased sales, we have an opening for an experienced, detail oriented rebuild. Clean, organized shop, top pay. Visit www.certifiedtrans.com/employad.html for more information. Follow the links for video tour of our shop and job application. (805) 852-7700.

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HELP WANTED: Well established family owned and operated Transmission & Auto Repair Center since 1992 is looking for experienced Service Writer. Candidate should be motivated, full of energy, a team player. Must have experience with Microsoft computer. Contact Mike (661) 350-0171 – Submit resumes to noriega327@yahoo.com or apply in person Monday thru Friday: 9am – 4pm or Saturday 9am – 12pm at Affordable Transmission & Auto Repair Center. We are located in the Palmdale/Lancaster area at 461 East Columbia Way (Ave. M) www.avautorepaircenter.com. **ATRA Mbr**

HELP WANTED: Transmission Builder- established local and operated transmission shop in business for 20 plus years. Five day work week, competitive pay, benefits, vacation time. Shop clean and spacious with the latest equipment and tools; located in Rapid City, South Dakota. Email resume to loganstrans@midconetwork.com. **ATRA Mbr**

HELP WANTED: Busy transmission shop in North Jersey seeking experienced installers, rebuilders, and outside sales reps. Five day work week, modern facility, health benefits available. Please send cover letter and resume with references to: fixin-trannys@gmail.com. **ATRA Mbr**

HELP WANTED: ATP is looking to hire an experienced standard transmission core purchaser. Dave mentioned that Gears magazine has free hiring ads and you probably have a set format/verbiage for this kind of role. The only thing we thought this individual should have is a thorough understanding of standard transmissions, and connections into the core industry and hopefully OE contacts. The location to be determined once a candidate is found. Contact would be jcraddock@transtar1.com.

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HELP WANTED: Calgary, Alberta Canada – National Franchise looking for qualified transmission rebuild. Must have at least 3 years experience. Excellent salary and benefits for the right person to join our growing team. Call (403) 287-3400.

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HELP WANTED: Automatic Transmission Technical Directory – Large transmission remanufacturing company seeking qualified individual to manage, supervise and direct a team of 10-20 builders. Competitive pay, Monday – Friday. Send resume to: novatrans@cfl.rr.com. **ATRA Mbr**



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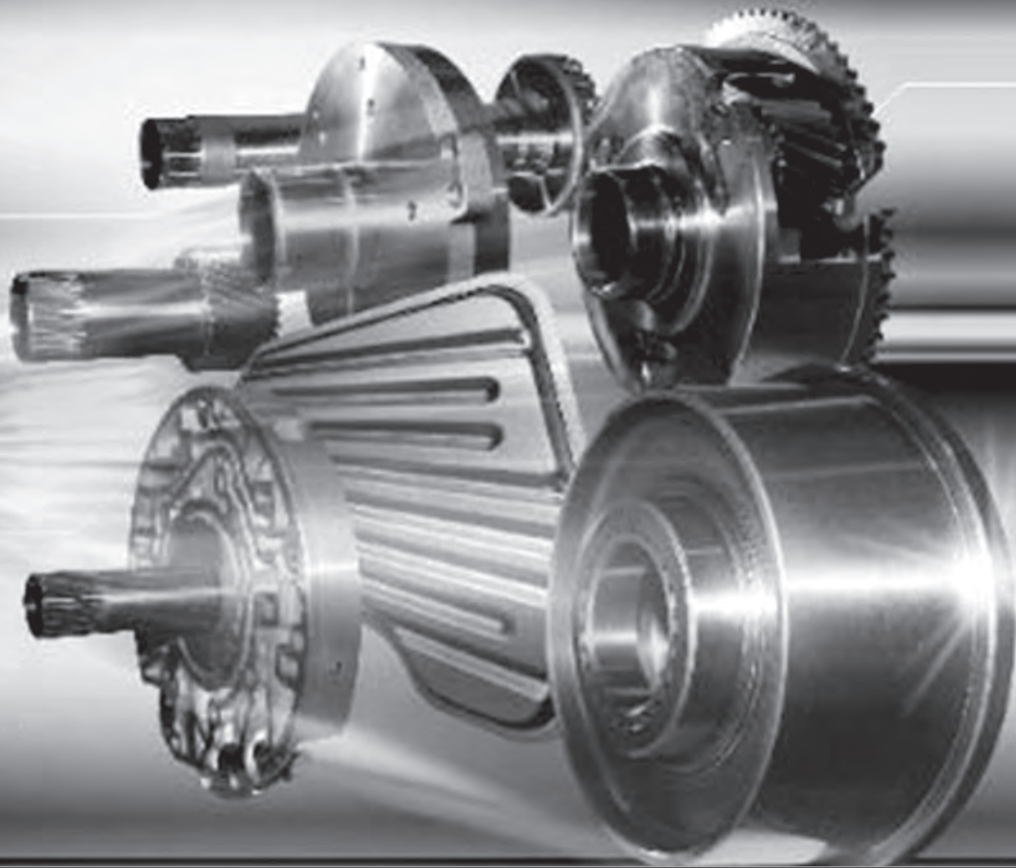


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