A Fast Fix for the Allison LCT 1000
A Flash From the Past
4F50N Slips in 2nd or 3rd
Sonnax Introduces TF-60SN* Solutions!

*Fits BMW 6F21WA & VW/Audi 09G, 09K, 09M.

More information is available at www.sonnax.com

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O
ver the last year or two we’ve talked a lot about the concept of Need-Do. We discussed it in the last issue of **GEARS**.

But the Need-Do term creates a specific problem. Because, to understand the concept, it’s important to understand what we mean when we use the word *need*.

To most transmission shops, the term *need* as practiced throughout the ‘80s and ‘90s was based on the idea that, when a customer has some type of transmission problem, his need is to get it fixed. And, in many cases it would take more than just a simple patch job; for any lasting solution, the customer needed his transmission rebuilt.

And that was the challenge: to convince the customer that he needed a rebuilt transmission, and that you were the one with the expertise to do it right. The *need* in this scenario is the transmission; it’s what the customer needs to get back on the road, trouble free and with peace of mind. There are books, videos and training classes available that’ll cover everything from phone techniques to the final delivery, all for the purpose of answering this one, simple question: How do we sell the product we offer?

Sales technique is a common discussion topic on ATRA’s *What’s Working* forum, and in many cases the discussion gets framed as “here’s what works for me.” Sometimes there are disagreements on what works.

As various sales techniques are bantered about, the implication of sales *ability* may enter the discussion. These discussions have benefited a lot of shop owners and helped them find ways to sell more work. But they’re still sales techniques based on “broken car = need transmission.”

This is where we’re taking a radical departure in our use of the word *need*. Need no longer refers to a specific repair; in fact, as far as our use of the word goes, no one needs a rebuilt transmission.

For our purposes, need addresses a very personal issue. It’s not the transmission itself; it’s about how that transmission problem affects the consumer. For some people that need involves getting to work every day. For others it’s about mobility… freedom… even security. The transmission problem may be standing in the way of that need, but the ultimate need is far more personal than a pile of nuts and bolts, or bands and clutches.

For years, advertisers have been using a similar concept for selling their products. They call it the *benefit*. Sure, one laundry detergent might get your whites whiter or your colors brighter. But in the end, the benefit is about more personal issues: You’ll be proud of yourself… your family will love you more… the neighbors will have greater respect for you… or you’ll have more money left after buying their product. The true benefit is always more personal than just how well their detergent cleans your clothes.

That’s what we mean when we talk about the *need* in Need-Do. It’s about discovering the personal needs of your customer (now caused by the broken transmissions), and doing it for him.

What’s even more important to consider is that one size rarely fits all; that one customer’s need often won’t have any interest to another customer. There are regional differences between customers and their needs, and even between individuals who share similar backgrounds.

I was recently talking to John King, an ATRA Member with two shops in the Portland, Oregon area. John came to last year’s Expo and went home with a greater appreciation for identifying the needs of his customers. He decided to make a real effort to discover what those personal needs might be.

What John discovered was that his customers’ needs tended to vary greatly between his two shops. In one shop the customers’ needs were usually cost-oriented: Most of those customers were looking for the lowest price, period. But in the other shop, the average customer was more concerned with job quality and warranty issues. Price was secondary for them.

Recognizing these differences enabled John to use entirely different sales procedures for his two shops… procedures that took the customers’ individual needs into account.

The lesson is that one solution won’t fit every shop. What works for a shop in New York City may not help at all in Salt Lake City. As John King discovered, there can be dramatic differences between the needs of customers who are separated even by just a few miles. You just have to figure out what those needs are.

This important consideration, and how to address it, is your *need*. Your *do* will be waiting for you at Expo: The management track will centered around examining specific techniques for identifying your customers’ needs, and discovering ways to address them. I look forward to seeing you there.
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Most Duramax trucks are bought to do work. Most of the time they do and they keep doing it for a long time. Occasionally, one will fail due to broken 4X4 extension housing. When this happens, you lose forward and reverse operation, and some oil, too.

To repair this, you’ll need a new or preferably updated 4X4 extension housing (29536309). GM and Allison recommend you repair this with the transmission removed. The recommended service and repair information is available from Allison, Alldata, OnDemand and some GM shop manuals. The obvious reason is to place the unit with the bellhousing down, to make it easier to install and inspect the unit and adjustments for the B5 clutch and geartrain endplay.

In addition, there’s also the possibility of finding other parts that are damaged or worn, such as worn planet washers, cracked or worn thrust washers, or glazed frictions. Until something like the extension housing breaks, you
may never know what other damage may be lurking inside. These transmissions can withstand a lot of abuse and still operate correctly, even with bad parts.

Since every situation is different, you’ll need to consider the damage you can see and the damage you can’t (such as the P2 planet, C4 clutch, C5 clutch, intermediate shaft and related thrust washers) that could be affected. This may be a good time to suggest other upgrades or a complete overhaul.

Take a look at the back end or the geartrain and decide if an in-vehicle repair is acceptable (figures 1, 2 and 3). The following procedures could be used to install and set up a replacement 4X4 extension housing with the main transmission housing mounted in the vehicle.

Keep in mind the C5 clutches, return springs, and the P3 planetary thrust bearings will be the critical items to examine during reassembly. Check the C5 clutch clearance if you’re changing the C5 clutch components or the C5 clutch apply piston. Perform the geartrain endplay check and adjustments with the transmission assembled.

- Position the truck so the front of the vehicle is about 2”–4” lower than the rear.
- Move the shift selector to drive. (Note CAUTION)
- Support the main case so you can raise or lower the transmission as needed.
- Remove the transfer case from what’s left of the extension housing.
- Raise the rear slightly.
- Carefully remove whatever is left of the extension housing, which usually includes the output shaft and P3 planet carrier.
- Remove the extension housing bolts to remove the remaining part of the extension housing, along with the C5 apply piston. The C5 return spring assembly and park pawl will try to interfere with this, so watch them.

Figure 2: View of back end with everything in place.

Figure 3: View of back end with things out of place.
CAUTION — Be careful with the park pawl while removing the extension housing. It will help to move the shifter to drive. The park pawl may try to come off with extension housing. At the same time, the return spring, which is anchored in the rear of the case, will try to hold onto to the extension housing. To avoid breaking the return spring, unhook the spring from the park pawl. If you try removing the spring from the rear of the case, the spring will probably break (figure 2).

Before going any further, examine the back end of the unit. If it looks like figure 2, it may be your lucky day. If it looks more like figure 3, the intermediate shaft, P3 sun gear, or P2 ring gear have shifted farther back. You will need to check for mislocated thrust bearings or damage (figure 4).

NOTE — Figure 5 shows the rear of the LCT with as much of the geartrain as can be removed from the rear of the case.

Depending on the damage, you should also remove the P3 planet carrier, bearings, output shaft, and C5 clutches and inspect them for damage or debris.

Once these are out of the way, inspect the P3 sun gear and ring gear, main shaft, related bearings, case, park pawl, etc., for damage or further problems. Use your judgment to decide if any other internal parts have been damaged.

There are some things to check before reinstalling the housing, start with the C5 clutch endplay: The endplay is based on the distance between the reaction plate at the back of the C5 clutch stack and the rear flange at the rear of the case. If you’re able to use the original clutch stack and the C5 apply piston, the clutch clearance will be the same.

If you’ve changed the C5 apply piston, make sure the height above the extension housing is the same as the original. If so, you’ll have the same clearance as before. If you’ve had to change any of the C5 clutch stack or the apply piston height is different, you should measure the distance from the clutch reaction plate to a straightedge across the rear flange of the case (figure 6).

The only procedure we can’t perform using the factory method is the endplay. Technically the endplay is checked with the unit assembled and positioned with the bellhousing on a stand. To check it, you have to pry the PTO gear up and down, with a dial indicator measuring the input shaft movement. It should be between 0.0110"–0.0610".

Figure 4: View of P1/P2 planet assembly and thrust washers.

Figure 5: View of LCT 1000 with rear geartrain removed.
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Here’s an alternate method:

- Temporarily assemble the planet assemblies and intermediate shaft with the rear gasket in the case.
- Install the 4X4 extension housing with the C3 planet carrier and output shaft installed. Don’t tighten the output shaft flange nut.
- Remove PTO cover or the Turbine Speed Sensor.
- Use a rubber or plastic hammer to tap the output shaft forward, to seat or zero-out the shafts, thrust bearings and washer clearances.
- Set a dial indicator against the end of the output shaft and zero it.
- Use a pry bar to pry the PTO gear back to get a measurement.

Adjust the endplay by changing the selective shim between the output shaft spacer in front of the ball bearing, inside the 4X4 extension housing.

- Remove the components used to check the endplay.
- Install the geartrain, clutches and shafts.
- Install the correct endplay washer.
- Install the C5 spring retainer with plenty of assembly grease to hold it.
- Install the park pawl, etc.

The back of your LCT 1000 should look like this (figure 7). There isn’t much more to say, except tighten the output flange nut with pin drive wrench J 43769 to 40-50 ft-lbs.
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Ford introduced the 5R55W/S in 2002, and by now we’ve become pretty familiar with the ins and outs of this unit, some examples are, slipping in 2nd and 5th gears, or binds on the 2-3 shift. We know to check the servo pin bore for wear and repair it with a sleeve (figure 1).

Or the famous, no engagement, slow engagement, or pump noise. Check the blow-off valve in the pump and replace it or update it with an aftermarket kit (figure 2).

The ever troublesome, multiple codes and missing gears? Look for a broken circuit in the solenoid block (figure 3).

And don’t forget the valve body: It’s important to inspect the valves and bores very closely for wear (figures 4A and 4B).

The mystery front seal leak turns out to be oil coming from the vent. You can plug the front vent with a cup.
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plug (figure 5; refer to bulletin 1164).

As time passed this unit has presented its share of problems; you may have experienced some we haven’t touched on. But there’s one problem you might not have heard about yet:

In 2000 Ford introduced the 5R55N. It was only used in the 2000-2002 Lincoln LS, 2002 Thunderbird, and the 2000-2002 Jaguar S-type. It’s a lot like the 5R55W/S, except the N model has an intermediate clutch; the W/S models don’t.

The Problem

This is how the problem usually shows up: You’ve just finished a rebuild on a 2001 Lincoln LS, and now it has erratic shifts, no 3\textsuperscript{rd} gear, and is setting codes P0733 and P0745.

The source of the problem? Inside the case, under the valve body, there’s a seal with a spring. What most people don’t realize is you have to use a punch and stake the seal to the case. You’re probably wondering, “Stake it? Doesn’t the spring hold it in place?”

No, it doesn’t. Here are the exact instructions from the Ford reference manual:

**CAUTION:** The intermediate clutch fluid inlet tube seal and spring must be correctly seated in the case. Failure to correctly seat these parts will cause an internal fluid leak and transmission damage. Use a drift punch to install and seat the intermediate clutch fluid inlet tube seal and spring into the case (figure 6).

Why It Happens

This problem starts during tear-down, after removing the valve body.

The intermediate clutch fluid inlet tube seal and spring usually just fall out of the case. This could lead you to believe the spring holds the seal in place.

It doesn’t.

Time and heat have caused the seal to shrink, and that’s where the spring comes into play. The spring is there to hold the seal tightly against the clutch housing.

Some techs have had this transmission in and out of the car two or three times before they called the ATRA HotLine for help, not knowing this small detail is something that can ruin
your day… or even week.

**The Fix**

To avoid this problem, use a punch to stake the seal into the case.

After you push the seal down with your thumb, seat the seal with a punch. The seal will move about 1/8”–1/16” more, and that’s all it takes!

So if you have a 5R55N with erratic shifts, no 3rd gear, and codes P0733 and P0745 after a rebuild, make sure the intermediate clutch fluid inlet tube seal and spring are fully seated in the case.

With this tech tip you will be on top of what’s “N” with the 5R55N. And that’s not just smart, that’s “Street Smart.”
The vehicles involved are 2004-up Fords equipped with a 4F50N transaxle. The complaint is excessive slip in 2nd or 3rd gear; sometimes both.

Upon disassembly, you discover the 2nd or 3rd gear clutches are badly burnt. In some cases the transmission continues to slip severely after a rebuild, and when you remove the unit for a second inspection, the same clutches are burnt in a short period of time.

The repair for this problem is the same as it was for the earlier AXOD transaxle: When the first AXOD transaxle came out, the 1-2 shift was a major problem. So much so that most kit suppliers added a 1-2 Capacity Modulator...
Valve replacement spring with their overhaul kits.

Well, the same spring will fix the newer, 2004-up 4F50N transmission. The AX4N transmission up to 2003 only had a 2-3 Capacity Modulator valve and spring (figure 2), while the AX4S has a 1-2 Capacity Modulator valve and spring (figure 3). The new 4F50N has both valves incorporated in the hydraulics for 2004.

The fix is still the same: Just replace the 1-2 and 2-3 Capacity Modulator Valve springs with the updated springs supplied by the aftermarket.

As shown in figure 1, both the 1-2 and 2-3 Capacity Modulator valves are in the same bore.

Remember to keep it simple and your repairs will be completed the first time.
At a time when cost cutting is everywhere and inventory reduction is on the top five list of what keeps you up at night; how can you be really sure that you are getting the best bang for your inventory/parts buck? At Seal Aftermarket Products we want you to be able to sleep well at night. We are focused on having those products on our shelf and offering fast order turn around time so that you can keep your inventory dollars to a minimum.

Seal Aftermarket Products division of Parker Hannifin Corporation supplies OE solenoids, hard parts, bushings, washers, kits, all kit components, bands, pistons, and some tools and we have been supplying these product groups to the Aftermarket for more than 30 years. Specializing in this broad range of product groups gives us further knowledge on the requirements of the entire rebuild as oppose to those who just specialize in one or two product group offerings.

Product Offering: Our product offering has changed over the years. Bryco by Carfel™ was known for offering the hard to find items. In 1995, we developed a Honda Bushing Installer/Remover Kit, part number 28999. We stocked so many of them that it took us a painfully slow process of ten years to sell them all. But then, in 2008, we began receiving calls asking for this kit again. The problem was we had already discontinued this kit because it was such a slow moving item. However, you explained to us that ‘now’ the bushings need to be replaced in almost every unit and
without this Honda Bushing Installer/Remover Kit from Bryco by Carfe™, it is a time consuming and difficult process to remove these bushings. So in September of this year, we will once again start shipping part number 28999, the Bryco by Carfe™ Honda Bushing Installer/Remover kit.

We heard you when you said to us that, “Not all parts are created equal.” Our patented reinforced 4L60E/4L65E sunshell gear called The Beast™ continues to be a popular Aftermarket product solution in spite of all the substandard imitations that infiltrated our industry. Investing in this part with your 4L60E/4L65E rebuilds saves time and money especially for those customers of yours who tow, drive off road, or are high performance buffs.

The acquisition that merged our Roadmaster™ and ProSelect™ brands brought together solenoids and hard part products and experience. As a direct customer of Ford OEM Components, Seal Aftermarket Products has access to a wide range of these OEM parts. And by your request, we bring in whatever it is that you need from Ford.

In the past three years there have been many changes with regards to the manufacture and supply of solenoids and hard parts. Seal Aftermarket Products considers it our obligation to the industry to continue to offer difficult and hard to get solenoids and hard parts.

Known by transmission professionals as “The Beast” for its remarkable weight and strength, the ProSelect sungear shell has been redesigned to eliminate cracking and breaking. In fact, our strengthened front is even better and stronger than OE sungear shells designed for TH700-R4, 4L60E and 4L65E transmissions. We've strengthened and reinforced the neck collar area with heavier and thicker material to eliminate fatigue failure on the shell. What's more, transmissions protected by The Beast won't lose Reverse or Second and Fourth gears as they frequently do with the OEM sungear shells.

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You have told us that quality, price, and availability are your primary concerns and today we are listening. Seal Aftermarket Products continues to adapt to the needs of today’s master technician. When you told us you wanted the o’ring hook and pick tool, we made it available (part number 99023A). When you told us you needed an A604 5 pinion planet set, we made it happen (part number K92749A). We are listening when you tell us that you need solenoids for the TF60SN/09G transmission. We are working to supply the items you need when you need them. We are here to help make your job quick and easy.

Seal Aftermarket Products has two customers; the wholesale distributors and the installers/ rebuilders. We have to achieve or exceed the expectations of both customers and sometimes what is important to the end user is not what is important to the wholesale distributor.

Tristar Group is the largest production rebuilder in the Middle East and the first in the Kingdom of Saudi Arabia to specialize in Automatic Transmissions. According to Scott Dodson, Vice President of Operations, “Honesty is the most important quality he wants to have in a vendor.” Key to any vendor-customer relationship is ‘trust and honesty’. Scott trusts that his orders will be on his dock when requested. Tristar’s global business requires a high level of service. “Parker’s service levels have been on mark for well over the last 24 months; less back orders; more communication. They are one of my top 3 vendors” according to Dodson. There are times when Scott needs something rushed or something out of the ordinary to happen quickly; Seal Aftermarket Products provides that extra service for him which in turn makes it easier for him to do business. Tristar currently has 12 locations along with production and retail facilities and has plans for expansion.

Capital Core, President and CEO, Jay Shingala, “I try to put myself in my customer’s shoes and figure out what kind of products or services would help me out? What I like about Seal Aftermarket Products is that you send us the product bulletins and Tech Sheets so that we have the information in our hand to help our customers.” Jay wants no back orders, short lead times, clear and concise product information, and prices that are set and won’t change frequently or without notice. Jay stresses the fact that we are all connected in this industry and our successes depend on each other; “Everybody is busy and response time should be within a day. Whenever I have a problem it is real easy to get a hold of someone at Seal Aftermarket Products. Capital Core and Seal Aftermarket Products, we do work hand in hand; there have been
times when I have had special requests and Seal Aftermarket Products comes through for me.” Capital Core currently has locations in Columbus, Ohio, Dayton, Ohio, and their newest location is located in Pittsburgh, PA. “I am one of the youngest owners in this industry and I have to create a business that will sustain my family and my employees for a long time. The industry will not be as good as it was in the heyday of the 80’s or 90’s but it will get better than it is today. Jay Shingala states, “I am building and growing my business to last many, many years.”

Whatever It Takes Transmission Parts (WIT) has 23 locations currently and has no intention of stopping there. In WIT’s newest location many of the customers were already using another brand of overhaul kit when WIT opened. WIT’s sales staff stood behind the Toledo Trans Kit (TTK) brand and now many of those customers have happily converted to TTK with no objections or issues. WIT President, Kenny Hester mentioned being pleased during a combined group kit audit when the results of the audit reflected that the TTK kit offered superior premium rubber compounds. According to Kenny “premium quality and 100% fill rates are the most important things a vendor should have. The toughest times for WIT in regards to TTK Kits were during the Seal Aftermarket Products acquisition. There is not much pain now, Seal Aftermarket products is a whole lot easier to work with.” A big portion of WIT’s growth has been because of the products and services that come from Parker.

So how can you be really sure that you are getting the best bang for your parts/inventory buck? Demand a quality product from a company who can deliver that product when you need it. Insist on a brand by Seal Aftermarket Products; we have a proven record of over 30 years of listening and responding to the needs in the Automatic Transmission Aftermarket and we have no plans stopping now. Seal Aftermarket Products, a company you can count on.
Introducing Ford’s Intelligent All-Wheel Drive System:

During the past three years, while not working on the ATRA Technical Hotline, I’ve been researching four-wheel drive and all-wheel drive systems for upcoming seminars and EXPOs. In the March 2009 issue of GEARS Magazine, I introduced Chrysler’s Interactive Torque Management System (ITM 3e). In this issue we’ll take a look at Ford’s new Intelligent All-Wheel Drive System.

Ford’s new all-wheel drive systems are referred to as an Intelligent All-Wheel Drive System or I-AWD, and are found in the Ford AWD Escape (figure 1), Ford AWD Five Hundred (figure 2), Ford AWD Freestyle (figure 3) or the Ford AWD Flex (figure 4), to name a few. These AWD systems are always active, require no input from the driver, and don’t have a mode-select switch. These systems combine transparent, all-surface operation and are capable of handling all road conditions, including street and highway driving, as well as off-road and winter driving.

The I-AWD system continuously monitors vehicle conditions and automatically adjusts the torque distribution between the front and rear wheels. During normal operation, most of the torque from the transmission is sent to the front wheels. If the system detects wheel slip between the front and rear wheels, or if you operate the vehicle under heavy throttle conditions, the I-AWD system will increase the torque to the rear wheels to prevent or control wheel slip.
Known by transmission professionals as “The Beast” for its remarkable weight and strength, the ProSelect sungear shell has been redesigned to eliminate cracking and breaking. In fact, our aftermarket Beast is even better and stronger than OE sungear shells designed for TH700-R4, 4L60E and 4L65E transmissions. We’ve strengthened and reinforced the neck collar spine with heavier and thicker material to eliminate fatigue failure on the shell. What’s more, transmissions protected by The Beast won’t lose Reverse or Second and Fourth gears as they frequently do with the OEM sungear shells.

If you want a sungear shell that’s better than the OE, ask for The Beast by ProSelect.

You’ll discover the real King of the Beasts
Ford’s I-AWD system consists of these components:

- Transfer case or Power Take-Off Unit (depending on application)
- Rear driveshaft
- Electronic on-demand coupler device
- Rear axle
- Coupler device control module, known as the 4WD Control Module (4WDCM)
- Differential Electronic Module (DEM) or an Intelligent Torque Control Coupler (ITCC) module, depending on application (figure 5).

**The Heart of the I-AWD system**

The heart of the Intelligent AWD system is the transfer case or power take-off unit (PTO) and an electronically controlled, on-demand coupler. The transfer case or PTO is a one-speed gearbox that attaches to the transaxle. The transfer case or PTO directs power to the rear driveshaft through a helical gear coupled to the transaxle differential case, a helical idler gear, a helical ring gear assembly, and a pinion set (figure 6).

The rear driveshaft transfers power to the electronic on-demand coupler, located on the rear differential, which in turn transfers the power through the rear differential to the rear wheels.

The on-demand coupling unit is attached to the rear axle, between the differential gear and the driveshaft. The on-demand coupler consists of mechanical and hydraulic sections that are driven by the driveshaft (figure 7).

**The Brains of the I-AWD System**

Depending on the application, the I-AWD System is controlled by the 4WDCM (Ford Flex), the ITCC module (Ford Escape) or the Differential Electronic Module (DEM) (Ford Five Hundred and Freestyle). The main purpose of the 4WDCM, the DEM or the ITCC module is to control the AWD function by distributing torque between the front and rear axles.

The I-AWD system isn’t sensitive to tire size differences between all four wheels and isn’t sensitive to being towed with one axle raised off the ground. The I-AWD system uses a CAN BUS system to communicate with the powertrain control module (PCM) and the ABS/ESP control module (ABS), and uses inputs from each of these systems to control the AWD system (figure 8).

**Diagnosing Ford’s I-AWD System**

Diagnosing the new Intelligent AWD system is pretty straightforward. Simply connect a compatible scan tool to the DLC connector and check for codes in the PCM and the ABS control module. Document all codes received from each of these modules.

Before starting your diagnosis of...
the AWD system, be sure to correct all codes in the other modules. PCM and ABS problems can and will interfere with the AWD system operation. After you’ve corrected any codes in the other modules, access the 4WDCM, DEM or ITCC module and retrieve codes from the AWD system. The following list of codes is what you might find in the 4WDCM, the ITCC module, or the DEM.

**Codes for the Differential Electronic Module**
- P0562 – System voltage low
- P0563 – System voltage high
- P0602 – PCM programming error
- P0606 – ECU short or open circuit
- P0932 – Hydraulic pressure sensor circuit
- P0937 – Hydraulic oil temperature sensor circuit
- P0939 – Hydraulic oil temperature sensor circuit low
- P0940 – Hydraulic oil temperature sensor circuit high
- P0960 – PCS A control circuit open
- P0961 – PCS A control circuit range performance
- P0962 – PCS A control circuit low
- P1886 – Oil pressure pump performance
- U0001 – High speed CAM communication fault
- U0121 – Lost communication with ABS module
- U2050 – No valid application for DEM

**Codes for the 4WD Control Module and ITCC Module**
- B1317 – Battery voltage high
- B1318 – Battery voltage low
- B1342 – ECU defective
- P1635 – Tire or axle out of range
- P1824 – 4WD clutch relay circuit failure
- P1825 – 4WD clutch relay circuit open
- U0100 – Loss of communication with PCM
- U0121 – Loss of communication with ABS
- U0401 – Invalid data received from PCM
- U0415 – Invalid data received from ABS
- U1900 – CAN communication bus fault

**I-AWD System Code Diagnosis for the DEM**

**P0562 – System voltage is low.** Check battery and charging system voltage. Verify all power and ground voltages are correct at the DEM connector. If system voltage is within specification, replace the DEM.

**P0563 – System voltage is high.** Check battery and charging system voltage. Verify all power and ground voltages are correct at the DEM connector. If system voltage is within specification, replace the DEM.

**P0602 – PCM programming error.** Attempt to clear code P0602. If code P0602 returns, verify all power and ground voltages are correct at the DEM connector. If voltages are within specification, replace the DEM.

**P0606 – ECU short or open circuit.** Attempt to clear code P0606. If code P0606 returns, verify all power and ground voltages are correct at the DEM connector. If voltages are within specification, replace the DEM.

**P0932 – Hydraulic pressure sensor circuit.** Check rear axle oil temperature sensor circuit. If circuit is okay, suspect a faulty rear axle oil temperature sensor.

**P0937 – Hydraulic oil temperature sensor circuit.** Check rear axle oil temperature sensor circuit. If circuit is okay, suspect a faulty rear axle oil temperature sensor.

**P0939 – Hydraulic oil temperature sensor circuit low.** Check rear axle oil temperature sensor circuit. If circuit is okay, suspect a faulty rear axle oil temperature sensor.

**P0940 – Hydraulic oil temperature sensor circuit high.** Check rear axle oil temperature sensor circuit. If circuit is okay, suspect a faulty rear axle oil temperature sensor.

**P0960 – Pressure control solenoid A circuit open.** Check ABS wheel sensor PIDs to verify the ABS module is transmitting the correct wheel speed to the DEM. Check for leaks from the active on-demand coupler. If no leaks
are found, check the PCS A circuit. If the PCS A circuit is okay, replace the DEM.

**P0961 – Pressure control solenoid A circuit performance.** Check ABS wheel sensor data to verify the ABS module is transmitting the correct wheel speed to the DEM. Check for leaks from the active on-demand coupler. If no leaks are found, check the PCS A circuit. If the PCS A circuit is okay, replace the DEM.

**P0961 – Pressure control solenoid A circuit low.** Check ABS wheel sensor data to verify the ABS module is transmitting the correct wheel speed to the DEM. Check for leaks from the active on-demand coupler. If no leaks are found, check the PCS A circuit. If the PCS A circuit is okay, replace the DEM.

**P1889 – Oil pressure pump performance.** Install a new active on-demand coupler oil pump. If code returns, install updated DEM kit #4C016, available from your local Ford dealer.

**U0001 – High speed CAN communication error.** Check high speed CAN bus system wiring and connection. Repair as needed.

**U0121 – Loss of communication with ABS module.** Check CAN communication system. Check wiring and connections. Check ABS module power and grounds. If CAN system and ABS module power and grounds are okay, suspect a faulty ABS module.

---

**Figure 7:** On-Demand coupler attached to rear differential.

**Figure 8:** The I-AWD system communicates with the PCM & the ABS modules.

**Figure 9:** 4WDCM connector terminal i.d.
As a dedicated transmission professional Rick Basta, owner of Transmission Kings, knows the secret to a successful shop is dependable performance and satisfied customers. That’s why he rebuilds with TransTec®.

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Owner of Transmission Kings
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U2050 – No valid application for DEM. Reconfigure the DEM using As-Built data.

I-AWD System Code Diagnosis for the 4WDCM and ITCC Module

1317 – Battery voltage high. Check battery and charging system operation. Repair as needed.

B1318 – Battery voltage low. Check battery and charging system operation. Repair as needed.

B1342 – ECU defective. Attempt to clear code B1342. If code B1342 returns,

---

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Introducing Ford’s Intelligent All-Wheel Drive System

Figure 10: On-Demand Coupler connector terminal i.d.

Figure 11: DEM connector terminal i.d.

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Together, we can enhance your Allison LCT 1000/2000 rebuild experience.

Parker is proud to be the only kit manufacturer to include in their Toledo Trans kit brand overhaul kit the output shaft retaining nut and the torque converter retaining bolts that are considered ‘one time use’ components. Also included in Kit Number T116002A is the filter magnet as it is extremely important in helping to reduce contamination from affecting the operation of the transmission. These kit enhancements combined with Parker components enhance your rebuild experience.
check the 4WDCM power and ground circuits. If the 4WDCM power and ground circuits are good, replace the 4WDCM.

**P1635 – Tire or axle out of acceptable range.** Check for correct tire sizes and tire pressure. Check ABS system for wheel speed sensor fault. If wheel speed sensor fault exists, repair as needed.

**P1824 – 4WD clutch relay circuit failure.** Check 4WD clutch relay circuit. Check active on-demand coupler circuits. If the coupler circuits check out okay, suspect a faulty active on-demand coupler or a faulty 4WDCM.

**P1825 – 4WD clutch relay circuit open.** Check 4WD clutch relay circuit. Check active on-demand coupler circuits. If the coupler circuits check out okay, suspect a faulty active on-demand coupler or a faulty 4WDCM.

**U0100 – Loss of communication with PCM.** Check the CAN communication system. Check PCM power and ground circuits. If the CAN communication system and the PCM power and ground circuits are okay, suspect a faulty PCM.

**U0121 – Loss of communication with ABS.** Check the CAN communication system. Check ABS module power and ground circuits. If the CAN communication system and the ABS module power and ground circuits are okay, suspect a faulty ABS module.

**U0401 – Invalid data received from PCM.** Check data coming from PCM. Check for data being out of range. Repair as needed.

**U0415 – Invalid data received from ABS module.** Check data coming from ABS module. Check for data being out of range. Repair as needed.

**U1900 – CAN communication bus fault.** Check CAN communication system, wiring and connections. Repair as needed.

I’ve included figures 9, 10, 11, 12, 13 and 14, to help you with your diagnosis. Refer to the appropriate service manual for your specific vehicle’s diagnostic routines.

Well, there you have it: a closer look at Ford’s new Intelligent All-Wheel Drive system. With a basic understanding of how Ford’s I-AWD system operates and a quick look at the diagnostic routines for this system, you should have no problem keeping those trannys rolling.

---

**Figure 13: Ford Escape I-AWD system wiring schematic**

**Figure 14: Ford Flex I-AWD system wiring schematic**
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There’s a lot riding on the quality and reliability of your work. That’s why you can’t take shortcuts when repairing a transmission. Whatever make, model or year you’re working on, Precision has the best parts and kits to fix it. All are cross-checked against the latest OEM specs (with changes noted and made). All are OE quality or better. And all are guaranteed to work. Plus, our huge inventory virtually assures immediate delivery.

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Search Engine Optimization move over... there's a tidal wave that's sweeping over and changing the face of marketing on all levels. If you aren't tapped into the amazing power of Social Networking for your business, you'd better get going. It's not too late because only a small percentage of businesses have figured it out.

The effects of the “buzz” about your business within the Social Networking communities has more to do with your Search Engine positioning than many of the old methods like keywords. The more links and visits to your web site and the greater the numbers of pages viewed, the higher your ranking will be in the Search Engines.

Social Networking isn’t just for the younger population. Baby Boomers are among the fastest growing segment of Social Networkers. In many cases they’re being forced into the new age of instant communication, if for no other reason than to stay in contact with their children and grandchildren.

The benefits are that you have the ability to reach millions of people with your message very quickly and at virtually no cost. The “word” about your company is being spread through the equivalent of good, old-fashion word-of-mouth advertising, delivered electronically via the web. The common vernacular is viral buzz because it spreads from one person to another exponentially... one person tells three, who each tell three more and that’s already 10; but it doesn’t stop or start there.

If you’re thinking your business is too small or too localized to benefit from the World Wide Web, think again.

There are now ways to target specific audiences in specific market areas. One concept is called Geo-Specific Targeting, in which you can even target specific zip codes. The Social Networking web sites and blogs allow you to target people by their personal interests or psychographics.

The keys are to employ well-designed strategies to tap into the various Social Networks with a commercial message that will attract people to your web site. You can have commercial web pages on popular social networks like Facebook, MySpace and Twitter. These pages should all link to your business’s web site, and to your blog if you have one.

Another opportunity exists with web sites like Blog Radio, where you can post interviews that showcase you or your business as the expert in your field. Users can tune in 24/7 to listen to information in a professional interview format that’s specific to the listeners’ information searches. This also links back to your web site.

The biggest drawback is that you’ll need to dedicate a few hours every week to keep the information on your Social Network current and to update your blog frequently... people won’t return to a blog that isn’t kept fresh, interesting, and doesn’t provide good information. It’s also important that you post messages on other blogs (with links back to yours) that are topical for your business.

You might be thinking, “Where am I going to find the time to do this?” One option is to use one of your staff to do it. You might even consider letting one of your kids do it... for them it’s a “no-brainer.” Another option is to outsource it to one of the hundreds of companies that are now offering customized Social Networking services. They can do everything from setting up your Social Network to maintaining it and keeping it fresh.
**Just Think - What if you had...**

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- A no-fault, nationwide warranty even on carryout units;
- The freedom to pay for them as you sell them?

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“We have used Certified Transmission for over 10 years. We have a great rapport with the CT staff. Their support and advice enhances the quality of repair that we provide for our customers. Our customers can count on quality transmissions, competitive prices, and an outstanding nationwide warranty.

CT’s shipments are speedy, giving us the ability to put customers back in their vehicles quickly. This is especially helpful when we get swamped. Our staff is also pleased because using CT Units relieves the pressure of having to be experts on every transmission we see.

I am happy to be a Certified Transmission Distributor because it makes life easier, we’re more profitable, and we now can offer more competitive pricing. With CT in our corner, transmission repair is now a satisfying and stress-free experience for everyone.”

Mike Hawkins (left), owner, and John Borgerding, service manager – Stagg Hill Transmission, Manhattan, KS

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responses are common at your shop?
1. Forget it. I’m going to get a used one for you to install.
2. Forget it. I’ll just tow it away.
3. I can’t afford that. Can you take payments?
4. I’ll have to talk to my wife first.
5. The car isn’t worth that much!
6. Just put it back together the way it was.
7. Can you fix it for less than that?
8. Can I get it done today?

Let’s get back to the flow of a typical job through your shop. The sale is made, the sale agreement signed, the warranty clarified, the time commitments agreed upon, the manner of payment established. Explain how you do all this.

What happens next?
• Do you install one of your own shelf units or do you instruct your builder to proceed with the job?
• Who orders parts, if you don’t have them in inventory?
• Do you ever use factory remnants? If so, when?

This is where you spell out anything about your rebuilding procedures you think are unique, or anything you insist upon for performance or durability. If you use a hot flush machine or a transmission dynamometer, explain the marketing benefits of these devices and the usefulness in reducing comebacks. Also explain the sales add-ons that you may use such as upgrades, coolers, or computer reprogramming.

The unit is built following the rebuilding procedures that we talked about in the last edition of GEARS. The R&R tech follows installation procedures as per his job description. Explain how these procedures were developed, including the safety concerns and avoiding costly accidents. Who now does the run up on the hoist and who does the final road test?

It’s time to meet the customer once again to deliver the finished product:
• What kinds of payments do you accept?
• How do you handle cash?
• How are credit card payments processed?
• What financing forms do you use, if any?
• Do you ask the customer to return after a few days for a recheck?
• Do you brief the owner about what to expect if modifications have been performed?
• How do you control customers’ final impressions of their business experience at your shop?

I know you’re happy; is your customer happy too?

Be Focused; Don’t Coast
The story about “how a typical job is processed through our shop” is, at face value, an easy one to write about because it’s an everyday event. Your procedures have evolved through time and testing so they actually work.

But don’t coast with this one. You’re writing about the procedures that are pivotal to the success of your business. Never assume the reader is familiar with what you’re talking about. Explain with equal candor the things that shouldn’t be done, along with the things that are central to success.

Another whole story has to be told about financial accounting. That’s beyond the scope of the present exercise. Presumably you are using one of the electronic accounting systems like Simply Accounting. If so, the reference manual for such systems will explain cash handling, accounts receivable/payable, sales processing, and financial reporting. If you’re using a manual system, you’ll need to describe how it works, because no one will be able to make sense of it other than the undaunted IRS.

Why You Have Sales Success
Let’s touch lightly on section 5 that reads: “What factors have led to our success in sales?” We’ve just discussed how you sell your work and that relates to this question. If you’ve acquired sales training, you’re better positioned to get correct prices for your work. If your reputation is well established, your pricing becomes a secondary consideration for your customer.

The larger issue is what part of the transmission market do you target? Is it wholesale and fleet business? If you’re after the full-priced, internationally-warranted, late-model business, this is an opportunity to share how you got there. Is it image? Is it trade affiliation? Is it reputation? Is it outside sales success?

For a few minutes think about how your shop compares to the competition. In an earlier article we defined your shop as distinct from the others. Now ask yourself why the customers who come to you choose you instead of the others? Be honest as you self-evaluate. What do you have the others don’t?

Future Plans: YES
Crystal Ball: NO
The next edition of GEARS will be the show floor issue at ATRA’s Powertrain Expo 2009. In that issue we’ll consider section 6: The future of my business, if I can have it my way.

Powertrain Expo has always been, and always will be, about forward thinking. The future success of your business depends on your ability to keep up with the changing technology; ATRA is your resource. But the future success of your business requires more than technical training. Here’s why:

If your business is a success, it’s because of you. Great! But you aren’t going to be there in the future for one reason or another. Who will your successor turn to for directions in running this business when you’re retired and on a cruise ship somewhere, or making your way through the “happy hunting grounds”? If you take the time to put an Operations Manual together, that’s you in hard copy form: You’re equipping the next-in-command to maintain the success of your shop.

Some of the readers of this series are shop owners who are counting on the value of their business to finance retirement. A potential purchaser will place little value on stock and equipment. Once I purchased the entire contents of a modern, 4-bay transmission shop for $1000! The real value is the proven, personal business plan that converts physical assets into a strong cash flow, through an effective team. You know how you do it: You must write it down.

PS: ATRA has arranged a “sky box” above the trade show floor during the upcoming Expo for those of us who want to discuss this project. I’m looking forward to meeting you there. This will provide an opportunity to share with each other as we plan our future. The ATRA What’s Working survey shows that the successful shops are those who plan.

Call or email any time if you need help with your project. Tel: (906) 440 4600 (Michigan), 705 942 2005 (Canada), mandmtransmission@shaw.ca.
Your Operations Manual: Missing Pieces

We’re getting close to sewing together the missing pieces of your Operations Manual. That’s the document your successor needs to take over where you left off. It’s also the document that contains the real value of your business, since all the rest is just a pile of stuff that brings in very little at an auction. You, and you alone, are the magic that converts that pile of stuff plus a managed team into a valuable cash flow. Your Operations Manual is you in hard copy form.

At the start of this series, I gave you 18 sections (mostly questions) to address and write about. If you complete this you’ll have a document that says what you do to make things happen. And just as important, it explains why you do things that way. You’re going to save your successor a lot of trouble and a lot of expensive mistakes by filling in all the blanks.

So, let’s review what we’ve covered so far:

1. What is a transmission shop?  ✔
2. Why am I in the transmission business?  ✔
3. Here’s what I know about my competitors.  PARTLY
4. Where is our shop, what does it look like, how is it equipped?  ✔
5. What factors have led to our success in sales?  PARTLY
6. The future of my business, if I can have it my way  □
7. The trade associations, colleges, AAA, etc. that think we’re cool  □
8. How a typical trans job gets processed through our shop  □
9. Who works here and what I expect each of them to do  ✔
10. How we price our work for different kinds of jobs  □
11. The minimum standards I insist on for work done here  ✔
12. How we warrant our work  ✔
13. The forms and computer systems we use  □
14. Advertising I like and advertising I don’t like  □
15. How we generate business from outside sales  □
16. Who we buy from, who we don’t, and why  ✔
17. Legal stuff: Incorporation papers, leases, contracts, tax documents  □
18. How the shop gets cleaned and equipment maintained  □

In this article we’ll focus on 8 and 10, since they’re related. In addition, we’ll provide some material for 5, since our success in sales is related to how we process jobs.

Don’t Ask, Don’t Tell; Just Write!

What you’re about to write for item 8 is the heart of your business. This material is critical for your successor to be able to pick up where you left off. Here you’ll show how you convert a sales lead into money in your pocket.

Start by describing how your potential customers get to you in the first place:

• Are most of your leads referrals?  ✔
• Do you have many drive-ins?  □
• What ad media generate leads?  □
• Who receives these leads at your business and who receives the customers when they show up at the door?  ✔
• Do you use a sales track, and if not, how do you shift the initial contact from a question/answer dialog to a commitment to show up for an initial inspection, diagnosis and estimate?  ✔
• What kind of dialog takes place between you and the customer during the initial road test?  ✔

I don’t want to limit your descriptions here, but I also don’t want you to lose momentum. Tell the full story about how you secure that potential customer as a cash customer.

Once the customer has agreed to do business with you and the vehicle is on your hoist:

• Do you use the RDI method as a sales procedure (remove/dismantle/inspect), or do you use flat pricing?  □
• Who removes the unit now and what requirements do you have regarding the R&R procedures?  □
• What if your technician notices a bad mount, flywheel, U-joint, or cooling lines — would that info get reported?  □
• Just think about what you’d be telling a new R&R tech if he were doing this job for the first time and you were standing there beside him. Write down what you’re thinking.

At some point the customer has to be brought in for the sales presentation. This is the subject of section 10 — How we price our work. Do you do this as a show-and-tell event or do you sell the work over the phone?

Most of us use computer-produced estimates to present to customers, since it implies an impersonal, objective tally rather than a questionable scribbled quote. How do you do it?

• Do you use a time guide for labor charges?  □
• Do you offer alternative services?  □
• What formula do you use for pricing jobs?  ✔
• Are some jobs flat priced and others priced by parts and labor?  □

The Business Sanctuary

We’re now in the inner sanctum of your business system: the “Sales Room.” There’s nothing more central to the heart of your business than what goes on in the Sales Room. Describe how you or your sales person performs. You must disclose, in complete detail, everything you know might happen as you present your sale. You’ve been there hundreds of times before; your successor hasn’t.

Here are some familiar cases of customer response to your sales presentation. How do you handle each one? What other
When we left off the last time we were discussing the transaxles’ output components and how to diagnose them. In this segment we’ll look at scan data and some diagnostic strategies to help isolate issues with these units.

Like other GM transmissions, diagnosis requires a quality scan tool. With the 6T70/6T75 this is even more important, as the need to access scan data is critical. Unlike other GM transmissions you’ve become accustomed to working with over the years, the 6T70/6T75 internal electrical components aren’t hardwired to the rest of the vehicle via the transmission harness.

Many technicians struggle with how to interpret the information on their scan tool, and how to use that information to help diagnose their specific problem. With that said, let’s look at the scan data you’ll see on the 6T70/6T75 applications.

**What 6T70 Scan Data Means**

1-2 Shift Time, 2-3 Shift Time, 3-4 Shift Time, 4-5 Shift Time or 5-6 Shift Time — Indicates the actual time it took to complete the last adaptable shift. This value will change only if an adaptable shift occurs. This means the information stored can only be used if the shift you’re monitoring is adaptable. If not, the TEHCM won’t attempt to address the hard or slipping shift you may be experiencing.

Calc. Throttle Position — Displays a (CTP) calculated throttle position value. This is determined by comparing the accelerator pedal position and the actual throttle plate position. The range is 0-100%. 0% represents idle or closed throttle deceleration, while 100% rep-
resents wide open throttle (WOT). This measurement is very valuable for dealing with shift feel or shift timing complaints. Is the CTP value too high or too low when compared with actual operating conditions? If so, look for a problem with a load input such as the MAP or MAF.

**Commanded Gear** — Displays the current commanded gear for the transaxle: 1, 2-3, 4, 5 or 6.

**Driver Shift Control** — Displays either Active or Inactive. The scan tool displays Active when the gear selector is in the (M or L) position, which enables TAP shifting. The scan tool displays Inactive when the gear selector is in any range other than M or L and TAP shifting is disabled. This reading is important for examining shift timing complaints. If the display indicates the system is Inactive, TAP shifting won’t function.

**Driver Shift Request** — Displays the request from the TAP Shift System. It will display upshift, downshift or invalid, depending on the voltage level measured at the BCM/ECM, and will also display none when there’s no TAP shift request. Since the TAP switches are momentary contact switches, an intermittent wiring or switch problem could cause the car to shift without customer input. This reading will help you verify whether the shift is being caused by a TAP system problem.

**ECT** — Displays the engine coolant temperature (ECT) value from the engine coolant temperature sensor. The ECT reading maximum threshold 151°C (304°F) when the signal voltage is low (0 volts). The ECT is at its minimum threshold at -40ºC (–40°F) when the signal voltage is high (5 volts). As with other GM applications, the 6T70 uses a dual pull-up design for the temperature sensor circuits. The transaxle uses the ECT signal for shift timing and TCC operation. ECT can be used to check the vehicle’s thermostat operation. A simple method for verifying ECT operation is to use a temperature gun and compare the reading to your scan tool ECT reading.

**Engine Speed** — Displays the speed of the engine in RPM. Engine RPM is a primary input for line pressure control.

**Engine Torque** — Indicates a calculated engine torque based on engine load, throttle position, and mass airflow. This is accurate to within 20 Nm (15 ft-lb) of actual measured engine torque. This is a critical measurement for line pressure and shift timing control with the 6T70. It’s also helpful in identifying aftermarket calibration. If engine torque under load greatly exceeds the advertised engine torque rating, suspect a non-OE calibration.

**Gear Ratio** — Indicates the calculated transaxle gear ratio. The scan tool displays the gear ratio calculated from the ISS and the OSS speed signals. This reading is one of the most important on your scan tool. Check the gear ratio in each gear under load to determine which solenoids aren’t operating correctly or which clutches are slipping.

**High Side Driver 2** — Indicates the High Side Driver 2 status. The High Side Driver controls the power feed for the solenoids. If the High Side Driver is disabled the solenoids won’t function. If the High Side Driver 2 is commanded off, your scan tool will display Disabled; if the High Side Driver 2 is commanded on, it displays Enabled.

**High Side Driver 2 CKT Status** — If the voltage is low when the circuit is commanded on, the scan tool will display Open/Short to GND. If the voltage is high when the circuit is commanded off, the scan tool will display Short to Volts. If there’s no circuit fault present, your scan tool will display OK, or Indeterminate.

**Ignition Voltage** — Displays the system voltage.

**IMS** — Displays PARK, PARK/REVERSE, REVERSE, REVERSE/NEUTRAL, NEUTRAL, NEUTRAL/DRIVE 6, DRIV 4, DRIVE 4/DRIVE 3, DRIVE 3, DRIVE 3/DRIVE 2, DRIVE 2, DRIVE 2/DRIVE 1, DRIVE 1 or INVALID. The TEHCM decodes the binary (high/low) values from the IMS to determine the actual range selected by the customer.

**IMS A/B/C/P** — Displays the status of the four A/B/C/P IMS pins at the TEHCM (TCM). HI indicates source voltage at that specific IMS pin. LOW

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indicates a 0 voltage signal. By moving the shifter through its ranges and noting which circuit fails to change, you can isolate whether the failure is related to pin A, B, C, or P. By monitoring the voltage on the suspect circuit as you move the shifter, you can identify the type of switch or circuit failure. If the voltage stays low, it indicates a short to ground. If the voltage stays high, look for an open circuit.

**ISS/OSS Supply Voltage** — Indicates the 8-volt supply circuit for the speed sensors. The display will indicate either **OK** or **Out of Range**. If the display indicates Out of Range, the speed sensors won’t function.

**Last Shift Time** — Displays the calculated shift time for the last upshift. This value is only accurate if it was an adaptable shift. In other words, the shift time isn’t accurate nor can you use it for diagnostic purposes if the shift wasn’t adaptable.

**Line PC Sol. CKT Status** — Indicates if an open, short to voltage or ground exists in the line pressure control (PC) solenoid feedback signal circuit. The display will indicate **OK**, **Open/Short to Volts**, **Short to GND**, or **Indeterminate**. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

**Line PC Sol. Pressure Command** — Displays the commanded pressure for the PCS 2 in kPa (PSI).

**PC Sol. 2 CKT Status** — Indicates whether the circuit is **OK**, **Open/Short to GND**, **Short to Volts**, or **Indeterminate**. This indicates the electrical state of the PCS 2 and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

**PC Sol. 2 Pressure Cmd.** — Displays the commanded pressure for the PCS 2 in kPa (PSI).

**PC Sol. 3 CKT Status** — Indicates whether the circuit is **OK**, **Open/Short to GND**, **Short to Volts**, or **Indeterminate**. This indicates the electrical state of PCS 3 and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

**PC Sol. 3 Pressure Command** — Displays the commanded pressure for the PCS 3 in kPa (PSI).

**PC Sol. 4 CKT Status** — Indicates whether the circuit is **OK**, **Open/Short to GND**, **Short to Volts**, or **Indeterminate**. This indicates the electrical state of PCS 4 and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

**PC Sol. 4 Pressure Command** — Displays the commanded pressure for the PCS 4 in kPa (PSI).

**PC Sol. 5 CKT Status** — Indicates whether the circuit is **OK**, **Open/Short to GND**, **Short to Volts**, or **Indeterminate**. This indicates the electrical state of PCS 5 and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

**Shift Sol. 1 CKT Status** — Indicates whether the circuit is **OK**, **Open/Short to GND**, **Short to Volts**, or **Indeterminate**. This indicates the electrical state of SS 1 and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

**Shift Solenoid 1** — Displays the commanded position for SS 1 as either on or off.

**Shift Sol. 2 CKT Status** — Indicates whether the circuit is **OK**, **Open/Short to GND**, **Short to Volts**, or **Indeterminate**. This indicates the electrical state of SS 2 and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

**Shift Solenoid 2** — Displays the commanded position for SS 2 as either on or off.

**Shift Sol. 3 CKT Status** — Indicates whether the circuit is **OK**, **Open/Short to GND**, **Short to Volts**, or **Indeterminate**. This indicates the electrical state of SS 3 and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

**Shift Solenoid 3** — Displays the commanded position for SS 3 as either on or off.

**Shift Sol. 4 CKT Status** — Indicates whether the circuit is **OK**, **Open/Short to GND**, **Short to Volts**, or **Indeterminate**. This indicates the electrical state of SS 4 and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

**Shift Solenoid 4** — Displays the commanded position for SS 4 as either on or off.
Open/Short to GND, Short to Volts, or Indeterminate. This indicates the electrical state of SS 2 and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

Shift Solenoid 2 — Displays the commanded position for SS 2 as either on or off.

TCC Brake Switch — Indicates the position of the TCC brake switch circuit input. OPEN indicates zero voltage as an input, brake pedal applied; CLOSED indicates source voltage, brake pedal released. The scan tool will display either OPEN or CLOSED.

TCC PC Sol. CKT Status — Indicates whether the circuit is OK, Open/Short to GND, Short to Volts, or Indeterminate. This indicates the electrical state of the TCC solenoid and its circuit. It’s important that the solenoid be commanded on/off to make sure this test has a chance to run.

TCC PC Sol. Duty Cycle — Indicates the commanded on-time of the TCC solenoid. The scan tool displays the on-time in percentage. A reading of 100% represents an energized, fully applied state. A reading of 0% indicates the solenoid is commanded off.

TCC PC Sol. Pressure Comm. — Displays the commanded pressure for the TCC solenoid in kPa (PSI).

TCC Slip Speed — Displays the difference between transaxle input RPM and engine RPM. A negative value means the engine RPM is less than the input RPM (deceleration). A positive value indicates the engine RPM is greater than the input RPM (acceleration). This measurement is used to determine if the TCC is slipping. The 6T70/6T75 applications are EC3 TCC systems, so a slip of 60 RPM or less during cruise, light throttle on flat roads is normal.

TCM Temperature — Displays results in °C (°F). This value comes from the two, thermocouple sensors mounted on the TEHCM circuit board. TCM overtemp occurs at 142°C on these applications. If the TCM exceeds 142°C, it’ll default and the transaxle won’t operate as designed. If you notice the TCM temperature is too high, the most likely cause is someone failed to attach the TEHCM spring bracket correctly.

TFP Switch 1,2,3,4 or TFP Switch 1,3,4,5 — Indicates the position of the Transmission Fluid Pressure Switches. The scan tool displays HI/LOW. This measurement may be used to help isolate problems with the solenoids or clutch select valves.

Trans. Fluid Temp. — This indicates the transaxle fluid temperature (TFT) value from the Transmission Fluid Temperature sensor. The TFT reading maximum threshold is 151°C (304°F) when the signal voltage is low (0 volts). The TFT is at its minimum threshold at –40°C (~40°F) when the signal voltage is high (5 volts). As with other GM applications, the 6T70 uses a dual pull-up design for the temperature sensor circuits. TFT is a primary input for TCC and line pressure control. A simple method for verifying TFT operation is to use a temperature gun and compare the reading to your scan tool TFT reading.

Transmission ISS — Displays the speed of the transmission input shaft. This value comes from the Input Speed Sensor. Your scan tool displays input shaft speed in RPM.

Transmission OSS — Displays the speed of the transmission output shaft. This value comes from the Output

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One other question that many technicians have is what is normal? Here’s a snapshot I took of a 2008 6T70 at cruise, light load, 3rd gear, 42 MPH. These readings would be considered normal for the driving conditions.

**Scan Data values (Typical, 3rd gear, 42 MPH, light load)**

- Engine Torque: 89 ft-lbs
- Calculated TP: 17%
- Engine Speed: 4120 RPM
- Input Speed: 4007 RPM
- Output Speed: 1397 RPM
- ISS/OSS supply Volts: OK
- Vehicle Speed: 42 MPH
- Commanded Gear: 3
- Shift Sol 1: OFF
- Shift Sol 2: ON
- Gear Ratio: 1.83-1
- Driver Shift Control: Active
- Driver Shift Request: Downshift
- IMS A/B/C/P: Low/Low/Low/Low
- TFP Sw 1: Low
- TFP Sw 2: Low
- TFP Sw 3: High
- TFP Sw 4: High
- ECT: 195°F
- Trans. Fluid Temp: 165°F
- TCM Temp: 161°F
- Line PC Sol Pres Com: 62 PSI
- PC Sol 2 Pres Com: 0 PSI
- PC Sol 3 Pres Com: 0 PSI
- PC Sol 4 Pres Com: 70 PSI
- PC Sol 5 Pres Com: 130 PSI
- TCC PC Sol Pres Com: 0 PSI
- TCC Brake Sw: Closed
- TCC Slip Speed: 121 RPM
- Last Shift Time: 0.37 Seconds
- 1-2 Shift Time: 0.37 Seconds
- 2-3 Shift Time: 0.32 Seconds
- 3-4 Shift Time: 0.37 Seconds
- 4-5 Shift Time: 0.29 Seconds
- 5-6 Shift Time: 0.37 Seconds
- Ignition Voltage: 13.58 Volts

So what other things can your scan tool do? On 6T70-6T75 applications your scan tool should have these capabilities:

- Output overrides — The ability to command the solenoids ON/OFF with the press of a button. The High Side Driver, PCS 2, 3, 4 and 5, Shift Solenoid 1, 2 TCC solenoids and the line pressure solenoid are capable of being overridden with your scan tool. Some of the solenoids can only be overridden with the vehicle stationary; others will operate with the vehicle in motion. Other solenoids can only be overridden when engine RPM is below a specified threshold (typically 1500 RPM) while others don’t limit the operational RPM. Still other solenoids can only be overridden for specific amounts of time. If you exceed the time limit, the override control function will be terminated. And some solenoids won’t allow the override feature to operate if DTCs (such as IMS) are set.

- Solenoid Cleaning — As we discussed in an earlier issue, this is a critical function. This function is a fully automated cleaning process for the solenoids.

- Clearing and Relearning Adapts — As we discussed in an earlier issue, this also a critical feature. The 6T70 6T75 are clutch-to-clutch shift transaxles. Failing to clear and relearn the adapts will likely result in transmission damage and a dissatisfied customer.

That’s all for now; in our final segment, we’ll look at these units’ hydraulic control system. Until then, remember: “Life is like riding a bicycle. You don’t fall off until you stop pedaling.”
This series of shop visits took me to Colorado Springs and Denver — the mile-high city. I was accompanied on the trip by the ATRA President and Rocky Mountain Chapter President Jimmy Rodd. We started out early since it was about a 70-mile drive down to Colorado Springs; our first destination. We had two shops in mind for the visit, but we also wanted to stop by a former ATRA Member’s shop.

The name of the shop isn’t important, but what we learned from the visit was. He’d been a Member for 18 years and had left over a Golden Rule Warranty dispute. After hearing the details of the event it was clear that the matter could have been avoided had ATRA intervened early on. Situations like this are the reason we changed the warranty process earlier this year, so that the ATRA Technical Department can begin the discovery process to understand the problem with the car and make recommendations.

This was an unfortunate outcome, but more disturbing was a comment the owner made. During one of our discussions he said, “I hate this business.” Wow! It brought me right back to some of the early discoveries of the What’s Working program.

Back in 2006 we noticed that attitude played a key role in business success. There’s a measure we used throughout the study called the Success Metric. Many of you are familiar with this: It’s roughly a standard of business success based on how busy and profitable your shop is. The scale goes from zero (completely dead and losing your shirt) to 20 (booked weeks ahead and making tons of money).

One of the things we discovered in the study was that shop owners who no longer liked working on cars and no longer enjoyed the transmission business didn’t score a success metric higher than 12. Conversely, those shop owners who still liked working on cars and enjoyed the transmission business scored no lower than 8.

Each group had a range of success (or failure) of about 12 points, but the two groups were simply shifted up or down, based on attitude. In fact, we discovered that attitude had more impact on business success than any other single aspect we measured.

Our next stop was Transmission Clinic of Colorado, owned by Don Callender. Don is very active on the What’s Working forum and offers a lot of good ideas with the group, so I was anxious to see his operation. It was fortunate for us that we had a GPS or we never would have found his shop; it’s an industrial area but is situated on a private road off one of the main roads, and the shop isn’t visible from the street.

When we arrived we immediately noticed that the shop was busy. We met with Don and he gave us the tour. There were several things I noticed right back to some of the early discoveries of the What’s Working program.

Owner Don Callender and ATRA President Jimmy Rodd (Transmission Clinic of Colorado)
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owners who track their sales often find that the majority of their business comes from only a few select units. And knowing this allows them to keep those transmissions, or the parts for those transmissions, in stock, so they can serve their customers better; which was exactly Don’s comment when I asked him about it.

We went through the shop and visited everyone, making our way to the office, when I noticed the plaques, trophies and pictures from all the sports teams and community organizations he sponsored. This was the first time since our last marketing study that I actually recognized the connection during a shop visit.

During our 2008 study we learned that shops that participated in local activities had greater business success, on average, than those that didn’t. Here was more evidence of that. And when we went into Don’s personal office I noticed the overflow of these commemorates.

Here was an actual example of a business owner steeped in the activities of his community, doing well even though you had to have a GPS to find him. We had a great time during the visit, and then it was off to the next shop.

Our next visit took us to Colorado Transmissions, owned by Barry and Jean Remple. Barry’s been in the industry for 21 years and owner of this business for 11. One thing we noticed right away was the appearance of the shop: It was clean and very professional looking, and that followed through to the customer waiting area.
BEYOND SURVIVING...THRIVING IN A DOWN ECONOMY

Car counts and inbound phone calls are at an all time low and cash for clunkers is taking maintenance business off the road. How then, is it possible that shop owners just like you are not only surviving in this down economy, but their shops are thriving? The answer is simpler than you think. They’ve decided to embrace two next-generation technologies that are allowing them to increase their weekly car count, have a higher average repair order, and get more regular maintenance business into their shop. The technologies we are talking about are ProfitBoost’s PIF Pro System and Demandforce’s D3 platform.

Richie Sleezer of Lee Myles Transmission and Auto Care in Bohemia, NY is a great example of how these powerful technologies working together can positively impact your business – In fact, in Richie’s case it is to the tune of over $47,000 a year in additional revenue. With ProfitBoost and Demandforce working together, Richie’s shop has seen an increase of 13% in his average repair order and an 86% increase in the number of leads he’s getting from the Internet.

The integration has also allowed Richie to provide better service to his customers. After implementing Demandforce and ProfitBoost together, one of Richie’s oldest customers who had not been in for some time, received a communication about his vehicle’s maintenance needs. Richie’s customer responded and let him know that his previous experience with his shop was less than satisfactory. By simply opening up the lines of communication, Richie was able to address the customer’s issue and bring him back into his shop. The individual is once again a happy customer and he’s made Richie’s shop more attractive to prospective clients by writing a positive online review about his experience.

We’ll talk more about your online reputation next month. In the meantime, if you’re ready to get out of survival mode and start increasing your bottom line, call us today.

Richie’s shop has seen an increase of 13% in his average repair order and an 86% increase in the number of lead’s he’s getting from the Internet.

Demandforce and ProfitBoost recently partnered with the goal of making it easy and cost effective for shops just like yours to communicate with their customers, market their services, and increase their bottom lines. The integration between ProfitBoost and Demandforce allows you to gather customer, vehicle, and repair order information from your ProfitBoost system and use it to automatically communicate to customers via email, postcards, and text messaging 7 days before their vehicle is due for service. Through this seamless integration, you’ll have a simple and pain-free way to leverage the data that’s already in your shop management system to get the most of your marketing and communication efforts.

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Unfortunately, we got there right around lunchtime (I don’t know why I keep doing this!) so some of the guys were out when we got there. Barry mentioned that business had been down compared to their normal levels, which is something I’ve heard quite a bit with this economy.

It also coincided with some of the information we’ve gathered from our consumer study, which showed nationwide, 62% of people with broken cars have postponed the repairs (see the May/June issue of GEARS, pg 48 for more details). Since this visit we’ve seen an increase in business overall as more of these people are getting their cars fixed.

Barry gave us a tour of the shop and one thing that caught our attention right away was Barry’s beautiful ’68 Camaro. Pictures really don’t do justice to the detail of this machine and the effort Barry put into it.

But it wasn’t much of a surprise: It was obvious that Barry’s attention to his project car was an extension of how he operated his business. The shop was well organized, clean and professional looking. Fortunately, we were there long enough for the rest of the crew to get back from lunch, so we had a chance to visit with everyone. Sadly, we had that 70-mile return trip to look forward to, so off we went.

The travel time really put a dent in our visit schedule and the traffic was terrible. I thought I was back in Los Angeles going through commute traffic. In spite of that we had time for one more visit.

Our last stop was Walker Transmissions, owned by Rick Walker. Rick is another active member of the What’s Working forum. Rick has been in business for 20 years and brings a lot of ideas to the forum.

When we arrived we were greeted by Rick and Tony, the sales manager. Something I picked up on right away was the plaques and pictures of the local sports teams he sponsors. As I mentioned before, I just recently began paying attention to signs of community involvement like this, since we started identifying its impact on business. It didn’t surprise me when
Rick said business was good, albeit a little down the week we were there. They gave us a tour and showed us how the building had been added to over the years as business had grown.

Rick is very customer centric; he and Tony shared a few stories about customer situations and the effort they made to think about the customer’s needs rather than simply seeing the customer as a potential sale. We also got a little demonstration of Tony’s customer service technique during a few phone calls.

That about wraps it up for the Denver visits. And, by the way, we followed up the weekend with a What’s Working presentation, directly following the technical seminar. If you’re looking for some ideas for your shop, or just want to get excited again about the transmission repair business, contact your local ATRA Chapter and make sure they arrange for a program. See ya in the trenches!
To my shock and excitement, ATRA invited me into their band of multi-talented gearheads! Being female and continually driven to learn about the automotive repair industry, I was slightly nervous but couldn’t wait to start.

I’m currently a student at Pierce College in Woodland Hills, CA, working toward my Associate of Science degree in Automotive Technology. Spring semester of 2009, I took a Standard Transmission, Drivelines and Differentials class with Professor Dave Skora. Dave is also a senior technical advisor for the Automatic Transmission Rebuilders Association.

Dave and fellow ATRA Tech Jon Rodriguez were kind enough to recommend me for an internship this summer. I ecstatically accepted and contacted Technical Director Lance Wiggins. I proposed to help other technicians by researching, locating information, and answering HotLine questions purely for the experience and knowledge I could gain.

I’ve been a motion picture stunt driver for almost 5 years and am now trying to work on and eventually build vehicles. Thanks to Dave’s guidance, I fell in love with the operation of transmissions and gears in general. I mean, who doesn’t love mechanical theory? I know it’s odd for a girl, right? Well, I figure if a passion runs in your blood, you shouldn’t stop it from flowin’!

So, on my first day at ATRA, Lance and Dave had me using AllData and Mitchell OnDemand to get used to the programs. I’ve used them before in school, so I thought I had them down pat. Boy was I wrong! At times throughout the day, the ATRA HotLine is literally ringing off the hook. It’s a good thing these techs are good at what they do.

I watched as Technical Advisor Randall Schroeder took HotLine calls. He answered many questions right off the top of his head while he searched for wiring diagrams on a Dodge 3500 turbo diesel that would go in and out of lockup. He just happened to know bad battery grounds through a cable might be the culprit. I’m not even in a garage and I’m learning off-the-wall, useful information already. This is great!

If you’re like me and want to know more than just how to fix a problem, Randall is the HotLine guy to call. As the other techs say, “Randall gives seminars over the phone.” You’ll get the information you need, plus why it happened, what else can happen because of it, and how to keep it from happening again, if possible. So have a pen and paper handy.

As far as ATRA goes, I’m extremely impressed with how many trades are incorporated into one company. They have everything from automotive technicians and customer service representatives, to photographers, designers and publishers. And not just under one roof: You can find that diversity in many individual employees!

My job was to learn how the six HotLine techs keep their day flowing smoothly, and what I could do to help them, without getting in the way. No problem: I learned very quickly they all have completely different personalities and working styles, but one common passion for transmissions.

My second day I spent in the shop will Bill Brayton. My first thought:
Fun with Transmissions, the name of his old transmission shop, suits him so well.” My second thought while pulling apart a 5L40E: “I need more brain space!” Three hours in the shop with Bill feels like working toward a Masters degree in automatic transmissions!

In the following week with ATRA, I learned more of Bill Brayton thoughts on BMW’s 5L40E, I also wrote (with Bill’s help) a Technical Service Bulletin on the FN5R/4F27E/FN4A-EL transmission (used in some Fords, Mazdas and Mercurys) for erratic or missing shifts that may be caused by a worn servo pin bore, and listened to Bill sing more Nickelback than I’ve heard Nickelback sing!

Overall, I’ve never met someone with such an incredible passion for a piece of machinery. His love for his work and intelligent curiosity are unbelievable and motivating. Bill’s found a way to get paid for one thing that makes his heart beat. I’ve always believed that the key to a happy life is to keep busy and do what you love. Thank you, Bill: You’re a true inspiration and fun teacher.

On my third day, I listened in on HotLine calls with Dave. He not only takes random calls, but other techs forward Volkswagen/AUDI and Allison calls to him for his extensive expertise and available information on their products. Once again, a tech who answers questions with information he already knows! Although, that is the job description.

Throughout the week I also listened in on Jon Rodriguez’s, Bill Brayton’s and Pete Huscher’s tech calls... as well as Mike Brown’s calls when he didn’t know I was paying attention. All of them have notes in front of them, ready to obtain information on the next vehicle.

To take these calls efficiently, many questions need to be asked and documented thoroughly. It’s always critical to understand the vehicle’s problem clearly, and then find out what tools the shop technician has to work with. Next, knowing how and where to search the PC in front of you is crucial to emailing or faxing the correct technical bulletins. Problem solving is the business, so to do what I came to ATRA for, my ears were always open.

If you want to speak with a tech who gets straight to the point, or your problem is a Honda, Jon Rod (Jon Rodriguez) is your man. I was fortunate enough to spend a day in the shop at DMC Transmissions in Ventura, CA with Jon. I disassembled and cleaned a 4L60E for him to assemble. My first official transmission job!

I guess I did well because he asked me to apprentice at the shop with him. I sure am glad I can take snap rings out, Jon.

If you’re having a bad day and know you may need to call a few times and want to speak with someone who’s very cordial, informative and able to help you get your job done, I’d suggest Pete. He’s amazingly knowledgeable, especially on four wheel drive systems, Ford products... and in getting great deals on boats, or so I’ve been told!

These last eight days have given me more insight into the transmission world than I could have imagined. I love it! It’s an incredible feeling when you find something that makes your heart beat just a bit faster. This will always be an internship I’ll remember and never wanted to end, but I look forward to my future transmission endeavors thanks to the ATRA technical team!
As I sit down to write this article, in the eleventh hour, with the editor of the magazine gently reminding me of its past due date, the main office phone rings. I look up from my desk to find that both of the membership service representatives that typically answer the phone were busy with others members. Frustrated, I know I need to break my thought process with regard to customer service for…um…customer service?

“Good afternoon, ATRA Business office, Kelly speaking, how can I help you?”

There is a frustrated customer on the other end of the phone. He is broken down on the side of the road, in a small town and he was more than 50 miles away from a hotel yet alone another transmission shop to fix his vehicle. To make matters worse it is towards the end of the day when shops and businesses are closing and he is moving his entire family across the country on this trip and has his wife, kids and dog in the vehicle with him.

I put myself in the same situation of this customer stranded on the road and after making a phone call to an ATRA Member in the surrounding area. The owner of the shop knew where they were located and was able to help arrange for a tow truck to bring their vehicle to his shop. Once there, he got the vehicle fixed in a relatively short time and had the customer back on the road to finish his journey.

While this scenario is no different than those that take place at other member shops or other calls that take place in our office, it’s ironic. The purpose of this article was to write about the customer service scenarios that typically happen at our office and how we handle situations with customers. Not exactly how I planned it, but this is exactly what we do for customer and member satisfaction. Customer service is an integral part of our business operations.

On average we receive about a dozen calls daily from consumers. The majority of the callers are looking for a transmission shop near them...

Even more so with the new procedures set in place for the ATRA Golden Rule Warranty program, we are faced with consumer relations every day. Scenarios similar to the one mentioned above happen often and ATRA is prepared and ready to help.

On average we receive about a dozen calls daily from consumers. The majority of the callers are looking for a transmission shop near them, ask general questions, or even request assistance with a transmission problem that may require a technician.

Consumers are more aware of ATRA and the services we provide through the membership of the association and it is becoming more noticeable with the increase in phone calls as well as the increase in visits to our website.

With this increase in ATRA awareness in the motoring public it gives ATRA Members shops the peace of mind that we are here to help you and your customers even in their direst of situations.

Although I was originally frustrated with this interruption it reminds me how important it is to continue reaching out to the consumers by bringing them peace of mind.

In the upcoming months we will be announcing new programs and efforts ATRA is making with regard to continually improving customer awareness and it’s great to see the results are paying off for members and consumers alike.

As I bring this article to a close, I hear the phone ringing again and I’m anxious to find out the situation the next caller has and present them with a solution to get them back on the road again.
You can count on Transtar to bring you the Best.

Transtar Industries and ATRA request the pleasure of your company at our industry reception.

October 31st, 2009
Riviera Hotel & Casino
6-8pm
Gulf States Chapter Sponsors Its Own Electrical Seminar

This past August 8th, ATRA’s Gulf States Chapter hosted a technical seminar in Loxley, Alabama. What made this seminar noteworthy was that it was completely planned, organized and presented by the Gulf States Chapter itself; this wasn’t an ATRA seminar, and ATRA wasn’t principally involved in its production.

Chapter President Delaine Andrews of Andrews Transmission and Car Care was quick to point out the challenges they faced in presenting their own seminar. According to Delaine, the most difficult part was marketing. They worked with a local parts distributor to help get the word out, but the most effective marketing involved simply calling the shops in their area.

The seminar was based on electrical essentials, including circuits, Ohm’s Law, voltage drop, and basic diagnostic procedures. It was presented by Dan Marinucci, and was an expanded version of his Expo program.

According to ATRA Board Member Laura Wilson, “All of the attendees rated Dan’s presentation as excellent, and reinforced that with positive comments and requests for additional seminars. The program went about an hour long, and no one complained or left early.”

ATRA’s BookStore provided the Chapter with some additional books and material to offer during the breaks.

Many attendees came with their families, who took advantage of the nearby shopping outlets to get a jump on their back-to-school shopping. A few others chartered fishing boats for the next day.

The Gulf States Chapter’s executive committee considered this seminar program to be a rousing success, and is planning other seminars in the near future.

The End of an Era: Gary Jennings Retires from ATRA’s Board

by Steve Bodofsky

This year at Expo we’ll witness the passing of a torch, as Gary Jennings, one of the owners of Jim Jennings Transmissions in Baltimore, MD, retires from ATRA’s Board of Directors.

What makes Gary’s exit so noteworthy is that 2009 marked his 23rd year serving the Association, the longest term on record. During those 23 years, Gary served nearly 10 years as president, and a couple terms as vice president.

How did Gary manage 23 years, when a term is three years? “When I took office in 1987, Board Members were elected for two-year terms, and all Board positions were up for election at the same time. But this created a situation where the entire Board could be replaced at once.

“We were reducing the number of Board Members to nine, so at the same time we took our cues from the US Senate, and began to alternate the election cycle,” explains Gary. “Every Board Member is elected for a three-year term, and only three seats are up for election each year. This provides the Board with a level of continuity from one year to the next.”

And what a time it was: The industry was just getting used to lockup converters. Front wheel drive transmissions were starting to show up all across the country. And it wouldn’t be long before computers took over transmission operation. Quite a time to step into a leadership role for the industry.

“I remember seeing some of the first front wheel drive cars being brought in on a car carrier to a local dealership. I pulled over, got out of my car, and just marveled at the changes we’d soon be dealing with in our shop.”

As difficult as those new front wheel drives were, their impact was nothing like the one we felt as computer controls began to take over… not just because of the training and experience necessary, but because of a whole new concept in customer relations: charging for diagnosis.

“After discussing the problems with a number of people, including (then ATRA trainer) Glenn Troub, I approached ATRA CEO Dennis Madden about putting together a brochure we could use to explain diagnostic fees to the customer,” said Gary.

From those discussions and Gary’s subsequent recommendation, ATRA created a new brochure — But You Didn’t Fix Anything! — which explained why a customer should expect to pay for diagnostic time. These brochures are available through the ATRA BookStore, exclusively for ATRA Members.

The brochure was introduced in the May/June issue of GEARS — Charging for Diagnosis Is As Easy as 1, 2, 3… — which won an IAMA award for GEARS.
So why is Gary retiring? “It was a tough decision; I loved my time on the Board. I loved meeting and getting to know some of the finest people in the country. I enjoyed the mental stimulation the job demands; it was a huge part of my life, and I’m going to miss it.

“I’d planned on retiring three years ago. But when the time came, I realized that I needed ATRA, maybe even a little more than they needed me, so I stayed on for another term.

“But now I’m three years older; I have twin, 2½ year old grandsons who demand more of my time…and it’s just time for me to go. Time for someone with newer, fresher ideas to step in.”

Gary and his wife Joyce have two children: Jennifer and J.B. J.B. is a state legislator for Maryland, and Jennifer is married and the mother of Gary’s twin grandsons, Cooper and Parker.

Today Gary continues to run the family business with his brothers Ken and Bill. Their shop, Jim Jennings Transmission, has 15 employees.

The Jennings family got into the transmission business almost by accident. Back in the ’50s, Gary’s father, Jim, was a machinist for the Glen L Martin Aircraft Company (later to become Lockheed Martin). Coworkers would come to Jim when they had problems with their transmissions, and he’d help them out. It turned into a business in 1962.

While still in high school, Gary worked in the family shop after school and on weekends. But he never really planned to continue in the business: “I wanted to be a real estate investor, so I thought a degree in accounting would provide me with the income I’d need to parlay into real estate.

“Then the second oil embargo came along, essentially killing the real estate business. So I went back to work with my family, handling their accounting and eventually taking over the business end of the operation.”

Gary and his brothers joined ATRA in 1983, primarily for ATRA’s Golden Rule Warranty and technical information. A lot of shops joined ATRA in those days: Lockup torque converters had just begun showing up, front wheel drives were on the horizon, and computer controls were just around the corner.

Gary first ran for the Board just a few years later. “Terry Greenhut was doing management seminars for ATRA, showing shop owners how to earn more for the work they were doing,” explains Gary.

“Back then, we were doing transmission work for a flat rate. The units we were seeing were C4s, 350s and Torqueflites. Suddenly we were seeing front wheel drives, and we had to practice saying ‘a thousand dollars.’ Many of us still couldn’t bring ourselves to say that.

“I became friendly with Terry and Mike Lee, who was doing seminars with Terry, and during our conversations they suggested I could help the industry by running for the Board.”

When asked about his greatest accomplishment, Gary didn’t even have to think about his answer: “GEARS Magazine.”

“GEARS began during my tenure as president. It came about thanks to the efforts of some exceptional people on the ATRA staff, but I like to think of myself as the ‘father’ of GEARS Magazine.

“GEARS began because ATRA was losing exposure in the marketplace. Back then we were working with MD Publications to create the annual Expo. They publish Transmission Digest, and the affiliation they had with ATSG was hurting ATRA’s identity.

“So we decided to change directions and create our own trade show. But to publicize it, we needed our own magazine. That series of decisions ultimately led to the creation of GEARS Magazine.”

Gary’s view of the future of the transmission repair industry? “I’m optimistic for those who remain on the cutting edge of technology…who have the equipment…the tools…the know-how to fix today’s cars.

“The technology being built into today’s cars is rising very quickly; too many shops allow their training to remain flat. For those shops who maintain their technological edge, I think the future is going to be very profitable.”

Of course, that level of technology brings its own problems, even for a shop that’s prepared. One of those difficulties involves the shop’s ability to recover time spent researching problems. “There was a time when you might spend four or five hours on a car to find a specific problem. But that was okay, because you knew you’d see that problem again, and you’d be able to spread the cost of your ‘education’ over a few cars.

“Today, you could work for a few days to find a problem and never see that situation again. And it’s difficult to charge a customer for 8 or 10 hours of labor, just to fix a loose connection or replace a faulty sensor.

“On the other hand, that same technology has forced a lot of low-end, backyard mechanics out of the business, leaving it open for those who’ve stayed on top of things. Therein lies my optimism,” says Gary.

Gary’s advice to ATRA Members? “Take better advantage of the programs and services ATRA offers. Most Members haven’t even begun to scratch the surface of what ATRA can offer on a daily basis.

“And remember that you’re not alone; there’s power in numbers, and the more you put into your trade association, the more you’ll get out of it.”

The years since 1987 have been an astonishing time for the auto repair industry. It’s been an era of rapid technological growth and a complete shift in how transmission shops think about their jobs.

And during all those years, Gary Jennings has been at the forefront, helping steer ATRA through some difficult waters. His retirement marks the end of an era; we wish him well and thank him for his years of dedication and service.
There’s a reason we like to hold Expo in Las Vegas: Because not everything at Expo is about business. Sometimes it’s about kicking back, having a little fun, and experiencing things you’ll never get to see anywhere else.

Precision of New Hampton Torque Converters and Hot Flush Cooler Flushers have gotten together to do just that for us. They made special arrangements with famed late-night TV host Jay Leno, to display his world renowned Ecojet car on the show floor at this year’s Expo.

What is the Ecojet? It’s a custom designed, 650-horsepower, bio-diesel powered monster of a supercar, conceived and created by Leno and his team at Big Dog’s Garage. Leno sketched the original designs for this mid-engine beast on the back of a napkin. It shares design cues with everything from jet aircraft to Formula One racecars.

Leno’s idea was simple: He wanted to design an environmentally friendly car that didn’t drive like it was powered by a couple gerbils on an exercise wheel. He wanted a muscle car that would make everyone stand up and take notice. And that’s just what he built: Make no mistake about it... this isn’t grandma’s economy car!

The Ecojet is powered by a Honeywell LT-101 turbine engine — that’s right, a jet engine! — running in a modified Corvette Z06 hydroformed aluminum frame, with aluminum and magnesium structural and chassis components. The shell’s composed of a carbon fiber over Kevlar skin.

If the Ecojet were just about gut-wrenching, soul-searing, screaming power, it’d still be worth a closer look. But it’s more than just a powerhouse... it’s also a pretty face: Sleek design with gull wing doors and a computer display for instrumentation. There wasn’t enough room for rear view mirrors, so it uses digital cameras to display the backward view for the driver.

The Ecojet made its public debut at the 2006 SEMA show, just eight months after Leno’s first simple drawings on that now-famous napkin. It looked terrific, but it didn’t run... yet. It would take more than two years before the engineers and technicians could work out the bugs and make this machine roadworthy.

But after they got it running, there was a problem: The 4L65E Corvette transaxle failed... repeatedly. It just couldn’t stand up to all that torque from an engine that’s creating over 200 horsepower... at idle! That is, not until Precision of New Hampton designed a high performance torque converter, specifically to handle the power from that turbine engine. Jay and his team installed the new converter and flushed the cooler with their Hot Flush machine (of course!) Problem solved.

Since its maiden voyage, the car has been tearing up streets and attracting crowds wherever it goes. And where it’s going next is the Rivera in Las Vegas, for a personal appearance at the 2009 Powertrain Expo. Don’t miss your chance to take a closer look at this one-of-a-kind powerhouse. Make your reservations to attend Expo today!
Seal Aftermarket Products Will Introduce New Catalog CD at Expo

Seal Aftermarket Products has been diligently working on its new 2010 CD catalog; updated part numbers, new items, technical bulletins, and product announcements are all featured in this new catalog CD.

ATRA’s Powertrain EXPO 2009 will be the first place these CD’s are available. Visit Parker’s booth #319 and be the first to get Seal Aftermarket Products 2010 free catalog CD.

Parker Hannifin is an OE manufacturer to several automotive OEMs. To make sure you are getting genuine Parker products, insist on Parker brands such as TTK™, Bryco™, Carfel™, ProSelect™ and Roadmaster™.

For more information, visit us on the web at www.parker.com.

Superior Announces Accumu-Sealt Dual Use Piston Replacement

Superior Transmission Parts is pleased to announce their new Accumu-Sealt dual use piston replacement package, Superior part #K089. This new kit fits U-140 through 240 series and U150 through 250 series Lexus and Toyota automatic transaxles.

Superior’s Accumu-Sealt technology gives your build a simple solution to finally seal the bores of your worn Toyota and Lexus valve body castings.

Leaks are common on the piston and bore of the C0, C1, and B1 on the U150-250 series, and the B1 and C2 piston and bore on the U140-240 series units. The loss of circuit pressures can cause burnt direct clutches; flairs on the 2-3 shift when hot (after 20 minutes or so); 2nd, 4th and 5th gear shifting problems (U150-250s); reverse slip; and burnt 2nd, 3rd and OD issues (U140-240s).

Each kit includes a new, specially designed and patent-pending Accumulator Buddy™ bore brush, and enough patent-pending pistons and rings to do two 3-piston models or three 2-piston models.

With our new Accumu-Sealt ringed pistons and Accumulator Buddy™ bore brush, the bores can be cleaned and surface-prepped to accept the new pistons with Teflon® sealing rings. Available at your local parts distributor, just tell them “I want my Superior!”

EZ Driver Introduces New Honda Tool Kit

EZ Driver is pleased to introduce their new mainshaft and intermediate shaft R&R tool kit for Honda MAXA and BAXA transaxles.

The new kit includes taps, removal bolts, special spacers and washers, and drivers. The drivers have reference marks to enable you to install the new bushings to the original height.

The kit also includes a storage tube and comes with two sets of replacement bushings.

EZ Driver is inexpensive: You can pay for the kit with your first transmission repair!

To learn more about EZ Driver and bearing installers, visit www.ez-driver.com or www.bearinginstallers.com, or contact Mike Tilley at 602-992-2961.

RatioTek Introduces New Subaru RT-4ATAXLE Kit

RatioTek is pleased to introduce its new RT-4ATAXLE valve body kit for the 1998-2007 Subaru 4-ATAXLE 4-speed AWD.

The new kit provides quick, clean shifts and more converter clutch holding power.

The RT-4ATAXLE kit comes with easy-to-read instructions and additional information that provides you with a complete valve body breakdown.

...Also from RatioTek, High Performance Kit for Subaru AWD 4ATAXLE

Tuners have offered kits to boost engine performance on Subaru engines for some time. The problem was that the transmission couldn’t handle the increased torque... until now.

The RT-4ATAXLE-HD kit from RatioTek allows you to build in the additional torque capacity needed to handle the additional load from add-on turbos and NOS systems.

The new kit fits 1998-2007 Subaru 4ATAXLE all wheel drive 4-speeds, and is calibrated for engines with boosted turbos and NOS systems.

The RT-4ATAXLE-HD kit comes with a pan gasket, valve body parts, and easy-to-follow instructions. And the kit can be installed without removing transmission from the vehicle.

To learn more about this new kit or any of the other products offered by RatioTek, call 626-968-2754, or visit them on the web at www.ratiotek.com.
Alto is pleased to announce the success of their recent PAACE Automechanika seminar in Mexico. Over 1000 people attended the recent event; the largest ever at the PAACE show.

“The seminar was a great success,” said Jose Montalvo, vice president of Latin American sales. “Although the Mexican economy has been hurt by the devaluation of the peso and the recent swine flu, the attendance at the show did not seem to be affected.”

Noe Gomez, general manager of Alto’s Mexican operations, was the keynote speaker. “Our presentation is quite different than most of the US companies that do seminars in Mexico,” said Noe. “Our seminar is delivered entirely in Spanish, without a translator, and the material is geared specifically for the needs of the Mexican market. Being located in Mexico gives us a big advantage in understanding the local market.”

Alto Products is the oldest and largest independently owned-and-operated clutch manufacturer in the world. Alto has manufactured over a billion clutches over the last 50 years for automotive, high performance, heavy duty, marine, and motorcycle applications.

For more information please visit www.altoUSA.com.

Trans-Tool is proud to introduce its new T-0100 Parts Scrubber; a new parts cleaning cabinet that uses a series of high pressure spray pipes designed to drown dirty parts or cases. The new Parts Scrubber uses a 2-hp gusher pump to create high pressure cleaning spray. It’s small in size, but can handle anything from small components to an E4OD case.

There are no moving parts to replace, and you can order it with a heating element for aqueous solutions. The Parts Scrubber is completely made in the USA by Trans-Tool; a leading tool manufacturer for over 30 years. And you can order a Parts Scrubber for as little as $2995 US.

For more information or to order your Parts Scrubber, contact your transmission parts distributor, mobile tool dealer, or visit their Trans-Tool web site at www.Trans-Tool.com.

New NP271/273 Spanner Socket from Adapt-A-Case

A line of small, Type 1, straight-sided, cotton fiber deburring wheels for Christmas tree and turbine-root deburring and edge-breaking applications is available from Rex-Cut Products, Inc. of Fall River, Massachusetts.

Rex-Cut® Type 1 Abrasive Wheels feature multiple layers of non-woven cotton fiber with aluminum oxide or silicon carbide abrasives that are laminated, pressed and bonded together into a dense wheel that lasts twice as long as unitized wheels, claims the firm. Providing smooth operator control, they are ideally suited for deburring, chamfering, and finishing turbine roots.

Available in 1", 2" and 3" sizes, these small Rex-Cut® Type 1 Abrasive Wheels come in two styles: soft bond for light deburring, blending and finishing, and hard bond for aggressive grinding. Constantly revealing fresh abrasives as they work, grain sizes offered are coarse, medium, fine, and very fine. Other sizes and thicknesses are also available.
Rex-Cut® Type 1 Abrasive Wheels are priced according to size, abrasive grain, bond and quantity. Samples and pricing are available upon request.

For more information contact Rex-Cut Products, toll free, at 800-225-8182, or visit them online at www.rexcut.com.

New Bonded Piston Kit for Nissan and Subaru from Corteco/TransTec

Corteco is pleased to announce the availability of TransTec® piston kit 4841. This kit contains the bonded balance pistons for 2003-up Nissan RESR05A and 2005-up Subaru 5-speed.

The following matrix identifies specific application information:

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TransTec® kit number 4841 is in stock and available for immediate delivery.

You can visit Corteco/TransTec on the web at www.transtec.com for more information.

TransTec Introduces New Kit for GM 6L45/50

TransTec is pleased to announce the availability of its new TransTec® overhaul kit 2523.

This kit covers the 6-speed rear drive 6L45/50 unit found in several 2006-up General Motors applications.

Featured Components

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<td>Rear Seal 2WD</td>
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Kit Number 2523 is in stock and available for immediate delivery.

You can visit TransTec on the web at www.transtec.com for more information.

New TransTec Kit for Acura MDX 2007-up

Corteco is pleased to announce the availability of TransTec® overhaul kit 2540 for the 2007-Up Acura MDX with transmission code BYFA.

Due to various component changes in the 3rd clutch and 4th/5th clutch, TransTec decided to add a new kit to the Honda/Acura 5-speed family. All sealing components for this unit are included in this new kit. Sealing components for the 07-up MDX transfer case are included in TransTec® kit number 4758.

Here’s what’s included in this new kit:

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<td>91207-PY4-004 Converter Seal</td>
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<tr>
<td>B36124</td>
<td>21811-RDK-000</td>
<td>Case Gasket</td>
</tr>
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</table>

TransTec® kit number 2540 is in stock and available for immediate delivery.

You can visit Corteco/TransTec on the web at www.transtec.com for more information.

New VW/Audi Kit from Corteco

Corteco is pleased to announce the availability of TransTec® overhaul kit number 2526. This kit covers the 6-speed front drive Aisin TF60/ Volkswagen O9G unit found in several Volkswagen applications and the 2003-06 Audi TT with a 1.8L engine.

Featured Components

<table>
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<tr>
<th>DESCRIPTION</th>
<th>TRANSTEC® P/N</th>
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<td>Molded Pan Gasket</td>
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<td>Sealing Ring Kit</td>
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Kit number 2526 is in stock and available for immediate delivery.
POWER INDUSTRY NEWS

You can visit Corteco/TransTec on the web at www.transtec.com for more information.

Transstar Opens a New Location in Oklahoma City

Transstar Industries, Inc., the premier provider of world-class drive-line solutions, is proud to announce the opening of a new warehouse in Oklahoma City, Oklahoma. With this location, Transstar will now be able to provide enhanced delivery to an extended group of customers, and full access to Transtar’s comprehensive product line and world-class customer service and sales staff.

This is the second in a series of expansions planned for 2009, which began in January with a move into the Columbus, Ohio, market. “I am very pleased with our continued development, even in difficult economic times,” states Neil Sethi, group vice president, Transtar Distribution Group. “This is a new phase of growth for us, and I fully expect us to expand into more markets this year and beyond.”

“We are happy to be able to provide our customers with local inventory and multiple same-day deliveries in the Oklahoma City area,” adds Corby Wilemon, vice president of the central region. “We have had a team working diligently onsite for the last several months, and are extremely optimistic that our new branch will fill a void for our customers in this region.”

“We are currently evaluating several other new markets based upon ongoing conversations with our current and prospective customers,” Sethi continues. “Our extensive national inventory combined with our neighborhood local delivery network allows customers everywhere to count on Transtar.”

For more information, visit Transtar online at www.transtar1.com.

RatioTek Announces Two New Toyota/Lexus Valve Body Kits

RatioTek has just introduced two new valve body kits for the Lexus A761E 6-speed transmission.

The first, built for OE vehicles, provides quick, clean shifts and more converter clutch holding power. And it corrects a 4-5 spin-up or flair.

The new Lexus kit comes with easy-to-follow instructions, and additional information that offers a complete valve body breakdown.

The second kit, RatioTek P/N RT-A761E-HD, allows you to build in the extra torque capacity needed to handle the additional load from add-on turbos and NOS systems.

This kit fits Lexus A761E 2006-2008 all wheel and rear drive 6-speeds; it’s calibrated for engines with boosted turbos and NOS systems.

The HD kit comes with pan gasket, valve body parts, and easy-to-follow instructions. And you can install the kit without removing transmission.

To learn more about these new kits or any of the other products offered by RatioTek, call 626-968-2754, or visit them on the web at www.ratiotek.com.

Steel Billet Band Anchor Pins for the 2004R And 700R4 Transmissions

The aggressive calibration required for ultra high performance 2004R and 700R4 transmissions frequently results in band anchor pin failure. CK Performance Products has produced high quality heat treated steel billet band anchor pins that won’t fail in the most demanding applications. These parts are manufactured to strict tolerances on CNC equipment.

CK Performance Products is dedicated to the commitment of designing and manufacturing the best street/strip and racing automatic transmissions, custom ratio planetary gears, valve bodies, unbreakable drums, input and output shafts, clutch hubs and many other items. Their constant research and development will continue to provide solutions to failure prone factory components.

For more information, call 718-784-4256 or visit them at ckperformance.com.

Ed Cross Joins the Sales Team at Smart Blend Synthetics

Life Automotive/Smart Blend Synthetics is proud to announce that Ed Cross has joined our sales and transmission support team. Ed has over 29 years of experience in the automatic transmission parts industry in sales, sales management, and training. He began with Transmart Inc. in 1979 and subsequently was with ATC, Axiom and Transtar Industries.

“I am excited about the opportunity with such an industry leading company as Smart Blend Synthetics. The automatic transmission fluid industry is constantly changing, but I have been most impressed by how our company’s engineers and research and development team stay on the cutting edge of this technology,” said Ed.

We look forward to the added service and transmission parts experience Ed brings to our team.

For more information contact Life Automotive Products at 1-888-422-9099 • FAX: 281-631-0460, or visit us at: www.smartblend.com.
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<td>Eriksson Industries</td>
<td>(800) 382-4418</td>
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<td>Transmission Exchange Co.</td>
<td>(503) 284-0768</td>
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<td>Autocomp Technologies</td>
<td>(713) 697-5511</td>
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<td>Precision of New Hampton Inc.</td>
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<td>Lory Transmission Parts</td>
<td>(305) 642-4621</td>
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<td>Miami Transmission Kits</td>
<td>(305) 865-7355</td>
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<td>ART Auto Sport Unlimited</td>
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<td>Remanufactured Transmissions</td>
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<td>Trans-Pac Motor Parts</td>
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BUSINESS FOR SALE: Unique transmission shop located in the heart of Montana for sale. This pristine shop is 40 by 60 foot, features 2 Rotary hoists and much more equipment. Also included, a 2 story, 2 bath house with a full unfinished basement. The backyard has a natural spring with a pond stock with fresh trout and 5 acres of prime Montana land. This property is 7 miles outside of Lewistown, Montana. Call (406) 539-9085 Serious inquires only please.

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BUSINESS FOR SALE: ALASKA BUSINESS FOR SALE – Alaska Gear and Transmission, Inc. at 345 Boniface Parkway in Anchorage, Alaska 99504. Established in 1970, well-known and respected. Owners moving to Lower 48 for family considerations. In East Anchorage, which has seen a recent commercial expansion (national retailers, such as Target, Home Depot, Kohl’s, Best Buy, Lowe’s, etc.) Major arterial frontage. On doorstep to Elmendorf Air Force Base and Fort Rich Army Base. Just off junction to only northbound highway in and out of Anchorage. High traffic counts (20,000 avg. daily cars on Boniface Parkway. 47,000 on Glenn Highway). Business and real estate for sale, together or separate. $200,000 for business and equipment; $1,250,000 for real estate. Or, $1,500,000 together. Real Estate: 40,196 sq ft lot. 13,276 sq ft buildings. Industrially-zoned, which is in limited supply in Anchorage. Three-phase electric. Beautiful metal mezzanine in shop. fenced yard. Complete in-house Torque Converter Rebuilding Facility, 4 Overhead Lifts plus 4 additional floor Stalls, and 14’ overhead door for large motor homes, Semi-Tractors and trailers. Large Covered outdoor shed with over 300 transmission and 200 Torque Converter cores. Can provide training for Torque Converter and Transmission rebuilding. Owner-financing considered, with significant down and demonstration of financial strength, projections, etc. Full PDF package available upon request. Please request it. Email Hugh Wade at hughjwade@gmail.com or call 907-230-1523.

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