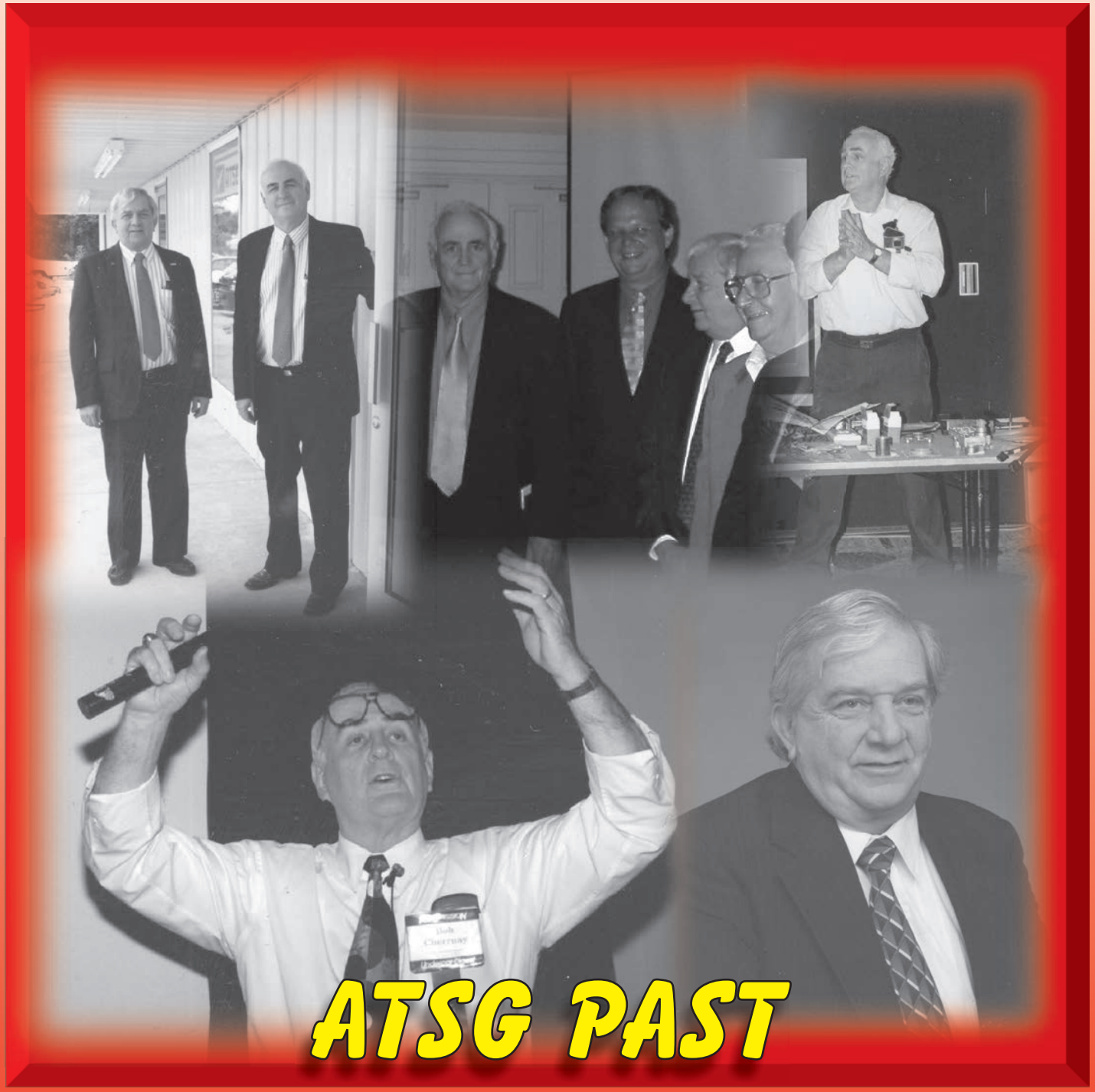
ATSG

AUTOMATIC TRANSMISSION SERVICE GROUP

25 YEARS OF TECHNICAL SERVICE



"2011" TRANSMISSION SEMINAR

SERVICE INFORMATION

Transtar - IFC

"25th Seminar Anniversary Silver Edition"

ATSG Seminars

As the October 1985 issue of Transmission Digest announced Bob's new venture with ATSG, the November issue announced the 21 seminars ATSG had already scheduled for 1986 with others pending. Seminars actually began in late of 1985 with REPCO in Texas run by Jay Wilemon and Trans Star in Georgia run by Eddie Lites covering transmissions like the 125C, 440-T4, 325-4L, ATX, AOD, A404 and more. Miami Florida January 18th was the first seminar of the 1986 year ending in Boston November 15th. Bob began doing these seminars with Dale England and C.W. Smith but it was with Dale England that ATSG's reputation of being a premier technical organization was beginning to take root. Some of the content of the 1986 seminar was ATSG's concern for understanding the electronics that were beginning to become a part of transmission diagnostics and repair. ATSG's standard format of complaint, cause and corrections covered problems related to some of the same transmissions that were in the late 1985 seminars. It was a time when GM had just recently released their 200C transmission and it was making quite a stir having a new transmission on the road. Although looking back now we can see how less complex the transmissions were back then but the need for information was just as important then as it is today. And ATSG was there to help thousands of shops with technical information, seminars and hotline to repair and resolve their transmission problems. 25 years later we are continuing with this legacy and good reputation world wide.

The information and part numbers contained in this booklet have been carefully compiled from industry sources known for their reliability, but ATSG does not guarantee its accuracy.

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FORD CFT30/CVT TRANSMISSION

TCC PERFORMANCE AND/OR TURBINE SENSOR CODES

COMPLAINT: Before or after overhaul, a Ford equipped with the CFT30 CVT Transmission may exhibit TCC apply issues. The TCC may not engage, may shudder, or set various codes for TCC performance or possibly even Turbine Sensor Codes.

CAUSE: One cause may be a damaged or missing Turbine Shaft O-ring or a damaged Torque Converter Clutch Apply Piston Assembly. If the Turbine Shaft O-ring is damaged or missing, or if the Torque Converter Clutch Apply Piston Assembly is damaged, it can cause a loss of converter apply oil. When this happens, there will be insufficient oil pressure to keep the Torque Converter Clutch properly applied, allowing it to slip. The slipping converter clutch may cause the computer to store TCC performance codes or possibly Turbine Sensor Codes. Refer to the diagram in Figure 1, this diagram shows the Turbine Shaft Assembly. Nearly every time the converter is removed from the transmission for service, there is no O-ring to be found, therefore it is assumed the Turbine Shaft does not take an O-ring. This Turbine Shaft needs to have a new O-ring installed during service procedures. Refer to the diagram in Figure 2 this diagram shows the Torque Converter Clutch Piston Assembly. The area in the piston assembly where the Turbine Shaft O-ring rides has a tendency to become grooved. This may be caused by internal instability in the torque converter causing the Turbine Shaft O-ring to fail prematurely.

CORRECTION: During service it is necessary to replace the Torque Converter and the Turbine Shaft O-ring. The Turbine Shaft O-ring is readily obtained in overhaul kits, and is also available from Ford if just the Torque Converter O-ring is being replaced.

In addition to the aforementioned information, there is a bulletin from Ford TSB 05-17-5 That deals with an Engine RPM Fluctuation at Highway Cruising Speeds for Vehicles Built Prior to 08-02-2005. The bulletin basically states that "some CVT vehicles may exhibit a 50-100 RPM fluctuation while at highway speeds with a constant throttle or slight tip-in to the throttle." The bulletin further states that "there will be no Diagnostic Trouble Codes DTC's" associated with this problem and that the correction for this issue is "Reprogram the Powertrain Control Module (PCM) and the Transmission Control Module (TCM) to the latest calibration using WDS release B38.10 and higher or B39.1 and higher." This reprogram procedure may not have any effect on the RPM fluctuation issue which is most likely due to the missing O-ring on the Turbine Shaft.

SERVICE INFORMATION:

Turbine Shaft O-ring/Converter Seal.....5F9Z-7H497-EA

TURBINE SHAFT ASSEMBLY

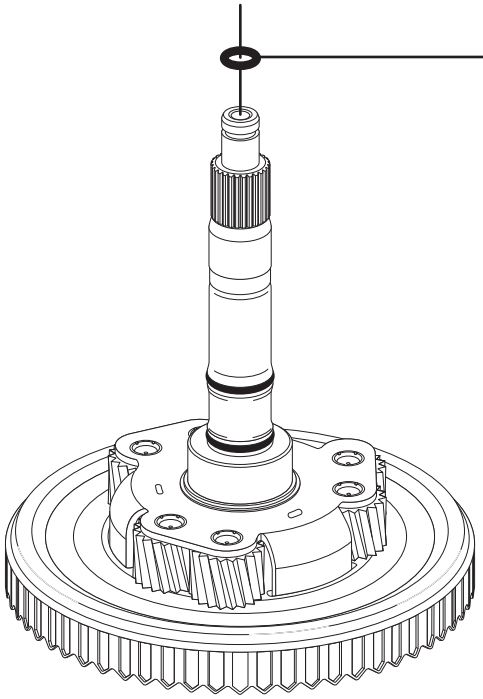


Figure 1

TORQUE CONVERTER CLUTCH
PISTON ASSEMBLY

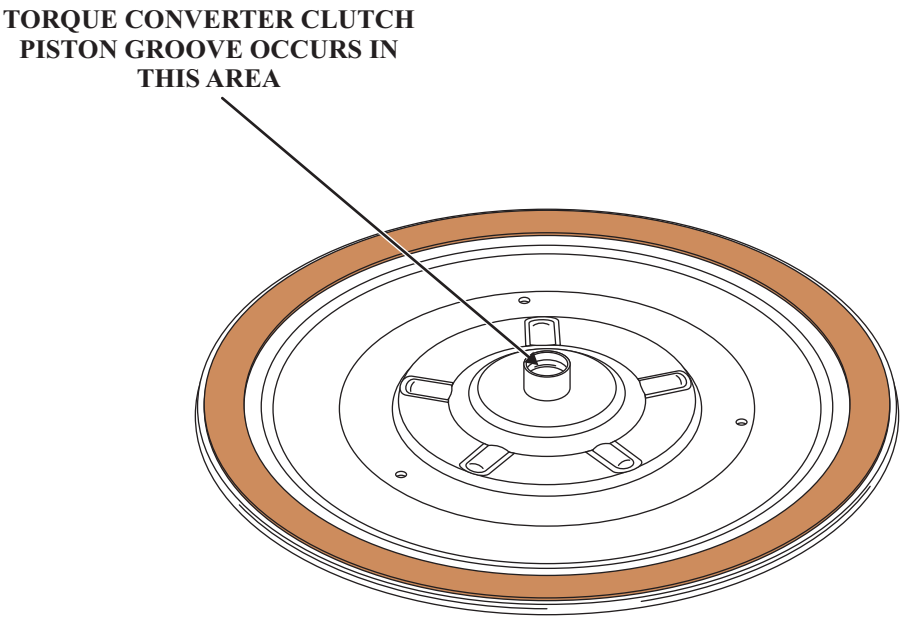


Figure 2

SAP - 6

POWER SPLIT DEVICE

THEORY OF OPERATION

The transmissions found in a Series/Parallel hybrid vehicle resembles a differential more than it does a transmission. The main difference is that there are multiple sources of power rather than just one. This ingenious component is called a **Power Split Device (PSD)**. The PSD is a compact device and each of the component rotates in its own way providing a number of power curves. The ring gear is sometimes powered by the hybrid battery to allow the vehicle to move off both forward and reverse on electricity only. At other times the ring gear creates power, regenerating the hybrid battery when braking.
The planet carrier is powered by the engine which causes rotation of the driving wheels for forward movement and the sun gear for generating electricity. While the planet carrier and sun gear are spinning, the ring gear can provide additional thrust to the wheels or allow engine rpm to be reduced. The sun gear is also used to start the engine. The PSD is how the gasoline engine and the two electric motors are connected, Figure 1.

The PSD can distribute thrust by suppling power from three different sources, a gasoline engine (ICE), motor generator 1 (MG1)and motor generator 2 (MG2). This power is not only split, it is combined as well. This power split depends on what is needed at any specific moment, in addition, the PSD can alter operation quickly.
The PSD allows a 3 phase electric motor (MG2) and the engine (ICE) to power the drive wheels either together or separately. Another electric motor (MG1) is connected to the sun gear. MG1 is the starter for the ICE and also controls the speed of the engine relative to road speed and output of the transmission which creates a CVT Transmission, Figure 2.

By speeding up MG1, the engine RPM can be kept within a small range and still accelerate the car which will control the speed of the car. MG2 is splined to the ring gear, the crankshaft is connected to the planetary carrier, and MG1 is connected to the sun gear. A chain connects the outer part of the ring gear to the final drive which drives the wheels.

To start the ICE the sun gear turns at about 3800 rpm and with the ring gear held the carrier is turned at about 1000 rpm, the engine is now running. To drive off under electric power only 3 phase electric power is sent to MG2 with the ICE running or not. If the ICE is off, the sun gear must turn backwards and then the planet carrier will not move while the ring gear is turning and now the car is gaining speed. As the ring gear turns faster, the sun gear must also turn faster in the opposite direction, Figures 3 and 4.
If the PSD is perfectly synchronized, the ICE remains off. Under normal acceleration between 10-32 mph the sun gear will turn the opposite direction it was moving and that will restart the engine, now the ICE is running but the car is still moving with only MG2. To engage power to the ring gear, the sun gear must have power and resist the planetary gears forcing them to add power to the ring gear. Now the ICE is running and adding power to the ring gear, the sun gear must have power going to it or the ICE cannot power the drive wheels.
Power flow for the series/parrallel system with a PSD can be seen in Figures 5 to 7.

POWER SPLIT DEVICE

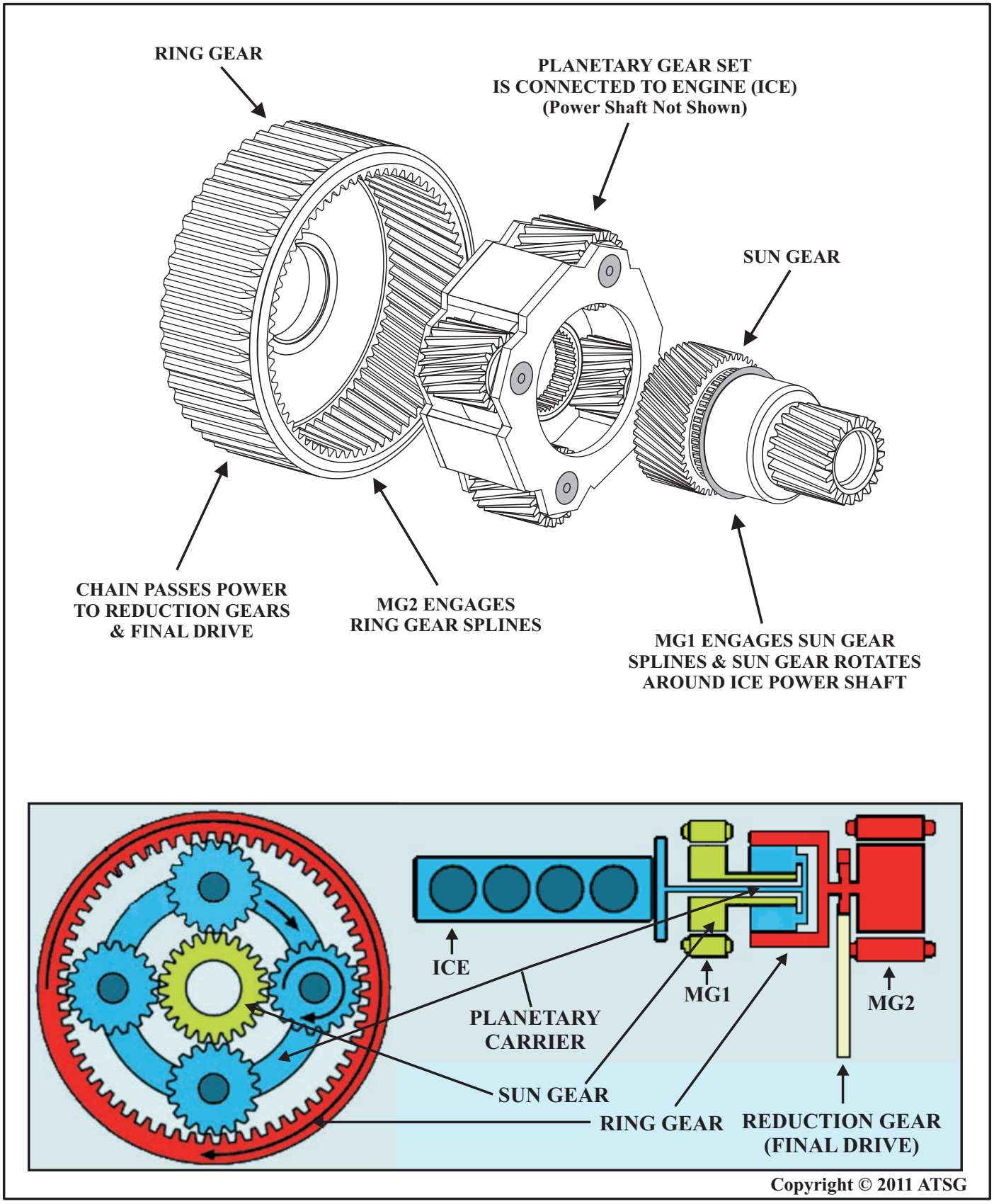


Figure 1

POWER SPLIT DEVICE

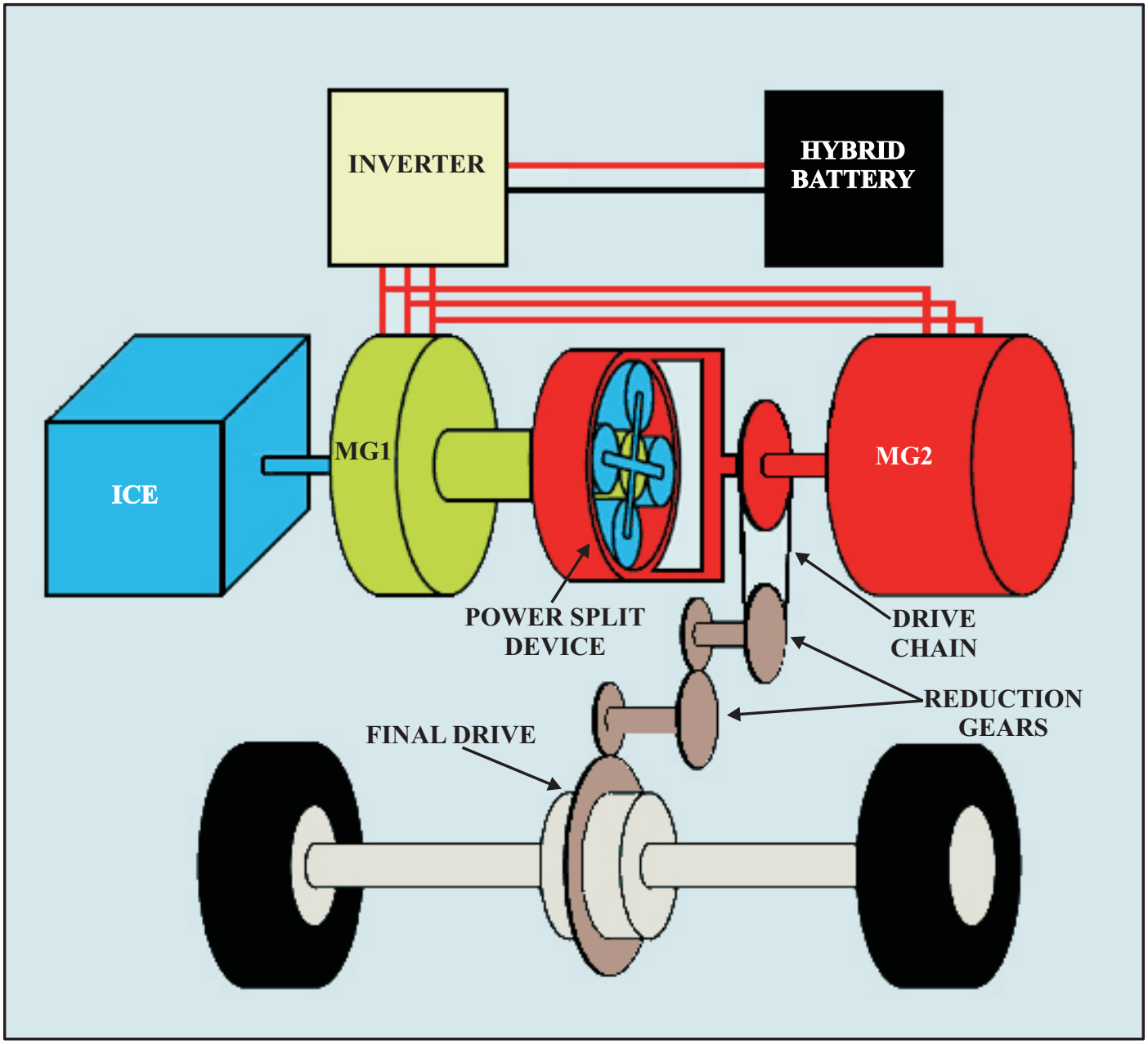


Figure 2

POWER SPLIT DEVICE

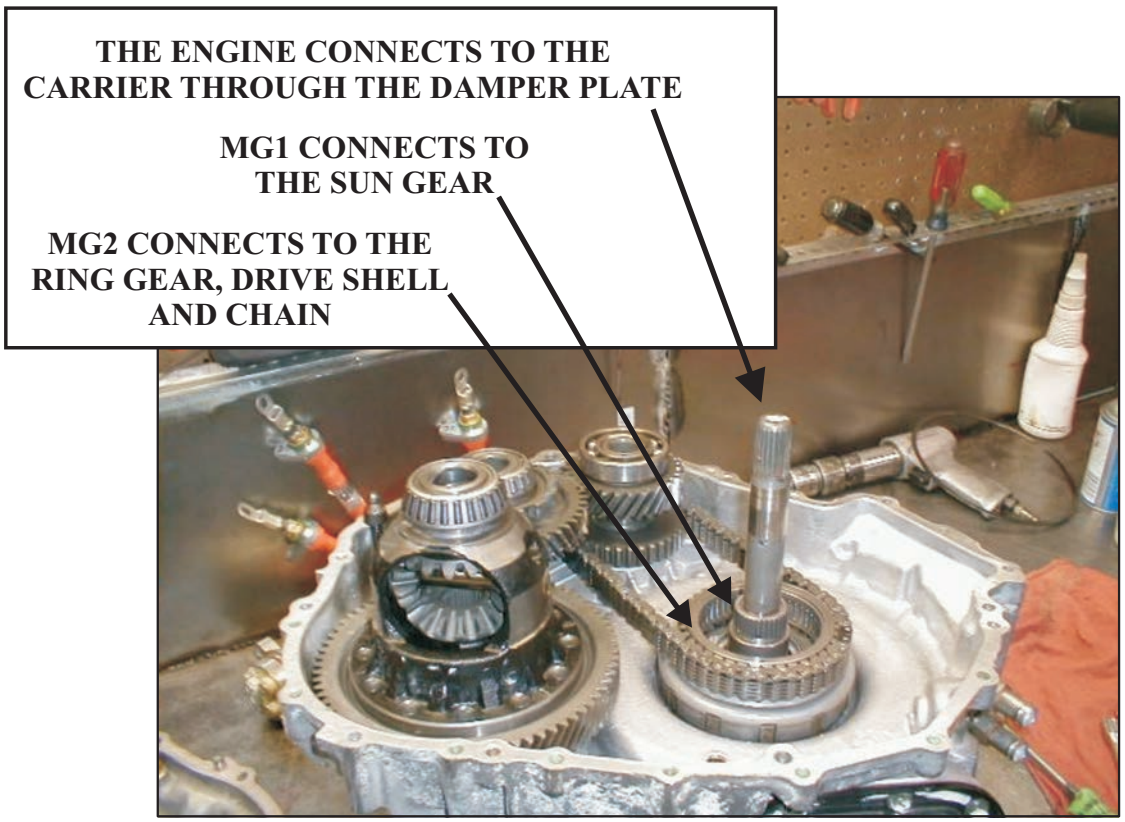


Figure 3

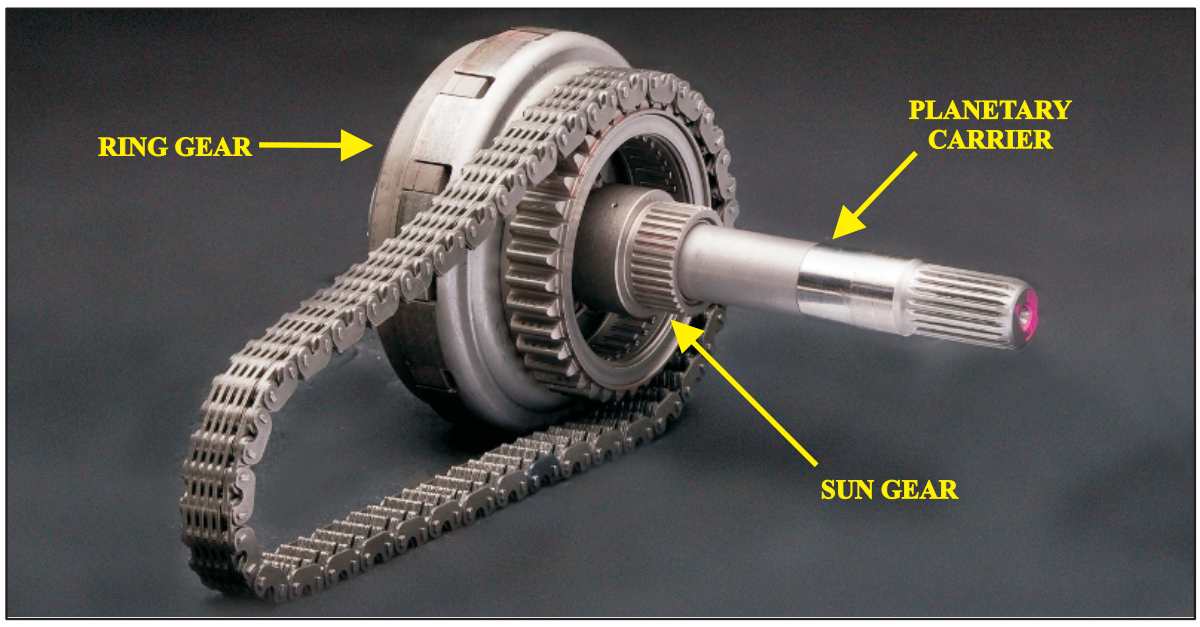
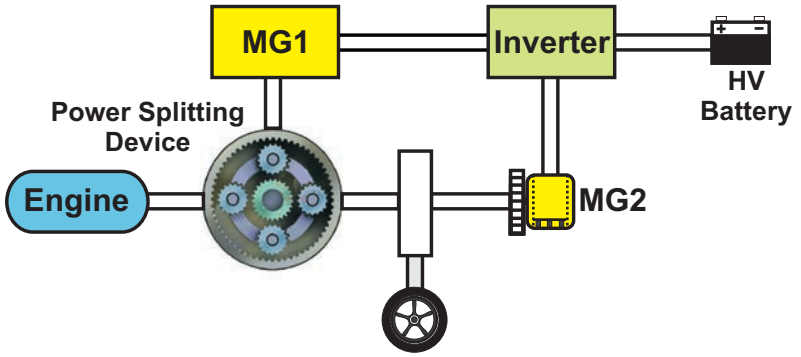


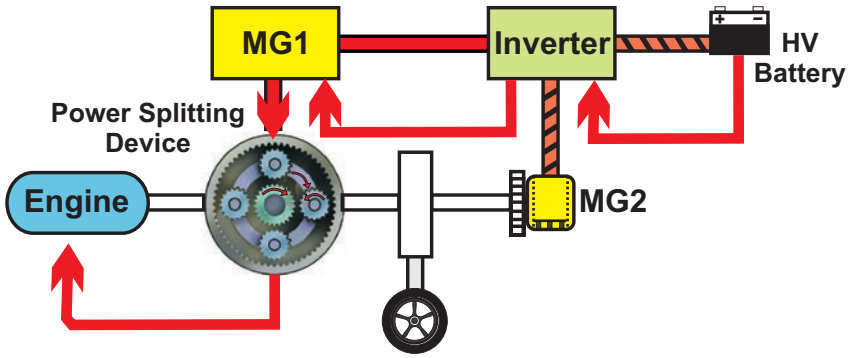
Figure 4

POWER SPLIT DEVICE

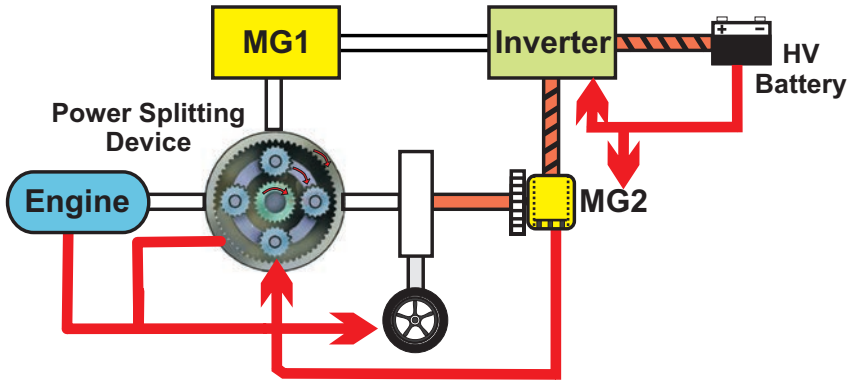
Stopped:
When the vehicle stops the engine stops automatically. If the AC is on or the HV battery state of charge is low, the engine will continue to run.



Stationary Engine Start:
To start the engine, MG1 connected to the sun gear is driven forward from the HV Battery. The PSD ring gear will be held while the rotation of the sun gear forces the planet carrier to rotate.



Starting Off (Engine Running):
The engine alone cannot supply all the torque to move off smartly. MG2 acting directly on the PSD along with the engine will drive the wheels.



Starting Off Electrically:
If a small amount of accelerator pressure is applied, the HV Battery will supply a small amount of power to MG2 and MG2 will move the car forward. Since MG2 is quite powerful and has high torque, the car can launch on electric power only.
Since this type of propulsion system uses no torque converter, "creep" will be simulated by the supply of a small amount of power from MG2 when the brake is released.

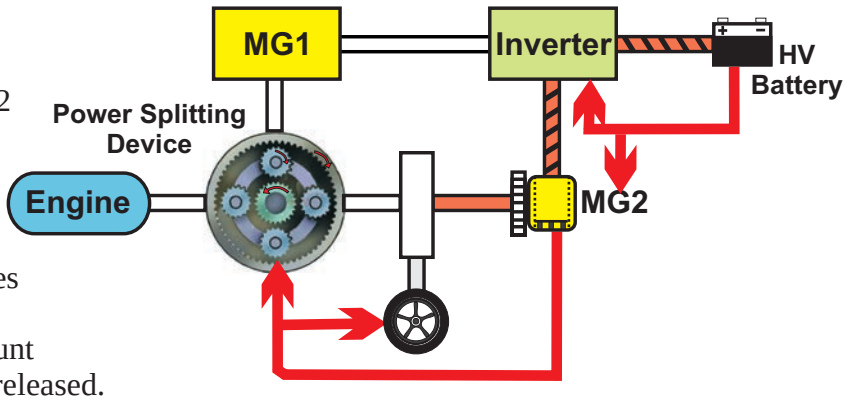
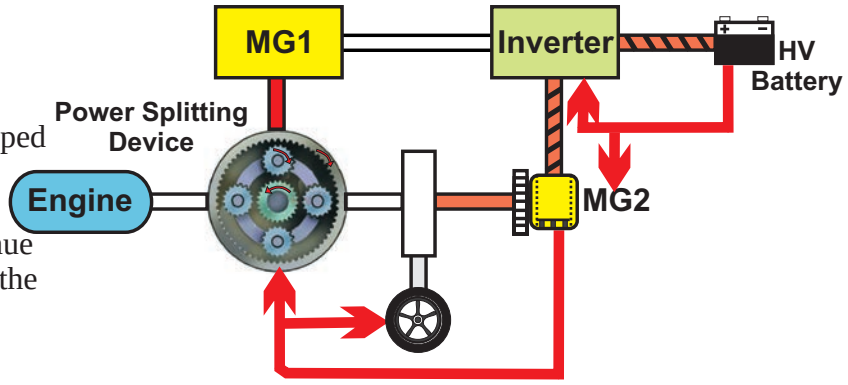


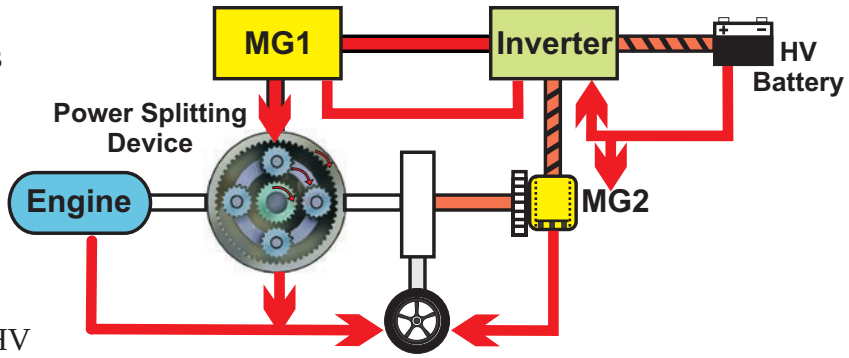
Figure 5

POWER SPLIT DEVICE

Slow Driving In EV Mode:
The PSD ring gear is turning as MG2 powers the car, the planet carrier is stopped and the sun gear and MG1 are spinning freely backwards. As long as a light throttle is maintained the car will continue to drive on electric power only without the ICE starting up.



Accelerating:
When power demand is high, the ICE and MG2 both drive the car. The ICE is spinning the PSD planet carrier. Torque is delivered through the PSD ring gear to drive the wheels.
The more throttle that is applied, the more torque is produced by the ICE. MG1and MG2 also supply power to provide more torque. If power demand is not very high, MG1 will charge the HV Battery.



Cruising @ Moderate Speed:
When a steady cruise speed is reached, the ICE rpm lowers. MG1 must now spin backwards which makes the PSD planet gears rotate forward. The rotation of the PSD planet is added to the PSD planet carrier which makes the PSD ring gear move much faster.

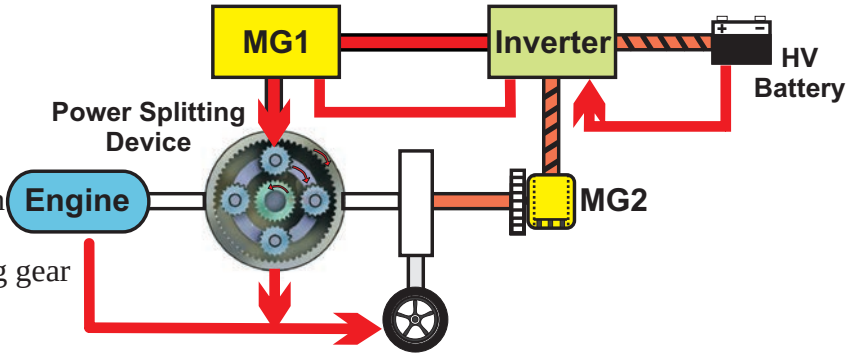
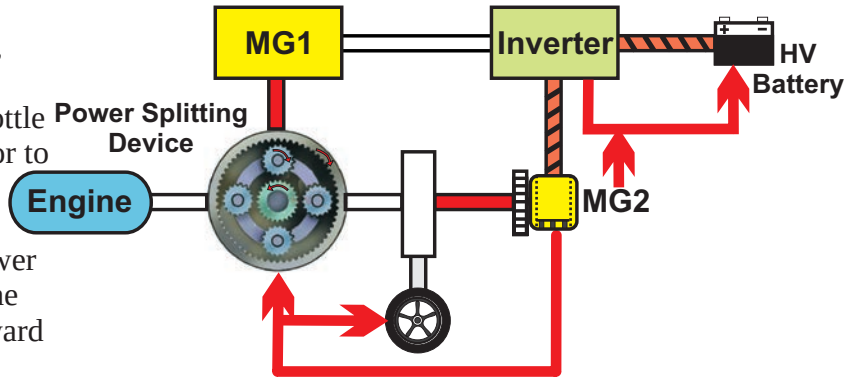


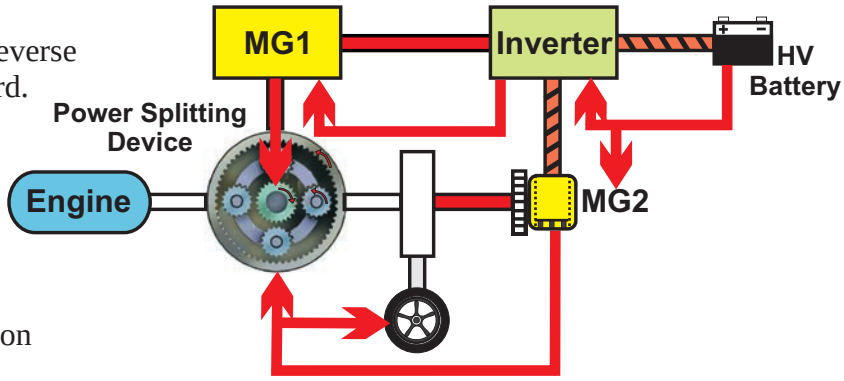
Figure 6

POWER SPLIT DEVICE

Coasting:
Because there is no real engine braking, it will have to be simulated. To produce the feel of engine braking when the throttle is released, MG2 now acts as a generator to charge the HV Battery, the drag from MG2 simulates engine braking. Because the engine is not needed to power the car, it stops. MG2 acts directly on the PSD ring gear and the planets spin forward and MG1 spins backwards freely.



Reverse:
A series parallel hybrid system has no reverse gear to let the ICE push the car backward. It can only move in reverse electrically using MG2.
As MG2 turns the input to reduction gear backwards, the PSD ring gear will also move backwards. With the ICE & the forward carrier stopped, MG1 will rotate forward. This is a backward version of EV Mode.



Regenerative Braking:
The electrical power generation of MG2 is increased for a much greater drag to slow the car. The electrical power generated by this action is used to charge the HV Battery

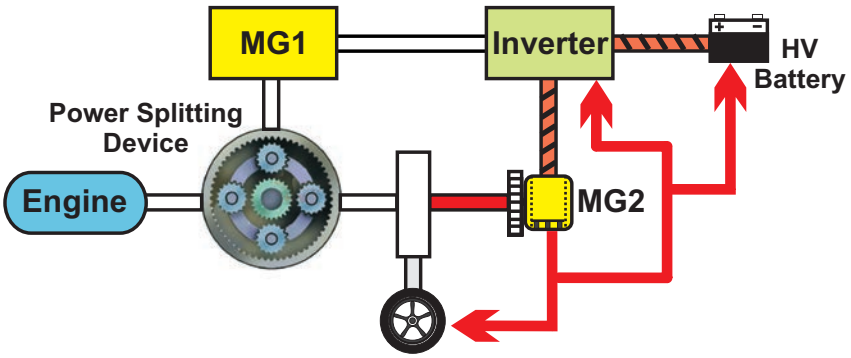


Figure 7

VB Pro - 14

Exedy - 15

TOYOTA PRIUS

GENERAL INFORMATION

Upon removal of the transaxle, a torque converter will not be found, only the splined end of the planetary carrier will be seen, Figure 1. Instead, bolted to the engine crankshaft, a damper assembly will be found, Figure 2. Because a conventional torque converter is not used, the damper assembly will cushion any torsional vibrations that may occur. Since functions such as creep mode and hill hold are simulated by the PSD and the electric motors, a torque converter is not needed.

All Prius cars have an inverter located in the engine bay, Figure 3, which converts electrical power between the DC hybrid battery and the 3 phase AC voltage from MG1 and MG2. MG1 is used to recharge the high voltage battery pack and supply electrical power to MG2. It also regulates the amount of electrical power supplied to MG2 through the inverter, which varies MG2 speed, Figures 4 and 5. MG2 always drives the wheels except during deceleration, at which time the wheels are driving MG2 which is generating electricity to be stored in the hybrid battery pack.
The inverter is also responsible for converting high voltage from the hybrid battery pack into 12 volts for the vehicles 12 volt system.
Because the inverter and the electric motors can get extremely hot, these vehicles will have a dedicated cooling system separate from the engine, Figure 6.

TOYOTA PRIUS - GENERAL INFORMATION

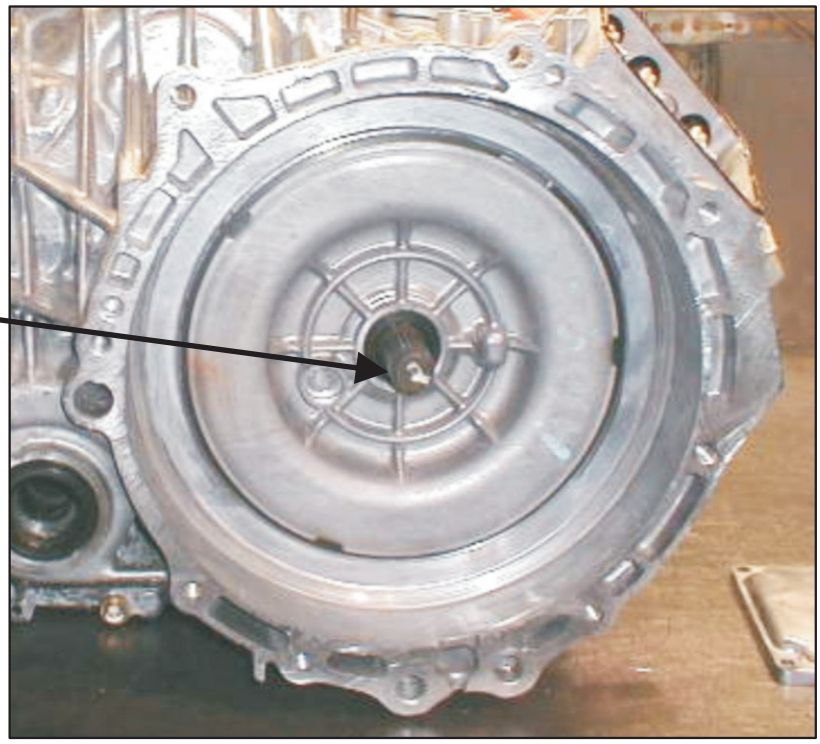


Figure 1

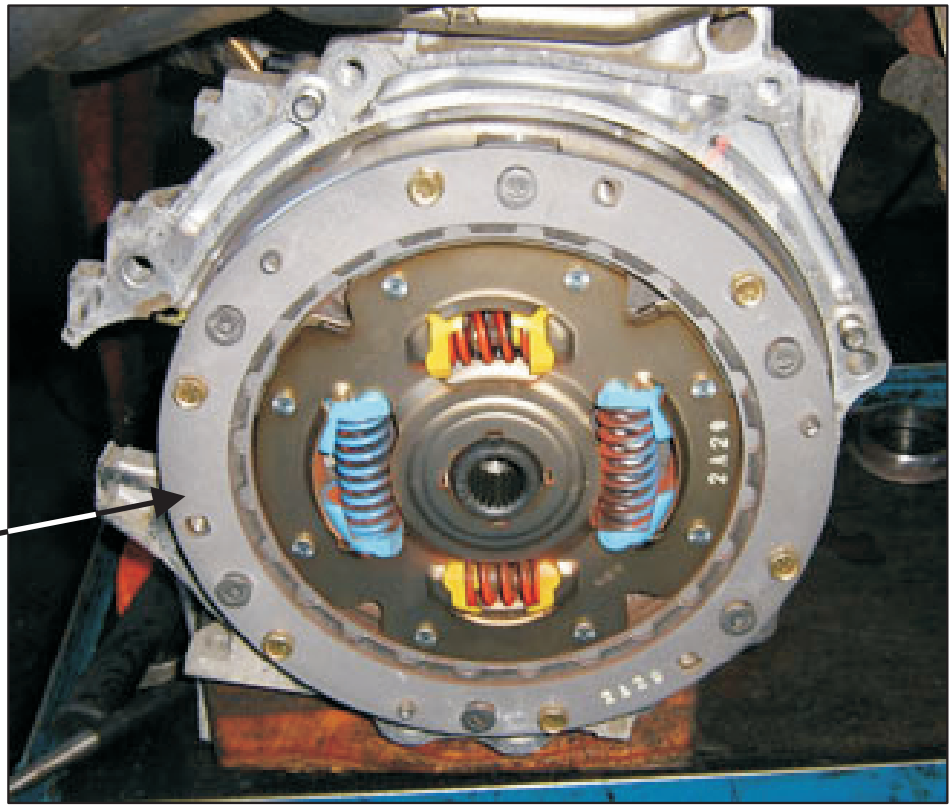


Figure 2

TOYOTA PRIUS - GENERAL INFORMATION

Figure 3

Figure 4

TOYOTA PRIUS - GENERAL INFORMATION

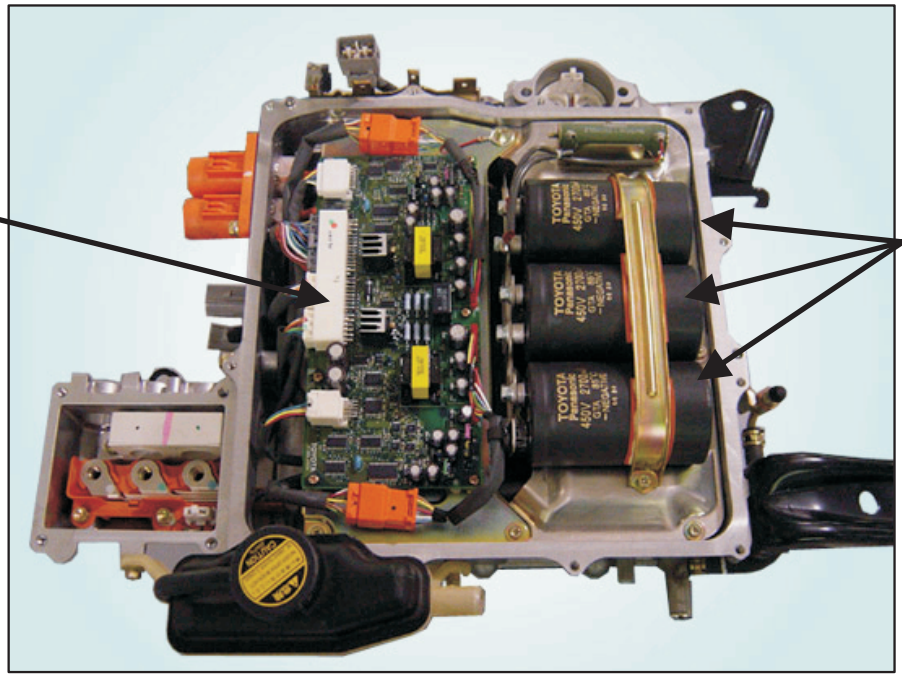


Figure 5

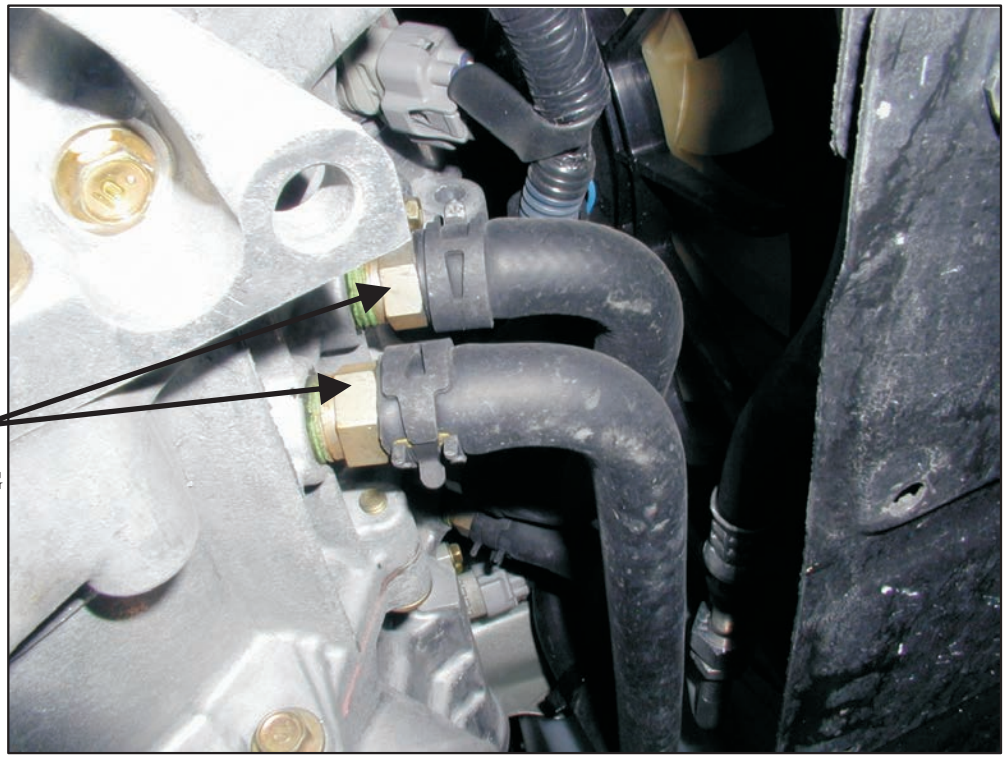


Figure 6

2001 - 2003 TOYOTA PRIUS

GENERATION 1 - P111 TRANSAXLE

The 2001 to 2003 Toyota Prius is known as the Generation 1 type which came equipped with the P111 transaxle. This is a type of ECVT but no belt, pulleys or clutch packs are used. These vehicles have a 1.5 Liter gasoline engine and two electric motors with a 274 volt hybrid battery pack. This will power the drive wheels either by the engine which we will refer to as the ICE (Internal Combustion Engine), or on electric power only. This system is known as the Toyota Hybrid System (THS).

The information that follows will relate to the P111 transaxle only, because there are a number of similarities between the P111 and the later P112 transaxle. The majority of the information for the P112 will be covered in that section.

NOTE: NEVER tow a Prius with its front wheels on the ground, this may cause MG2 to generate electricity. If that happens, the electrical insulation could start melting and possibly create a fire hazard. ALWAYS tow with the front wheels off the ground or on a flat bed tow truck.

The Gen I P111 transaxle can quickly be identified by the 3 phase high voltage cables that connect the inverter to MG2, Figure 7. The P111 also has an oil pan where the drain plug is located and the motor generator reservoir fill plug is shown in Figure 8. The fluid level check/fill plug is located a few inches above the pan between the MG1 and MG2 cooling hose connections, Figure 9.
The three phase cables for the MG1 and MG2 electric motors will have to be removed. Make certain you mark the locations of the cables using the letters on them that is shown in Figure 10. Because they are separate cables in the P111, they can be swapped which would cause operational difficulties.

Because the 3 phase cables in a GEN I P111 are separate, they can be switched which would result in the possibility of the car moving backward when it should be moving forward. What may also happen is MG1 and MG2 may fight each other which would affect the electric motors ability to produce the correct rpm to attain proper vehicle speed.
A Phase Sequence Tester is used to check for correct rotation of an electric motor. The rotation is dependant on how the system was engineered. Figure 11 shows that the normal rotation is to the left. Motor rpm is also checked with a CAT III digital Multi-Meter in order to see that the electric motors can perform properly. Notice this is done with the technician wearing Class 0 gloves rated at 1000 Volts.

Motor Generator 1 (MG1) is shown in Figure 12. The bell housing section of the transaxle is always referred to as the MG1 housing. In Figure 13 Motor Generator 2 (MG2) is seen. The transaxle case section is always referred to as the MG2 housing. The Gen 1 P111 electric motors have less power then the P112 due to the shape of the motors magnets.

PRIUS GENERATION I - P111 TRANSAXLE

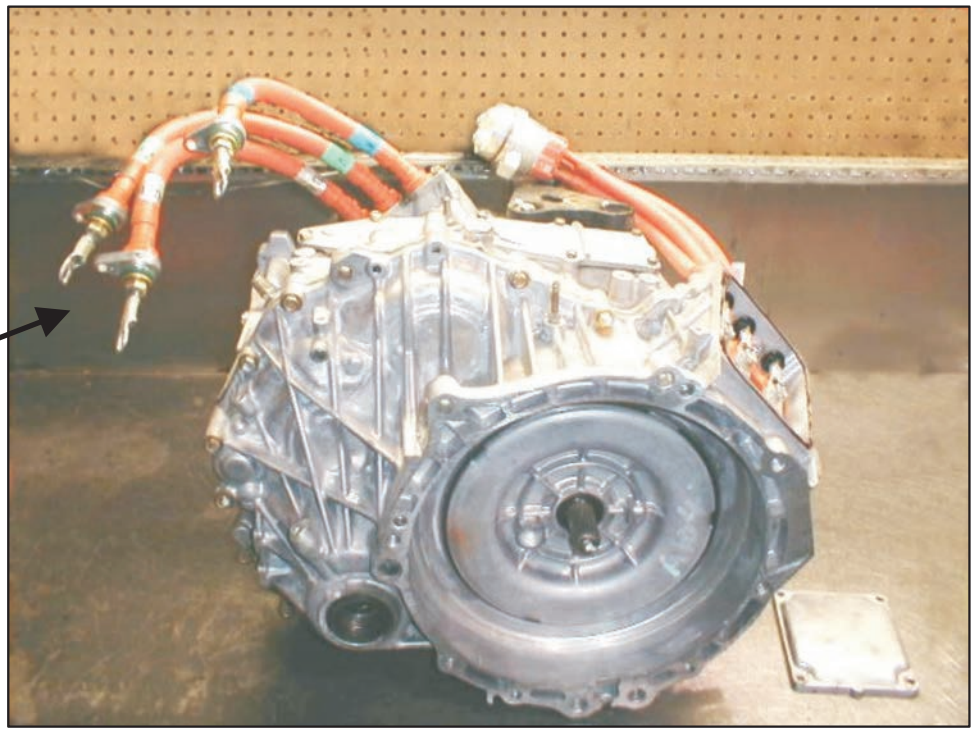


Figure 7

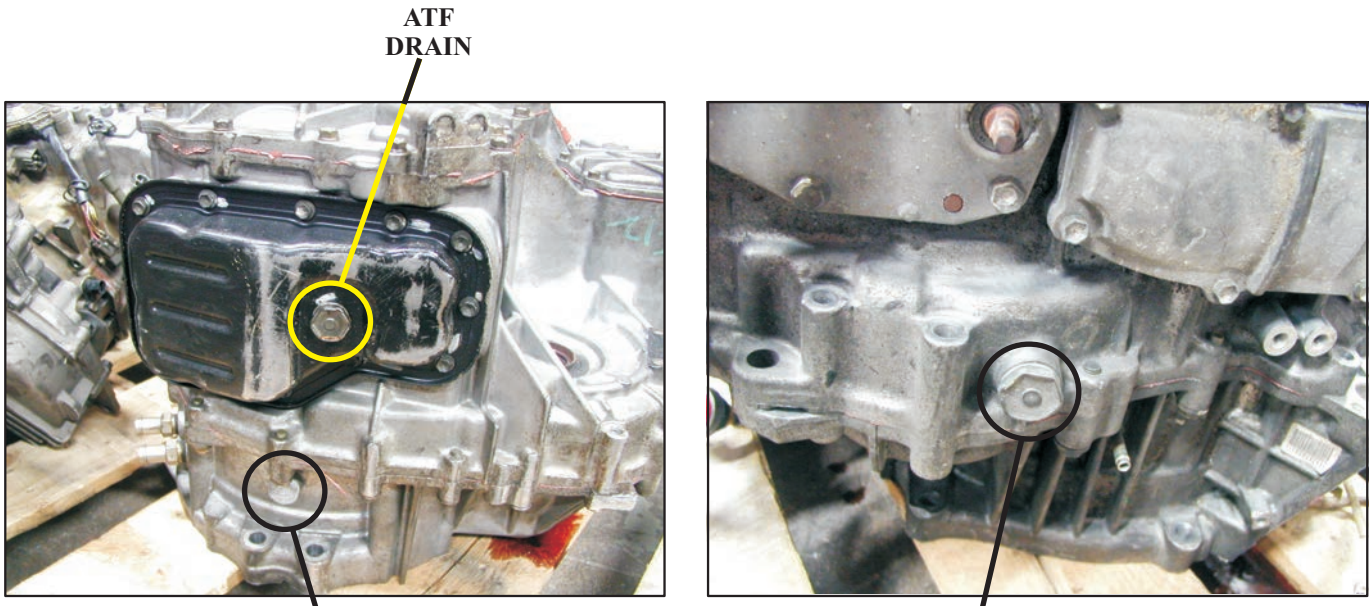
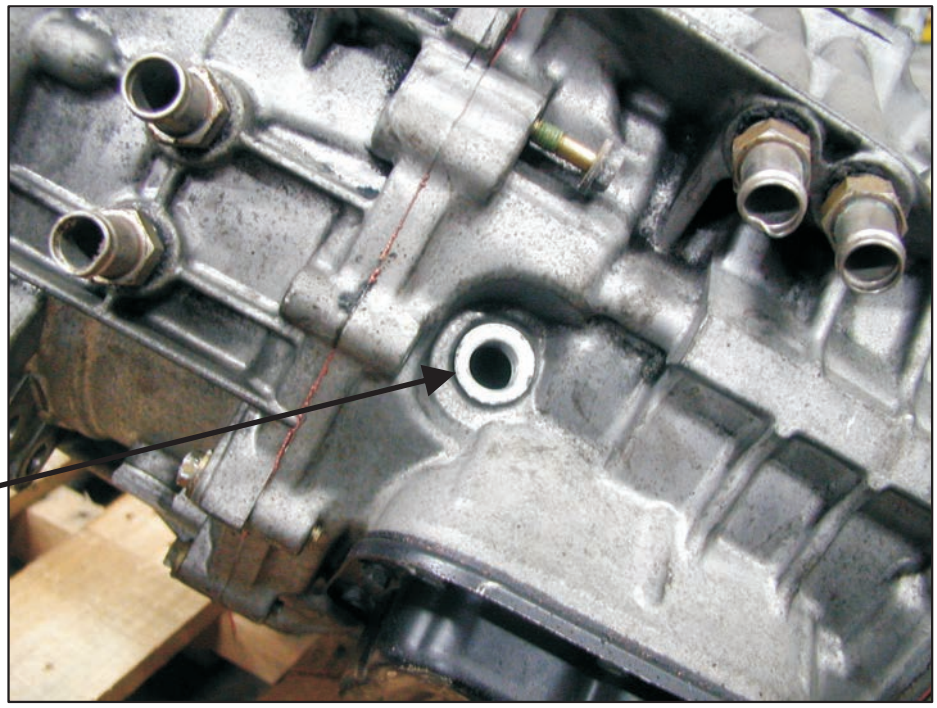


Figure 8

PRIUS GENERATION I - P111 TRANSAXLE



ATF Type - T-IV Fluid Capacity - 4.9 Qts. (4.6 Liters)

Figure 9

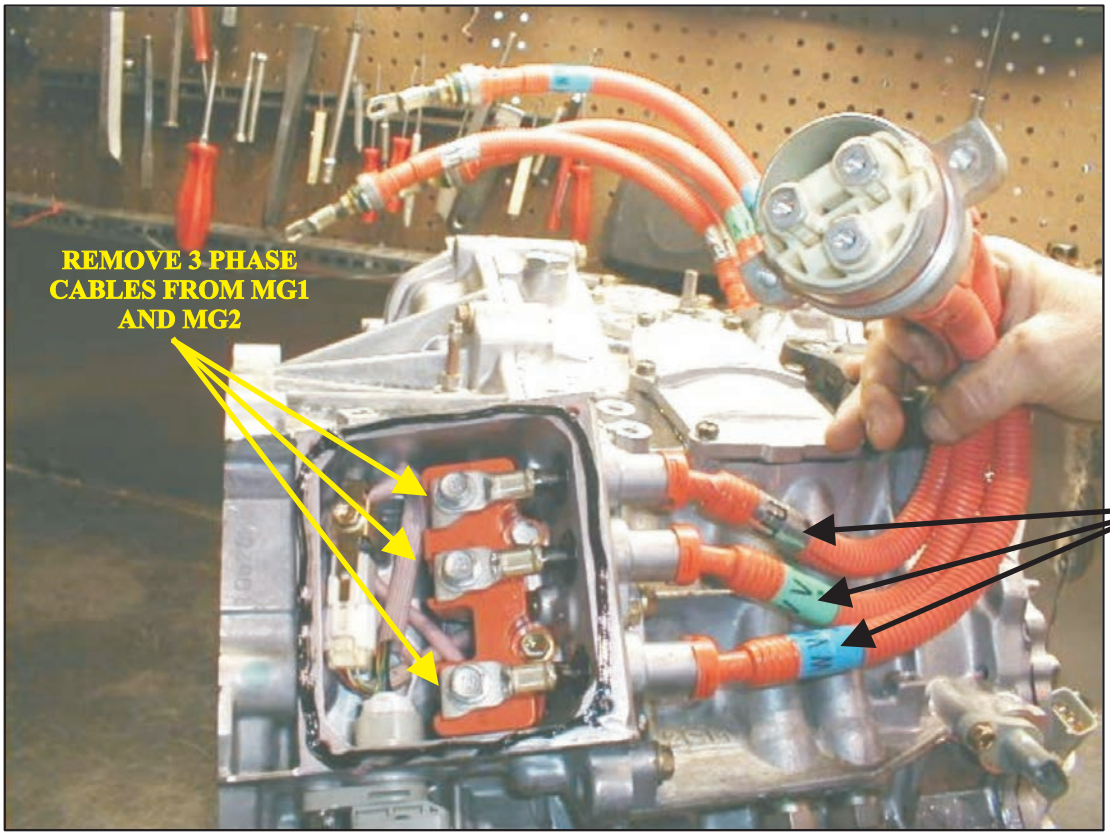


Figure 10

Because the P111 3 phase cables are individual they can be crossed, if this happens either the car will back up when it is supposed to go forward or it may bind up because MG1 and MG2 a fighting each other.

Shown above is the use of a Phase Sequence Meter, this meter indicates the direction of rotation the electric motor is supposed to turn which is determined by the design engineer. As the meter indicates the correct rotation is to the left, if the cables were switched right hand rotation would be seen. A Cat III meter is also used to check electric motor RPM to determine if MG1 or MG2 are fighting each other.

Figure 11

PRIUS GENERATION I - P111 TRANSAXLE

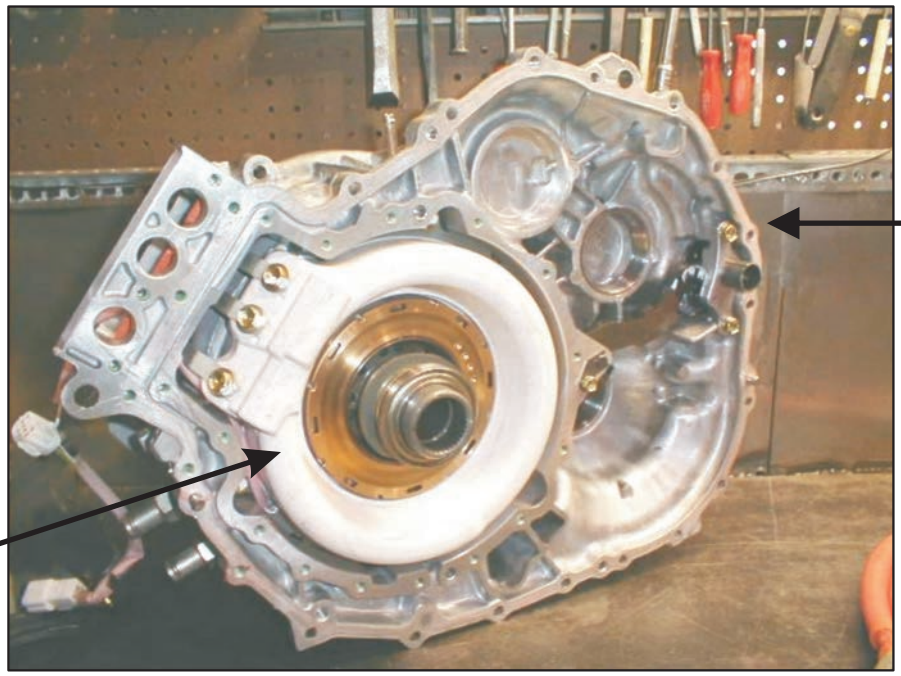


Figure 12

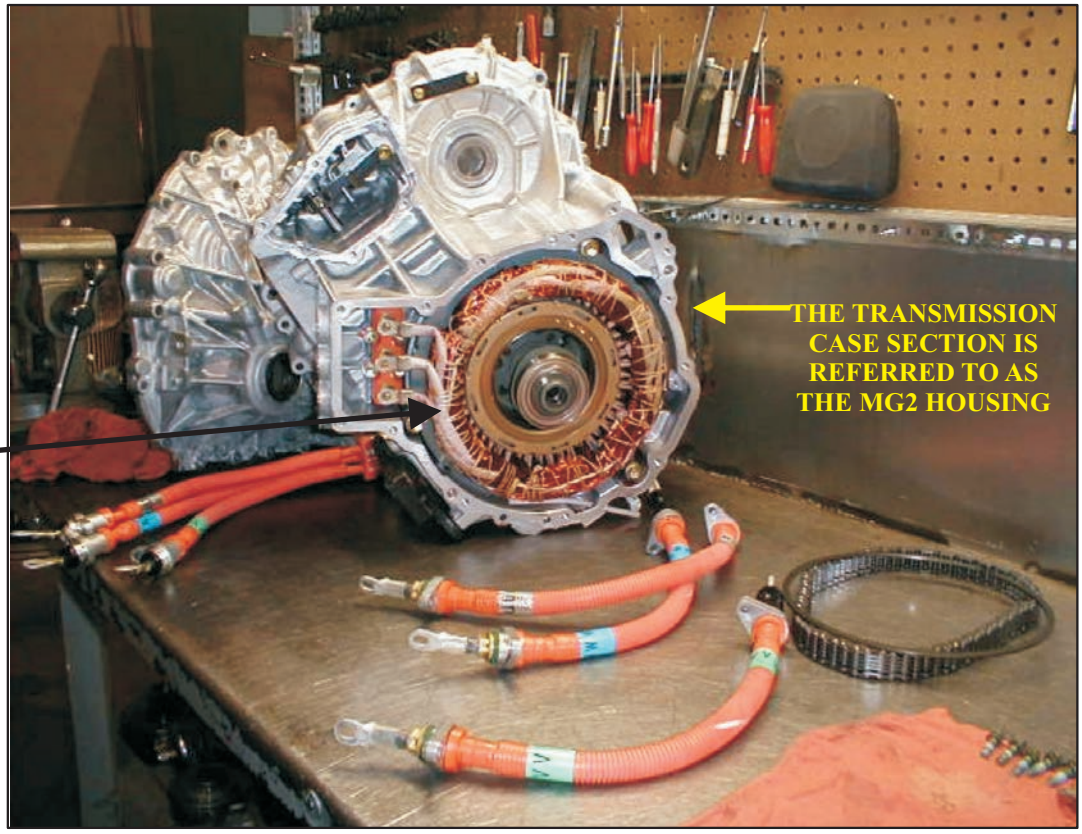


Figure 13

2004 - 2009 TOYOTA PRIUS

GENERATION 2 - P112 TRANSAXLE

The 2004 to 2009 Toyota Prius is known as the Generation 2 type which came equipped with the P112 transaxle. These vehicles still use a 1.5 Liter gasoline engine but it is a more powerful DOHC version. Two electric motors are still used but they are more powerful and a 201 volt hybrid battery pack is now used but the hybrid system can boost that to 500 volts AC. This system is known as the Toyota Hybrid System-II (THS-II).

NOTE: NEVER tow a Prius with its front wheels on the ground, this may cause MG2 to generate electricity. If that happens, the electrical insulation could start melting and possibly create a fire hazard. ALWAYS tow with the front wheels off the ground or on a flat bed tow truck.

The P112 three phase cables cannot be switched because the cable assemblies are encased in booted connectors which are keyed to their location on the case as seen in Figure 14. The P112 also does not use a torque converter. A damper plate assembly is used.

There are a number of fill and drain plugs on the P112 as seen in Figure 15. Because the inverter, MG1 and MG2 need a dedicated cooling system there are two coolant drain plugs. Filling the system is done through the overflow tank under the hood. There is also an ATF drain and fill plug also shown in Figure 15.

If the snap ring in the front of the transmission is removed, the sealing cover for the MG1 cooling reservoir can now be seen in Figure 16. The cover has an inner and outer rubber o-ring seal so it is possible to have a leak out the front that is coolant. The cover is removed after MG1 is removed so a punch can be inserted into the MG1 mounting bolt holes and the cover driven out from behind.

Manual gear selection and park are performed by a computer controlled electric Shift Actuator Motor which controls in internal linkage and is mounted on the transaxle as seen in Figure 17.

In the rear cover of the transaxle is where the lubrication pump is located, Figure 18, and is a Gerotor style pump with the end cover being the pump body. There is a pressure port in the pump cover to check lube pressure which should be 1.4 psi (9.8kPa) or more.

With the end cover removed in Figure 19, MG2 can be seen with the oil pump drive shaft sticking out. This shaft is driven by the engine through the planetary carrier. Notice there is a short flat end and a long flat end.

Make certain the long flat end faces the lube pump gears. There is a lube hole in the pump drive shaft. Make certain it is clear.

Motor temperature is monitored and sent to the Hybrid Control Module via the temp sensor that is seen in Figure 20. This sensor is fragile so handle with care and keep it out of harms way when reinstalling MG2 into the case.

Both MG1 and MG2 have what is known as a Resolver in their respective covers (Figure 21). This is a revolution sensor to monitor electric motor rpm. The electrical connector for the MG2 resolver is also shown in Figure 21. The reason for six pins is because there are actually three pickups in one resolver each producing an AC voltage signal. Since the sensor rotor is oval, the gap between the motor stator and the rotor varies with rotation of the rotor.

There is an internal transaxle filter which is located inside the transaxle and is seen in Figure 22. The pickup tube end of the filter sticks out above the surface of the case and must be centered into the feed hole in the end cover as shown in Figure 23.

The bell housing section is where the final drive components are located, this is where the power split device and the counter gears and final drive carrier are located, Figure 24. The drive chain is driven by the engine or by electric motor. The drive chain seen in Figure 24 is stretched and in need of replacement.

PRIUS GENERATION II - P112 TRANSAXLE

There is an oil slinger located under the drive counter gear, Figure 25. This must be installed under the counter gear with the ridge facing out.
In Figure 26 the power split device (PSD) can be seen. This device is able to drive the wheels either from the engine or from MG1 or MG2. It does this by the sun gear being connected to MG1, the ring gear being connected to MG2 and the planetary carrier is connected to the engine.
In Figure 27, the cover for MG1 can be seen which is located in the bell housing section of the transaxle. Inside this cover is the MG1 resolver. There is also an end play shim located here. Do not leave this out.

When the transaxle is assembled, MG1, the power split device and MG2 are as they are seen in Figure 28. MG1 is the smaller of the two and recharges the hybrid battery pack and supplies power to boost MG2 and also serves as the ICE starter.
MG2 and the engine work together to drive the wheels. MG2 being the larger motor has the stronger torque output and handles initial vehicle take off. During regenerative braking, MG2 converts kinetic energy into electrical energy which is stored in the hybrid battery pack.

PRIUS GENERATION II - P112 TRANSAXLE

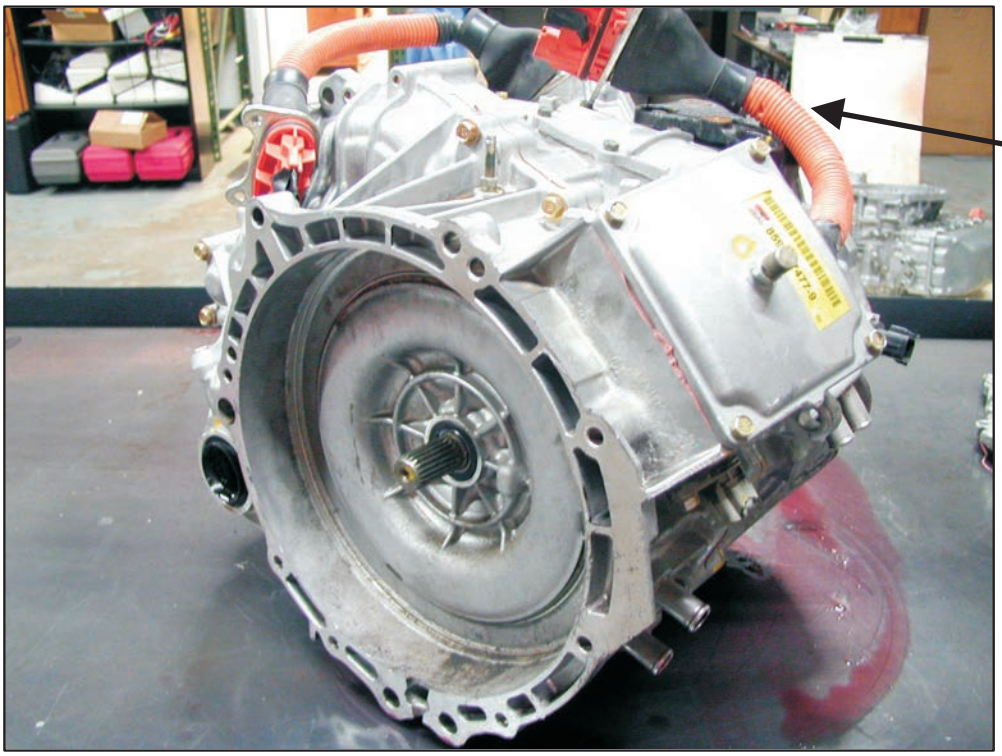
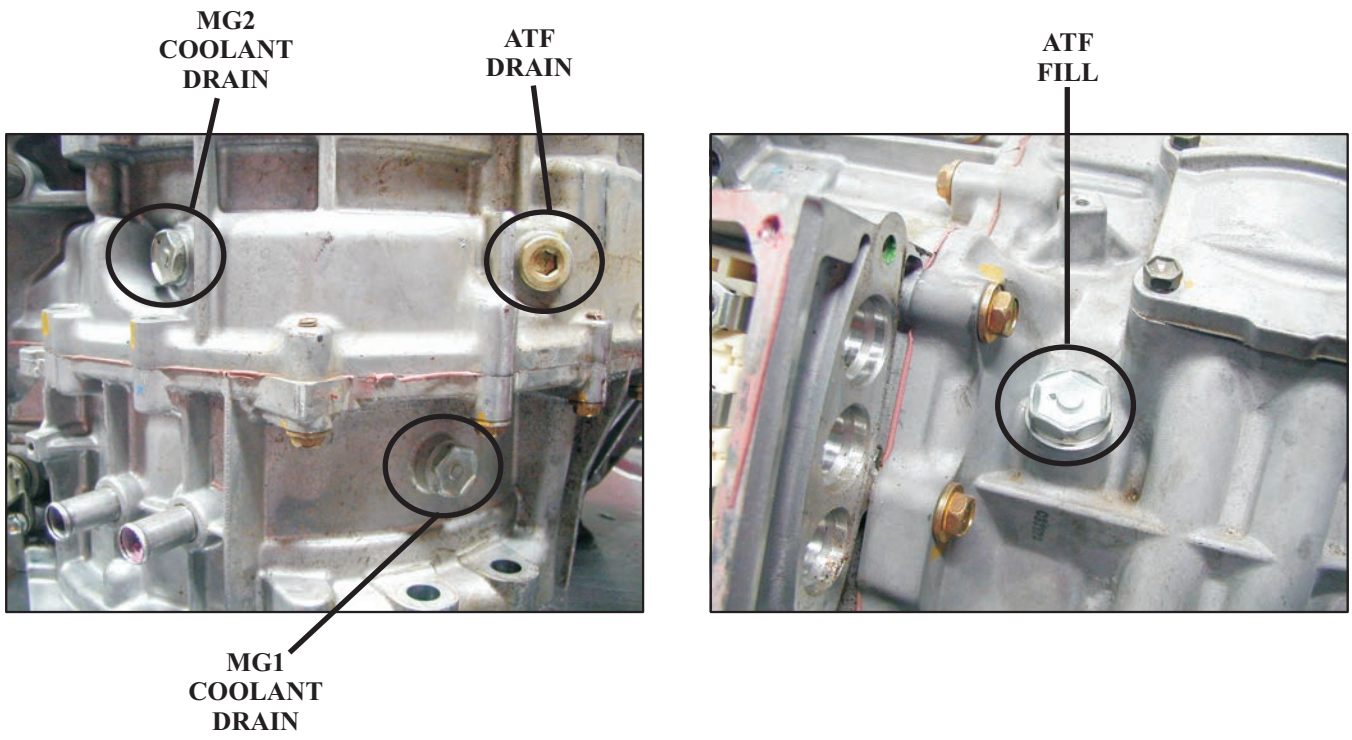


Figure 14



ATF Type - WS Fluid Capacity - 4.0 Qts. (3.3 Liters)

Figure 15

PRIUS GENERATION II - P112 TRANSAXLE

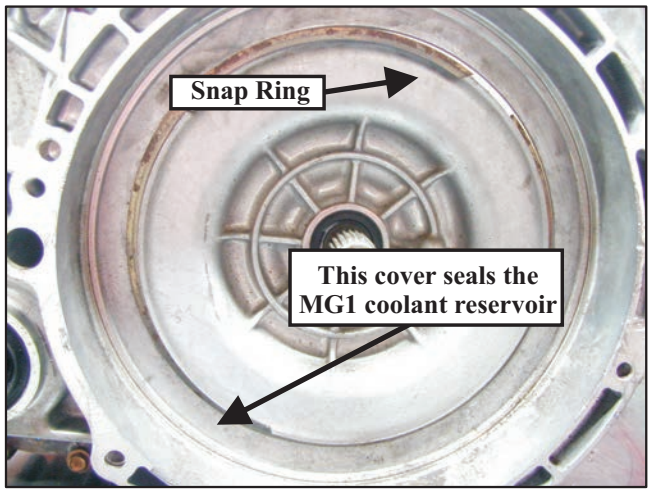
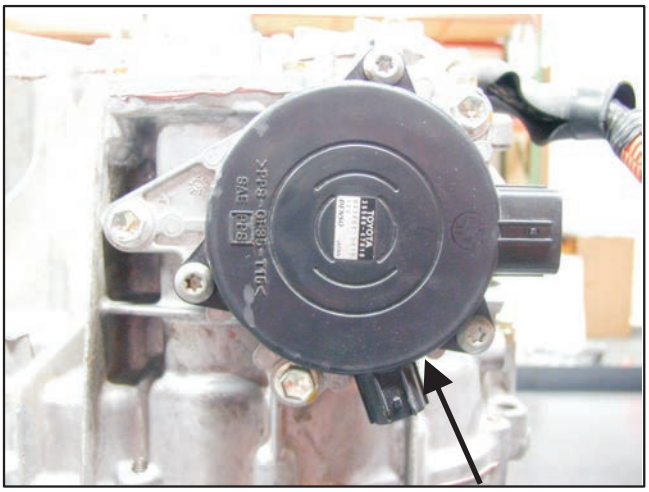
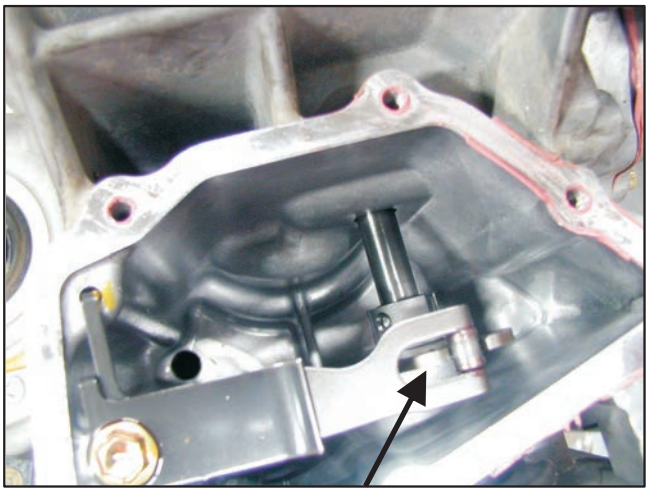


Figure 16





THE SHIFT CONTROL ACTUATOR OPERATES THE INTERNAL LINKAGE

Figure 17

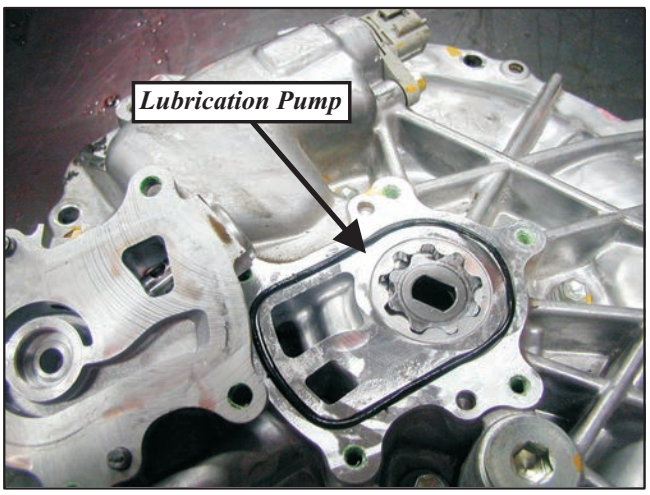
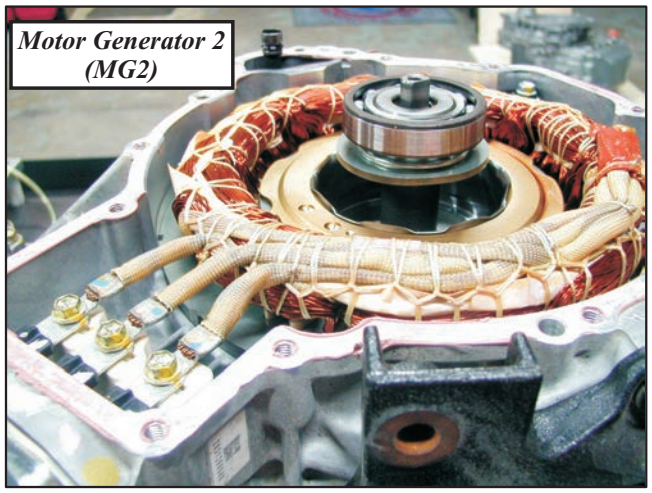


Figure 18

PRIUS GENERATION II - P112 TRANSAXLE



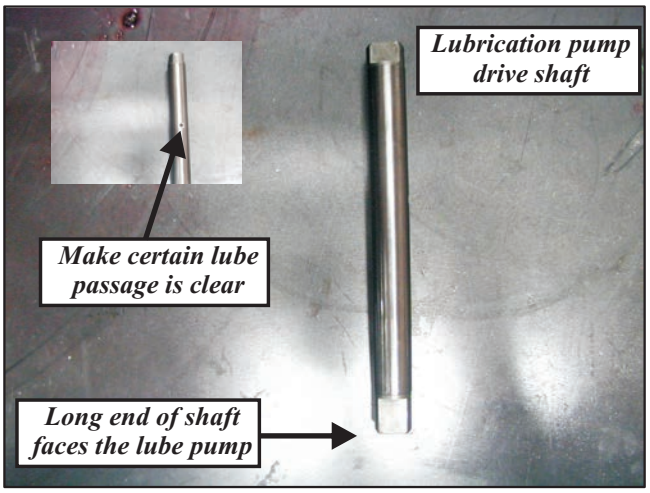


Figure 19

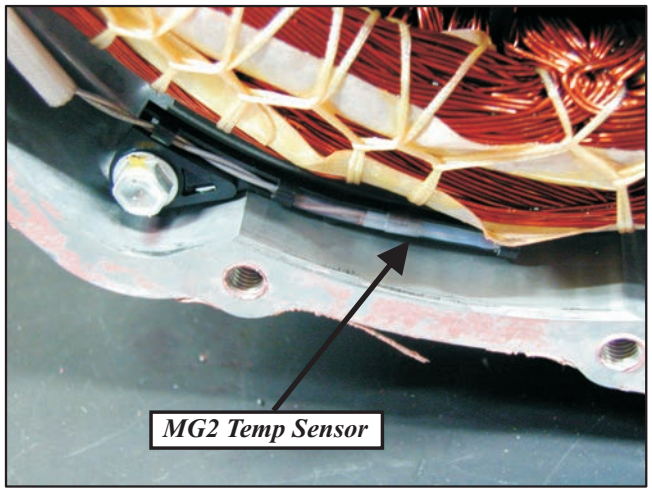
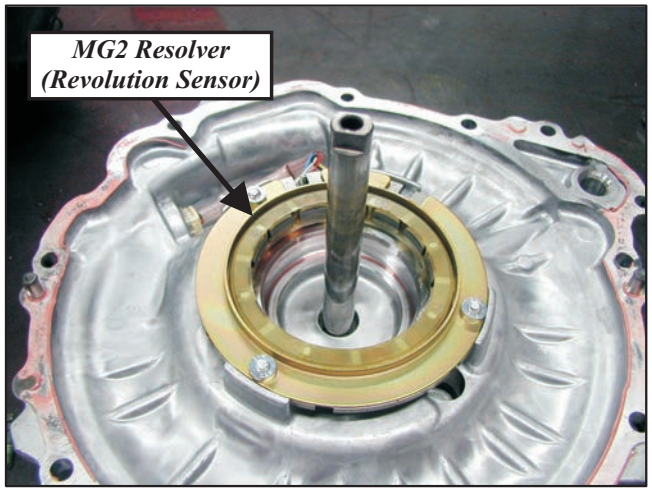


Figure 20



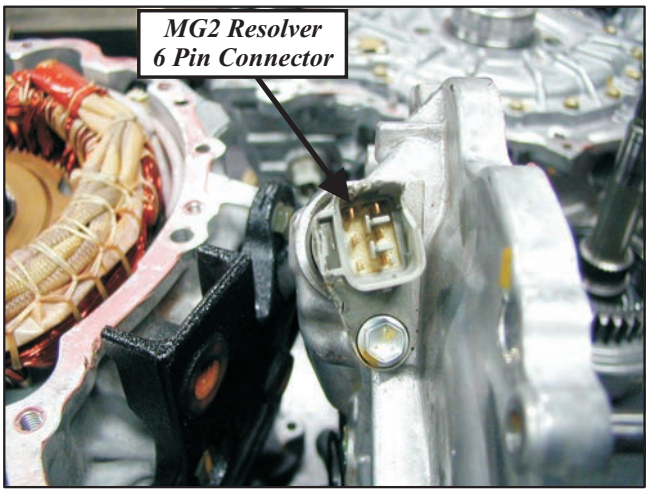
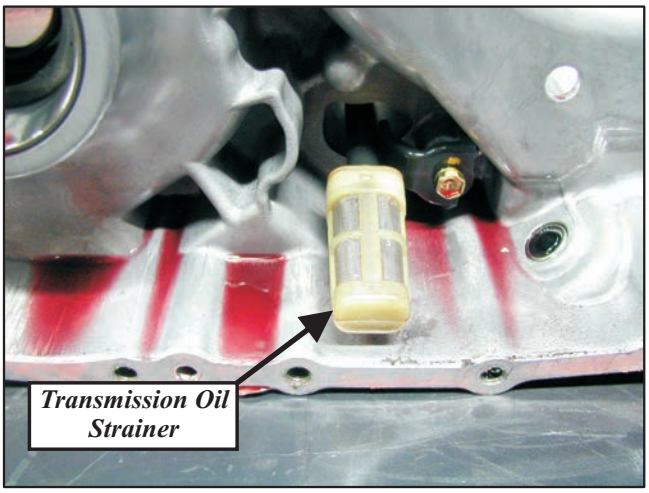


Figure 21

PRIUS GENERATION II - P112 TRANSAXLE



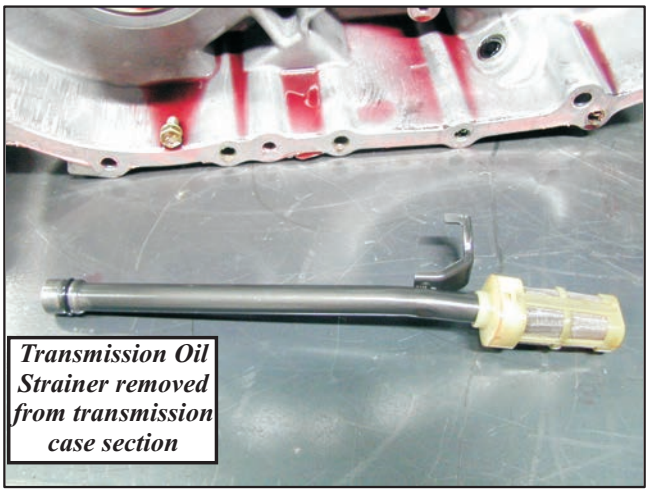
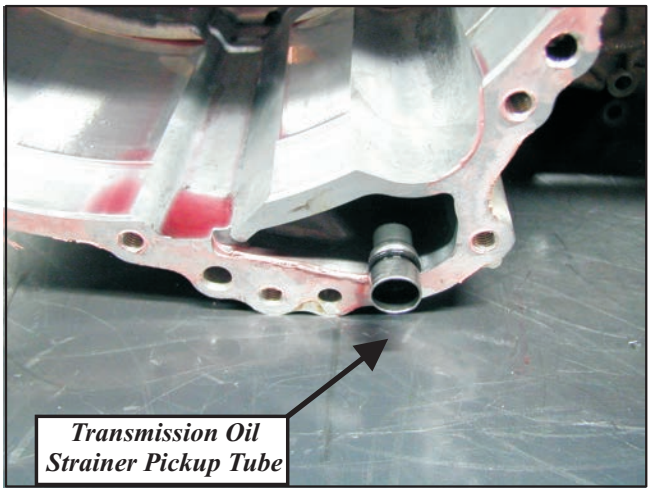


Figure 22



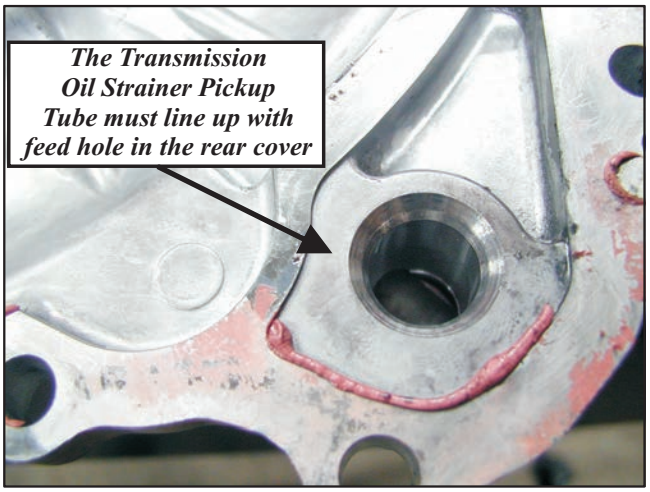
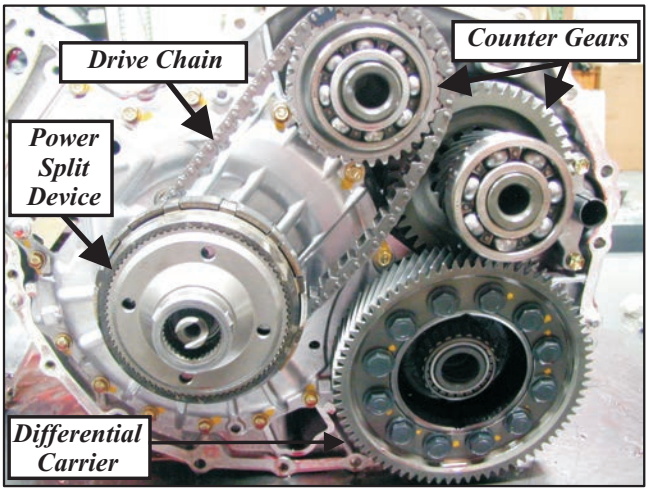


Figure 23



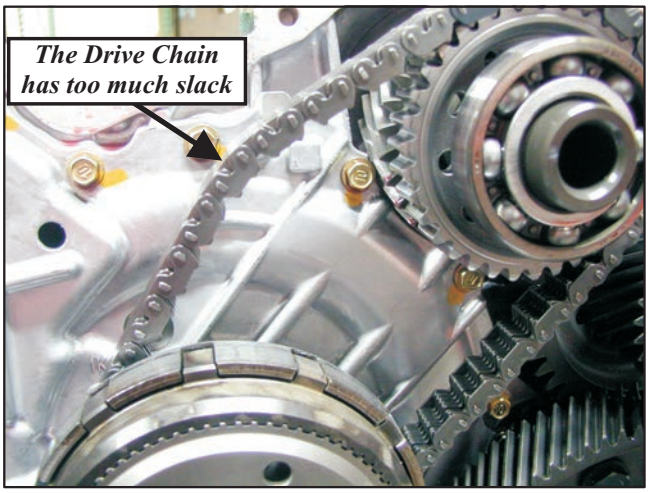


Figure 24

PRIUS GENERATION II - P112 TRANSAXLE

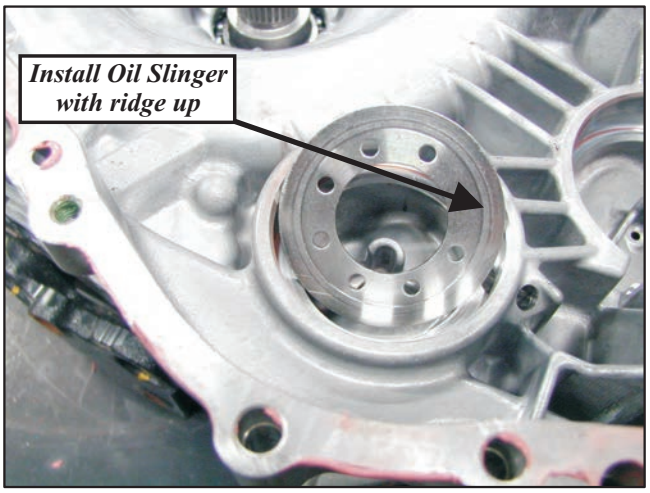
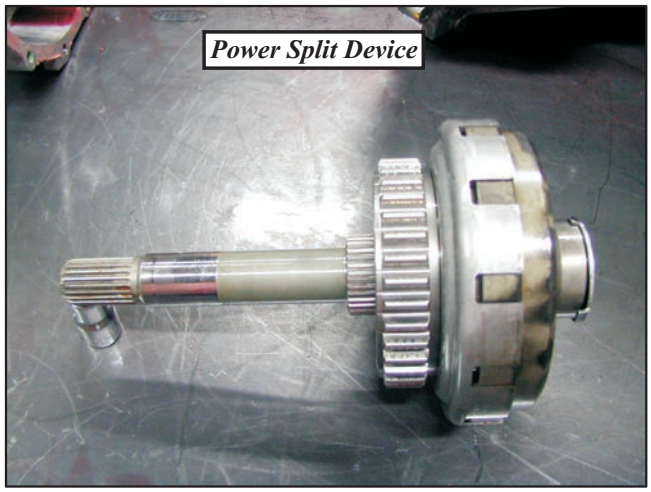


Figure 25



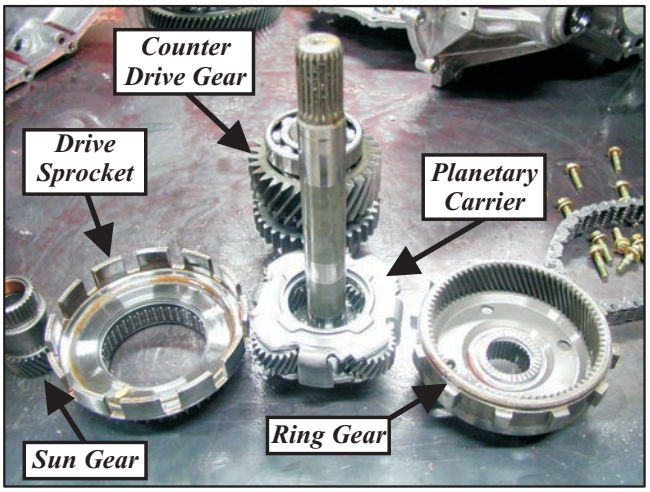
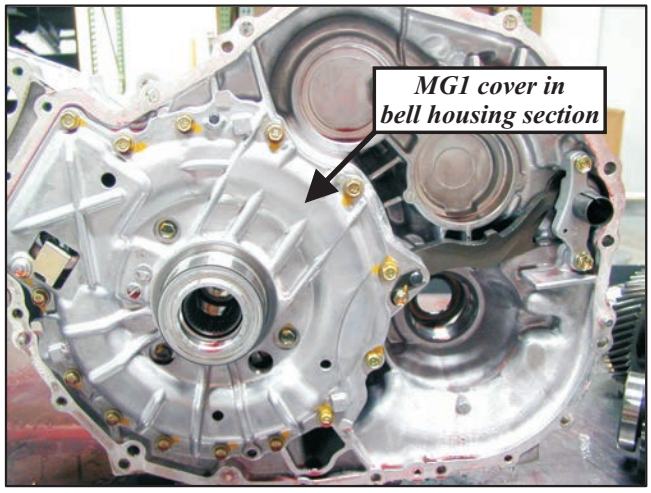


Figure 26



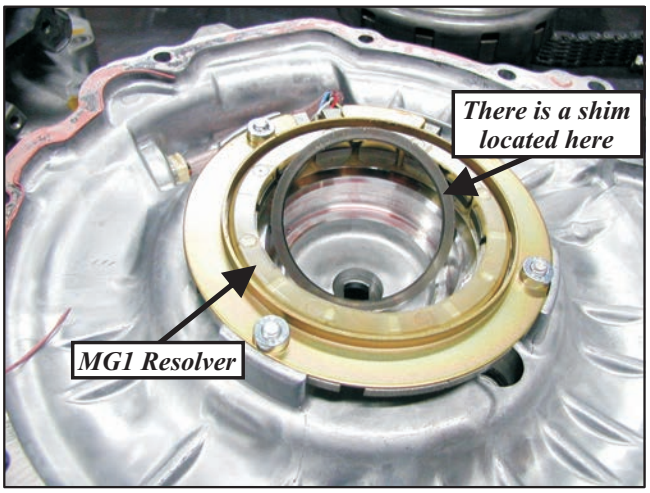


Figure 27

PRIUS GENERATION II - P112 TRANSAXLE

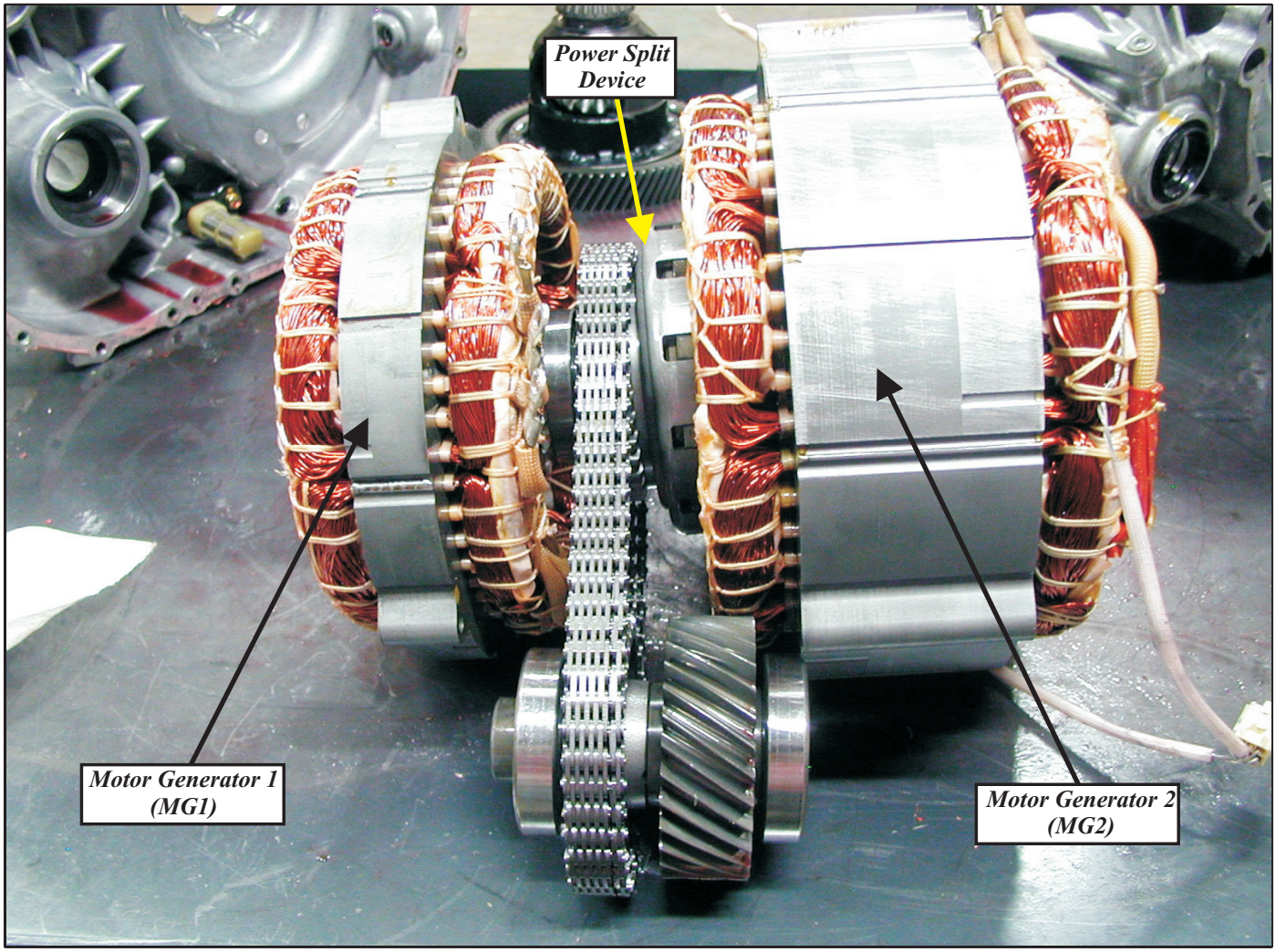


Figure 28

TOYOTA PRIUS

ELECTRICAL DIAGNOSTICS

Diagnostics on the GEN-II Prius is a bit challenging because there are almost 300 trouble codes just for the Hybrid system. That does not include hybrid battery codes or transmission codes which can be found in the chart in Figure 2. Take note that these codes are "C" chassis codes.
The chart in Figure 3 shows the default action when a transmission code is stored by looking at the park indicator lamp on the instrument panel.

To erase codes C2300, C2301, C2303, C2304, C2305, C2306 and C2307 the P CON Fuse in the under hood relay box, Figure 1, must be removed because the scan tool cannot clear these codes.

An example of ECU code retrieval is shown in Figure 3. Any stored code has an associated Information Code that matches it to provide a dedicated data list for that particular code that is stored.
The example in Figure 4 indicates that a P3101 code relates to the information 3 library which is information code 204.
Figure 5 is an example of scan data from a Prius that shows a partial data list. The data list is comprehensive with a capable scan tool.

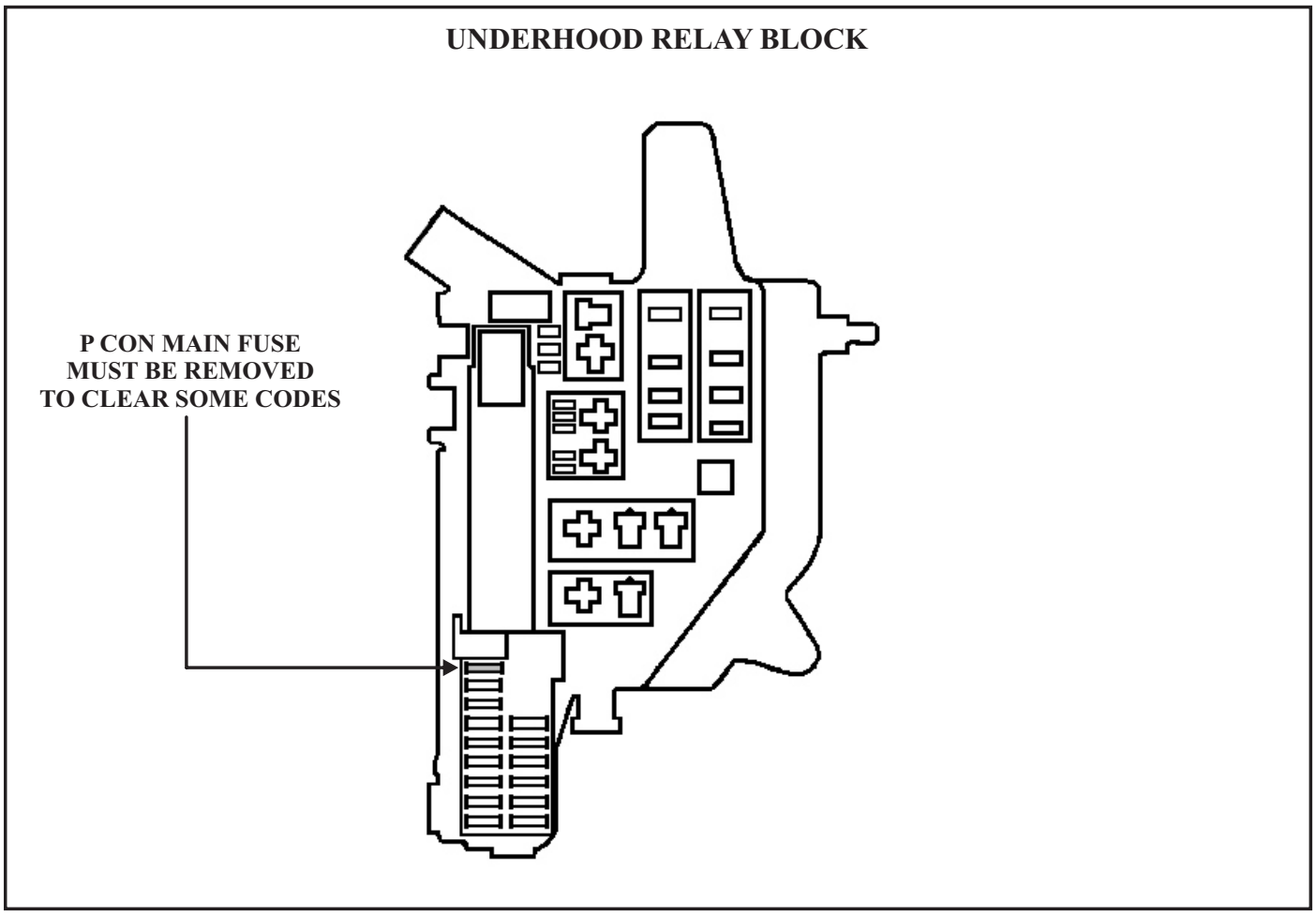


Figure 1

PRIUS ELECTRICAL DIAGNOSTICS

PRIUS DIAGNOSTIC CODE CHART		
DIAGNOSTIC CODE	**CODE DEFINITION**	**"P" POSITION SWITCH INDICATOR LAMP CONDITION**
*C2300	Actuator System Malfunction	Blinks Slowly
*C2301	Shift Changing Time Malfunction	Blinks Slowly
*C2303	Short to Power Relay Malfunction	Not Blinking
*C2304	Open or Short in "U" Phase Circuit	Blinks Slowly
*C2305	Open or Short in "V" Phase Circuit	Blinks Slowly
*C2306	Open or Short in "W" Phase Circuit	Blinks Slowly
*C2307	Power Source Malfunction	Blinks Slowly
C2310	Open or Short in Battery Circuit	Not Blinking
C2311	High Voltage Comm Line Malfunction	Blinks Slowly
C2312	Control ECU Power Source Comm Line Fault	Not Blinking
C2315	High Voltage Malfunction	Not Blinking
C2318	Low Voltage Error (Power Supply Fault)	Not Blinking
If Code C2318 is stored with any of these codes, diagnose the C2318 first.		

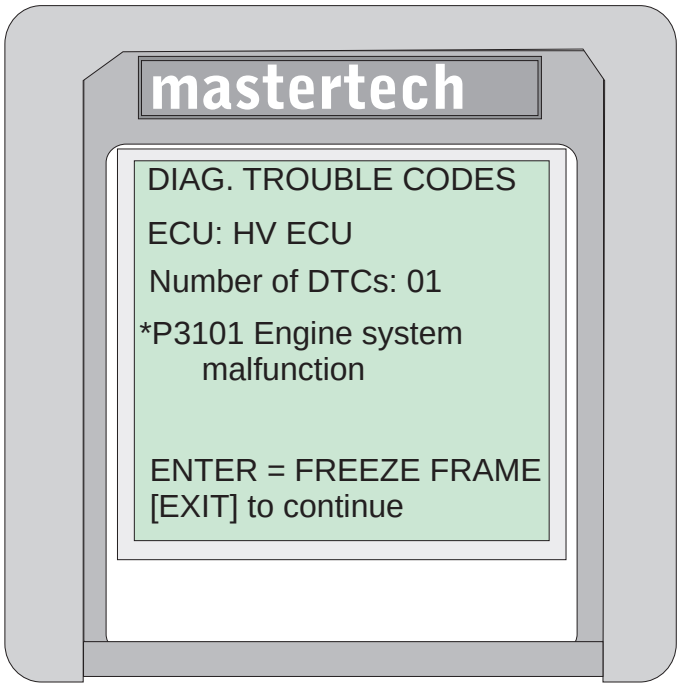
Figure 2

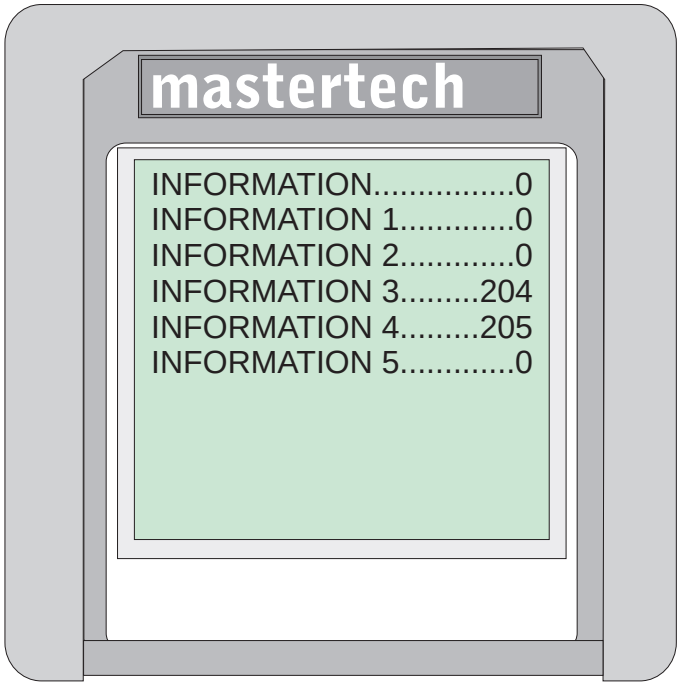
PRIUS DIAGNOSTIC CODE FAILSAFE CHART		
DIAGNOSTIC CODE	**FAILSAFE FUNCTION**	**RESULTING SYMPTOMS**
C2300 C2301	Only the "P" position release operation is possible and the shift control actuator is activated	>The shift position is not indicated on the instrument panel >Although the shift position is indicated on the IP, the vehicle cannot be driven
C2303	———	>The battery is dead
C2304 C2305 C2306	The transaxle parking lock control relay is turned off	>The parking lock mechanism cannot be turned off
C2307	The transaxle parking lock control relay is turned off	>The shift position is not indicated on the instrument panel >Although the shift position is indicated on the IP, the vehicle cannot be driven
C2311		>The parking lock mechanism cannot be switched
C2312	———	>The hybrid system does not start up
C2318	———	>The parking lock mechanism cannot be switched on a hill

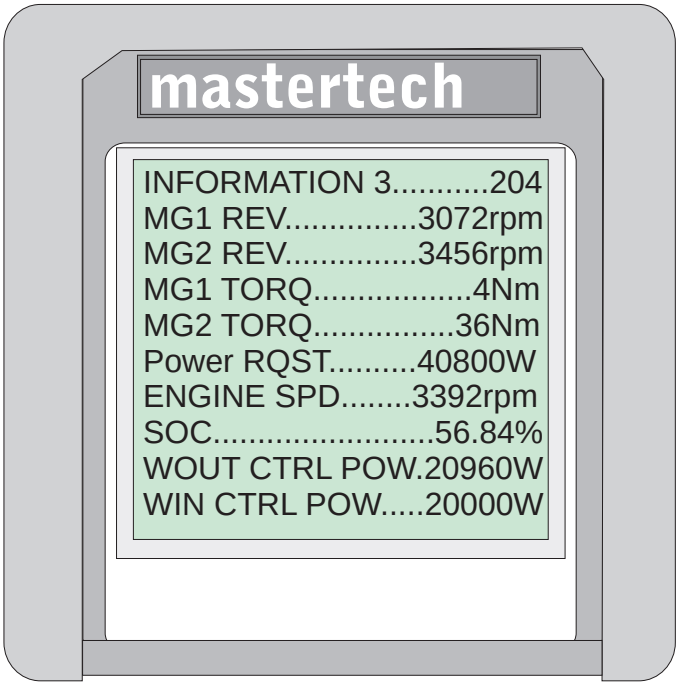
Figure 3

PRIUS ELECTRICAL DIAGNOSTICS

INFORMATION CODES







Diagnostic Trouble Code P3101 relates to Information Code 204 which will give a specific related data list.

Figure 4

PRIUS ELECTRICAL DIAGNOSTICS

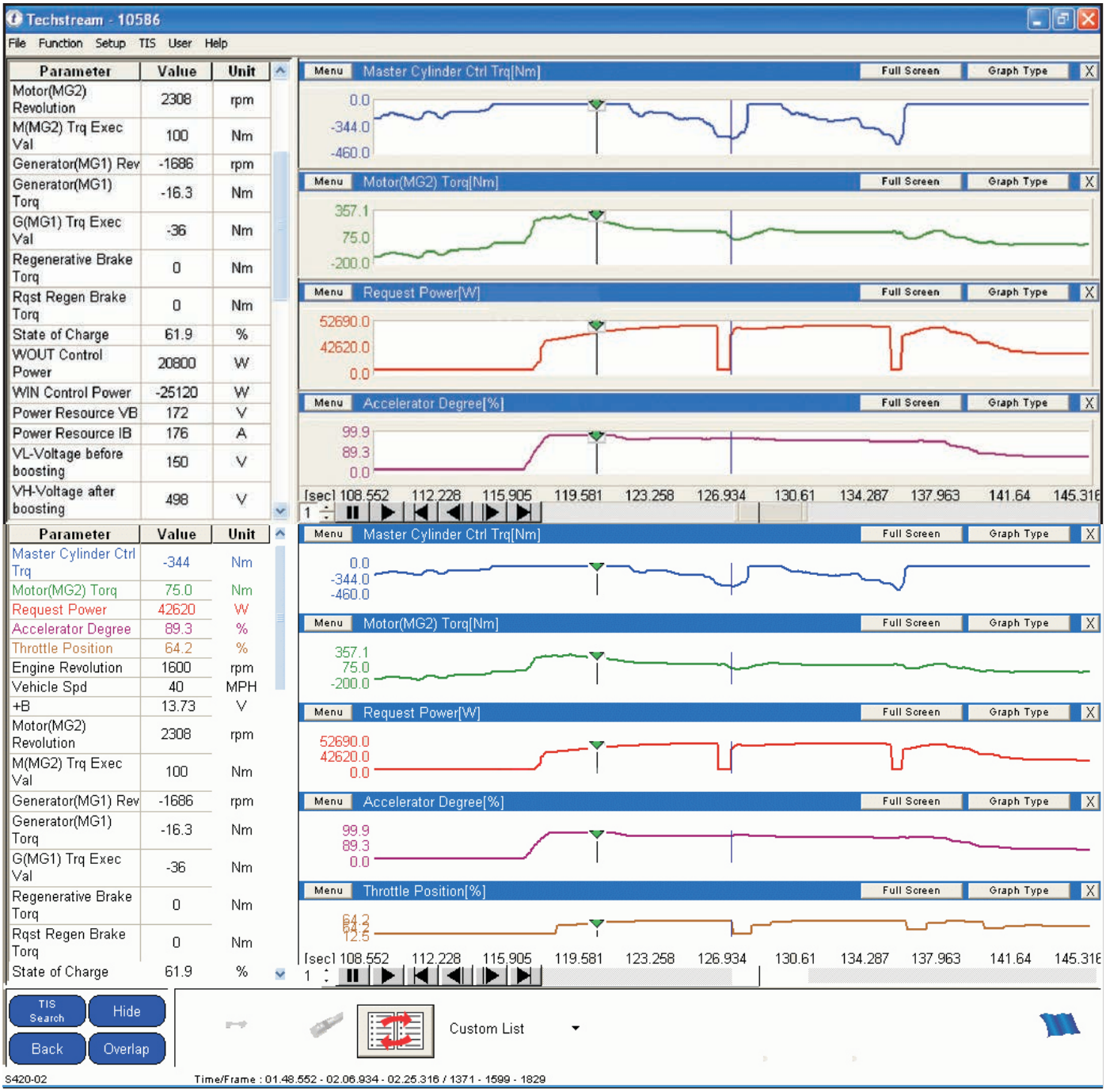


Figure 5

GHOST CODES

FRETTING CORROSION

COMPLAINT: A vehicle comes into the shop storing one or more Diagnostic Trouble Codes. After diagnosis nothing definitive is found however the codes can be cleared at this time and the symptoms are not present . These codes will return intermittently with the same diagnostic results.

CAUSE: A bit of oxidation has developed at connector contact points due to "Fretting Corrosion" which is the result of a small amount of motion between connector cavities and pins.

CORRECTION: In some instances the simple act of disconnecting and reconnecting a connector eliminates the codes and symptoms that exist. Fretting corrosion can be identified by examining connector terminal ends for what looks like small black smudges as shown in Figure 1, in some instances a magnifying glass may be necessary.

Fretting corrosion has been know to cause sensor, solenoid, driveability and communication codes to be stored. In low current circuits fretting corrosion can cause intermittent conditions, in high current circuits due to high resistance that circuit becomes non-functional.
To repair and prevent fretting corrosion disconnect the problem connector and apply a liberal amount of dielectric grease with a nylon brush. Make certain the connector seal is in good condition and secure wire harnesses to prevent unnecessary movement.
A good example of problems caused by fretting corrosion is GM TSB 08-05-22-009C. You can search this bulletin by using a 2004 to 2008 Chevy Malibu as the problem vehicle.

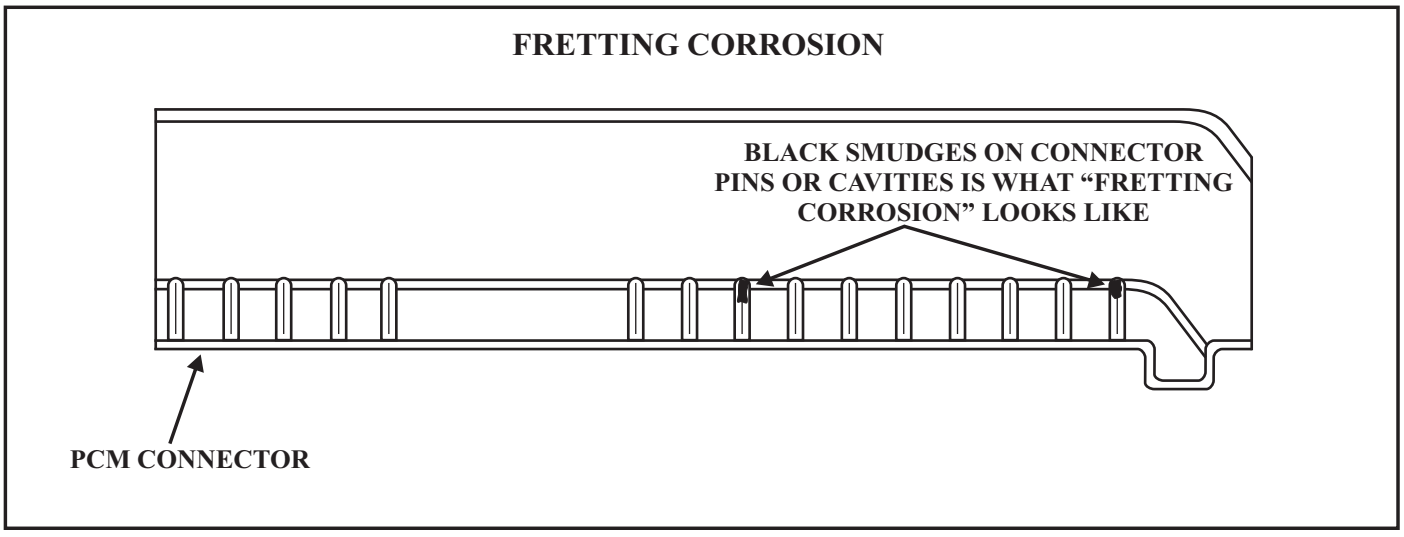


Figure 1

FORM - A - FUNNEL

FLUID DRAINING TOOL

COMPLAINT: Many times one of the technicians in the shop has to drain fluids, oils or coolant as well as filters that are located in difficult locations. As the fluid drains it could spill over cross members, exhaust systems, hoses or many other items that could be in its path. In some instances all the oil can not be cleaned up because it has gotten into channels, nooks and crannies. The oil continues to drip for some time. This could pose a problem for a freshly repaired or serviced vehicle because these residuals may be mistaken for a leak.

CORRECTION: The Form - A - Funnel, Figure 1, can be shaped into many different forms so it can get to difficult drain locations as seen in Figures 2 and 3.

WARNING: The inner core of Form - A - Funnel is LEAD, if the outer rubberized coating should become damaged, it would be wise to replace it and dispose of the damaged one properly, at the very least Wash Your Hands if you handle the core.

SERVICE INFORMATION:

Form - A -Funnel can be obtained from companies such as Transtar, Napa, and New Pig.com as well as others.

FORM - A - FUNNEL

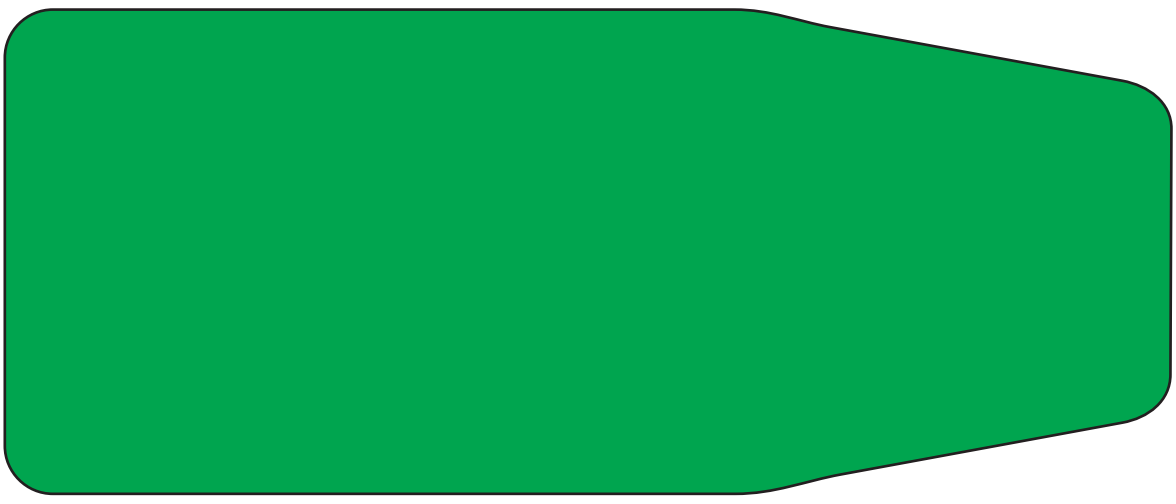


Figure 1

FLUID DRAINING TOOL

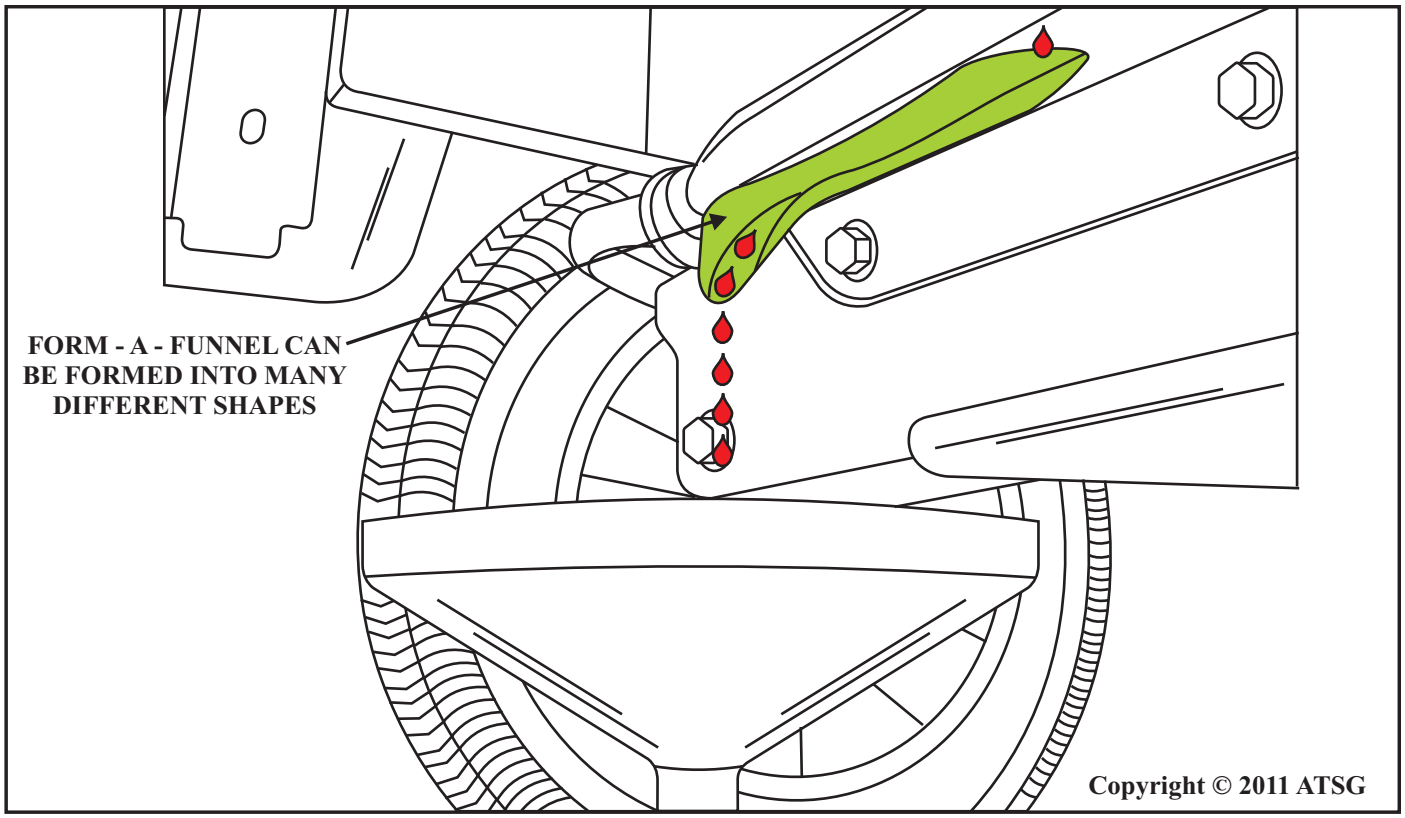


Figure 2

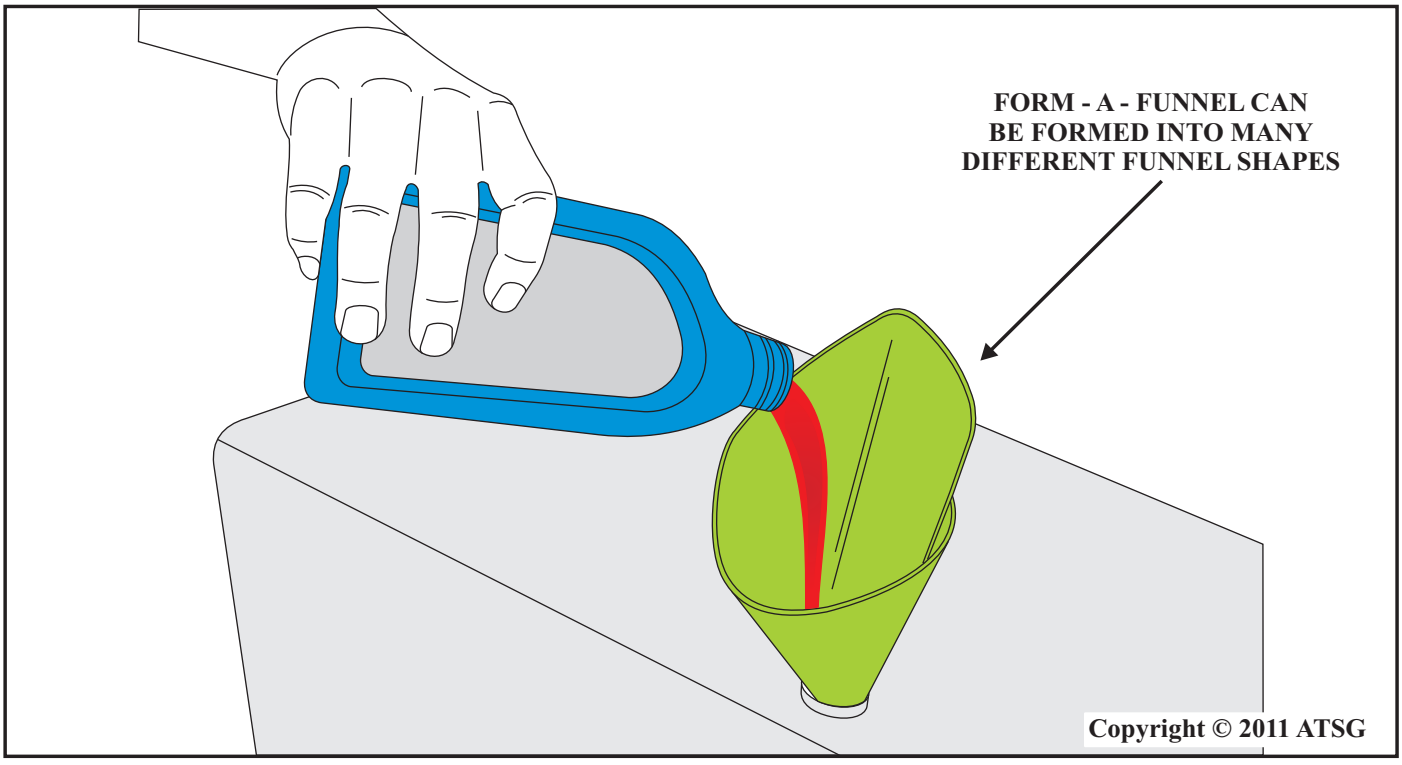


Figure 3

45RFE/545RFE/68RFE

DELAYED ENGAGEMENTS

COMPLAINT: Shortly after a fluid and filter change, whether part of a service or overhaul, the transmission begins to exhibit delayed engagements which can be longer after an extended off time period.
There may be a number of codes stored including but not limited to the following:
P0868 - Line Pressure Low
P0944 - Loss Of Prime
P0731 - Gear Ratio Error in First Gear
P0736 - Gear Ratio Error In Reverse
P0841 - Low Reverse Pressure Switch Rationality
P0876 - UD Pressure Switch Rationality

CAUSE: A cooler filter that restricts flow may have been installed, Figure 1.

CORRECTION: Make certain to install a quality cooler filter by checking to see that the intake holes in the top of the filter are not restricted, Figure 2.
Some cooler filters may come with a new adaptor, screw the non-threaded end into the filter and tighten to 165 in. lbs. (18.6 Nm), Figure 3 and the threaded end of the filter assembly into the case and tighten to 125 in. lbs. (14.1Nm), Figure 4.

NOTE: Never use an O.E. cooler filter that has a part number of 04799662AB.

SERVICE INFORMATION:
All 4x4 applications of RFE transmission use the 4x4 style filter. All 2x4 applications in the 1999 to 2007 model years used the 2x4 style filter. For the 2008 model year two wheel drive transmissions in the Dodge Dakota only used the 4x4 filter and pan. In 2009 as a running change some RFE applications use the 4x4 style filter and pan. Some 1999 to 2007 factory reman transmissions may have the 4x4 filter and pan, Figures 5 and 6.
For 2010 and Later RFE transmissions the 4x4 style filter and pan will be used for all applications. Some RFE transmissions may have a new common oil pan and can be used with either filter. The spin-on cooler filter is the same for any style pan.

Chrysler Cooler Filter.....04799662
Filtran Cooler Filter.....F-374
Chrysler Two Wheel Drive Sump Filter.....05015267AD
Filtran Two Wheel Drive Sump Filter.....F-322
Chrysler Four Wheel Drive Sump Filter.....05013470AD
Filtran Two Wheel Drive Sump Filter.....F-304

A special thanks to Chris Tartik of Filtran LLC for supplying the filters and some of the information contained in this bulletin.

A & Reds - 41

45REF/545RFE/68RFE DELAYED ENGAGEMENTS

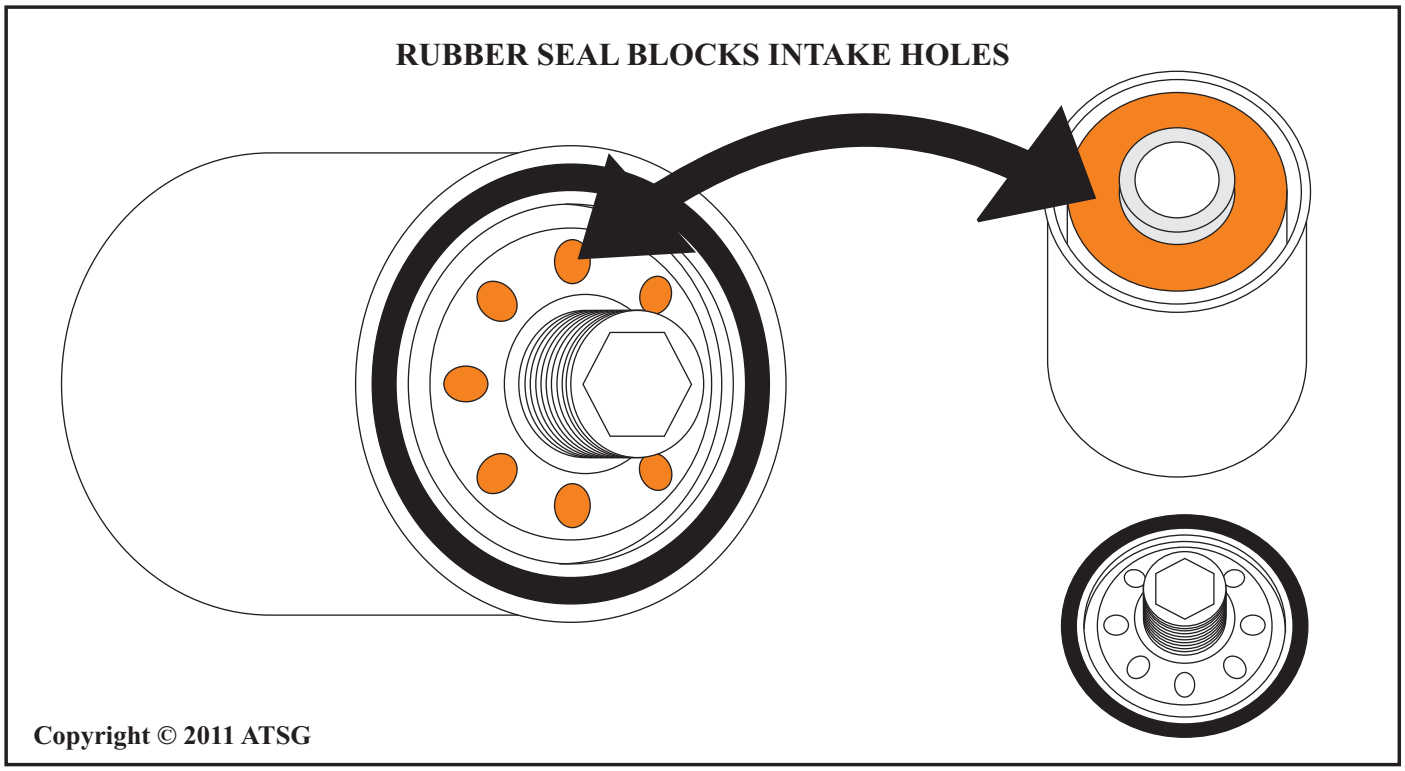


Figure 1

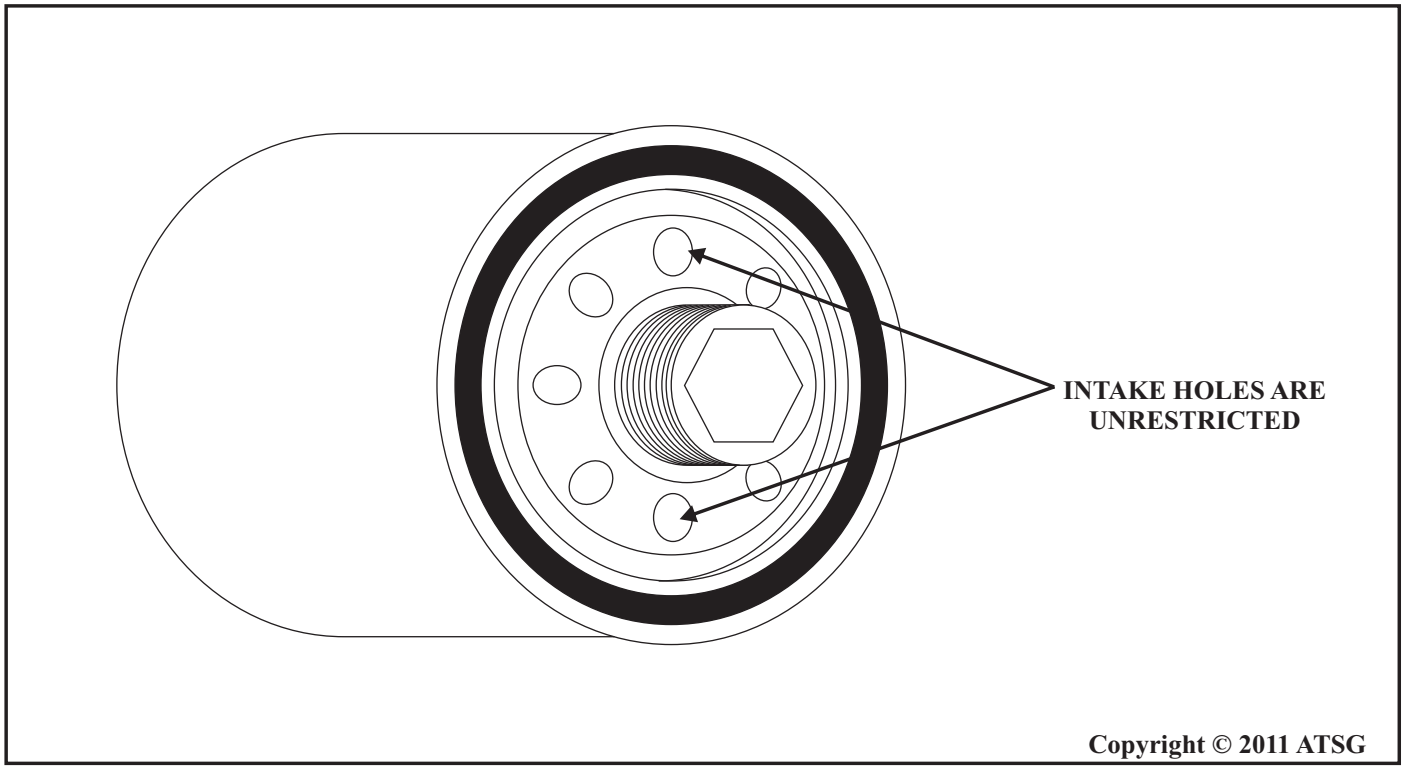


Figure 2

45REF/545RFE/68RFE DELAYED ENGAGEMENTS

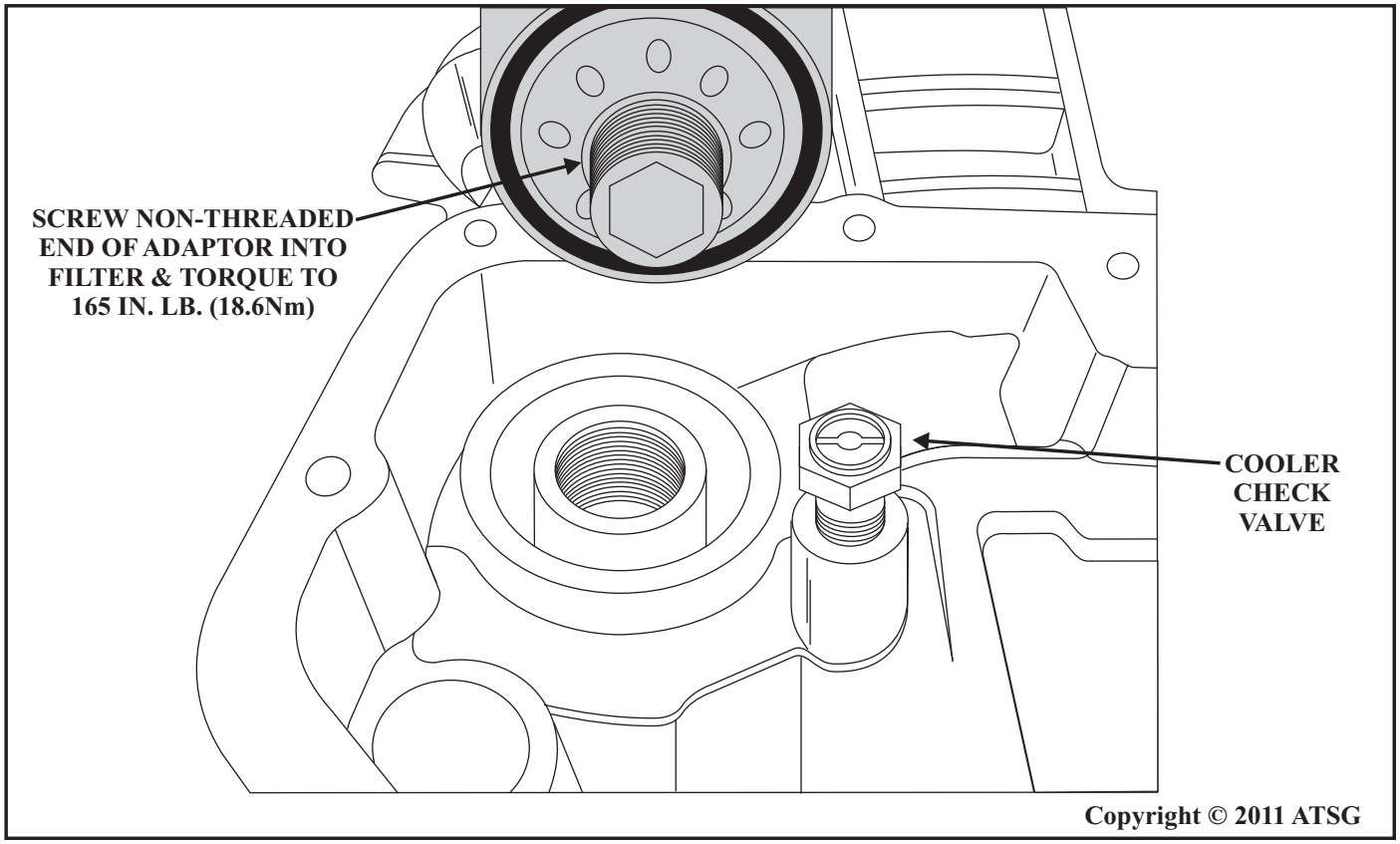


Figure 3

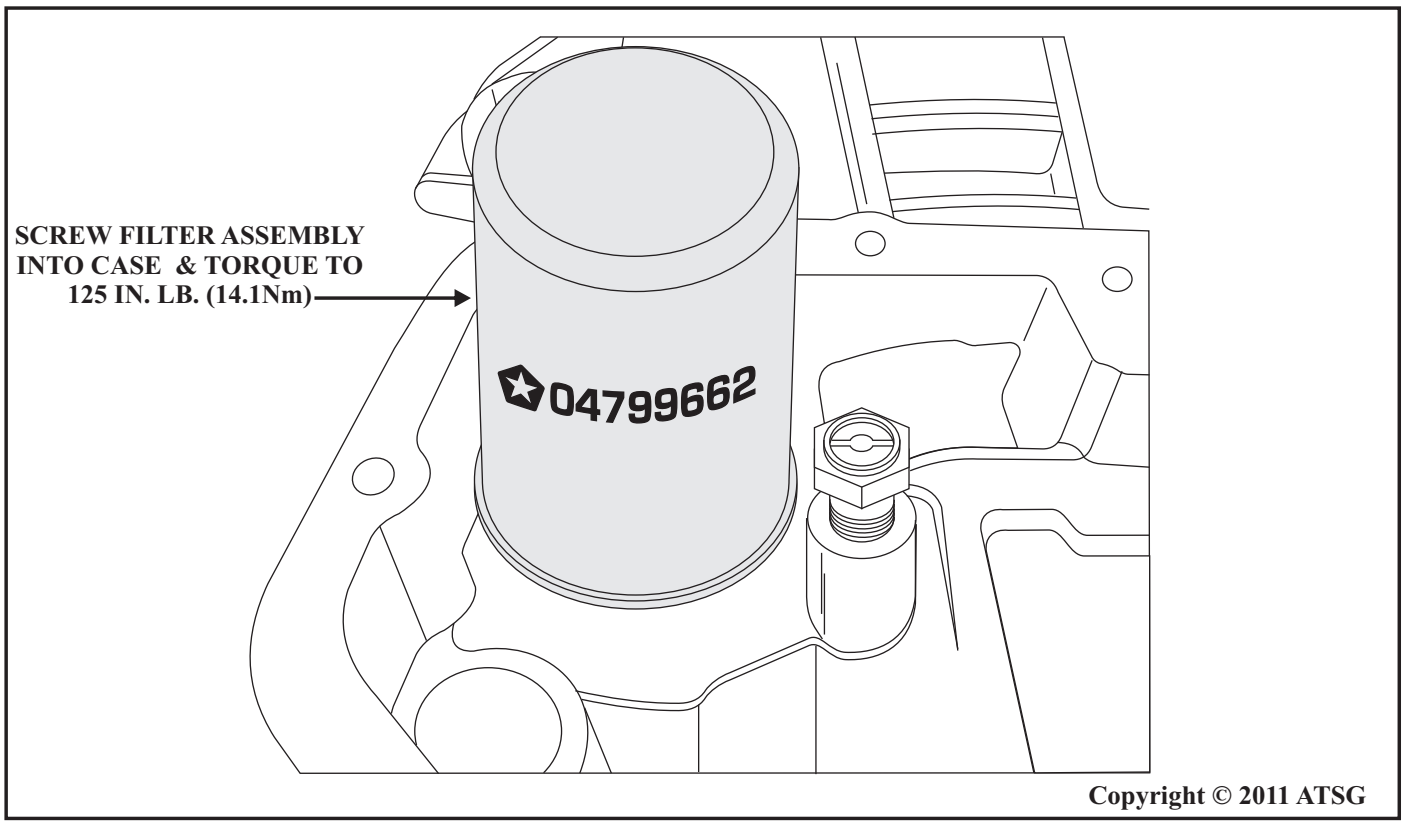


Figure 4

45REF/545RFE/68RFE DELAYED ENGAGEMENTS

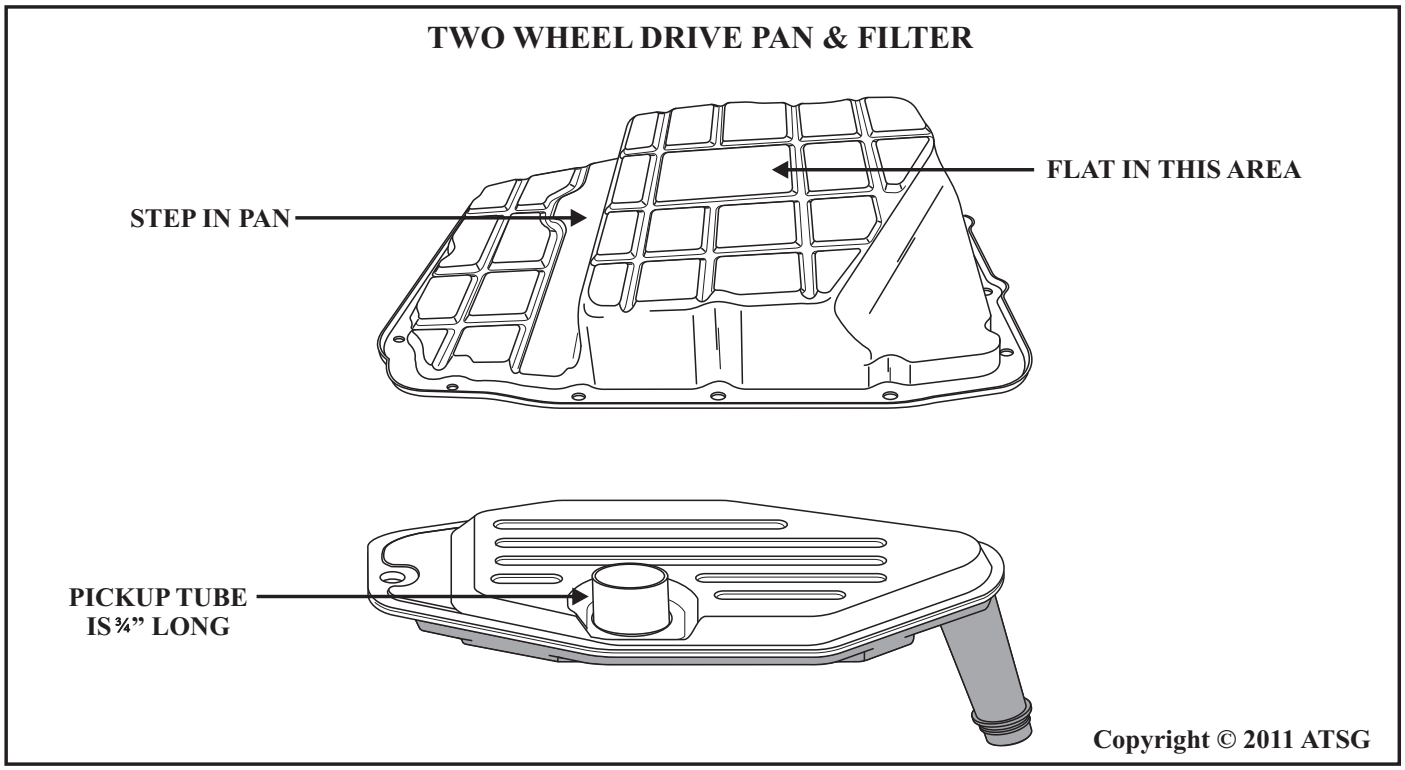


Figure 5

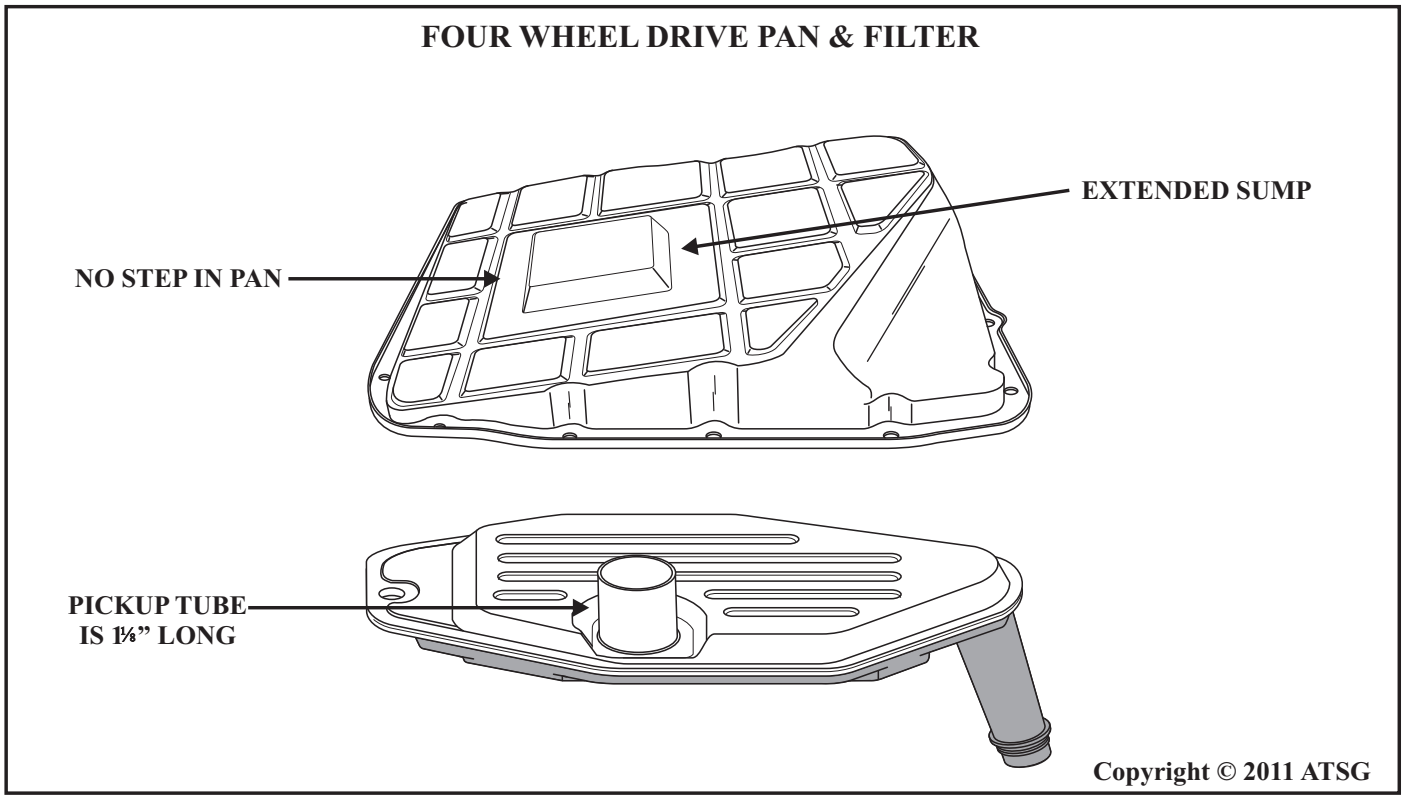


Figure 6

Exedy - 45

DODGE TRUCK 06&UP 5.7L MODELS 545RFE

TCC SHUDDER AND/OR POOR GAS MILEAGE

COMPLAINT: 2006 and Up Dodge Trucks equipped with the MDS "Multi Displacement" 5.7 L HEMI engine and the 545RFE transmission, may exhibit a complaint of Torque Converter Shudder between 30 and 40 mph., after overhaul and Torque Converter replacement.

CAUSE: The cause may be that the wrong Torque Converter was installed. There are two types of the 5.7 HEMI engine. A V-8 full time and a MDS which is a Multi Displacement type. This means it goes from a 8 cylinder engine to a 4 cylinder within 40 milliseconds by de-activating lifters, spark and fuel. MDS activates when there is little to no load on the engine, as in highway driving. The Torque Converter lining on the MDS type has reliefs that go all the way thru the lining, and must be used, or a shudder during partial Torque Converter apply may occur. A diagnostic trouble code 74/P1799 "Calculated Oil Temp. in use" may also set as a result of the TCC shudder, which may stop cylinder de-activation resulting in poor fuel economy See Figure 2 for a view of three common types of Torque Converters and how to identify them. Figure 3 shows the 3.7/4.7 O.E. Torque Converter Lining which is smooth and will not interchange with the HEMI. Figures 4 and 5 Show the HEMI High Stall Converter Lining and note that there are reliefs thru the lining which will help the TCC slip when it is in Partial application mode.

CORRECTION: To correct this condition, contact your local Torque Converter distributor and use the Torque Converter specified for the vehicle that you are working on. Also verify that they are using the O.E. lining or the "High Carbon Lining," which will interchange. Refer to Figure 1 for a description of the Vehicle Identification Number and note that the 8th digit identifies the engine type. A "D" is a full time V-8 and a "2" identifies a MDS.

Special thanks to Jim Blatt, Lee Myles Precision Torque Converter of New Hampton and Ed Lee From Sonnax

VEHICLE IDENTIFICATION NUMBER

VIN- 1 D 7 H U 1 8 2 8 6 X X X X X X X

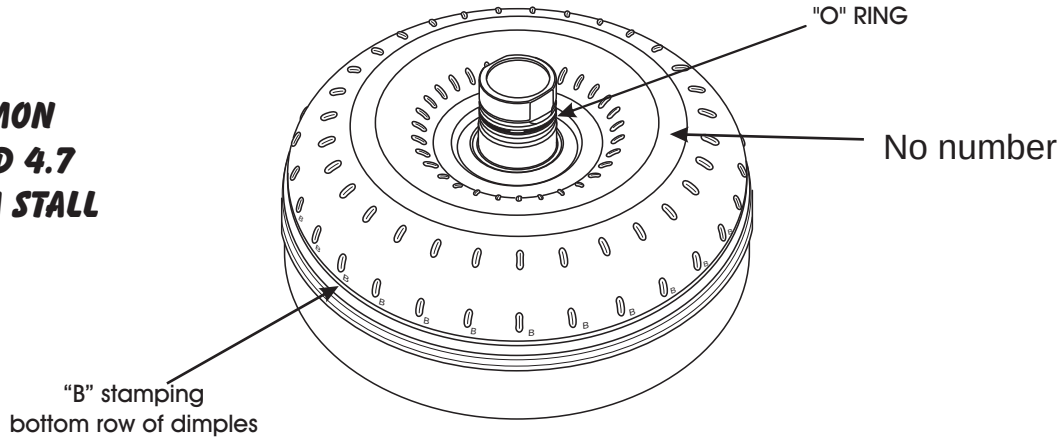
8th Vin Character "2" = Multi Displacement MDS V-8

8th Vin Character "D" = V-8

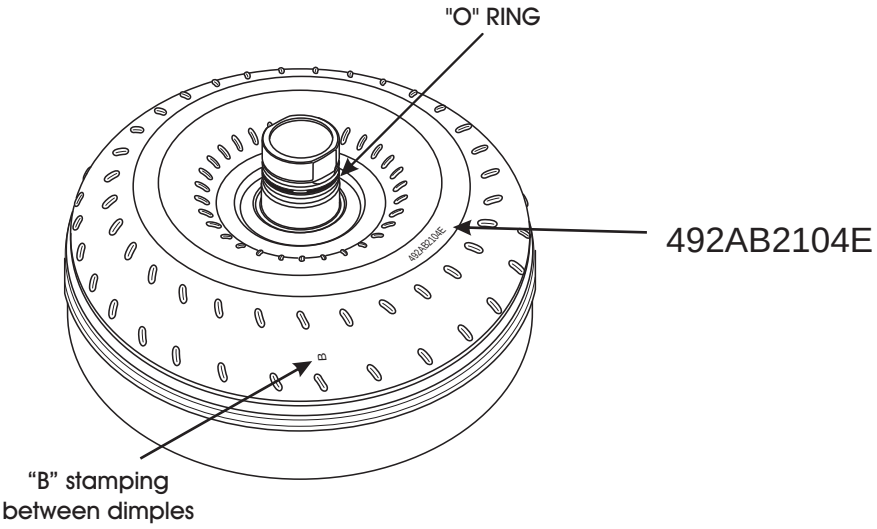
Figure 1

COMMON TORQUE CONVERTER I.D.

COMMON 3.7 AND 4.7 MEDIUM STALL



1ST DESIGN HEMI 5.7 HIGH STALL



2ND DESIGN HEMI 5.7 HIGH STALL

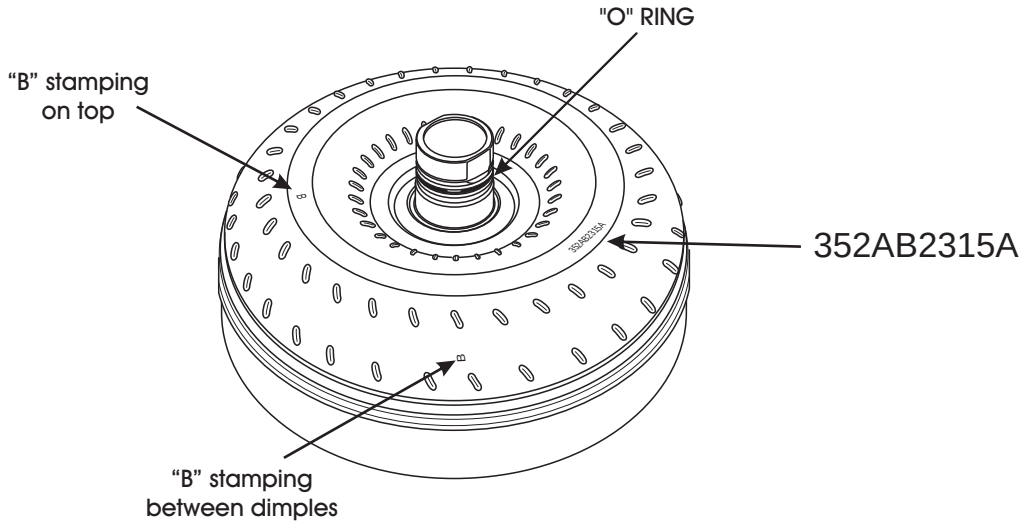


Figure 2

Transtec - 48

COMMON 3.7 AND 4.7 TCC PISTON AND DAMPENER

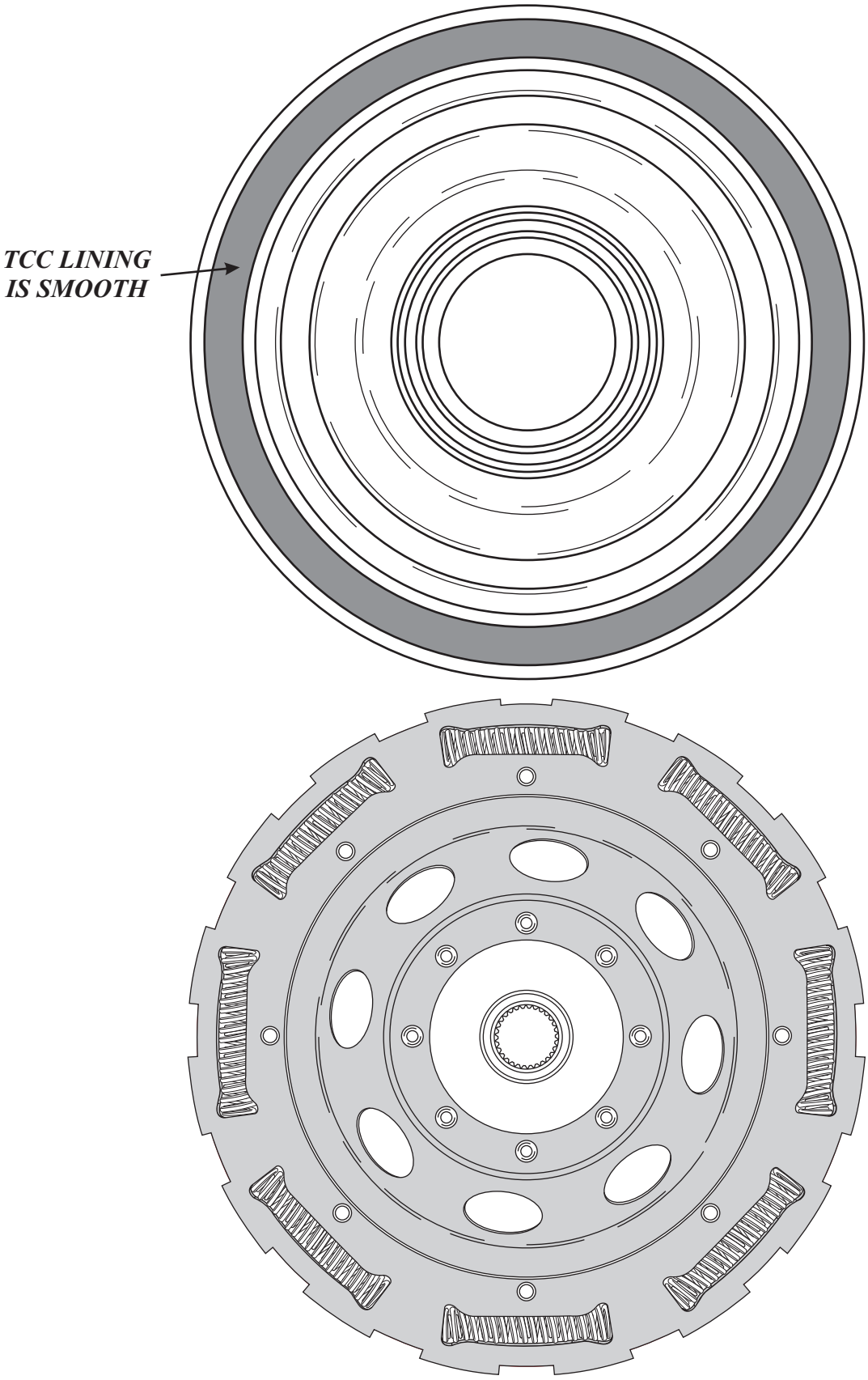


Figure 3

1ST DESIGN 5.7 HEMI TCC PISTON AND DAMPENER

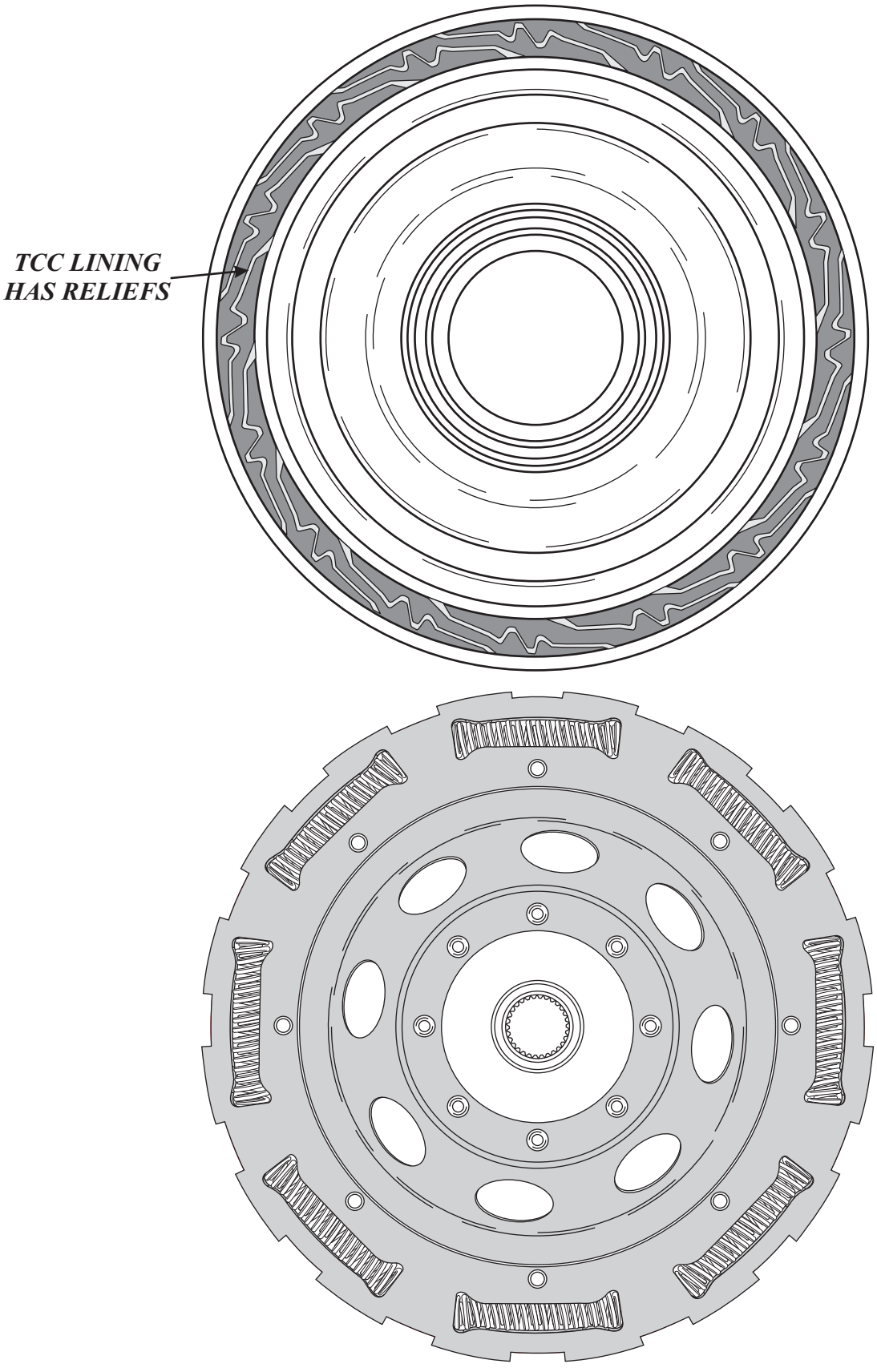


Figure 4

2ND DESIGN 5.7 HEMI TCC PISTON AND DAMPENER

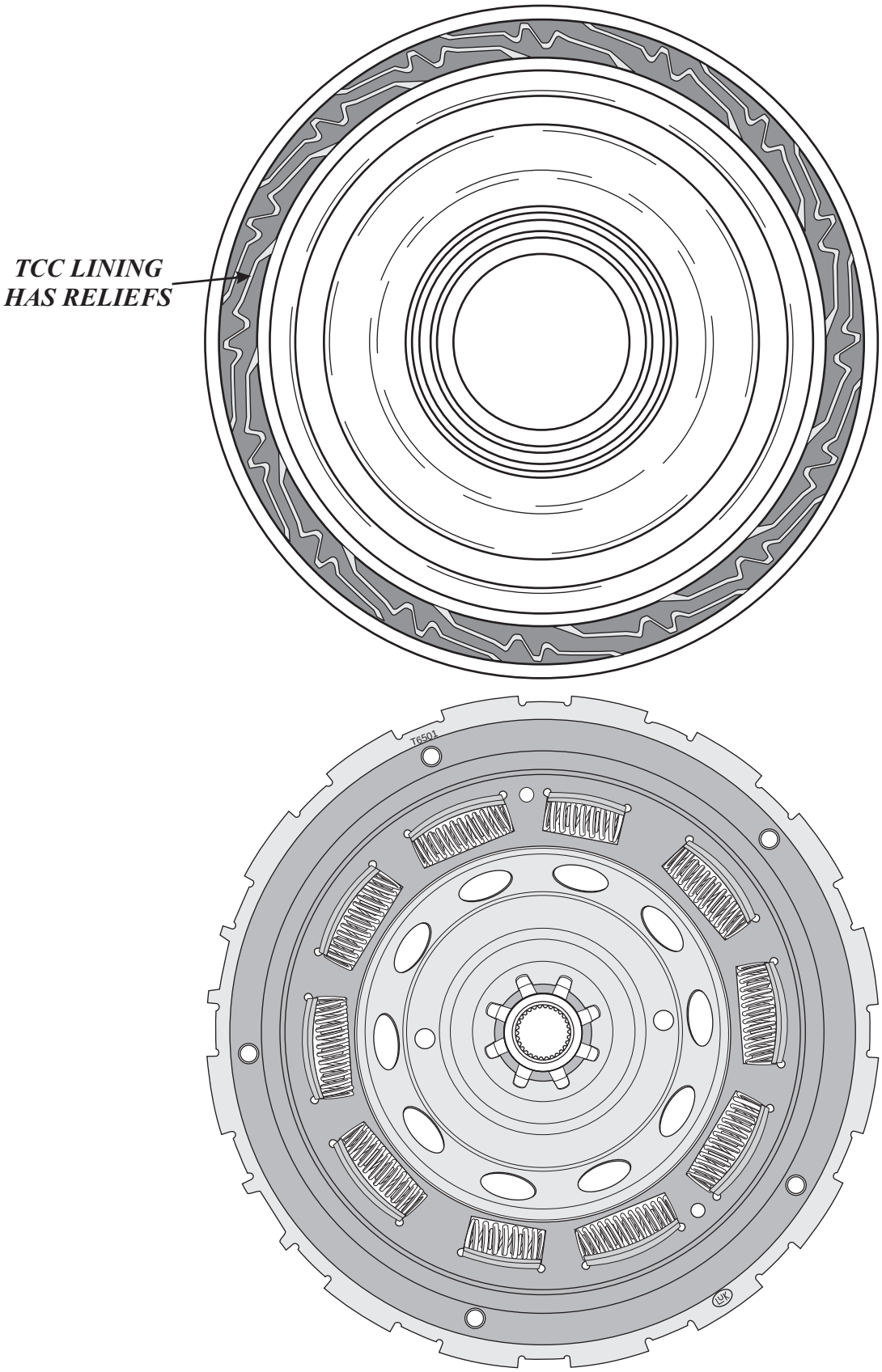


Figure 5

Transtool - 52

Hayden - 53

CHRYSLER-DODGE-JEEP 45/545RFE

FRONT PUMP CHANGE

CHANGE: The two screws that held the spacer plate to the pump body have been eliminated and the screw holes have been cast shut as shown in Figure 1.

With the spacer plate screw holes cast shut, the line pressure passage in the pump cover is sealed and therefore cannot cause a no move condition which eliminates the need for the screws as seen in Figure 2. The previous design pump spacer plate has the holes for the screw holes as seen in Figure 3, while the later design pump spacer plate has no screw holes as seen in Figure 4.

With the previous design pump, that has the screw holes drilled, (Refer to Figure 5), the screws are necessary because those holes exist in a main line pressure passage in the pump cover, (See Figure 6). If the screws were loose or missing, a significant leak in the main line pressure circuit would occur causing a loss of pump volume and the no move complaint.

PARTS AFFECTED: The pump body and spacer plate.

INTERCHANGEABILITY:

The newly designed pump assembly will back service all 45/545RFE transmissions.

SERVICE INFORMATION:

New design Pump Assembly.....68009879AD

Many thanks to Greg Nader of Sonnax for his help, and a special thanks to Dan Tucker from Tucker's Transmissions in Pine Bluff, AR for bringing this to our attention.

CHRYSLER-DODGE-JEEP 45/545RFE

FRONT PUMP CHANGE

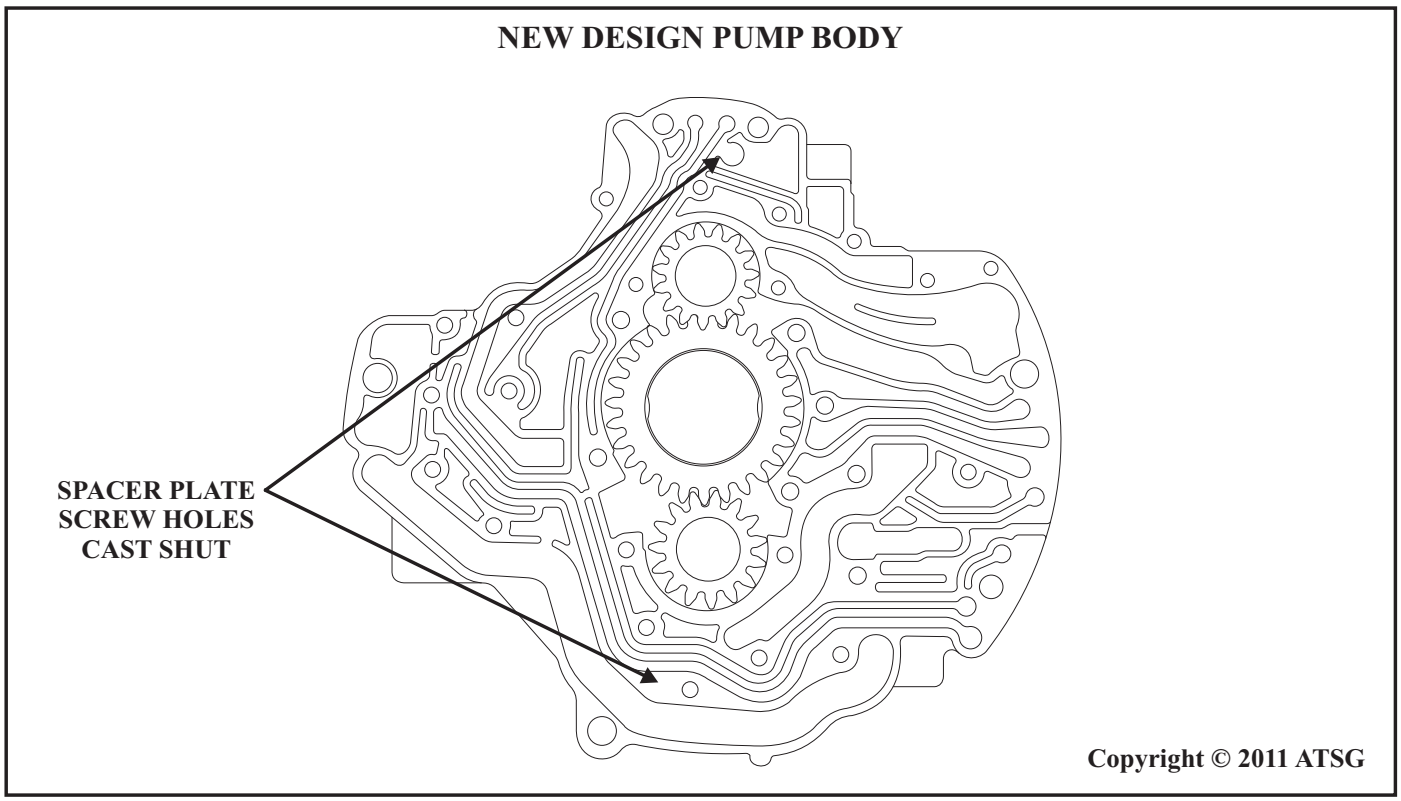


Figure 1

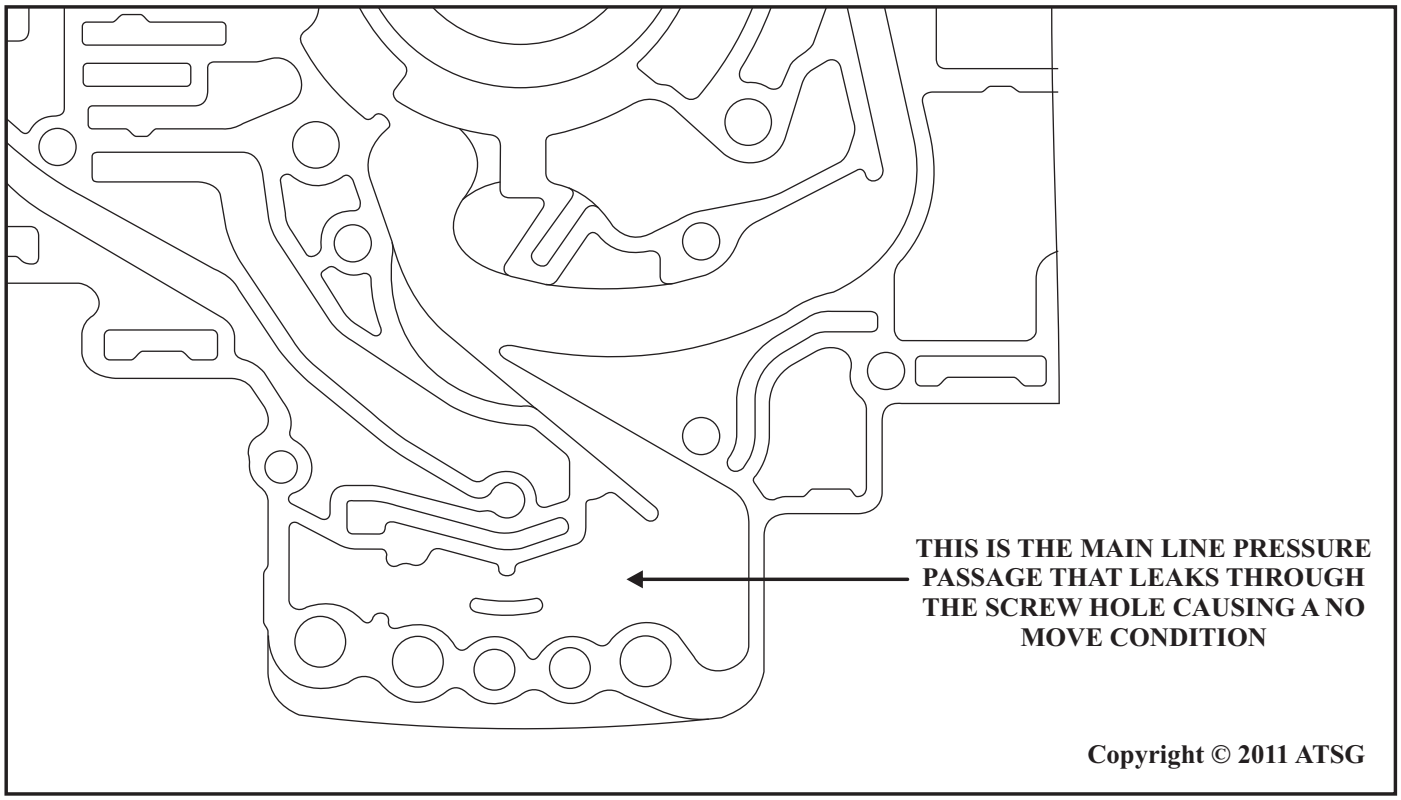


Figure 2

Techpac - 56

Techpac - 57

CHRYSLER-DODGE-JEEP 45/545RFE

FRONT PUMP CHANGE

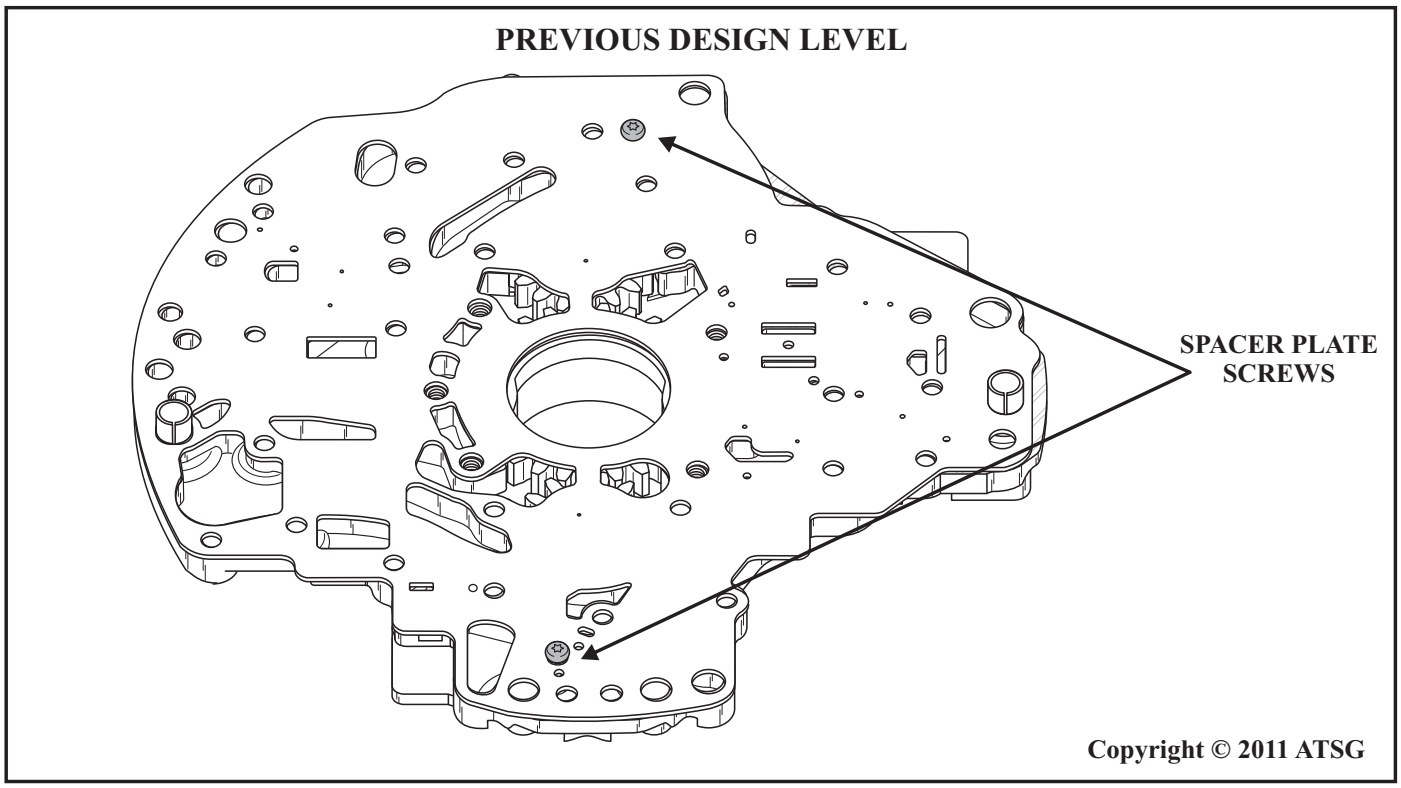


Figure 3

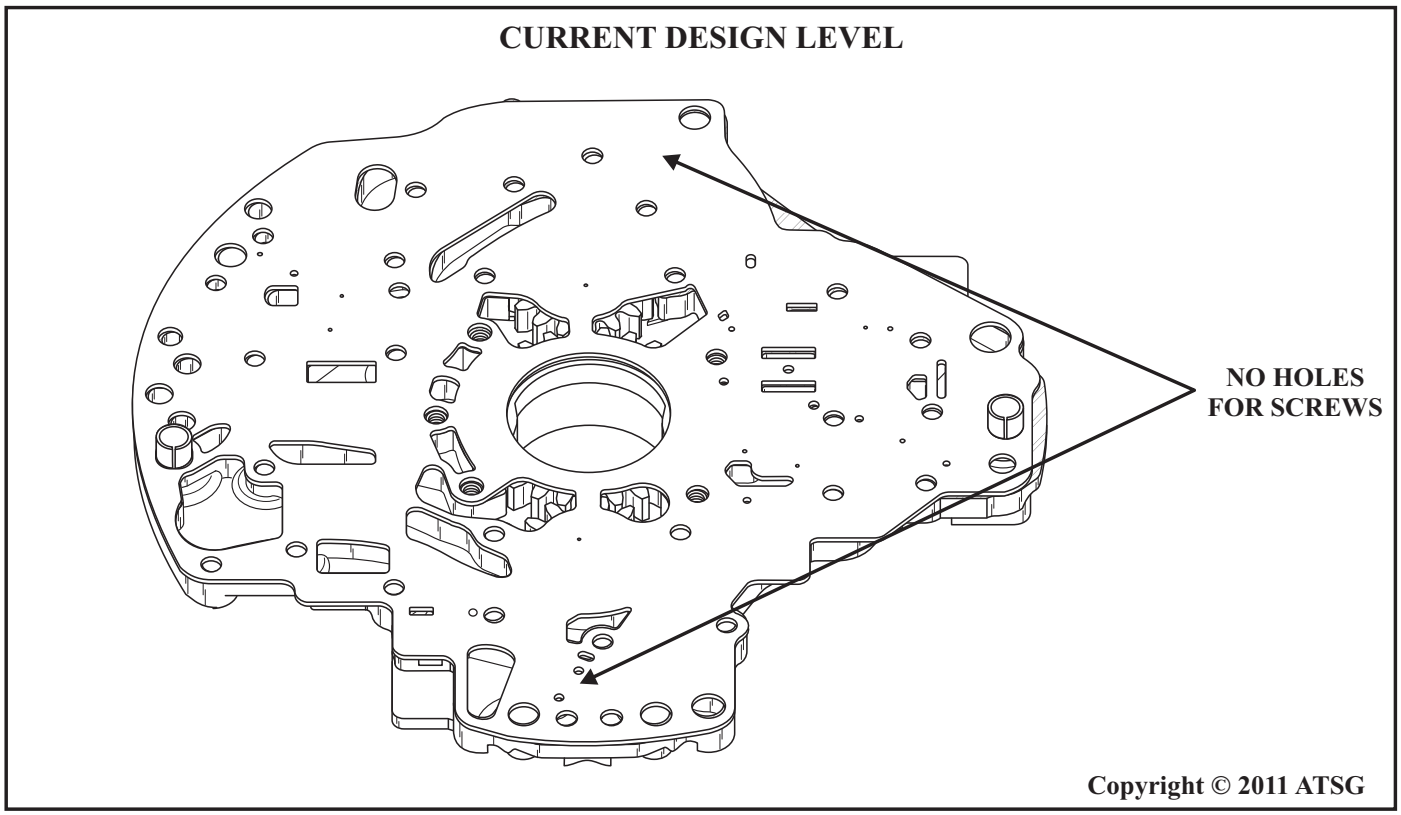


Figure 4

CHRYSLER-DODGE-JEEP 45/545RFE

FRONT PUMP CHANGE

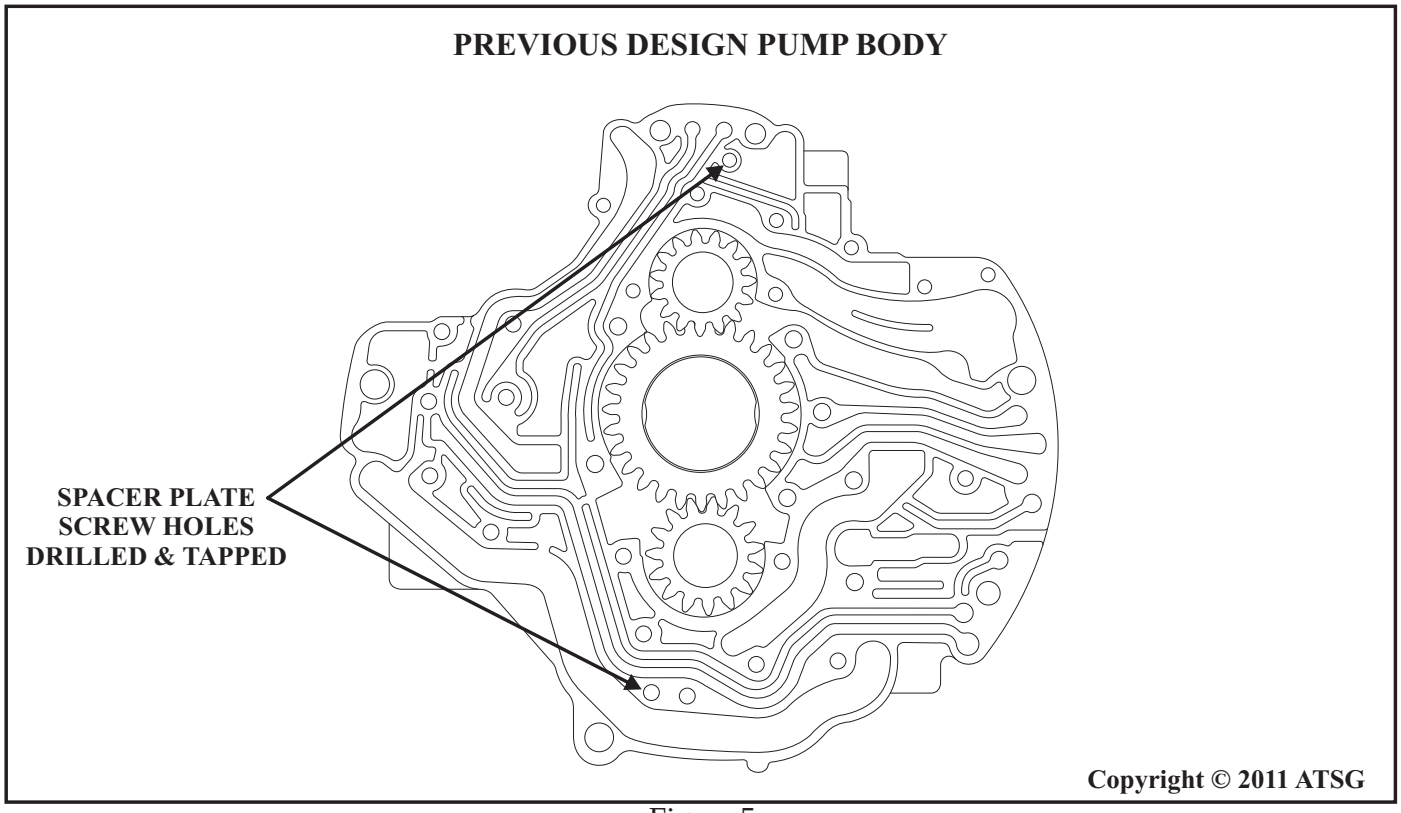


Figure 5

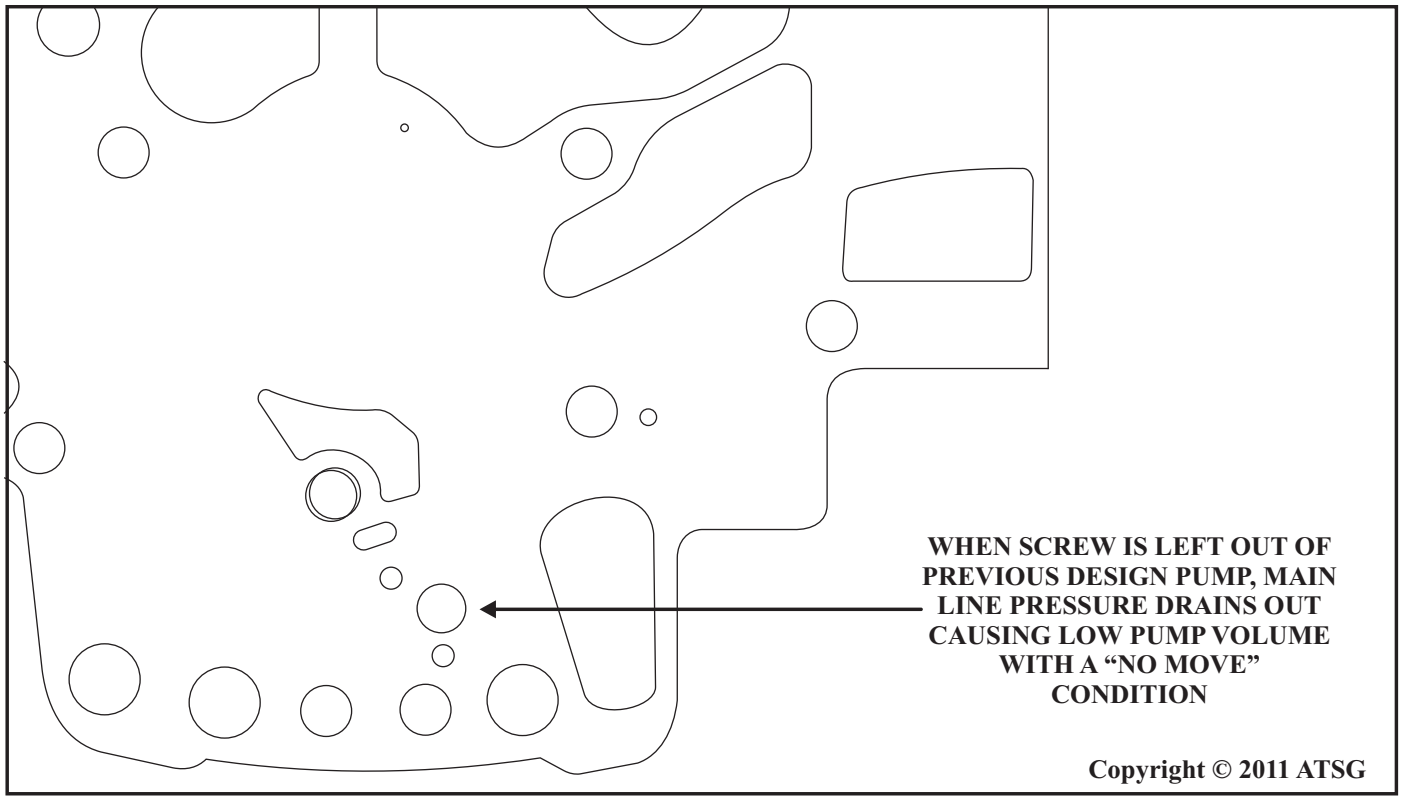


Figure 5

DODGE 45/545/68RFE

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

The 45RFE has gone thru many changes since it was introduced in 1999. The Pump has had a few changes that pertain to the To Cooler/Lube circuit that can cause some overheating and or planetary failure conditions, if parts are mis-matched. The following pages will show these changes, that happened in the pump cover and spacer plate, how to identify, and the interchange information related to them.

- ***Refer to Figure 1 to see the To Cooler Circuit Identified in the Pump Body. This circuit is where changes occurred.***
- ***Refer to Figure 2 to see the To Cooler Circuit connection to the 1st Design Pump Spacer Plate I.D.'d as the "Hatchet Hole."***
- ***Refer to Figure 3 to see the 1st Design Pump Covers connection to the To Cooler Circuit from the 1st Design Pump Spacer Plate I.D.'d as the "Hatchet Hole," then on to the passages highlighted in grey to a .077" orifice that is drilled into the casting, which connects the To Cooler circuit to the sump.***
- ***Refer to Figure 4 for external I.D. with the casting number and casting code, as well as the area in the side of the pump cover where the .077" orifice is located.***
- ***Refer to Figure 5 to see the To Cooler Circuit connection to the 1st Design Pump Spacer Plate. I.D.'d as the "Hatchet Hole."***
- ***Refer to Figure 6 to see the 2nd Design Pump Covers connection to the To Cooler Circuit from the 1st Design Pump Spacer Plate I.D.'d as the "Hatchet Hole," then on to the passages highlighted in grey to a passage that is cast shut.***
- ***Refer to Figure 7 for external I.D. with the casting number and casting code, as well as the area in the side of the pump cover where the hole is cast shut.***
- ***Refer to Figure 8 to see the 2nd Design Pump Spacer Plate and note the "Hatchet Hole" has been eliminated.***
- ***Refer to Figure 9 to see the 3rd Design Pump Cover. There is no connection to the To Cooler Circuit as the "Hatchet Hole" is closed. The passages highlighted in grey lead to a passage that is connected to a bolt that houses a check ball and spring that leads to the sump, which has no function.***
- ***Refer to Figure 10 for external I.D. with the casting number and casting code, as well as the area in the side of the pump cover where the bolt that houses a check ball and spring is located.***
- ***Refer to Figure 11 for a modification of the 1st Design Pump Cover, to prevent Cooler pressure loss.***
- ***Refer to Figure 12 for a breakdown on the pump assembly.***

INTERCHANGEABILITY

1st Design Pump Plate can be used with the 1st and 2nd Design Pump Cover ONLY. If the 1st Design plate is used on the 3rd Design Pump Cover, To Cooler Pressure will be connected to a .101" orifice leading to the sump!

2nd Design Pump Plate can be used with the 1st and 2nd and 3rd Design Pump Cover, and is highly suggested. Note: At the time of this printing, the Pump plate is Not sold separately from the complete Pump assembly.

Special Thanks to Mike Riley @ Transtar

Ratio tech - 61

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45/545/68RFE OIL PUMP BODY AND GEARS

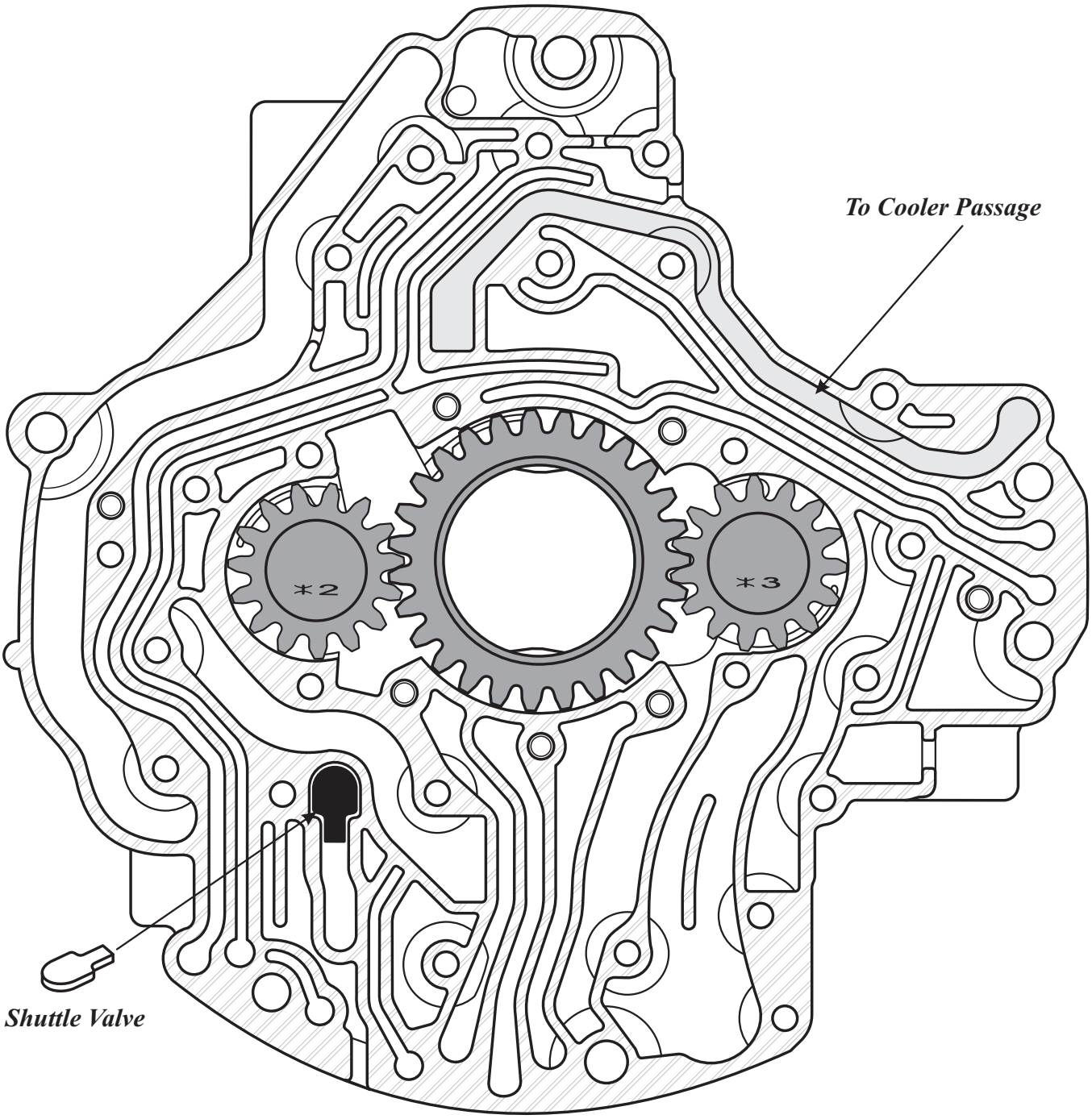
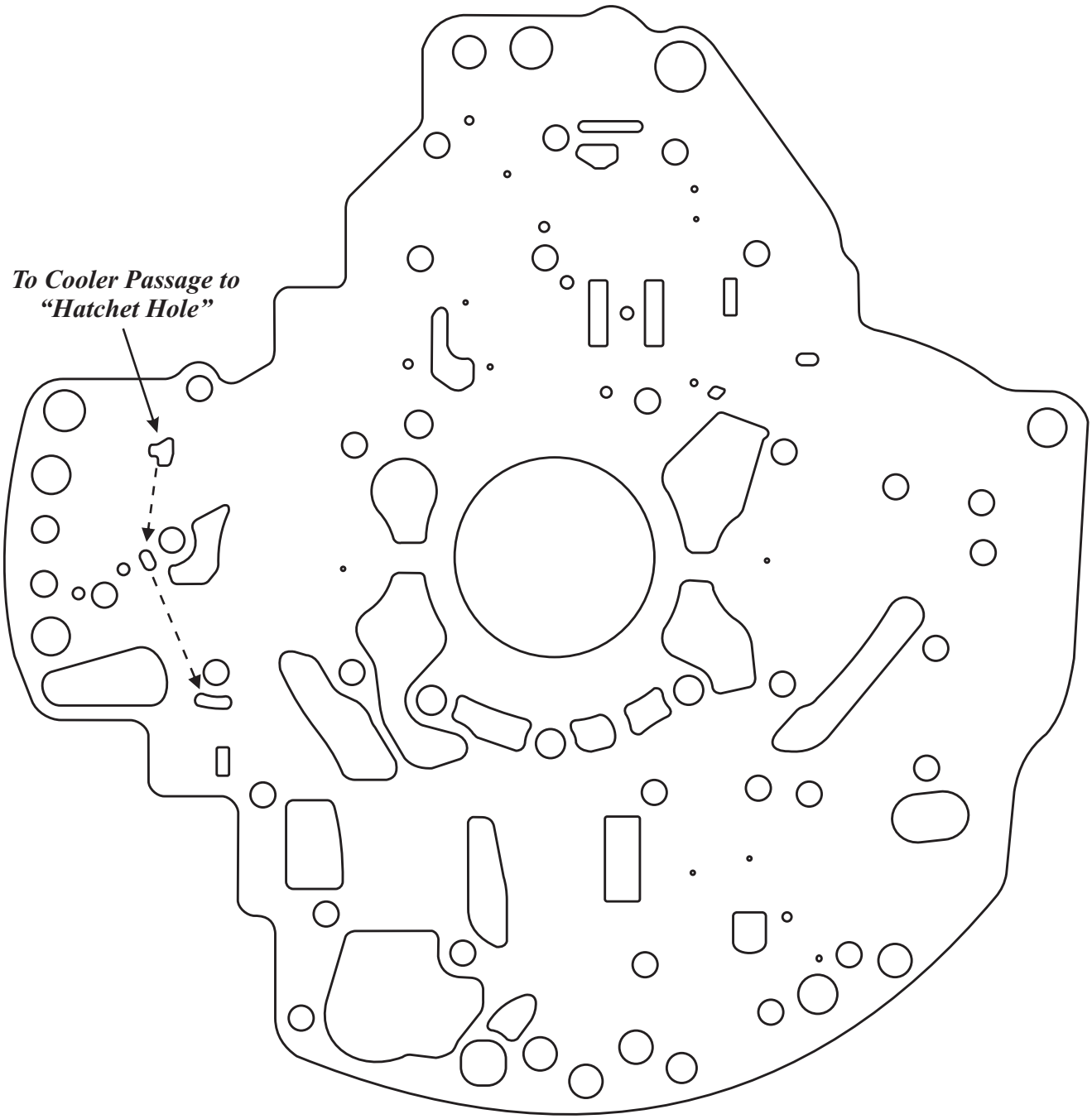


Figure 1

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45RFE 1st DESIGN PUMP SPACER PLATE



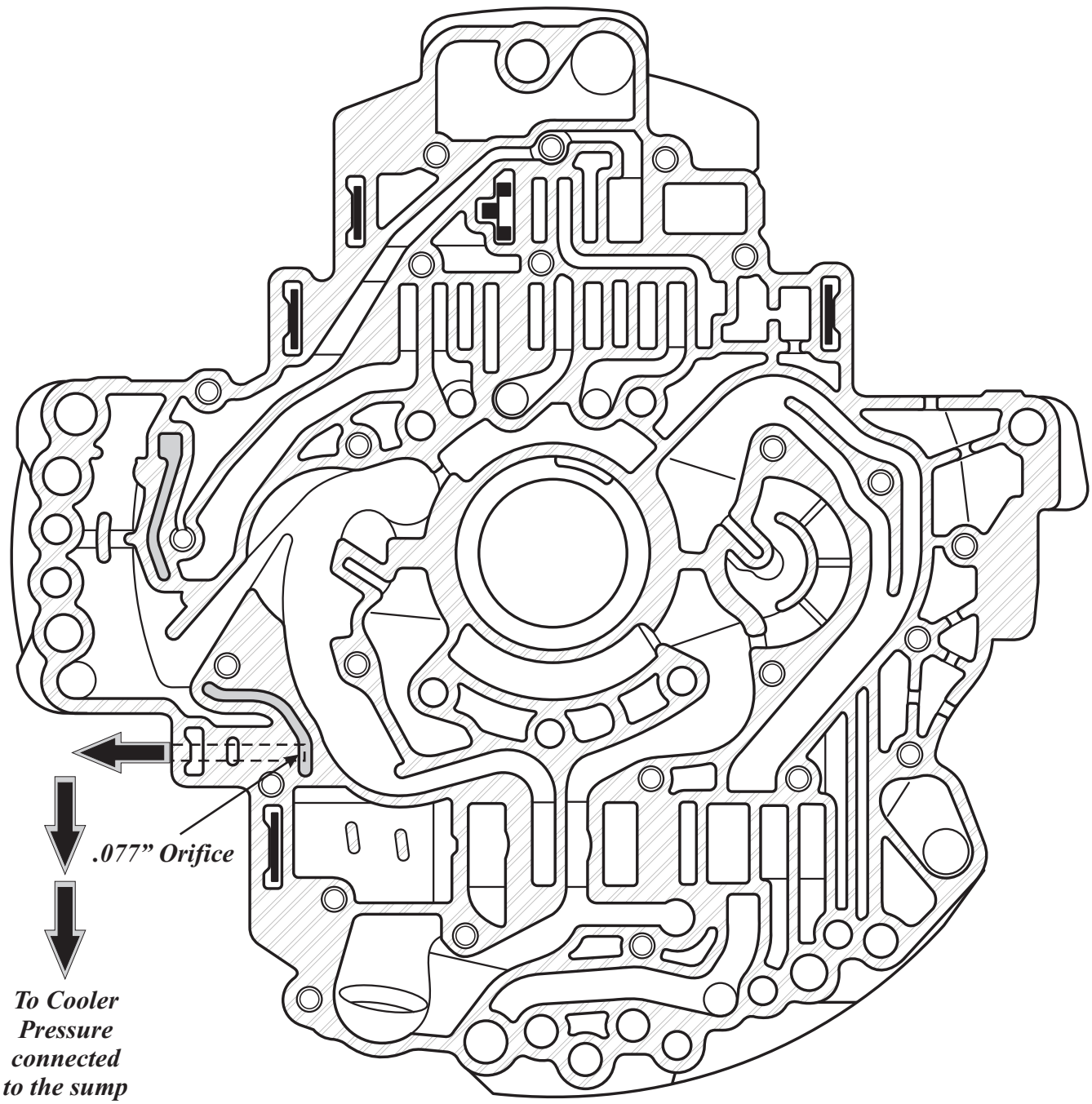
The To Cooler Passage in the Pump Body connects to the "Hatchet Hole." To cooler pressure is fed in the direction of the arrows shown above, which leads to the Pump cover.

Figure 2

Superflow - 64

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45RFE 1st DESIGN PUMP COVER



The 1st Design Pump Plate combined with the 1st Design Pump Cover connects the To Cooler Circuit thru the "Hatchet Hole," in the Pump Plate to a .077" orifice which leads to the sump. O.E. Hydraulics show this orifice as "C2" in the oil circuit diagrams. See Figure 11 for a modification to close off the connection to the sump.

Figure 3

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45RFE 1st DESIGN PUMP COVER I.D.

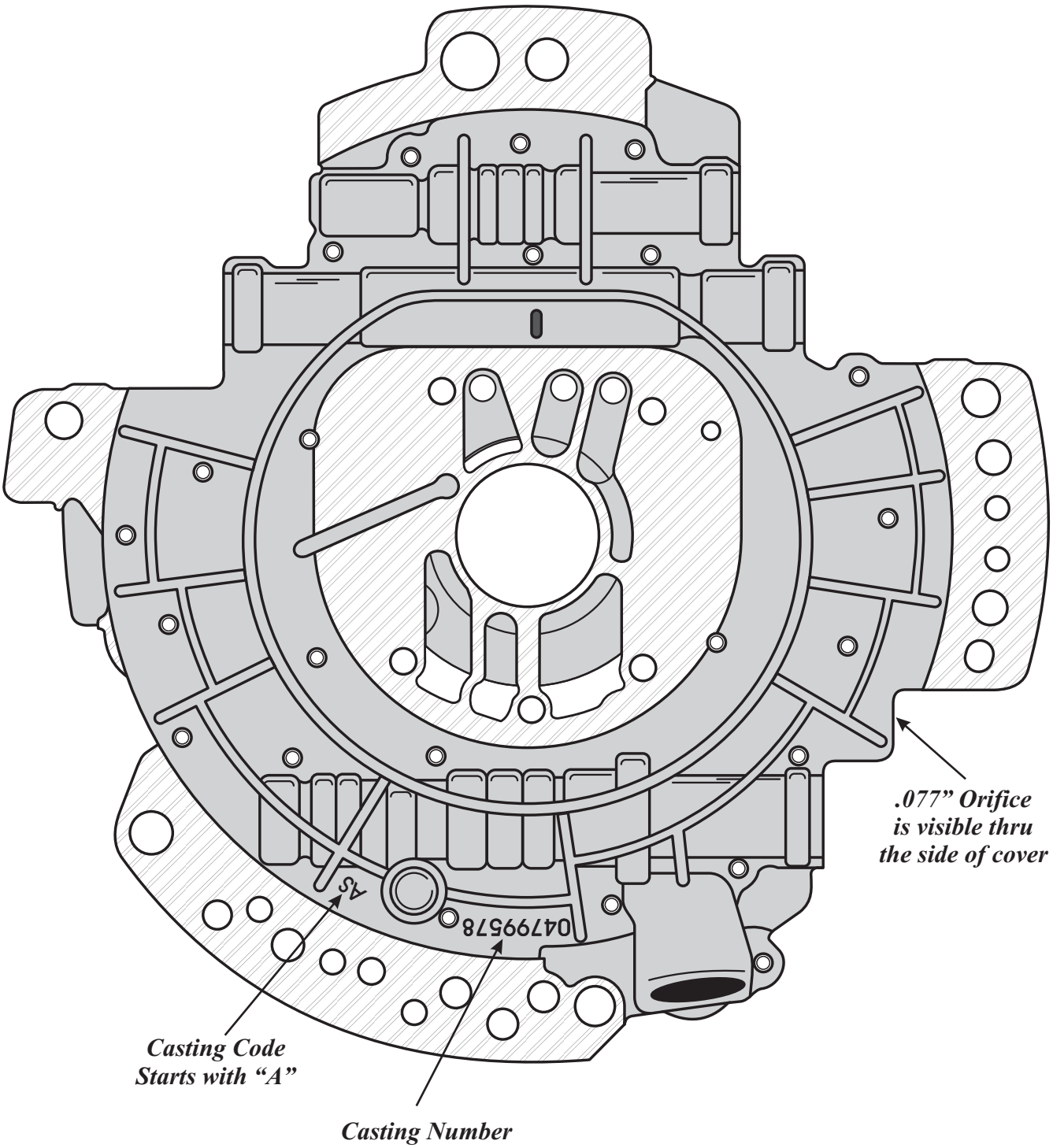
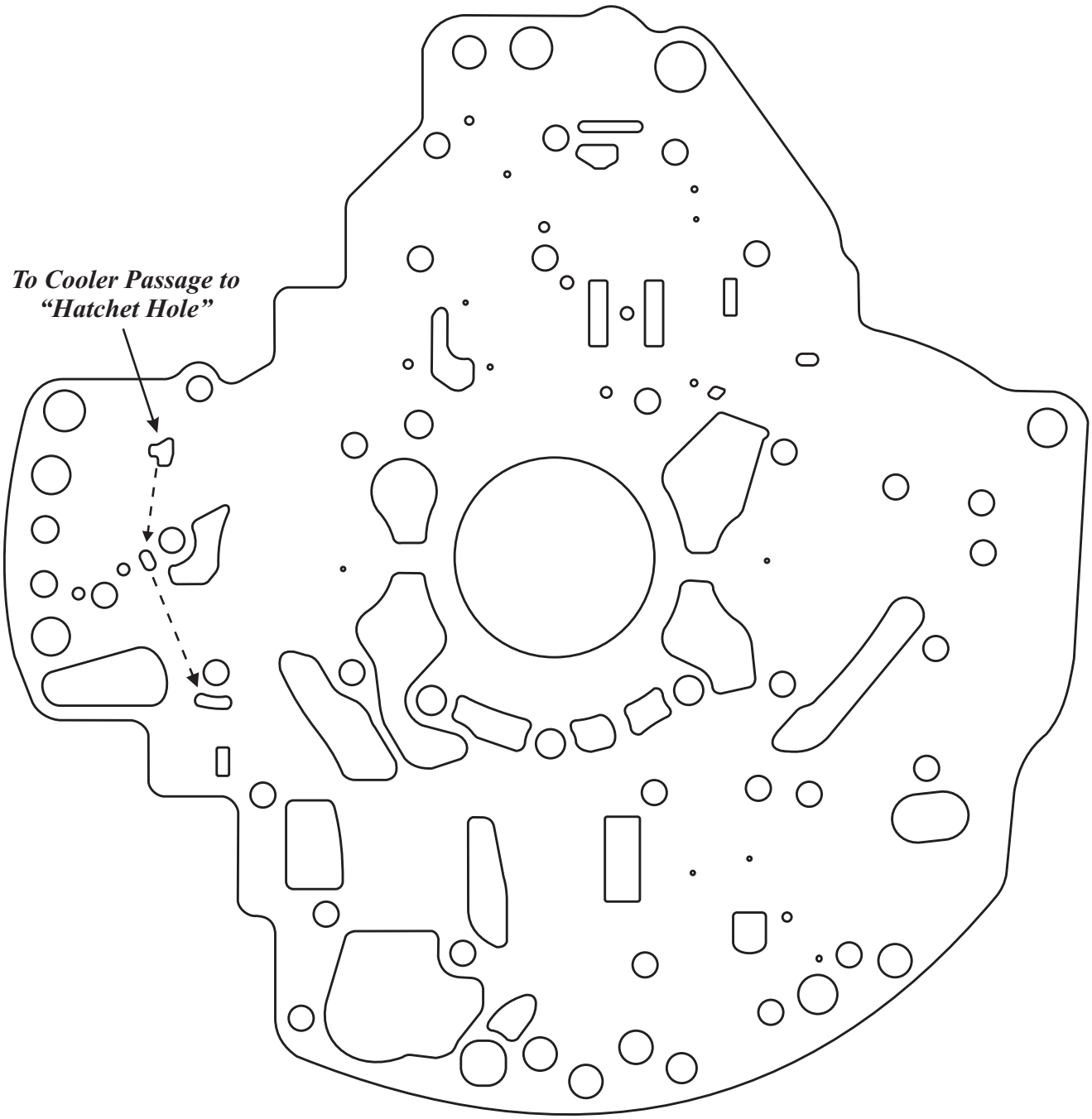


Figure 4

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45RFE 1st DESIGN PUMP SPACER PLATE

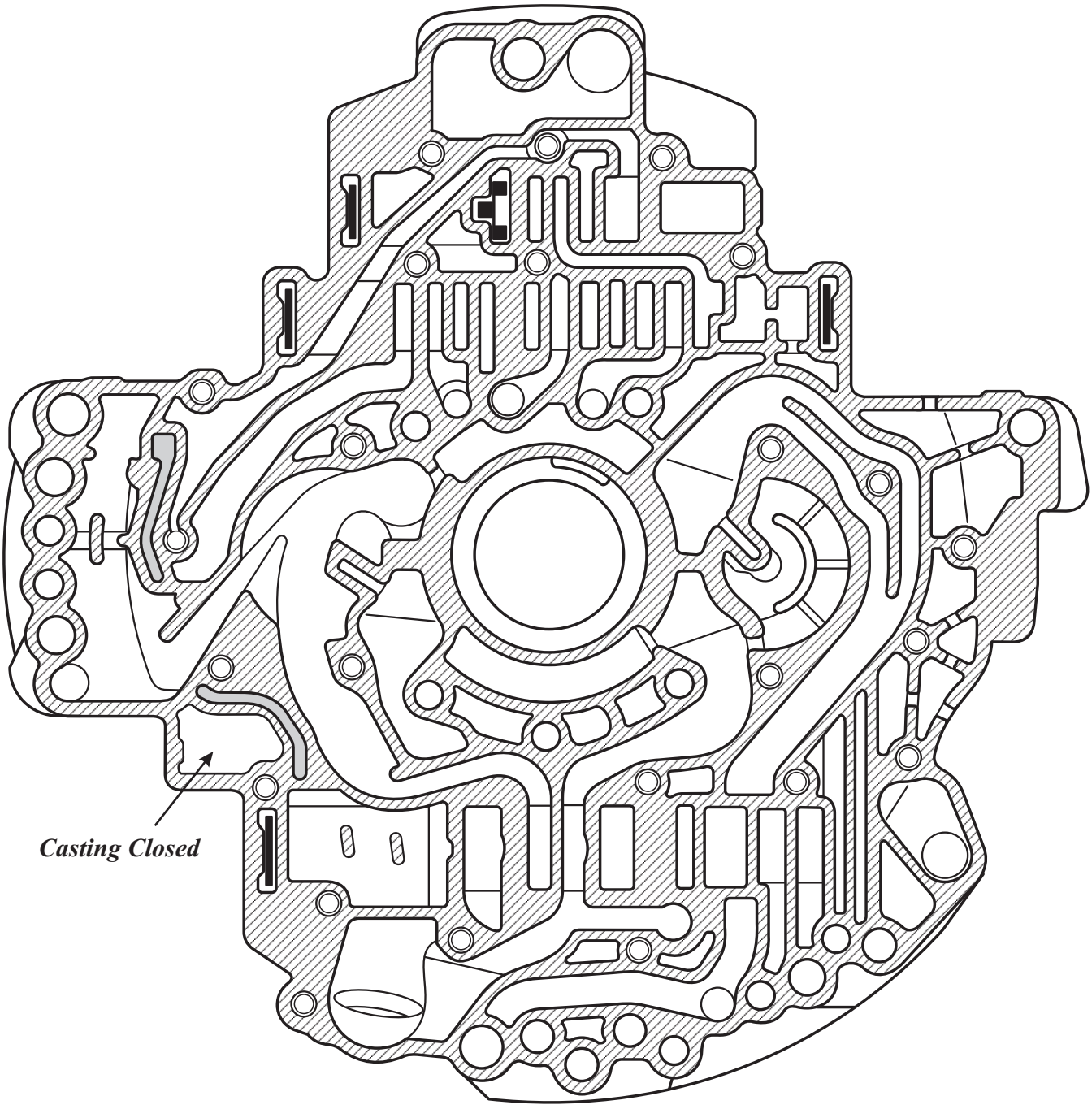


The To Cooler Passage in the Pump Body connects to the "Hatchet Hole." To cooler pressure is fed in the direction of the arrows shown above, which leads to the Pump cover.

Figure 5

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45RFE 2nd DESIGN PUMP COVER



The 1st Design Pump plate combined with the 2nd Design Pump Cover blocks the To Cooler Circuits connection to the sump.

Figure 6

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45RFE 2nd DESIGN PUMP COVER I.D.

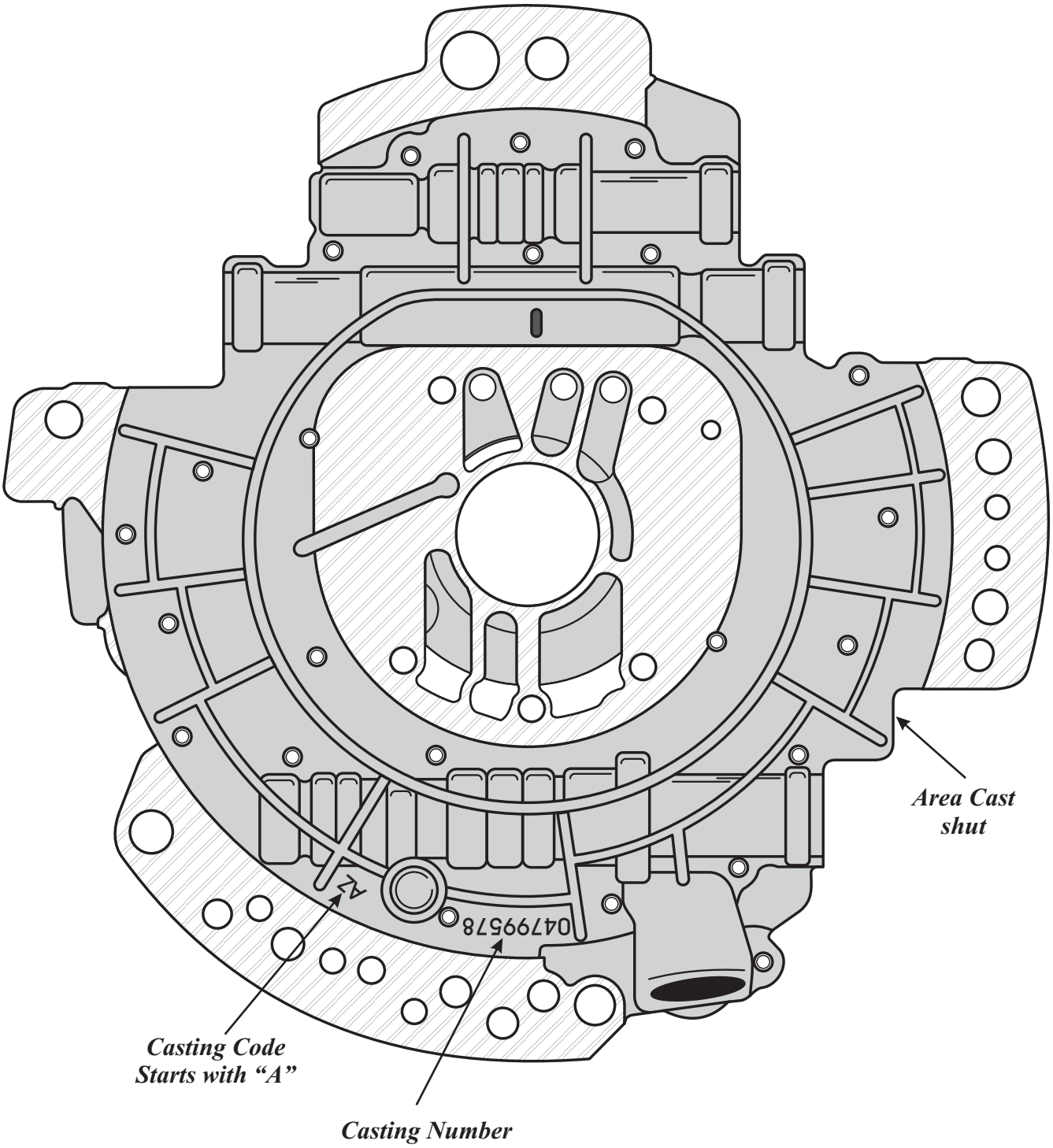


Figure 7

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45/545/68RFE 2nd DESIGN PUMP SPACER PLATE

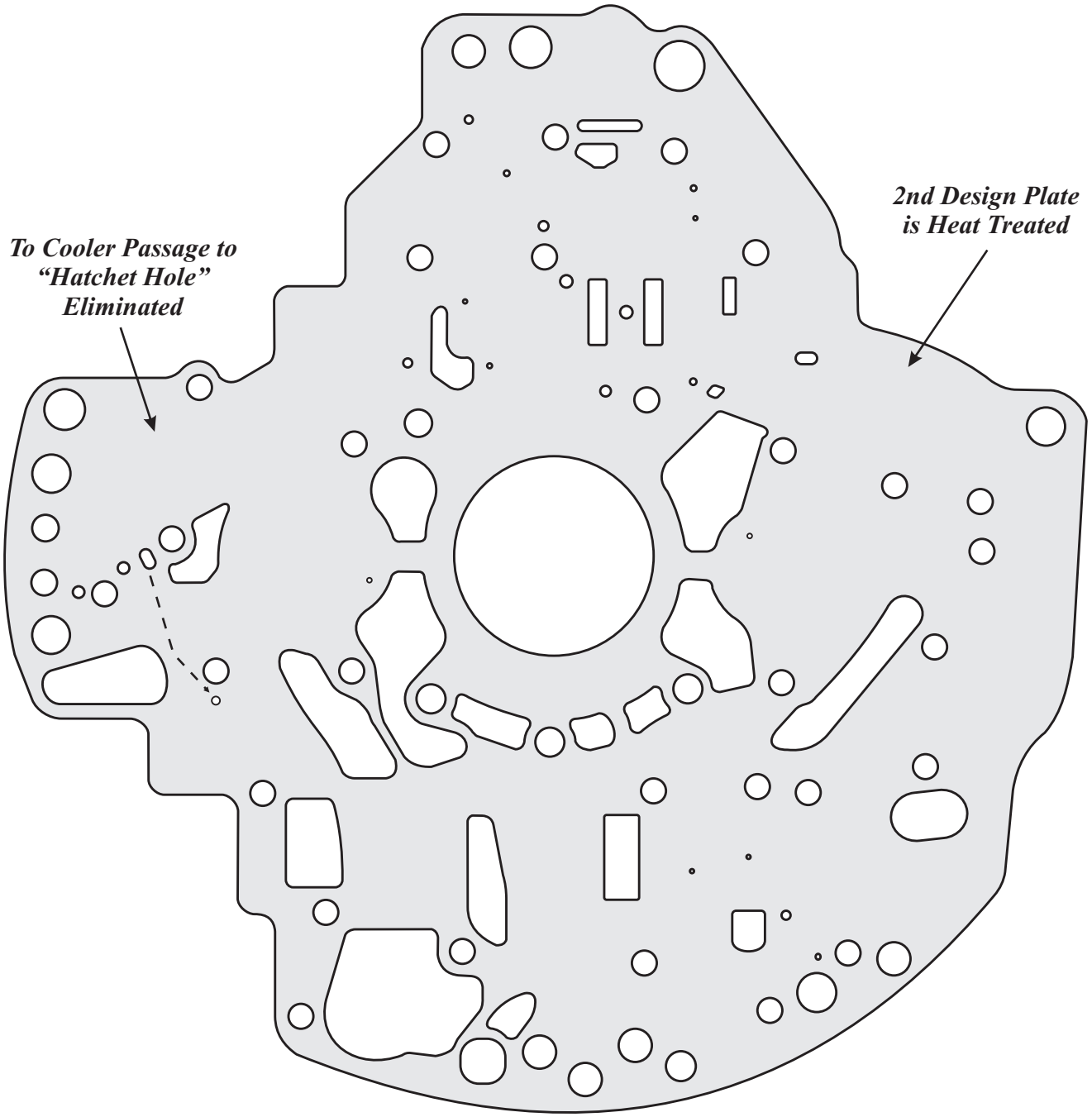
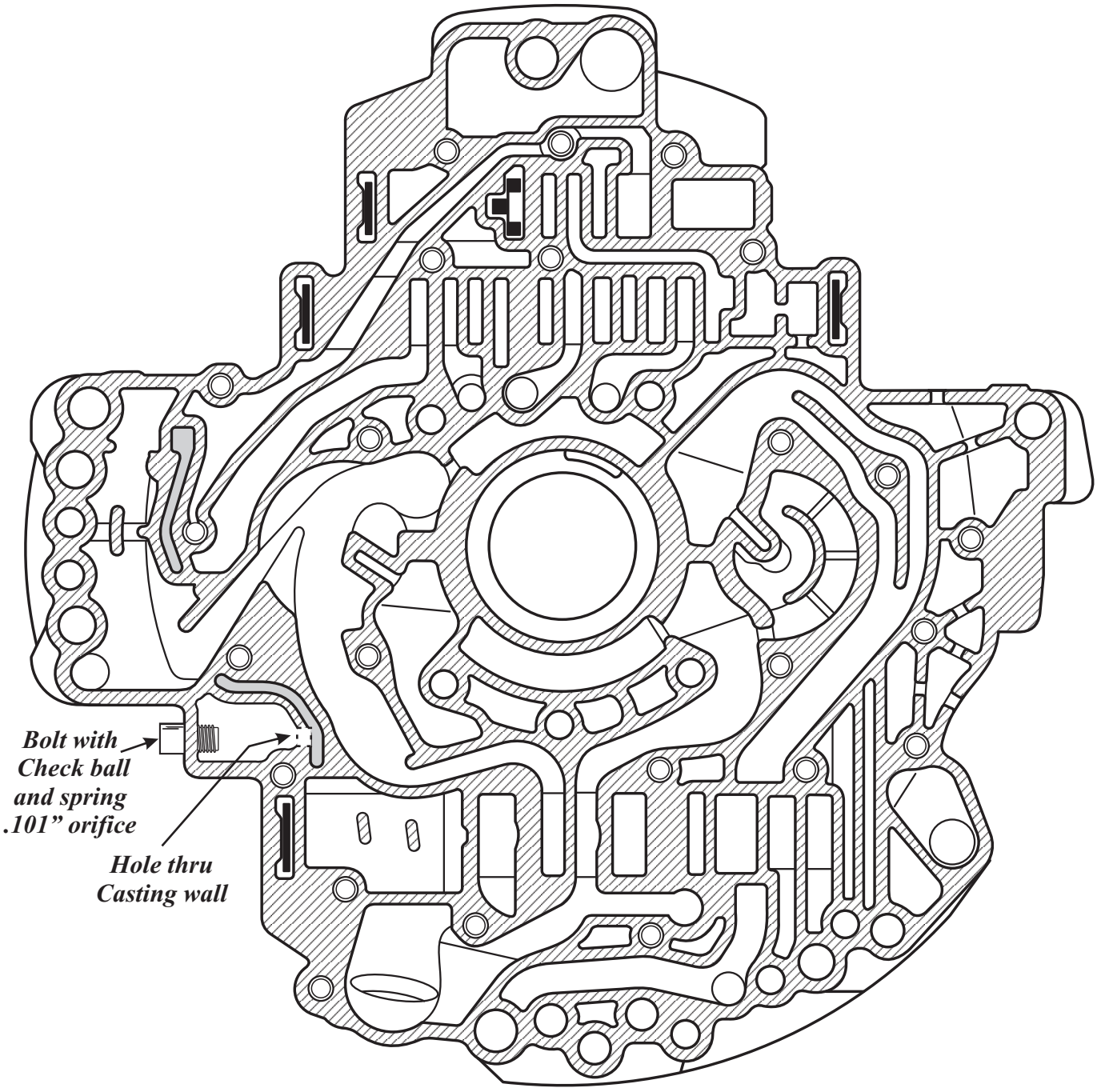


Figure 8

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45/545/68RFE 3rd DESIGN PUMP COVER



The 2nd Design Pump plate has no "Hatchet Hole" therefore there will be no To Cooler Pressure connection to the sump.

Figure 9

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

45RFE 3rd DESIGN PUMP COVER I.D.

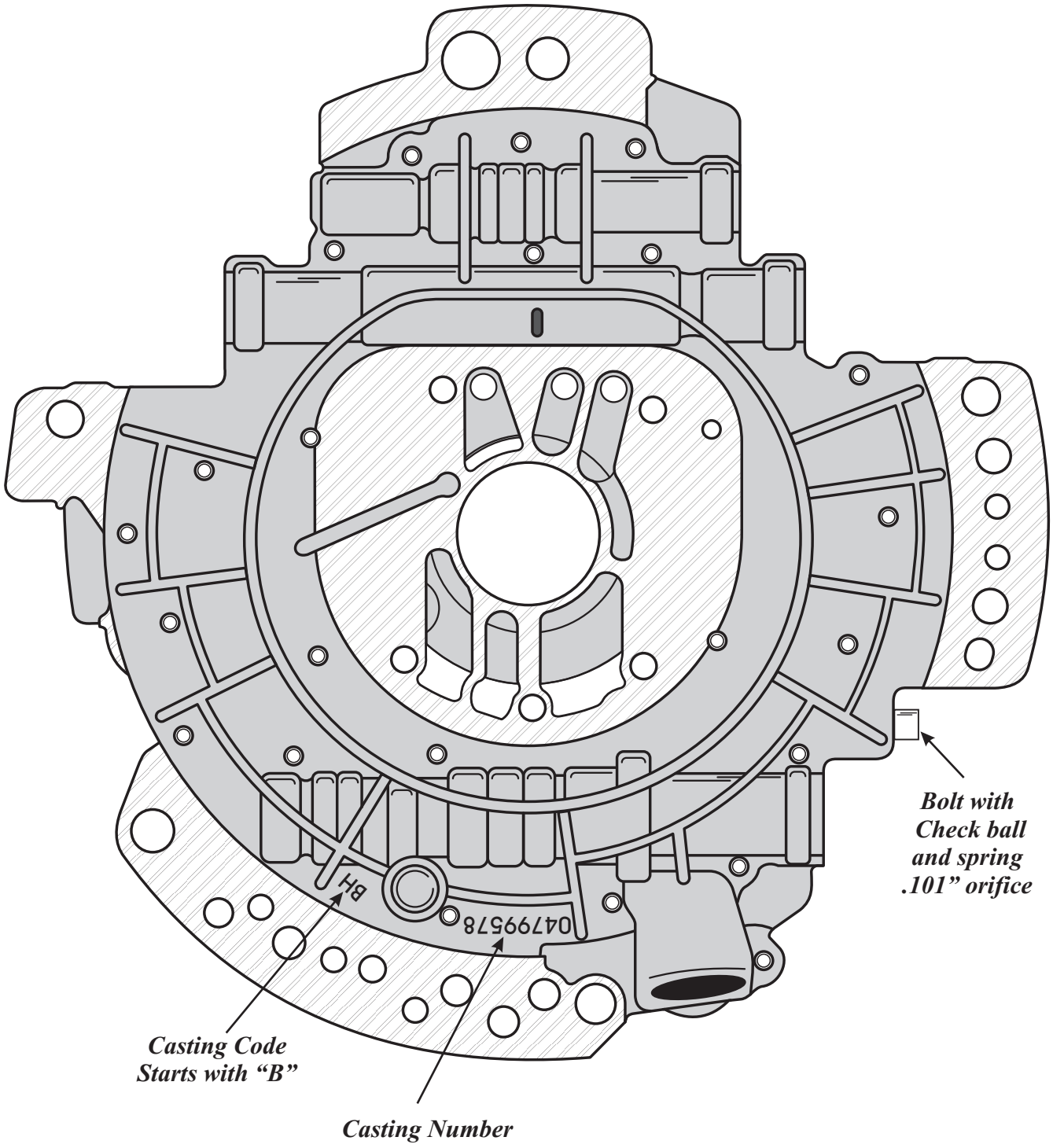
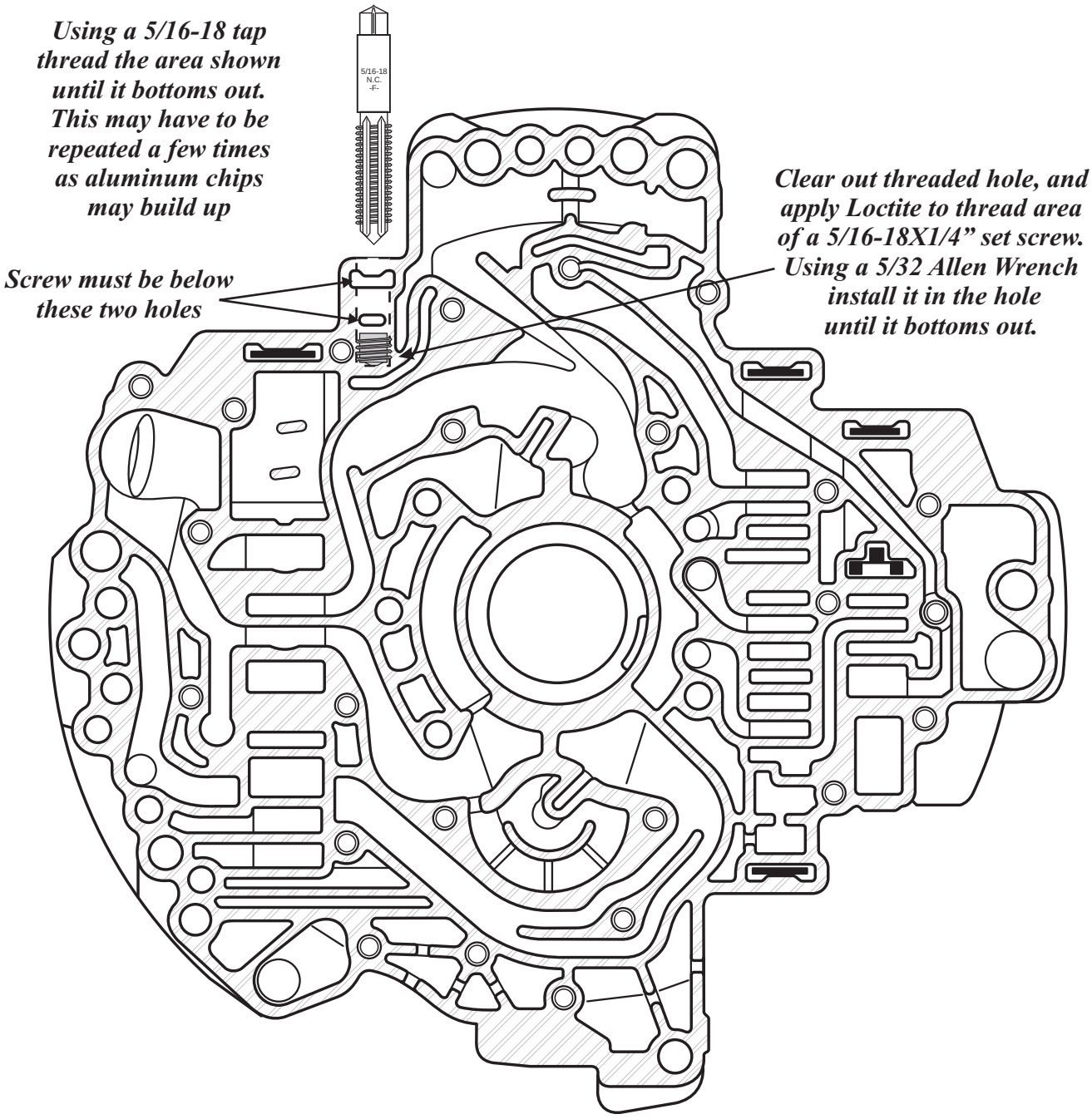


Figure 10

LUBE CIRCUIT AND PUMP CASTING DESIGN CHANGES

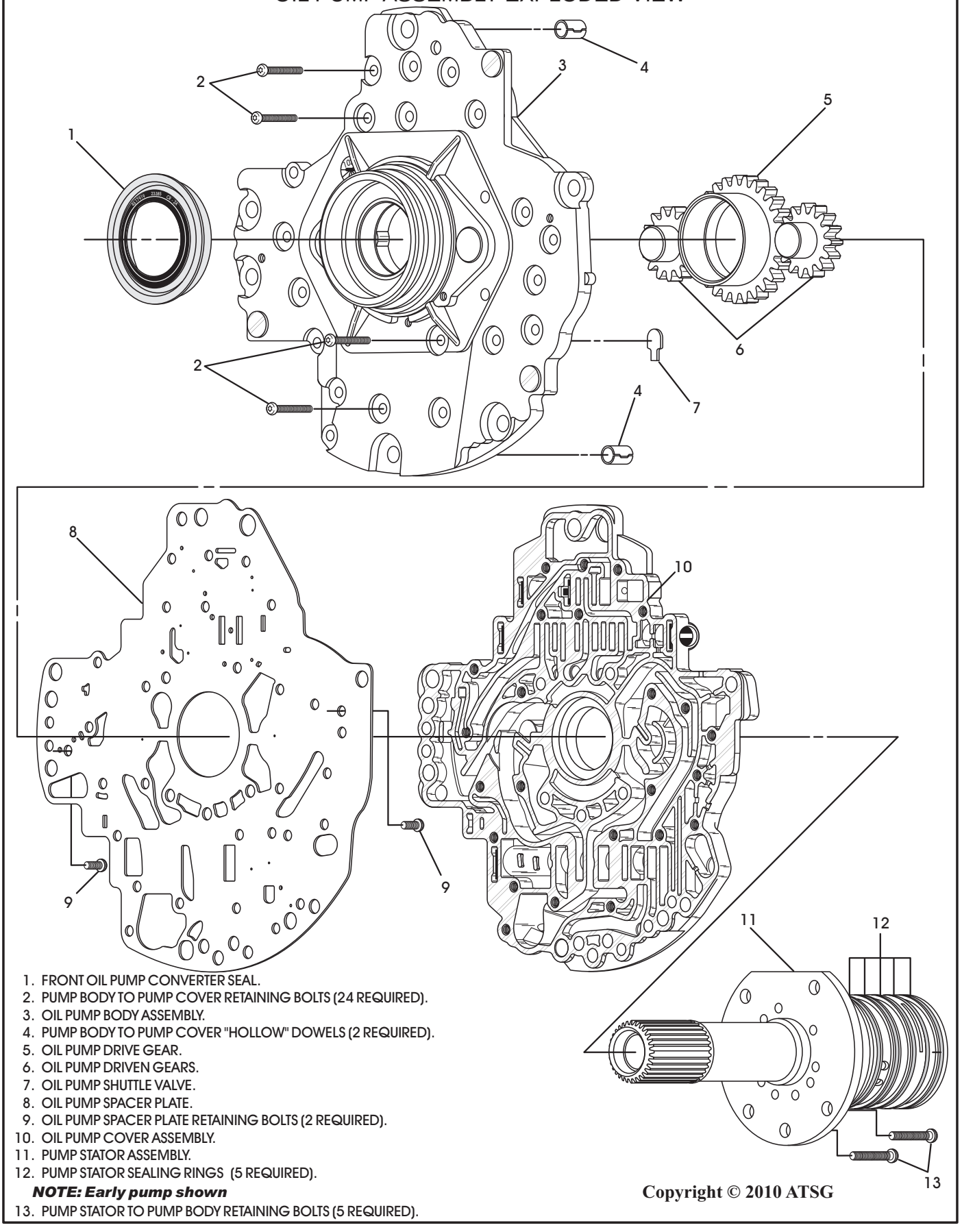
45RFE 1st DESIGN PUMP COVER MODIFICATION



To Modify the 1st design pump to eliminate the .077" orifice leading to the sump, follow the instructions listed above. Note: It is not necessary to drill the pump cover before tapping as the hole that is already present, will accept the tap to cut the threads easily.

Figure 11

OIL PUMP ASSEMBLY EXPLODED VIEW



1. FRONT OIL PUMP CONVERTER SEAL.
2. PUMP BODY TO PUMP COVER RETAINING BOLTS (24 REQUIRED).
3. OIL PUMP BODY ASSEMBLY.
4. PUMP BODY TO PUMP COVER "HOLLOW" DOWELS (2 REQUIRED).
5. OIL PUMP DRIVE GEAR.
6. OIL PUMP DRIVEN GEARS.
7. OIL PUMP SHUTTLE VALVE.
8. OIL PUMP SPACER PLATE.
9. OIL PUMP SPACER PLATE RETAINING BOLTS (2 REQUIRED).
10. OIL PUMP COVER ASSEMBLY.
11. PUMP STATOR ASSEMBLY.
12. PUMP STATOR SEALING RINGS (5 REQUIRED).

NOTE: Early pump shown

13. PUMP STATOR TO PUMP BODY RETAINING BOLTS (5 REQUIRED).

Figure 12

CHRYSLER 31TH/41TE/41TES/42LE/42RLE/42RLE-VLP/62TE

FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

Proper identification of the transaxle gear ratio is mandatory on Chrysler Corp domestic front wheel drive applications, as gear ratios are different from model to model and will not interchange. The transaxle is identified by the "Last 3 Digits" of the OEM part number and there are currently four different procedures that may be used to accomplish this.
The transaxles indentified in the following charts are 31TH, 40TE, 41TE, 41AE, 40TES, 41TES, 62TE, 62AE, 42RLE & 42RLE VLP.

Procedure No. One:

There is a bar code label located externally on the case on top of the bell housing, as shown in Figure 1. The last three numbers of the OEM part number, as shown in Figure 1 indicate the final drive gear ratio and its related tooth counts. After you have these numbers, refer to Figures 3 through 16 for the identification of the unit that you have.

Procedure No. Two:

There is also a white label attached to the transfer gear cover, as shown in Figure 2. The three numbers on this label are also the last three numbers of the OEM part number, as shown in Figure 1. After you have these numbers, refer to Figures 3 through 16 for the identification of the unit that you have.

Procedure No. Three:

The most permanent form of external identification is an etching in the case, located near the transfer gear cover, as shown in Figure 2. This etching in the case will include the complete OEM part number, as shown in Figure 1. After you have the complete part number, refer to Figures 3 through 16 for the identification of the unit that you have.

Procedure No. Four:

Disassemble the unit and start counting the teeth for identification.

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

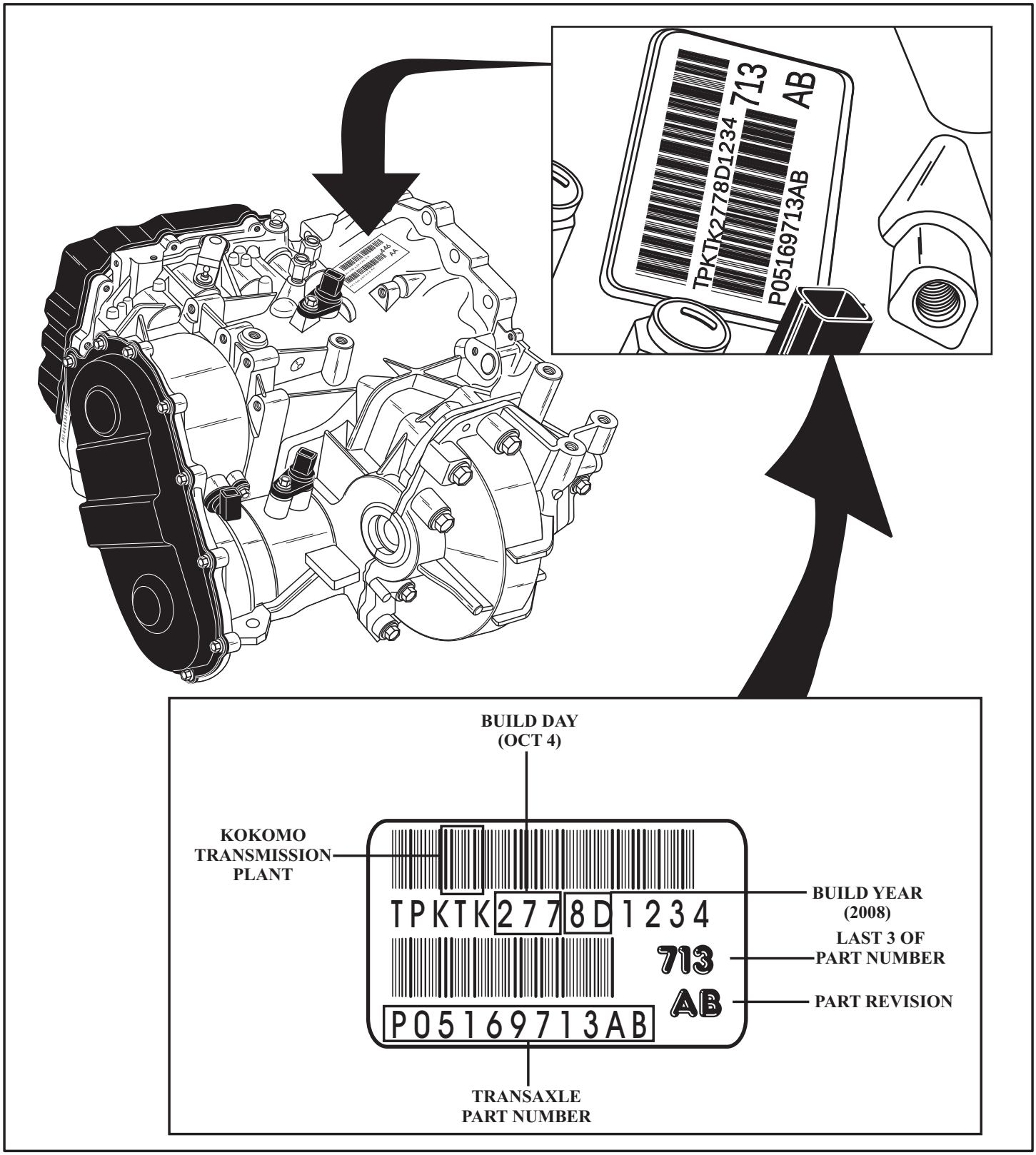
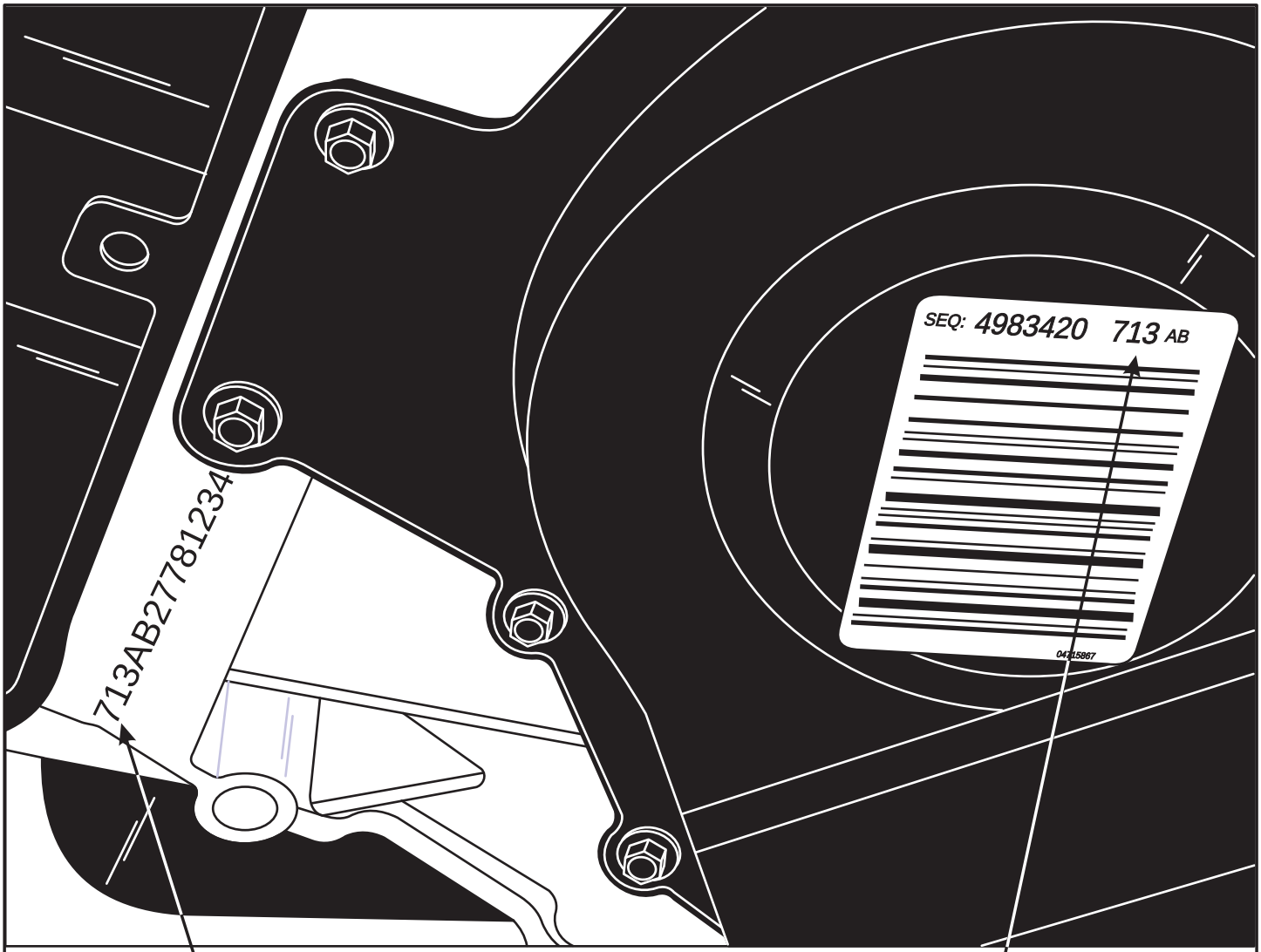


Figure 1

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012



TRANSAXLE PART NUMBER CONTAINS THE SAME LAST 3 NUMBERS THAT ARE ON THE REAR GEAR COVER
(This example of 713 indicates this 62TE application is for a 2009 Chrysler Sebring which should contain a 74 tooth output gear, a 70 tooth transfer gear, a 23 tooth pinion gear & a 79 tooth ring gear for a final drive ratio of 2.24)

NUMBER ON TAG ON GEAR COVER IS LAST 3 OF PART NUMBER

Figure 2

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

1998 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER	SERVICE TRANS PART NUMBER
NS/RS	31TH	2.4L	45	47	20	61	3.19	4567620	4567620
PL	31TH	2.0L	45	47	21	60	2.98	4659870	4762876
P2	31TH	2.0L	45	47	20	61	3.19	4659960	4797856
PL	31TH	2.0L	45	47	21	60	2.98	4659962	4778716
P1	31TH	2.0L	43	49	20	61	3.48	4659961	4778715
J2	31TH	2.4L	43	49	21	60	3.26	4850300	4659961
NS	41TE	3.0L	47	49	17	59	2.49	4800859	4883859
NS/GS/RG	41TE	2.4L	47	49	16	60	2.69	4800850	4883850
NS/GS/ RG/RS	41TE	3.3L	47	49	17	59	2.49	4800851	4883851
NS/RS	41TE	3.5L/3.8L	50	46	15	56	2.37	4800852	4883852
NS/GS/RS	41AE	3.8L	50	46	15	56	2.37	4800853	4883853
JX/FJ/JA J2/PT	41TE	2.0L/2.4L	47	49	16	60	2.69	4800854	4883854
JX/FJ/JA J2/J4	41TE	2.5L	47	49	16	60	2.69	4800855	4883855
JA/PT	41TE	2.0L	46	50	16	60	2.81	4800856	4883856
J2/J4 TURBO	41TE	2.4L	47	49	17	59	2.49	4800858	4883858
LH	42LE	3.2L/3.5L	32	33	11	39	2.52	4659800	4882556
LH	42LE	2.7L	31	34	11	39	2.68	4659900	4882555
PR	42LE	3.5L	31	34	11	39	2.68	4786701	4882508

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
FJ	SEBRING/AVENGER/TALON	P1	NEON (KNOCKDOWN KIT)
GS	VOYAGER (INTERNATIONAL MARKET)	P2	NEON (KNOCKDOWN KIT)
J2	CIRRUS/STRATUS (EXPORT)	PL	NEON/SRT-4
J4	CIRRUS/RT CONVERTIBLE (MEXICO)	PR	PROWLER
JA	CIRRUS/STRATUS/BREEZE	PT	PT CRUISER
JX	SEBRING CONVERTIBLE	RG	VOYAGER (INTERNATIONAL MARKET)
LH	CONCORDE/INTREPID/300M	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
NS	CARAVAN/VOYAGER/TOWN & COUNTRY		

Figure 3

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

1999 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER	SERVICE TRANS PART NUMBER
NS/RS	31TH	2.4L	45	47	20	61	3.19	4567620	4567620
PL	31TH	2.0L	45	47	21	60	2.98	4799901AB	4762876
P2	31TH	2.0L	45	47	20	61	3.19	4799918AB	4797856
PL	31TH	2.0L	45	47	21	60	2.98	4800309AA	4778716
P1	31TH	2.0L	43	49	20	61	3.48	4659961	4778715
J2	31TH	2.4L	43	49	21	60	3.26	4850300	4659961
NS	41TE	3.0L	47	49	17	59	2.49	4800859	4883859
NS/GS/RG	41TE	2.4L	47	49	16	60	2.69	4800445AA	5011445AA
NS/GS/ RG/RS	41TE	3.3L	47	49	17	59	2.49	4800445AA	5011445AA
NS/RS	41TE	3.5L/3.8L	50	46	15	56	2.37	4800446AA	5011446AA
NS/GS/RS	41AE	3.8L	50	46	15	56	2.37	4800447AA	5011447AA
JX/FJ/JA J2/PT	41TE	2.0L/2.4L	47	49	16	60	2.69	4800448AA	5011448AA
JX/FJ/JA J2/J4	41TE	2.5L	47	49	16	60	2.69	4800448AA	5011448AA
JA/PT	41TE	2.0L	46	50	16	60	2.81	4800450AA	5011450AA
J2/J4 TURBO	41TE	2.4L	47	49	17	59	2.49	4800451AA	5011451AA
LH	42LE	3.2L/3.5L	32	33	11	39	2.52	4659800	4882556
LH	42LE	2.7L	31	34	11	39	2.68	4659900	4882555
PR	42LE	3.5L	31	34	11	39	2.68	4800952AA 4799943AA	5014952AA 4886943AA

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
FJ	SEBRING/AVENGER/TALON	P1	NEON (KNOCKDOWN KIT)
GS	VOYAGER (INTERNATIONAL MARKET)	P2	NEON (KNOCKDOWN KIT)
J2	CIRRUS/STRATUS (EXPORT)	PL	NEON/SRT-4
J4	CIRRUS/RT CONVERTIBLE (MEXICO)	PR	PROWLER
JA	CIRRUS/STRATUS/BREEZE	PT	PT CRUISER
JX	SEBRING CONVERTIBLE	RG	VOYAGER (INTERNATIONAL MARKET)
LH	CONCORDE/INTREPID/300M	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
NS	CARAVAN/VOYAGER/TOWN & COUNTRY		

Figure 4

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2000 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER	SERVICE TRANS PART NUMBER
NS/RS	31TH	2.4L	45	47	20	61	3.19	4799900AB	4886900AB
PL	31TH	2.0L	45	47	21	60	2.98	4799901AC	4886901AC
P2	31TH	2.0L	45	47	20	61	3.19	4799918AC	4886918AC
PL	31TH	2.0L	45	47	21	60	2.98	4800309AB	5014309AB
PL (MEX)	31TH	2.0L	43	49	20	61	3.48	4800306AB	5015306AB
J2	31TH	2.4L	43	49	21	60	3.26	4799999AC	5014999AC
NS	41TE	3.0L	47	49	17	59	2.49	4800305AA	5014305AA
NS/GS/RG	41TE	2.4L	47	49	16	60	2.69	4800444AA	5011444AA
NS/GS/ RG/RS	41TE	3.3L	47	49	17	59	2.49	4800445AA	5011445AA
NS/RS	41TE	3.5L/3.8L	50	46	15	56	2.37	4800446AA	5011446AA
NS/GS/RS	41AE	3.8L	50	46	15	56	2.37	4800447AA	5011447AA
JX/FJ/JA J2/PT	41TE	2.0L/2.4L	47	49	16	60	2.69	4800448AA	5011448AA
JX/FJ/JA J2/J4	41TE	2.5L	47	49	16	60	2.69	4800449AA	5011449AA
JA/PT	41TE	2.0L	46	50	16	60	2.81	4800450AA	5011450AA
J2/J4 TURBO	41TE	2.4L	47	49	17	59	2.49	4800451AA	5011451AA
LH	42LE	3.2L/3.5L	32	33	11	39	2.52	479994AA	4882556
LH	42LE	2.7L	31	34	11	39	2.68	4659900	4882555
PR	42LE	3.5L	31	34	11	39	2.68	4799943AA	4886943AA

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
FJ	SEBRING/AVENGER/TALON	P1	NEON (KNOCKDOWN KIT)
GS	VOYAGER (INTERNATIONAL MARKET)	P2	NEON (KNOCKDOWN KIT)
J2	CIRRUS/STRATUS (EXPORT)	PL	NEON/SRT-4
J4	CIRRUS/RT CONVERTIBLE (MEXICO)	PR	PROWLER
JA	CIRRUS/STRATUS/BREEZE	PT	PT CRUISER
JX	SEBRING CONVERTIBLE	RG	VOYAGER (INTERNATIONAL MARKET)
LH	CONCORDE/INTREPID/300M	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
NS	CARAVAN/VOYAGER/TOWN & COUNTRY		

Figure 5

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2001 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER	SERVICE TRANS PART NUMBER
NS/RS	31TH	2.4L	45	47	20	61	3.19	4800914AA	5003914AA
PL	31TH	2.0L	45	47	21	60	2.98	4799901AC	4886901AC
PL	31TH	2.0L	45	47	21	60	2.98	4800309AB	5014309AB
PL (MEX)	31TH	2.0L	43	49	20	61	3.48	4800306AB	5015306AB
JR/PT/PG	41TE	2.0L	46	50	16	60	2.81	48003281AA	5067281AA
JR/PL/PT/P2	41TE	2.0L/2.4L	47	49	16	60	2.69	4800269AA	5067269AA
JR	41TE	2.7L	47	49	16	60	2.69	4799922AA	4886922AA
JR (TURBO)	41TE	2.4L	47	49	17	59	2.49	4800956AA	5014956AA
NS/GS/RG	41TE	2.4L	47	49	16	60	2.69	4800930AA	5010930AA
NS/GS/RS/RG	41TE	3.3L	47	49	17	59	2.49	4800931AA	5010931AA
RG	41AE	3.3L	47	49	17	59	2.49	4800707AA	5012706AA
NS/RS	41TE	3.5L/3.8L	50	46	15	56	2.37	4800932AA	5010932AA
NS/GS/RS	41AE	3.8L	50	46	15	56	2.37	4800918AA	5003918AA
LH	42LE	3.2L/3.5L	32	33	11	39	2.52	4799940AB	4886940AB
LH	42LE	2.7L	31	34	11	39	2.68	4799941AB	4886941AB
PR	42LE	3.5L	31	34	11	39	2.68	4799943AB	4886943AB

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
GS	VOYAGER (INTERNATIONAL MARKET)	PL	NEON/SRT-4
JR	SEBRING SEDAN & CONV STRATUS SEDAN	PR	PROWLER
LH	CONCORDE/INTREPID/300M	PT	PT CRUISER
NS	CARAVAN/VOYAGER/TOWN & COUNTRY	RG	VOYAGER (INTERNATIONAL MARKET)
P2	NEON (KNOCKDOWN KIT)	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
PG	PT CRUISER (INTERNATIONAL MARKET)		

Figure 6

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2002 - 2003 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER	SERVICE TRANS PART NUMBER
JR/PT	40TE 41TE	2.0L	46	50	16	60	2.81	4800281AE	5067281AE
JR/PL/PT/P2	40TE 41TE	2.0L/2.4L	47	49	16	60	2.69	4800269AE	5067269AE
PT/JR (TURBO) P5	41TE	2.4L	47	49	16	60	2.69	4800424AB	5073424AB
JR	41TE	2.7L	47	49	16	60	2.69	4799922AE	4886922AE
RS/RG	41TE	2.4L	47	49	16	60	2.69	4800930AE	5010930AE
RS/RG/RT	41TE	3.3L	47	49	17	59	2.49	4800931AE	5010931AE
RG	41AE	3.3L	47	49	17	59	2.49	4800707AE	5012707AE
RS/RT	41TE	3.5L/3.8L	50	46	15	56	2.37	4800932AE	5010932AE
RS	41AE	3.8L	50	46	15	56	2.37	4800918AE	5003918AE
CS	41AE	3.5L	46	50	16	63	2.95	4800709AB	5080709AB
CS	41TE	3.5L	46	50	16	63	2.95	4800413AB	5084413AB
LH	42LE	3.5L	32	33	11	39	2.52	4800862AB	5096862AB
LH	42LE	2.7L	31	34	11	39	2.68	4800380AA	N/A
PR	42LE	3.5L	31	34	11	39	2.68	4799943AE	4886943AE
TJ	42RLE	4.0L	N/A	N/A	N/A	N/A	N/A	52854104AA	N/A
TJ	42RLE	2.4L	N/A	N/A	N/A	N/A	N/A	52854105AA	N/A
KJ	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52852984AA	N/A
KJ/AN/HB ND/NM/DR	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52852983AA	N/A

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
CS	PACIFICA	P5	PT CRUISER (MEXICO)
DR	RAM PICKUP	PL	NEON/SRT-4
HB	DURANGO	PR	PROWLER
JR	SEBRING SEDAN & CONV STRATUS SEDAN	PT	PT CRUISER
KJ	JEEP LIBERTY	RG	VOYAGER (INTERNATIONAL MARKET)
LH	CONCORDE/INTREPID/300M	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
ND	DAKOTA (3RD GEN)	RT	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
NM	RAIDER	TJ	JEEP WRANGLER
P2	NEON (KNOCKDOWN KIT)		

Figure 7

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2004 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER	SERVICE TRANS PART NUMBER
JR/PT	40TE 41TE	2.0L	46	50	16	60	2.81	4800550AA	5094550AA
JR/PL/PT/P2	40TE 41TE	2.0L/2.4L	47	49	16	60	2.69	4800330AA	5094330AA
PT/JR (TURBO) P5	41TE	2.4L	47	49	16	60	2.69	4800424AC	5073424AC
JR	41TE	2.7L	47	49	16	60	2.69	4799922AF	4886922AF
RG	41TE	2.4L	47	49	16	60	2.69	4800930AF	5010930AF
RS	40TE	2.4L	47	49	16	60	2.69	4800240AA	5094240AA
RS/RG/RT	41TE	3.3L	47	49	17	59	2.49	4800931AF	5010931AF
RG	41AE	3.3L	47	49	17	59	2.49	4800707AF	5012707AF
RS/RT	41TE	3.5L/3.8L	50	46	15	56	2.37	4800932AF	5010932AF
RS	41AE	3.8L	50	46	15	56	2.37	4800918AF	5003918AF
RG (TURBO DSL) RT	41TE	2.8L TD	47	49	15	56	2.68	4800268AA	5094268AA
CS	41AE	3.5L	46	50	16	63	2.95	4800709AC	5094709AC
CS	41TE	3.5L	46	50	16	63	2.95	4800413AC	5094413AC
LH	42LE	3.5L	32	33	11	39	2.52	4800862AB	5096862AB
LH	42LE	2.7L	31	34	11	39	2.68	4800380AA	5103380AA
TJ	42RLE	4.0L	N/A	N/A	N/A	N/A	N/A	52854104AB	52854246AA
TJ	42RLE	2.4L	N/A	N/A	N/A	N/A	N/A	52854105AB	N/A
KJ	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52854248AA	N/A
KJ/AN/HB ND/NM/DR	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52852983AB	52854249AA
AN/ND/NM	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	5285298AA	52854250AA

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
AN	DAKOTA	P2	NEON (KNOCKDOWN KIT)
CS	PACIFICA	P5	PT CRUISER (MEXICO)
DR	RAM PICKUP	PL	NEON/SRT-4
HB	DURANGO	PT	PT CRUISER
JR	SEBRING SEDAN & CONV STRATUS SEDAN	RG	VOYAGER (INTERNATIONAL MARKET)
KJ	JEEP LIBERTY	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
LH	CONCORDE/INTREPID/300M	RT	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
ND	DAKOTA (3RD GEN)	TJ	JEEP WRANGLER
NM	RAIDER		

Figure 8

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2005 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER	SERVICE TRANS PART NUMBER
JR/PT	40TE 41TE	2.0L	46	50	16	60	2.81	4800311AA	5128311AA
JR/PL/PT/P2	40TE 41TE	2.0L/2.4L	47	49	16	60	2.69	4800312AA	5128312AA
PT/JR (TURBO) P5	41TE	2.4L	47	49	16	60	2.69	4800343AA	5128343AA
JR	41TE	2.7L	47	49	16	60	2.69	4800313AA	5128313AA
RG/RS	41TE	2.4L	47	49	16	60	2.69	4800315AA	5128315AA
RS	40TE	2.4L	47	49	16	60	2.69	4800316AA	5128316AA
RS/RG/RT	41TE	3.3L	47	49	17	59	2.49	4800317AA	51283317AA
RG	41AE	3.3L	47	49	17	59	2.49	N/A	5128418AA
RS/RT	41TE	3.5L/3.8L	50	46	15	56	2.37	4800422AA	5128422AA
RG (TURBO DSL) RT	41TE	2.8L TD	47	49	15	56	2.68	4800319AA	5128319AA
CS	41AE	3.5L	46	50	16	63	2.95	4800354AA	5128354AA
CS	41TE	3.5L	46	50	16	63	2.95	4800366AA	5128366AA
CS	41TE	3.8L	47	49	15	56	2.68	4800262AA	5128262AA
TJ	42RLE	4.0L	N/A	N/A	N/A	N/A	N/A	5285069AA	N/A
TJ	42RLE	2.4L	N/A	N/A	N/A	N/A	N/A	52850695AA	N/A
KJ	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52850696AA	N/A
KJ/AN/HB ND/NM/DR	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52850697AA	N/A
AN/ND/NM	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52850698AA	N/A
LX	42RLE	2.7L/3.5L	N/A	N/A	N/A	N/A	N/A	4800351AA	N/A

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
AN	DAKOTA	ND	DAKOTA (3RD GEN)
CS	PACIFICA	NM	RAIDER
DR	RAM PICKUP	P2	NEON (KNOCKDOWN KIT)
P5	PT CRUISER (MEXICO)	PT	PT CRUISER
PL	NEON/SRT-4	RG	VOYAGER (INTERNATIONAL MARKET)
HB	DURANGO	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
JR	SEBRING SEDAN & CONV STRATUS SEDAN	RT	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
KJ	JEEP LIBERTY	TJ	JEEP WRANGLER
LX	CHRYSLER 300C/DODGE MAGNUM		

Figure 9

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2006 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER
JR/PT	40TE	2.0L	46	50	16	60	2.81	4800311AA
JR/PT/PL/P2	40TE	2.4L	47	49	16	60	2.69	4800312AA
JR/PT/P5 (TURBO)	41TE	2.4L/T	47	49	16	60	2.69	4800343AA
JR	41TE	2.7L	47	49	16	60	2.69	4800313AA
RS	40TE	2.4L	47	49	16	60	2.69	4800316AA
RS/RG/R2	41TE	3.3L	50	46	16	63	2.50	4800317AA
RS	41TE	3.8L	50	46	15	56	2.37	4800422AA
RG (DSL TURBO)	41TE	2.8L TD	47	49	15	56	2.68	4800319AA
CS	41AE	3.5L	46	50	16	63	2.95	4800354AA
CS	41TE	3.5L	46	50	16	63	2.95	4800366AA
A9	40TE	1.6L	46	50	16	60	2.81	4800360AA
TJ	42RLE	4.0L	N/A	N/A	N/A	N/A	N/A	52850694AB
KJ/K1 KA/KK	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52850696AB
KJ/K1/HB ND/NM/DR	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52850697AB
ND/NM	42RLE	3.7L	N/A	N/A	N/A	N/A	N/A	52850698AB
LX/LE/L2	42RLE	2.7L/3.5L	N/A	N/A	N/A	N/A	N/A	4800393AB

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
A9	OUTSIDE POWERTRAIN SALES	LX	CHRYSLER 300C/DODGE MAGNUM
CS	PACIFICA	ND	DAKOTA (3RD GEN)
DR	RAM PICKUP	NM	RAIDER
HB	DURANGO	P2	NEON (KNOCKDOWN KIT)
JR	SEBRING SEDAN & CONV STRATUS SEDAN	P5	PT CRUISER (MEXICO)
K1	CHEROKEE CKD	PL	NEON/SRT-4
KA	NITRO 1ST GEN	PT	PT CRUISER
KJ	JEEP LIBERTY	R2	VOYAGER CKD
KK	LIBERTY 2ND GEN	RG	VOYAGER (INTERNATIONAL MARKET)
L2	300C CKD	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
LE	300 MAGNUM/CHARGER-INT	TJ	JEEP WRANGLER

Figure 10

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2007 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER
JR/PT/PL/P2	40TE	2.4L	47	49	16	60	2.69	4800331AA
JR/PT/P5 (TURBO)	41TE	2.4L/T	47	49	16	60	2.69	4800440AA
RS	40TE	2.4L	47	49	16	60	2.69	4800434AA
RS/RG/R2	41TE	3.3L	50	46	16	63	2.50	4800540AA
RS	41TE	3.8L	50	46	15	56	2.37	4800546AA
RG (DSL TURBO)	41TE	2.8L TD	47	49	15	56	2.68	4800319AA
CS	41TE	3.8L	47	49	15	56	2.68	4800443AA
A9	40TE	1.6L	46	50	16	60	2.81	4800461AA
JS/J1	40TES	2.4L	47	49	16	60	2.69	4800355AA
JS/J1	41TES	2.7L	47	49	16	60	2.69	4800322AA
JS/JC/J1/J5	62TE	3.5L	74	70	23	79	2.24	4800335AA
CS	62TE	4.0L	74	70	23	79	2.24	4800335AA
CS	62AE	4.0L	74	70	23	79	2.24	4800650AA
TJ	42RLE	4.0L	N/A	N/A	N/A	N/A	N/A	52850694AB
JK	42RLE (2WD)	3.8L	N/A	N/A	N/A	N/A	N/A	52854260AA
JK	42RLE (4WD)	3.8L	N/A	N/A	N/A	N/A	N/A	52854261AA
KA/KK	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	52850701AA
KJ/K1 KA/KK	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	52854257AA
KJ/K1/HB ND/NM/DR	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	52854258AA
ND/NM	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	52854259AA
LX/LE/L2	42RLE (2WD)	2.7L/3.5L	N/A	N/A	N/A	N/A	N/A	4800415AA

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
A9	OUTSIDE POWERTRAIN SALES	LE	300 MAGNUM/CHARGER-INT
CS	PACIFICA	L2	300C CKD
DR	RAM PICKUP	LX	CHRYSLER 300C/DODGE MAGNUM
HB	DURANGO	ND	DAKOTA (3RD GEN)
J1	SEBRING CKD	NM	RAIDER
J5	JOURNEY CKD	P2	NEON (KNOCKDOWN KIT)
JC	JOURNEY 1ST GEN	P5	PT CRUISER (MEXICO)
JK	WRANGLER 6TH GEN	PL	NEON/SRT-4
JR	SEBRING SEDAN & CONV STRATUS SEDAN	PT	PT CRUISER
JS	SEBRING/AVENGER	R2	VOYAGER CKD
K1	CHEROKEE CKD	RG	VOYAGER (INTERNATIONAL MARKET)
KA	NITRO 1ST GEN	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
KJ	JEEP LIBERTY	RT	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
KK	LIBERTY 2ND GEN	TJ	JEEP WRANGLER

Figure 11

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2008 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER
JR/PT/PL/P2	40TE	2.4L	47	49	16	60	2.69	4800331AA
JR/PT/P5 (TURBO)	41TE	2.4L/T	47	49	16	60	2.69	4800440AA
R2/RT	41TE	3.3L	50	46	15	56	2.37	4800441AA
RS/RG/R2	41TE	3.3L	50	46	16	63	2.50	4800540AA
CS	41TE	3.8L	47	49	15	56	2.68	4800443AA
A9	40TE	1.6L	46	50	16	60	2.81	4800461AA
JS/J1	40TES	2.4L	47	49	16	60	2.69	4800355AA
JS/J1	41TES	2.7L	47	49	16	60	2.69	4800322AA
J1/JS (TURBO)	41TES	2.4L T	50	46	16	63	2.50	4800502AA
J5/JC	40TES	2.4L	46	50	16	63	2.95	4800452AA
J5/JC	41TES	2.7L	46	50	16	60	2.81	4800453AA
JS/JC/J1/J5	62TE	3.5L	74	70	23	79	2.24	4800335AA
CS	62TE	4.0L	74	70	23	79	2.24	4800335AA
RT	62TE	2.8L TD/3.3L 3.8L/4.0L	74	70	25	79	2.06	4800436AA
CS	62AE	4.0L	74	70	23	79	2.24	4800650AA
JK	42RLE (4WD)	3.8L	N/A	N/A	N/A	N/A	N/A	52854260AA
JK	42RLE (2WD)	3.8L	N/A	N/A	N/A	N/A	N/A	52854261AA
KA/KK	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	52850701AA
KJ/K1 KA/KK	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	52854257AA
KJ/K1/HB ND/NM/DR	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	52854258AA
ND/NM	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	52854259AA
LX/LE/L2	42RLE (2WD)	2.7L/3.5L	N/A	N/A	N/A	N/A	N/A	4800415AA

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
A9	OUTSIDE POWERTRAIN SALES	LE	300 MAGNUM/CHARGER-INT
CS	PACIFICA	L2	300C CKD
DR	RAM PICKUP	LX	CHRYSLER 300C/DODGE MAGNUM
HB	DURANGO	ND	DAKOTA (3RD GEN)
J1	SEBRING CKD	NM	RAIDER
J5	JOURNEY CKD	P2	NEON (KNOCKDOWN KIT)
JC	JOURNEY 1ST GEN	P5	PT CRUISER (MEXICO)
JK	WRANGLER 6TH GEN	PL	NEON/SRT-4
JR	SEBRING SEDAN & CONV STRATUS SEDAN	PT	PT CRUISER
JS	SEBRING/AVENGER	R2	VOYAGER CKD
K1	CHEROKEE CKD	RG	VOYAGER (INTERNATIONAL MARKET)
KA	NITRO 1ST GEN	RS	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
KJ	JEEP LIBERTY	RT	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
KK	LIBERTY 2ND GEN	TJ	JEEP WRANGLER

Figure 12

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2009 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER
P5	40TE	2.0L/2.4L	46	50	16	60	2.81	4800430AB
PT	40TE	2.0L/2.4L	47	49	16	60	2.69	4800331AB (BUX) 4800731AA (DOM)
PT (TURBO)	41TE	2.4L T	47	49	16	60	2.69	4800440AB
R2	41TE	3.0L	50	46	16	63	2.50	4800540AB
RT	41TE	3.3L	50	46	15	56	2.37	4800441AB
JS	40TES	2.4L	47	49	16	60	2.69	4800355AC (BUX) 4800735AA (DOM)
JC	40TES	2.0L/2.4L	46	50	16	63	2.95	4800452AB (BUX) 4800732AA (DOM)
JS	41TES	2.7L	47	49	16	60	2.69	4800322AC
JS/JC	62TE	2.7L	74	70	23	79	2.24	5169702AB
JS	62TE	3.5L	74	70	23	79	2.24	5169713AB
JC/JS	62AE	3.5L	74	70	23	79	2.24	5169704AB
RT (TURBO DIESEL)	62TE	2.8L TD	74	70	25	79	2.24	5169699AB
JK	42RLE (4WD)	3.8L	N/A	N/A	N/A	N/A	N/A	68036706AC
JK	42RLE (2WD)	3.8L	N/A	N/A	N/A	N/A	N/A	68036705AC
KA/KK/K1	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800708AC
KA/KK/K1	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	68036707AC
DS/DX ND/NM	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800711AC
ND/NM	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800710AC
LX/LE/L2 LC/LD	42RLE (2WD)	2.7L/3.5L	N/A	N/A	N/A	N/A	N/A	4800712AC

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
DS	RAM TRUCK 4TH GEN	LC	CHALLENGER
DX	RAM TRUCK (MEXICO)	LD	CHARGER
JC	JOURNEY 1ST GEN	LX	CHRYSLER 300C/DODGE MAGNUM
JK	WRANGLER 6TH GEN	ND	DAKOTA (3RD GEN)
JS	SEBRING/AVENGER	NM	RAIDER
K1	CHEROKEE CKD	P5	PT CRUISER (MEXICO)
KA	NITRO 1ST GEN	PT	PT CRUISER
KK	LIBERTY 2ND GEN	R2	VOYAGER CKD
LE	300 MAGNUM/CHARGER-INT	RT	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
L2	300C CKD		

Figure 13

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2010 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER
PT	40TE	2.0L/2.4L	47	49	16	60	2.69	4800331AB (BUX) 4800731AA (DOM)
R2	41TE	3.0L	50	46	16	63	2.50	4800540AB
RT	41TE	3.3L	50	46	15	56	2.37	4800441AB
JS	40TES	2.4L	47	49	16	60	2.69	4800355AC (BUX) 4800735AA (DOM)
JC	40TES	2.0L/2.4L	46	50	16	63	2.95	4800452AB (BUX) 4800732AA (DOM)
JS	41TES	2.7L	47	49	16	60	2.69	4800322AC
JS/JC	62AE	2.7L	74	70	23	79	2.24	5169702AC
JS	62TE	3.5L	74	70	23	79	2.24	5169713AC
JC	62AE	3.5L	74	70	25	79	2.06	4800698AA
JC/RM/RT	62TE	3.5L/4.0L	74	70	25	79	2.06	4800436AB
RM/RT	62TE	3.8L	74	70	23	79	2.24	4800714AA
RT (TURBO DIESEL)	62TE	2.8L TD	74	70	23	79	2.24	5169699AC
JK	42RLE (4WD)	3.8L	N/A	N/A	N/A	N/A	N/A	68036706AC
JK	42RLE (2WD)	3.8L	N/A	N/A	N/A	N/A	N/A	68036705AC
KA/KK/K1	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800708AC
KA/KK/K1	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	68036707AC
DS/DX ND/NM	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800711AC
ND/NM	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800710AC
LX/LE/L2 LC/LD	42RLE (2WD)	2.7L/3.5L	N/A	N/A	N/A	N/A	N/A	4800712AC

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
DS	RAM TRUCK 4TH GEN	LC	CHALLENGER
DX	RAM TRUCK (MEXICO)	LD	CHARGER
JC	JOURNEY 1ST GEN	LX	CHRYSLER 300C/DODGE MAGNUM
JK	WRANGLER 6TH GEN	ND	DAKOTA (3RD GEN)
JS	SEBRING/AVENGER	NM	RAIDER
K1	CHEROKEE CKD	P5	PT CRUISER (MEXICO)
KA	NITRO 1ST GEN	PT	PT CRUISER
KK	LIBERTY 2ND GEN	R2	VOYAGER CKD
LE	300 MAGNUM/CHARGER-INT	RM	MINIVAN (ROUTAN - VW BADGED CHRYSLER)
L2	300C CKD	RT	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY

Figure 14

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2011 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER
R2	41TE	3.0L	50	46	16	63	2.50	4800540AB
JS	40TES	2.4L	47	49	16	60	2.69	4800355AC
JC	40TES	2.0L/2.4L	46	50	16	63	2.95	4800452AB
RT (TURBO DIESEL)	62TE	2.8L TD	74	70	23	79	2.24	5169699AC
RT/RM/JC/JS	62TE	3.6L	74	70	25	79	2.06	5169720AA
JC	62AE	3.6L	74	70	25	79	2.06	5169721AA
JC (TURBO DIESEL)	62TE	2.0L TD	74	70	23	79	2.24	5169723AA
JS	62TE	2.4L	74	70	23	79	2.24	5169722AA
JK	42RLE (4WD)	3.8L	N/A	N/A	N/A	N/A	N/A	68036706AC
JK	42RLE (2WD)	3.8L	N/A	N/A	N/A	N/A	N/A	68036705AC
KA/KK/K1	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800708AC
KA/KK/K1	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	68036707AC
DS/DX ND/NM	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800711AC
ND/NM	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800710AC

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
DS	RAM TRUCK 4TH GEN	KK	LIBERTY 2ND GEN
DX	RAM TRUCK (MEXICO)	ND	DAKOTA (3RD GEN)
JC	JOURNEY 1ST GEN	NM	RAIDER
JK	WRANGLER 6TH GEN	R2	VOYAGER CKD
JS	SEBRING/AVENGER	RM	MINIVAN (ROUTAN - VW BADGED CHRYSLER)
K1	CHEROKEE CKD	RT	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY
KA	NITRO 1ST GEN		

Figure 15

CHRYSLER FINAL DRIVE GEAR RATIO IDENTIFICATION FOR MODEL YEARS 1998 THRU 2012

2012 CHRYSLER/DODGE/JEEP TRANSMISSION FINAL DRIVE GEAR RATIOS

VEHICLE FAMILY	TRANS TYPE	ENGINE APP	OUTPUT GEAR (TOOTH COUNT)	TRANSFER GEAR (TOOTH COUNT)	PINION GEAR (TOOTH COUNT)	RING GEAR (TOOTH COUNT)	GEAR RATIO	TRANS PART NUMBER
R2	41TE	3.0L	50	46	16	63	2.50	4800540AB
JS	40TES	2.4L	47	49	16	60	2.69	4800355AC
JC	40TES	2.0L/2.4L	46	50	16	63	2.95	4800452AB
RT (TURBO DIESEL)	62TE	2.8L TD	74	70	23	79	2.24	5169699AD
RT/RM/JC/JS	62TE	3.6L	74	70	25	79	2.06	5169720AB
JC	62AE	3.6L	74	70	25	79	2.06	5169721AA
JC (TURBO DIESEL)	62TE	2.0L TD	74	70	23	79	2.24	5169723AA
JS	62TE	2.4L	74	70	23	79	2.24	5169722AA
KA/KK/K1	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800708AD
KA/KK/K1	42RLE (4WD)	3.7L	N/A	N/A	N/A	N/A	N/A	68036707AD
DS/DX ND/NM	42RLE (2WD)	3.7L	N/A	N/A	N/A	N/A	N/A	4800711AD

CHRYSLER BODY CODE ID

BODY CODE	VEHICLE MAKE	BODY CODE	VEHICLE MAKE
DS	RAM TRUCK 4TH GEN	KK	LIBERTY 2ND GEN
DX	RAM TRUCK (MEXICO)	ND	DAKOTA (3RD GEN)
JC	JOURNEY 1ST GEN	NM	RAIDER
JS	SEBRING/AVENGER	R2	VOYAGER CKD
K1	CHEROKEE CKD	RM	MINIVAN (ROUTAN - VW BADGED CHRYSLER)
KA	NITRO 1ST GEN	RT	CARAVAN/GRAND CARAVAN/TOWN & COUNTRY

Figure 16

CHRYSLER/DODGE/JEEP 41TES/42RLE-VLP

UNABLE TO ERASE CODE P1745

COMPLAINT: The vehicle may have previously come in for transmission repairs. When originally scanned for codes, P1745 for "Line Pressure Too High For Too Long" was present with other transmission related DTCs as well. When an attempt is made to erase the P1745 code, it refuses to clear.
The vehicle may have been repaired and been out for some time only to return to the shop with P1745 present.

CAUSE: The code counters have not been cleared. P1745 is an informational code that lets the technician know that the transmission control system has been running in an open loop line pressure control for 2000 miles or for 1000 2-3 upshifts.
The transmission is not designed to operate in open loop line pressure control for an extended time period. This code is meant to protect the transmission by placing it in limp mode.

CORRECTION: In order to erase the P1745 you must reset the VLP Shift Counter and the Output Tooth Counter which is a single operation using a capable scan tool. Follow the scan tool prompts until "Clear Variable Line Pressure Counters" is found and initiate the process.

NOTE: Not all aftermarket scan tools will provide this option, in this event the vehicle will have to be taken to the dealer unless a factory scan tool is available.

CVC - 93

CHRYSLER/DODGE 62TE

1-2 OR 2-3 NEUTRAL

COMPLAINT: 2007 and Up Chrysler/Dodge vehicles equipped with the 62TE transaxle may exhibit a complaint of a 1-2 or 2-3 neutral upshift, which commonly occurs after overhaul, resulting in immediate limp mode. Note: Limp mode is 3rd gear, and if there is a neutral on the 2-3 upshift, limp mode in drive will result in a no move condition until the ignition is cycled.

CAUSE: The cause may be,
For a Neutral on a 1-2 upshift, worn sealing ring lands on the Low Clutch housing causing a severe pressure loss to the Direct Clutch. Refer to Figures 1 and 2 for a component and solenoid application chart and note that during the 1-2 upshift , the Direct Clutch comes on and causes the pinion shaft to turn 1:1. See Figure 3 for a location of the Direct Clutch sealing rings and Piston.

2. For a Neutral on a 2-3 upshift, during the overhaul process, the feed pipe for the 2-4 clutch was put in backwards causing a severe leak in the 2-4 Clutch. Refer to Figures 1 and 2 for a component and solenoid application chart and note that during the 2-3 upshift the 2-4 Clutch is applied, a severe leak will cause a neutral on the 2-3 and a neutral when in limp mode as well. See Figure 4 for a location of the 2-4 feed pipe.

CORRECTION: To correct this condition,

1. Refer to Figure 3 and check for worn Sealing rings on the Low Clutch housing. The housing will need to be replaced if there is wear. Refer to service information for the part number of the housing. If the ring lands are not worn, remove the piston from the Direct Clutch and replace as necessary.
2. For a Neutral on a 2-3 upshift, during the overhaul process, the feed pipe for the 2-4 clutch was put in backwards causing a severe leak in the 2-3 Clutch. See Figure 4 for location and direction.

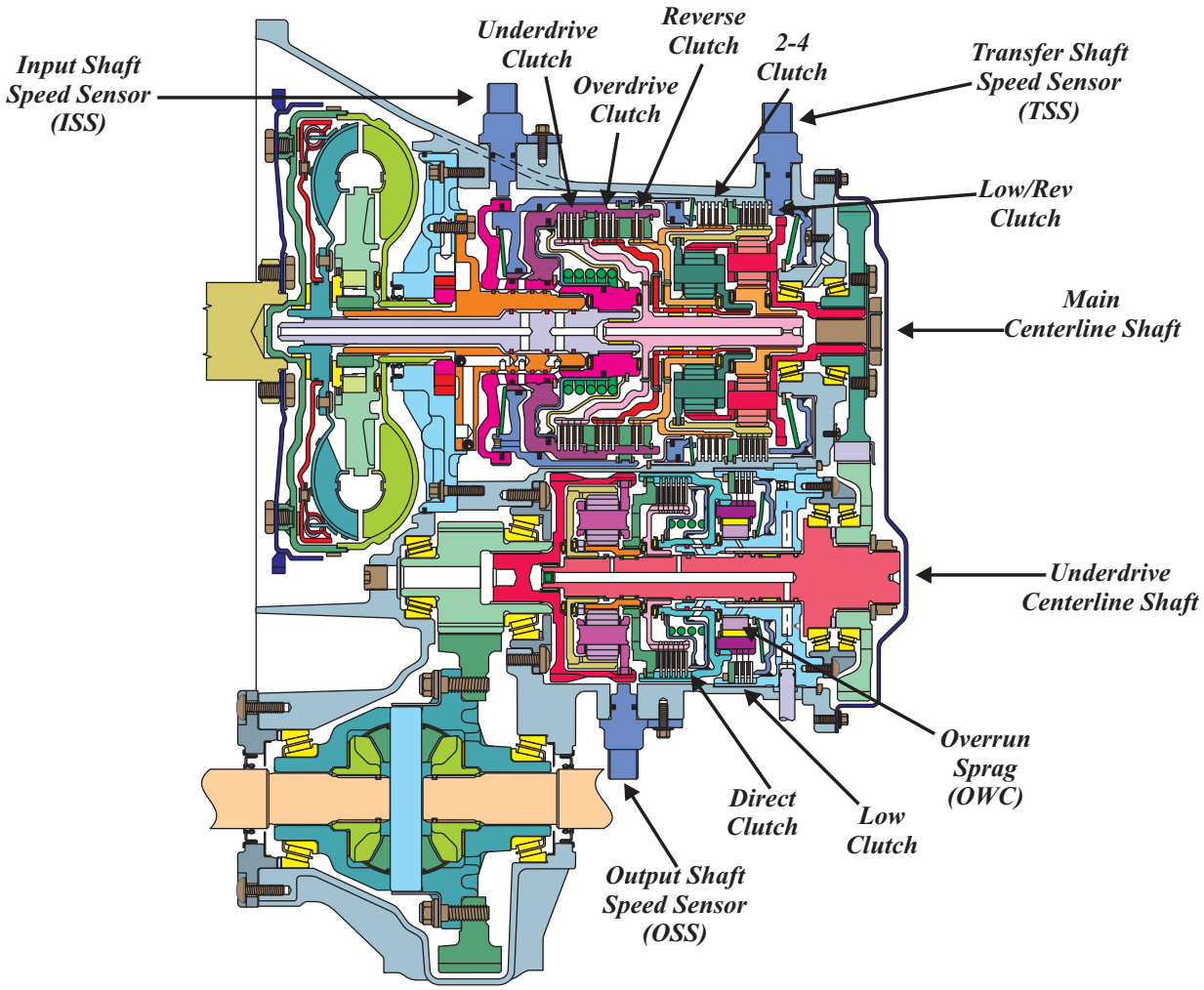
SERVICE INFORMATION:

LOW CLUTCH HOUSING (Chrysler part number).....1-68029389-AA
Note: Housing comes completely assembled, piston included.

Special thanks to
Bob at AAMCO
Las Vegas, NV

1-2 OR 2-3 NEUTRAL

CLUTCH APPLICATION CHART & COMPONENT LOCATIONS



62TE		ELEMENTS APPLIED							
GEAR	RATIO	UD	OD	R	2-4	L-R	LC	DC	OWC
1	4.127	X				X	(X)		H
2	2.842	X				X		X	
3*	2.284	X			X		X‡		H
4'	1.573	X			X			X	
4	1.452	X	X				X‡		H
5	1.000	X	X					X	
6	0.689		X		X			X	
R	3.215			X		X	X		

* Limp-in Mode
‡ Applied in coast only

(X) On in manual low. In OD-1 "On" at launch; "Off" at 150 rpm output speed
4' - Four Prime

Figure 1

1-2 OR 2-3 NEUTRAL

SOLENOID, PRESSURE SWITCH AND CLUTCH APPLICATION CHART

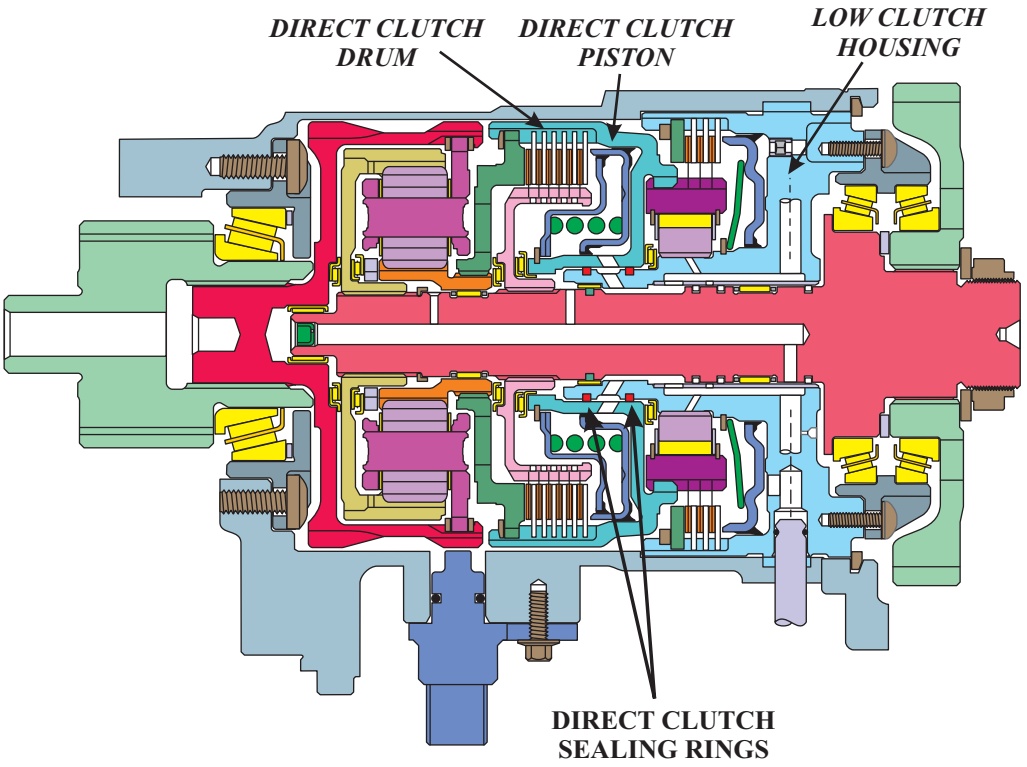
			Solenoid Status								Pressure Switch Status					Clutch Status						
GEAR	RATIO	LP (PSI)	VFS	PWM	PWM	PWM	PWM	PWM	PWM	VFS	OD	L/R	2-4	LC	DR	UD	OD	L/R	2-4	LC	DR	REV
			LP	UD	OD	PND L/R	2-4 R-L/R	LC	DR	LU												
			%DC	NA	NV	NV	NA	NV	NV	%DC												
P/N		135	dcc			X						X						X				
Rev	3.215	235	dcc															X		X		X
OD-1	4.127	135	dcc	X		X	X	X(a)				X		X(a)		X		X		X(a)		
OD-2	2.842	135	dcc	X		X	X		X			X			X	X		X			X	
OD-3	2.284	135	dcc					X		(dcc)			X	X		X			X	X		
Default	2.284	135	dcc													X			X			
OD-4'	1.573	135	dcc						X	(dcc)			X		X	X			X		X	
OD-4	1.452	95	dcc		X		X	X		dcc	X			X		X	X			X		
OD-5	1.000	95	dcc		X		X		X	dcc	X				X	X	X				X	
OD-6	0.689	95	dcc	X	X				X	dcc	X		X		X		X		X		X	

(a) released after output exceeds 150rpm. Not released in Manual-1
dcc- duty cycle control
(dcc) - overheat strategy only
4' - fourth prime
← - 2-3, 3-2, 4-2 - Double Swap Shifts
⇠ - 6-4' - Kickdown to fourth prime

Figure 2

1-2 OR 2-3 NEUTRAL

LOW AND DIRECT CLUTCH LOCATION



LOW CLUTCH HOUSING PASSAGE IDENTIFICATION AND DIRECT CLUTCH SEALING RING INFORMATION

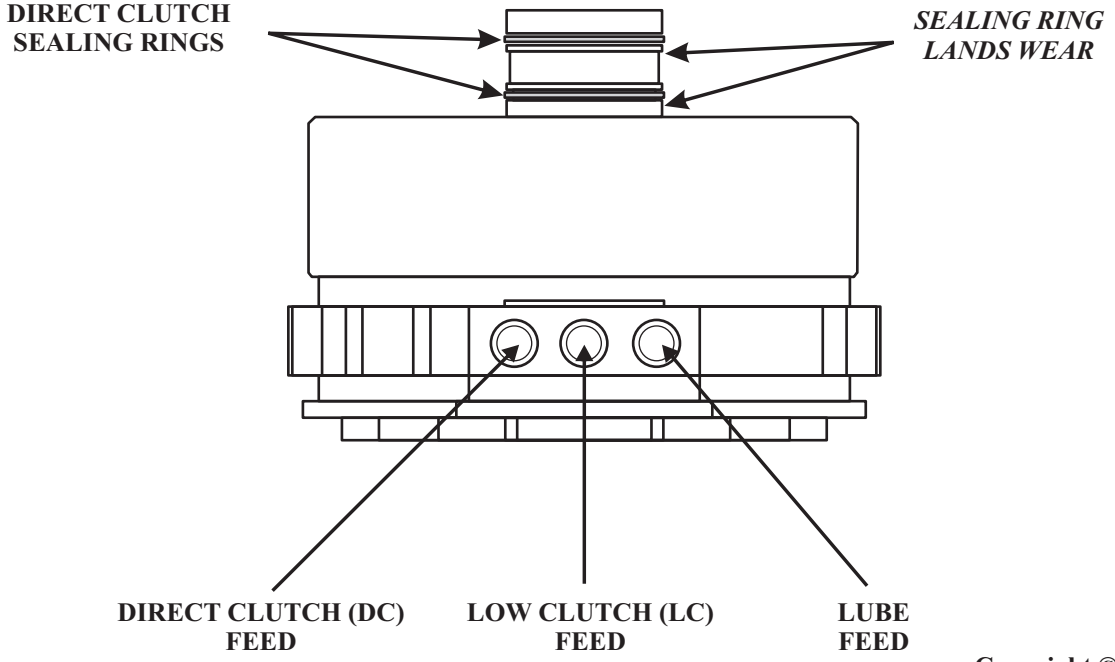
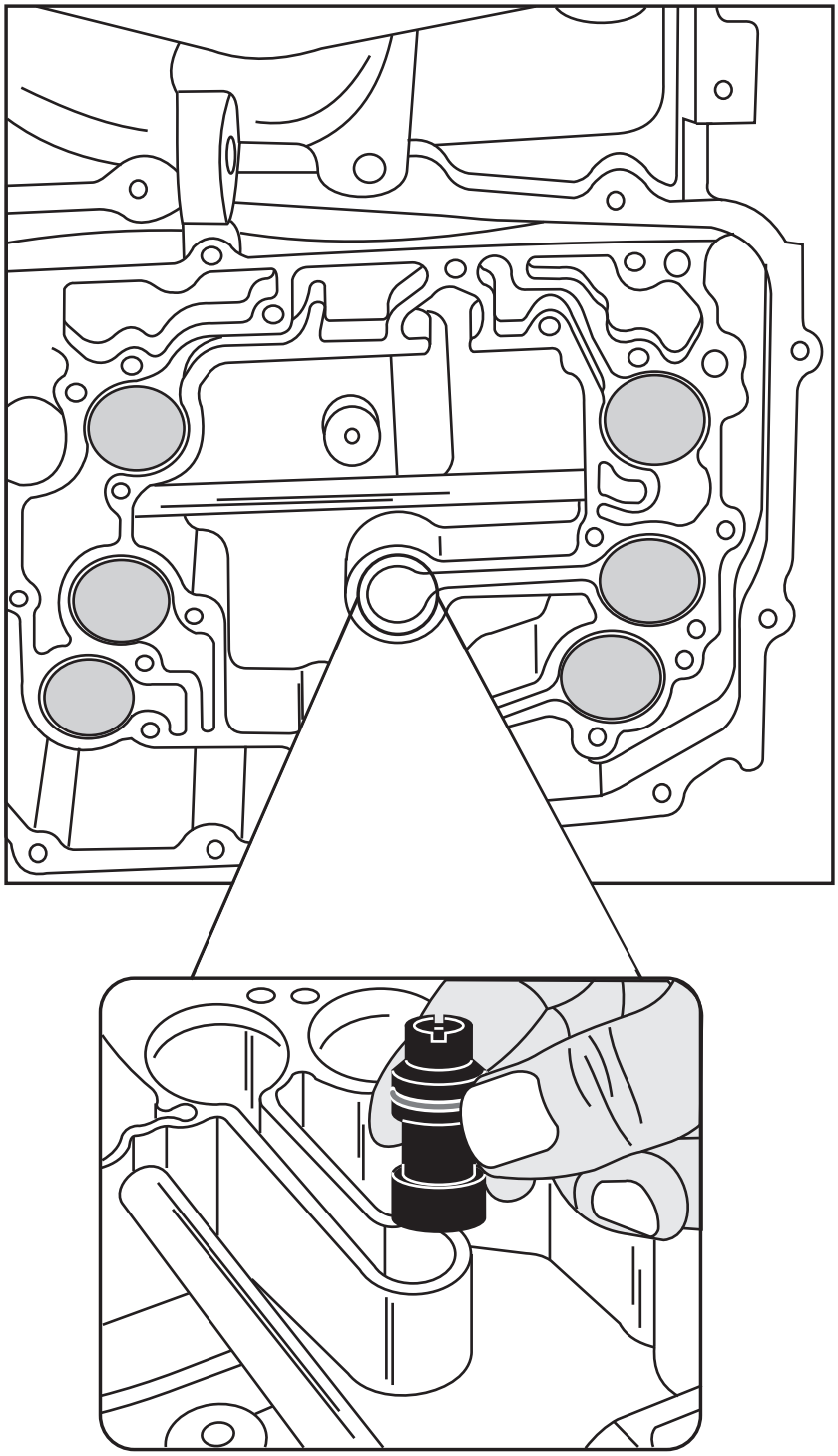


Figure 3

1-2 OR 2-3 NEUTRAL

2-4 CLUTCH OIL SUPPLY PIPE LOCATION



2-4 CLUTCH OIL SUPPLY PIPE AND O'RING

Figure 4

CHRYSLER/DODGE

CRANKSHAFT POSITION SENSOR CODE

COMPLAINT: A 2008 or 2009 Chrysler 300 Series or Dodge Charger with a 2.7L or 3.5L engine and either, the 42RLE or NAG1 transmission may come in with a P0339 for an intermittent loss of signal from the Crankshaft Position Sensor (CKP). This may even occur after the transmission has been installed after repairs have been completed.

CAUSE: An inconsistent air gap exists between the Crankshaft Position Sensor and the flexplate due to flexing of the flexplate exciter ring, Figure 1.

CORRECTION: The first step in the repair of this condition is to install a .018" (.46mm) shim between the transmission case and the bolt hole of the CKP Sensor, Figures 1 and 2 and tighten the CKP Sensor bolt to 106 in. lbs. (12Nm). Next clear the code and drive the vehicle performing four (4) wide open throttle 1-2 shifts in the 5800 engine rpm range.
If this procedure fails to cure the complaint and code P0339 returns, then the flexplate will have to be replaced.

SERVICE INFORMATION:

Crankshaft Position Sensor.....5029811AC
CKP Sensor Shim.....68061031AA
2.7L/3.5L Flexplate.....04736299AC

CHRYSLER/DODGE CKP SENSOR CODE

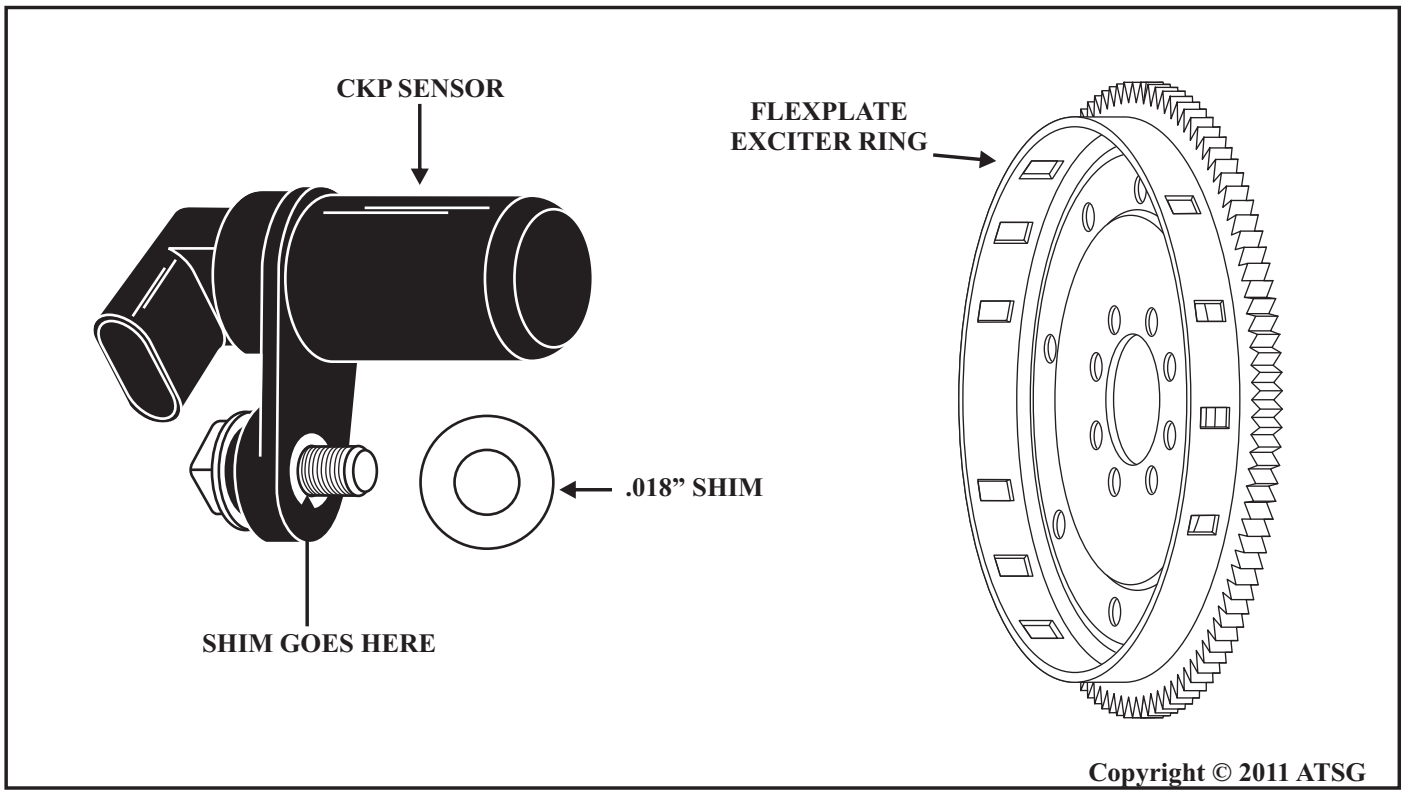


Figure 1

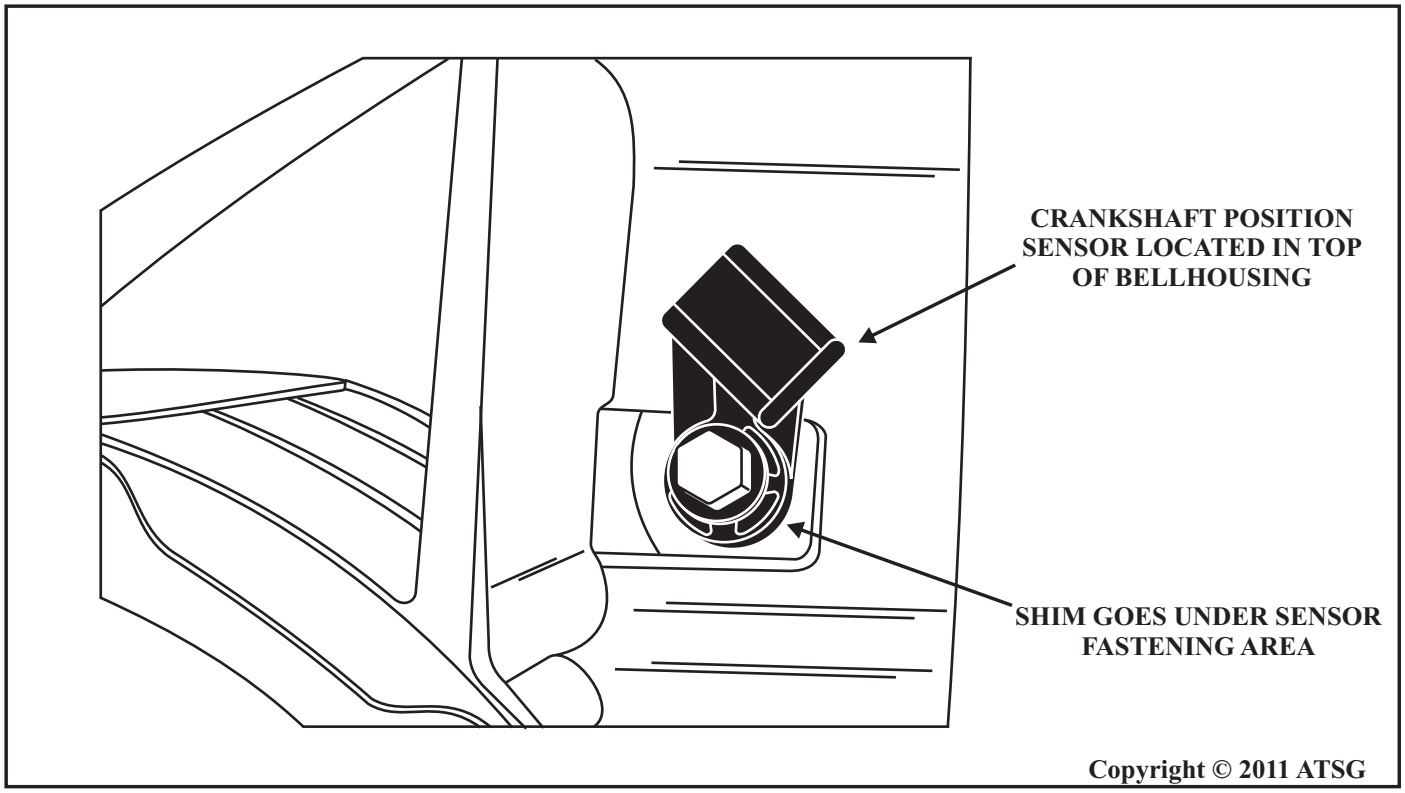


Figure 2

SNAP-ON - 101

722.6/NAG 1

TCC JUDDER

COMPLAINT: A Mercedes or Chrysler vehicle equipped with the 722.6/NAG 1 may come in with a complaint of TCC Judder. It doesn't feel like the usual TCC shudder or chatter, but more like a vibration. The Judder may be followed by a harsh TCC engagement and the possibility of stalling the engine in drive when cold.

CAUSE: The Lubrication Pressure Regulator Valve bore in the upper valve body has worn in the area of the inner spool as shown in Figure 1.

SUMMARY: The type of converter clutch used in these applications is a clutch pack, the clutch drum assembly inside the converter used for converter clutch apply has a typical clutch pack, pressure plate and retaining snap ring (Refer to Figure 2). This converter is a three circuit system, converter clutch apply and release, converter "in" and converter "out" pressure. The converter clutch is applied by pressure supplied to the clutch drum through the center and out the tip of the input shaft. When pressure is removed, converter clutch is released, (See Figure 3).

It is the lubrication pressure regulator valve that regulates the converter "in" pressure which becomes converter "out" pressure to the cooler.

When the inboard land of the valve wears, unregulated line pressure is able to get into the converter charge "in" circuit, increasing the pressure inside the converter (Refer to Figures 4, 5 and 6).

This cross leaking of pressure causes the clutch apply and release operation to be compromised causing the vibration complaint, (See Figure 7). When the converter clutch is commanded on, the vibration stops and depending on the integrity of main the line pressure circuit, this apply can be very abrupt and is also why there is no lubrication problem when this bore wears as it is not starving the lube circuit but rather increasing the pressure in that circuit.

The may also contribute to a cold stall in drive complaint as well.

CORRECTION: Recondition the lubrication valve bore with the use of the repair kit available from Superior Transmission Parts.

SERVICE INFORMATION:

Superior 722.6/NAG 1 Lubrication Pressure Regulator Valve Bore Repair Package... ...K093.

A special thanks to Nino Luongo from Beds Automatic Transmissions, England & European Exchange from Hackensack, NJ

722.6/NAG 1 TCC JUDDER

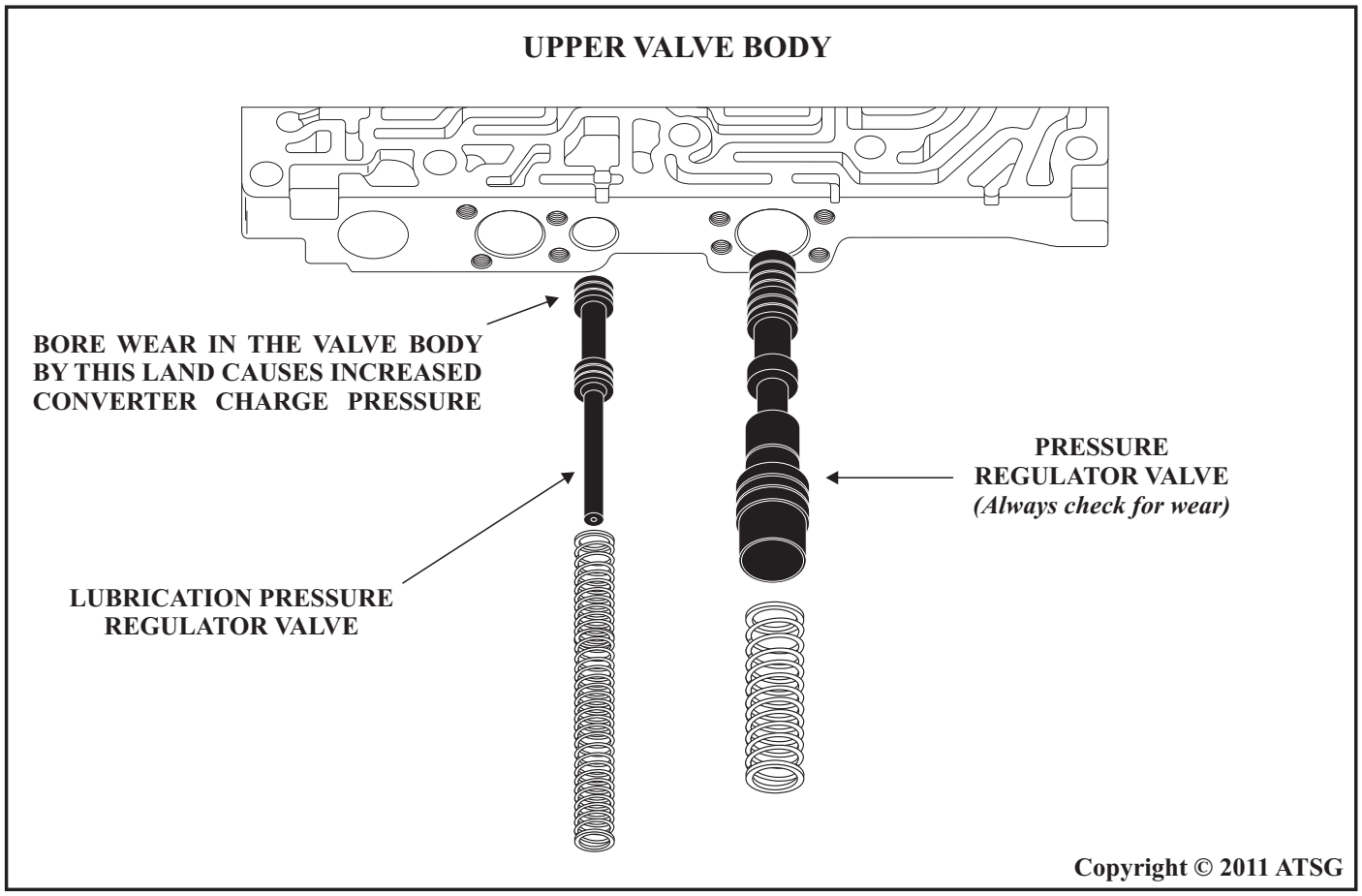


Figure 1

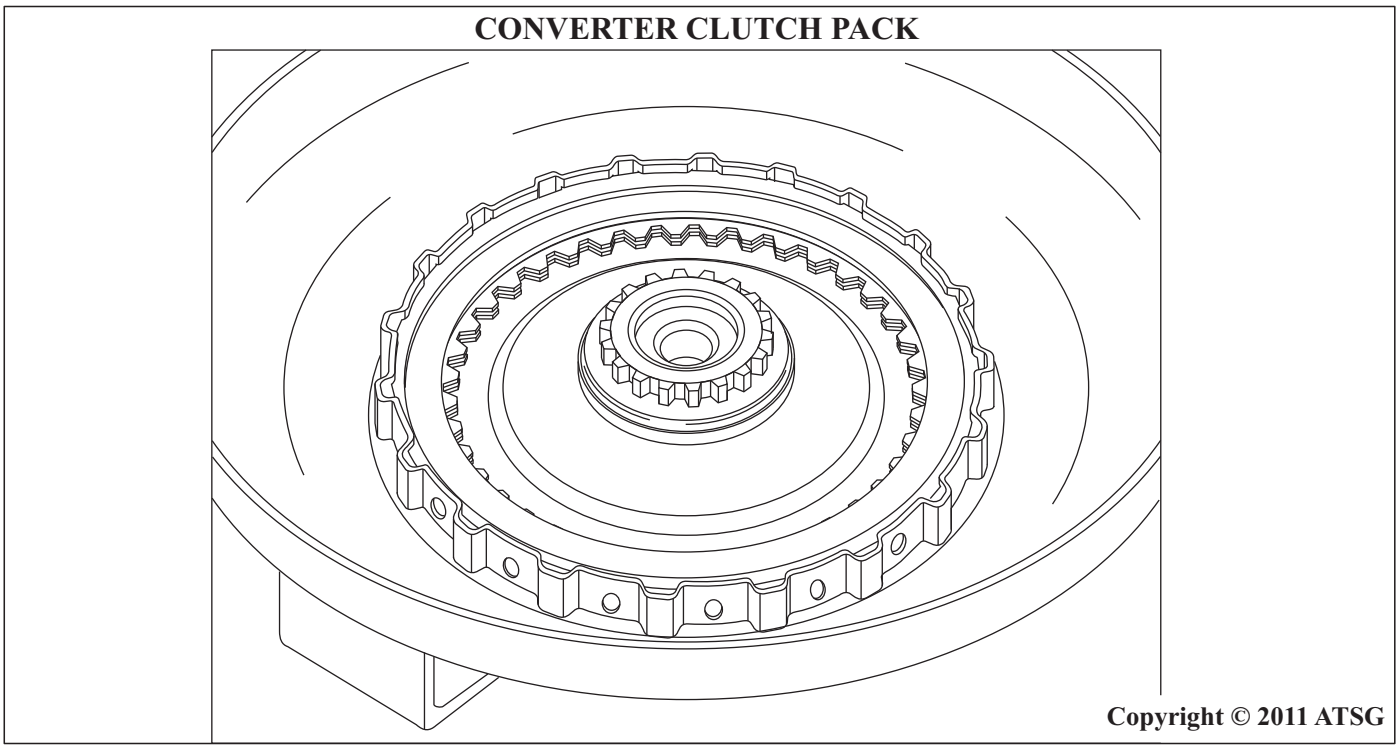


Figure 2

722.6/NAG 1 TCC JUDDER

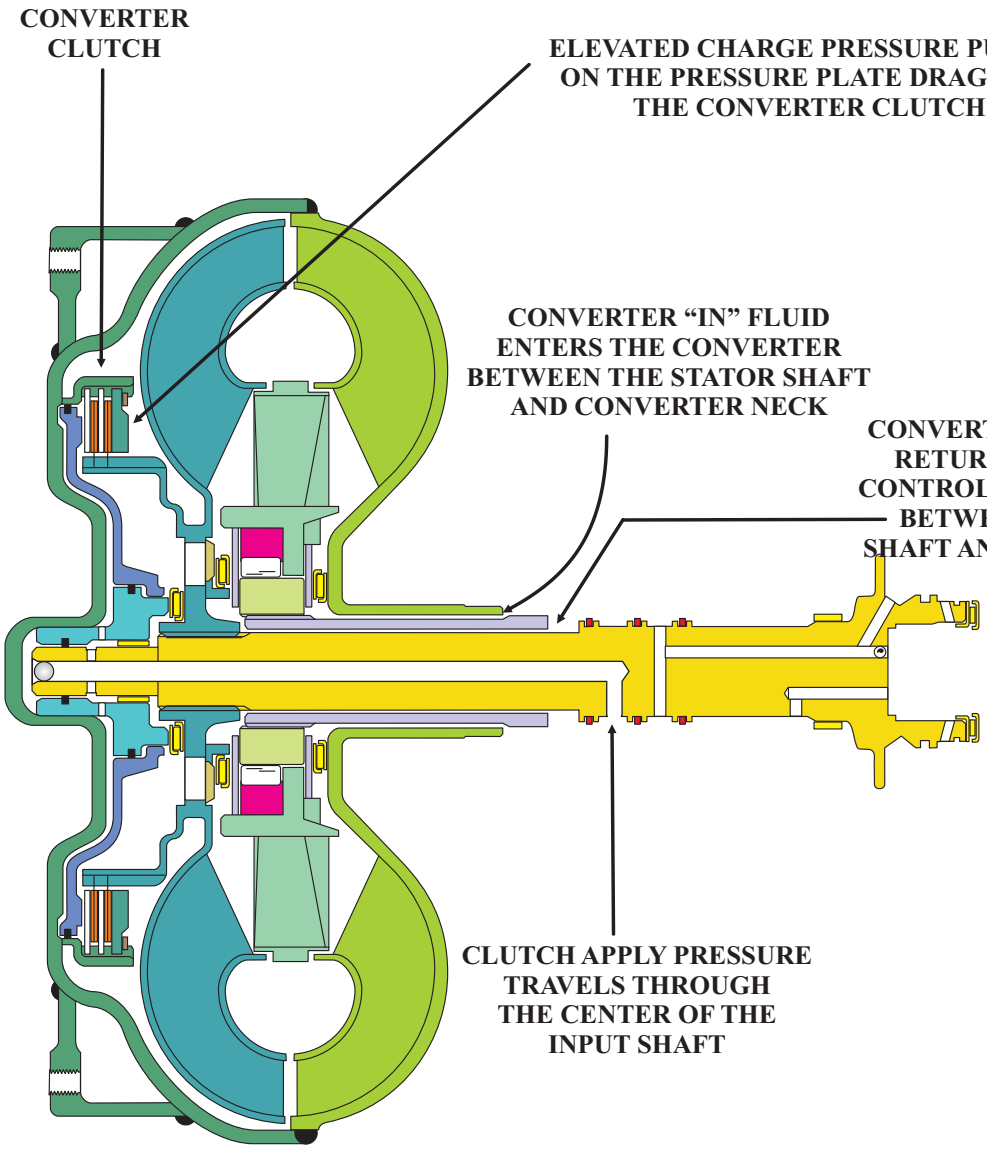


Figure 3

722.6/NAG 1 TCC JUDDER

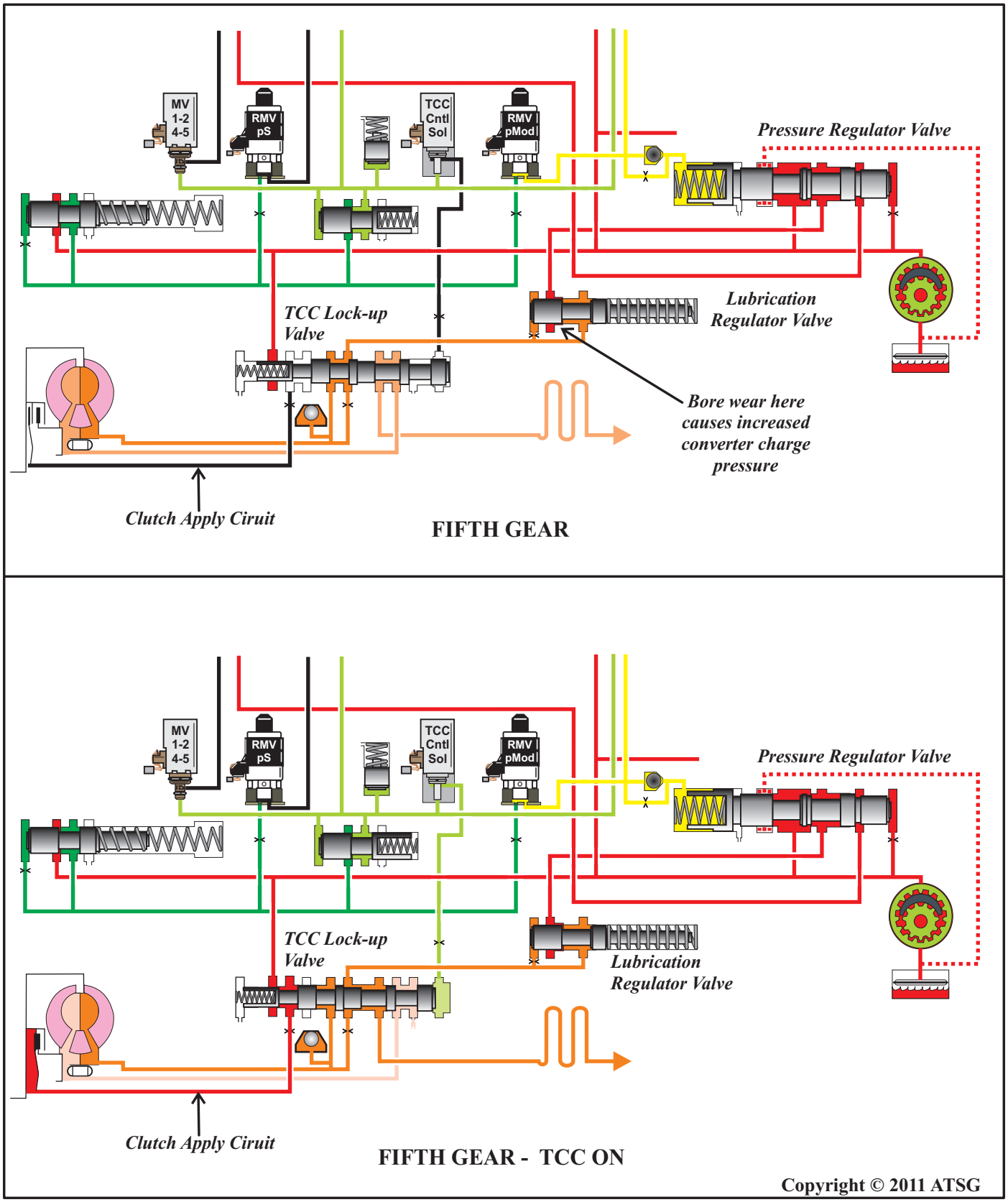


Figure 4

722.6/NAG 1 TCC JUDDER

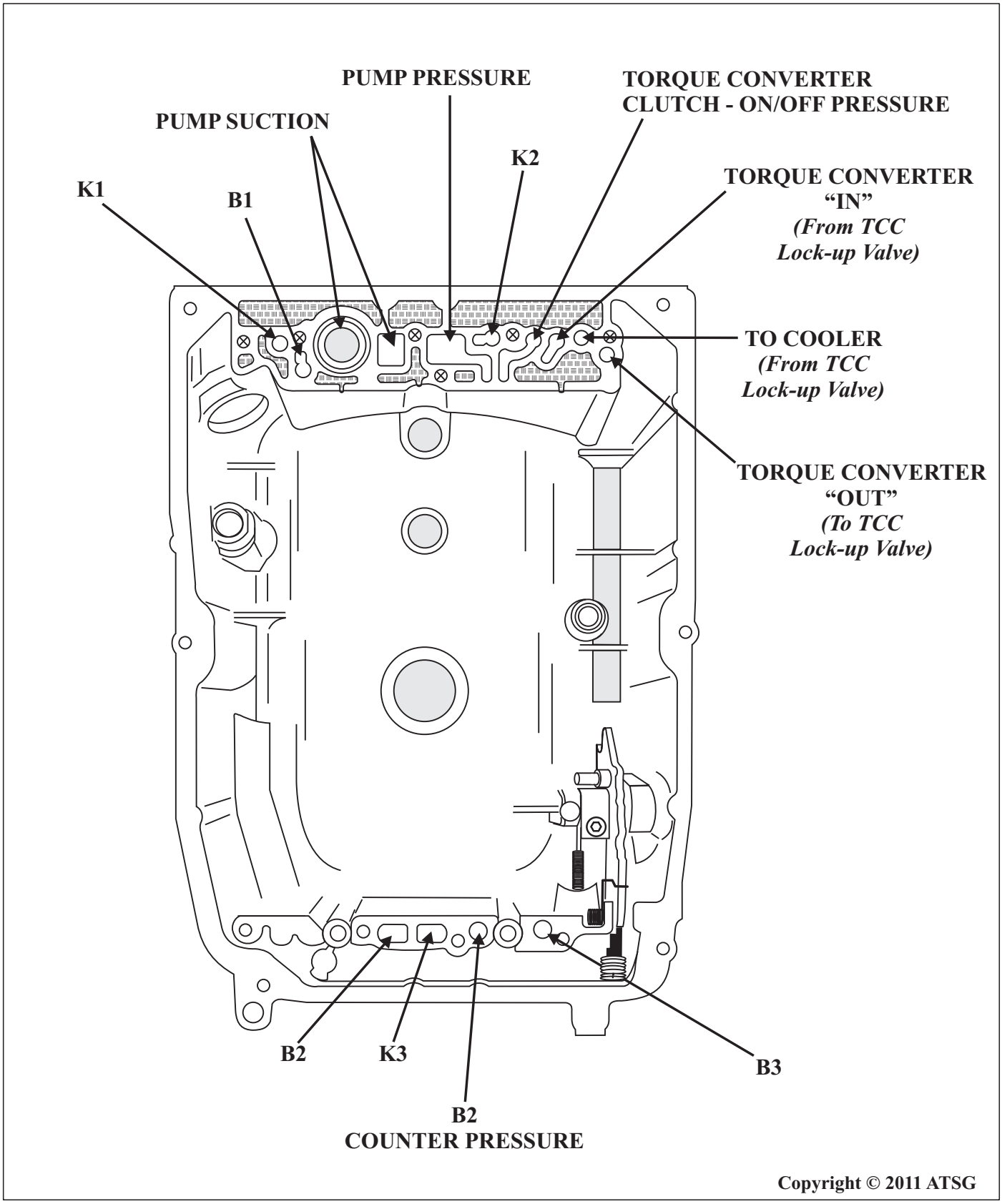


Figure 5

722.6/NAG 1 TCC JUDDER

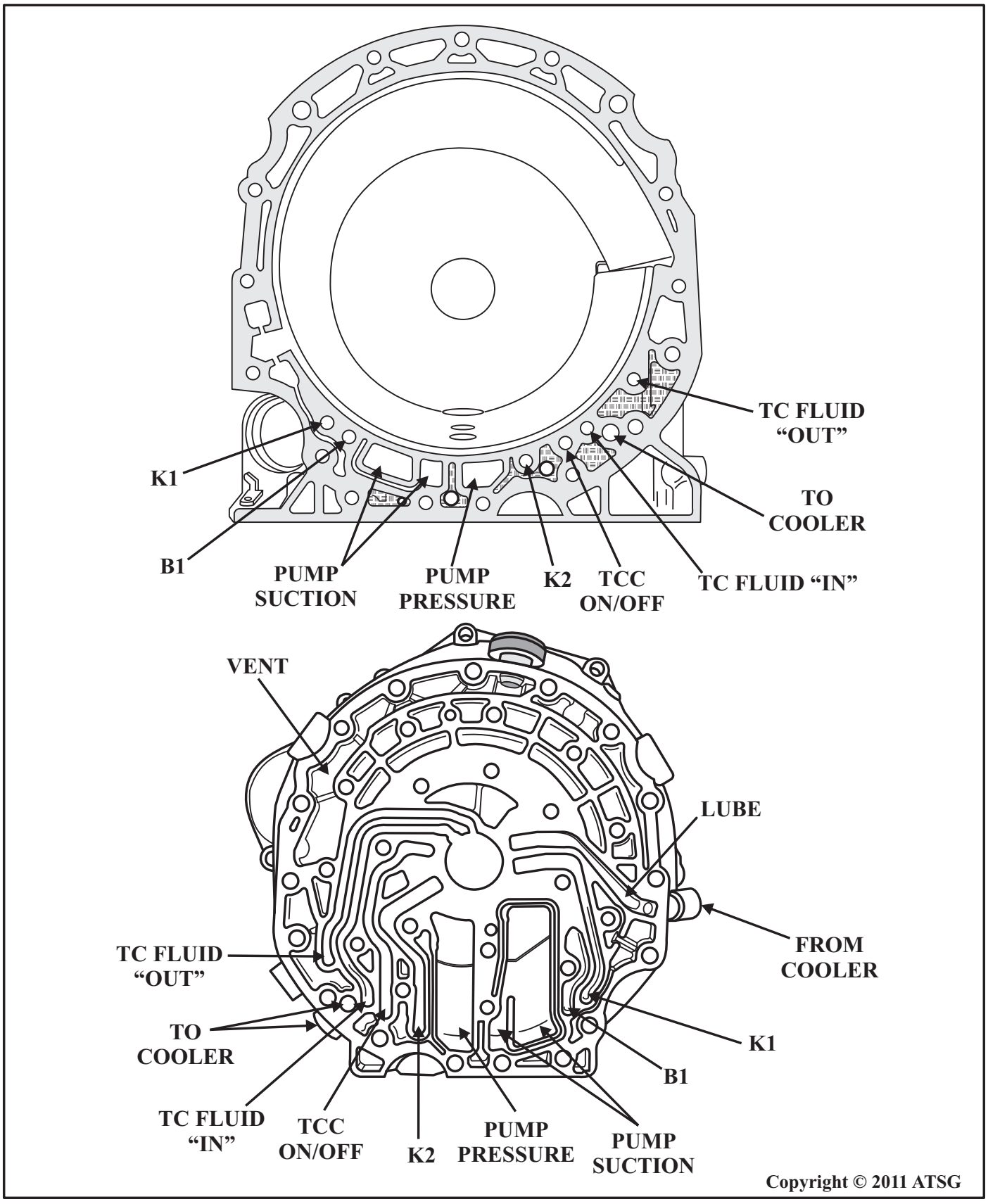
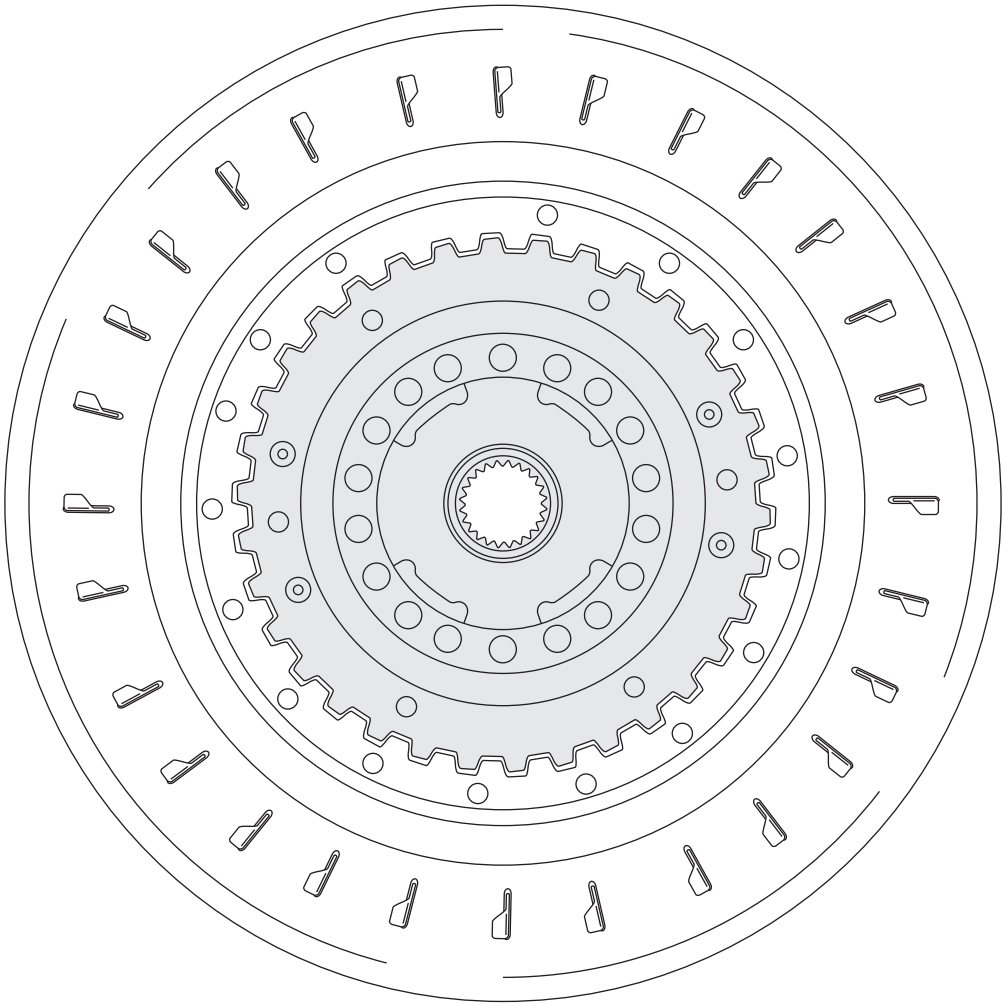


Figure 6

722.6/NAG 1 TCC JUDDER



Seen here is the turbine shell & hub. The hub fits into the torque converter clutch assembly mounted in the cover as seen in Figure 2. The turbine shell splines onto the input shaft so that when the clutch applies, the shaft is driven at engine speed. This configuration also allows for both the clutch pack assembly & converter charge pressure to be in the same space. This clutch drum is not equipped with a piston return spring relying on the internal pressure to release the piston. Cross leaks at the Lubrication Regulator valve compromises the apply and release of this clutch producing a vibration sensation (judder).

Figure 7

CHRYSLER/DODGE/JEEP NAG 1

GARAGE SHIFT RINGING NOISE

COMPLAINT: An 2005 to 2007 Dodge Nitro, Chrysler 300, Magnum or Charger, Jeep Grand Cherokee or Jeep Commander may come in with a complaint of a ringing, snapping or popping sound during a garage shift from drive to reverse or from reverse to drive. The technician finds that the noise is coming from driveshaft, Figure 1.

CAUSE: Spline rub of the output flange to output shaft.

CORRECTION: Mark the prop shaft in relation to the differential yoke and remove the prop shaft. Remove the output shaft nut and use an appropriate puller to remove the output flange.
If the vehicle application you are working on is the following:
2005 Chrysler 300C with 5.7L engine built prior to August 18, 2004.
2005 Dodge Magnum with 5.7L engine built prior to August 18, 2004.
2005 Jeep Grand Cherokee with 3.7L engine built prior to June 22, 2005.
2006 Chrysler 300C with 3.5L engine built prior to June 22, 2005.
2006 Dodge Magnum with 3.5L engine built prior to June 22, 2005.
Replace the output shaft flange.

If you are working on a vehicle that does not fall into the above applications, clean the output shaft and the output flange splines and apply a thin coating of Stud & Bearing adhesive to the splines of the output flange, Figure 2.

Install the flange and nut and tighten the nut to 150 ft. lbs. (200 Nm). Stake the nut in place. Install the prop shaft lining up the previously created alignment marks.

SERVICE INFORMATION:

Output Flange Nut.....52108234AA
Output Flange (3.5L).....05175566AA
Output Flange (3.7L).....52108628AB
Output Flange (5.7L).....05135158A
Output Flange (6.1L).....05170003AB

GARAGE SHIFT RINGING NOISE

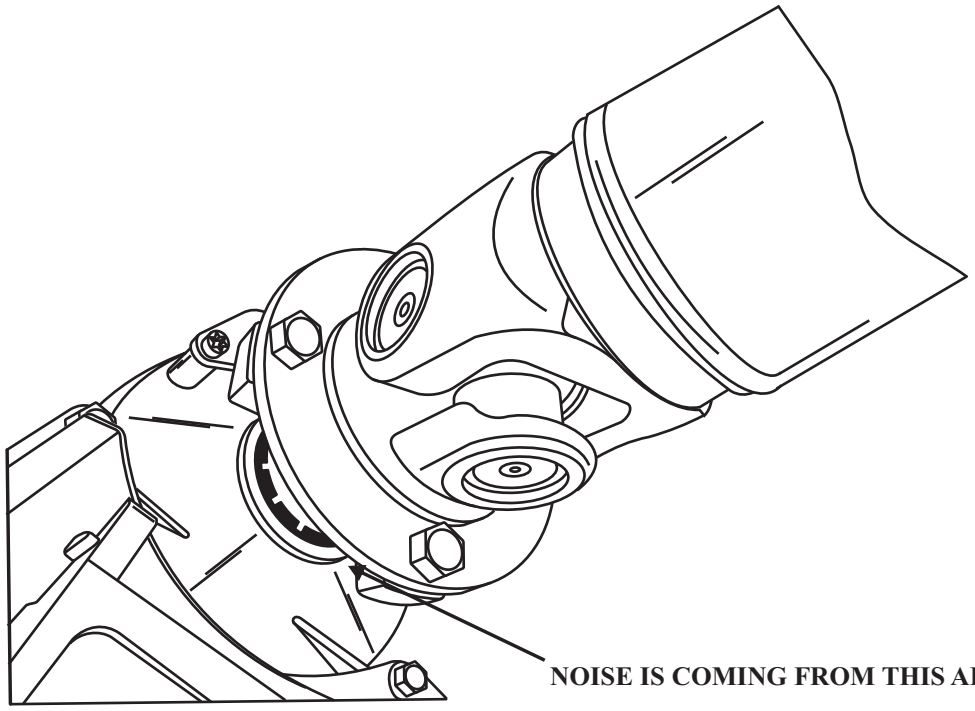
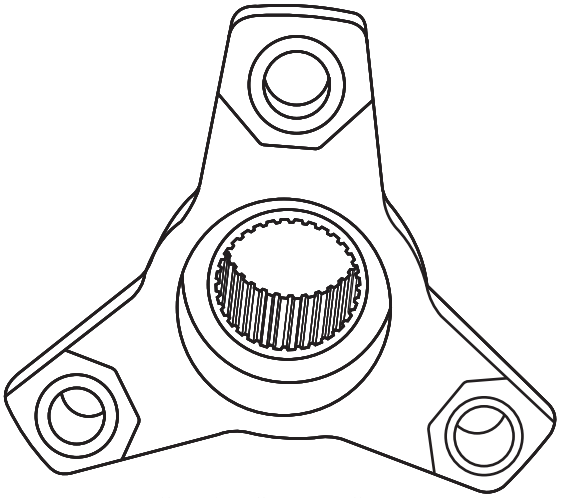
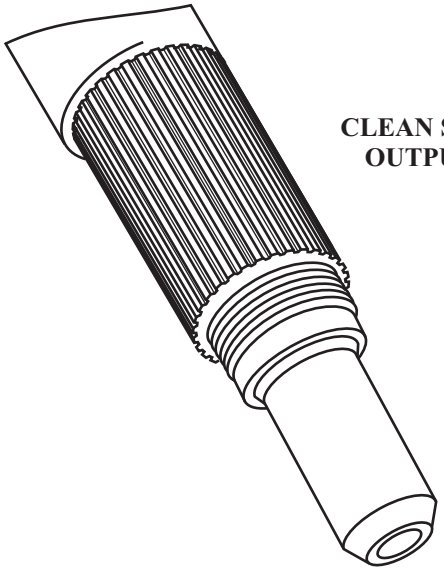


Figure 1



CLEAN SPLINES OR
REPLACE OUTPUT FLANGE



CLEAN SPLINES OF
OUTPUT SHAFT

Figure 2

HONDA

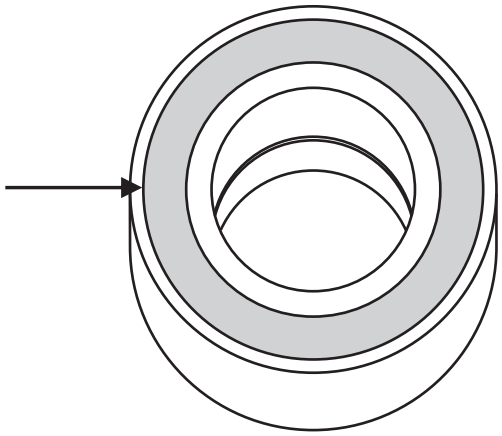
FRONT WHEEL BEARINGS

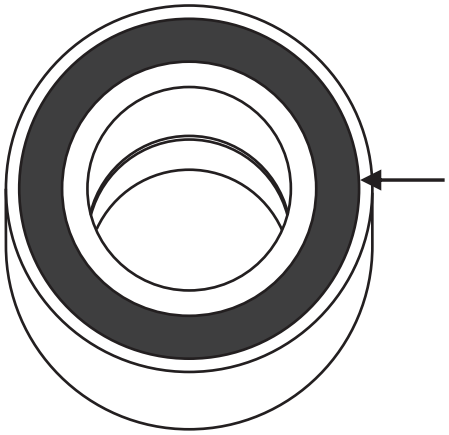
COMPLAINT: After front wheel bearing replacement, the ABS Warning Lamp is illuminated. Code retrieval produces any of the following codes:
12 or 14 = Wheel Sensor Electrical Noise/Intermittent Interruption.
21 or 22 = Magnetic Encoder Fault.
The vehicles that are affected are 2003 Accord, 2002 - 2003 CR-V and 2003 Element.

CAUSE: The wheel bearing has been pressed into the steering knuckle hub backwards.

CORRECTION: One side of these Honda wheel bearings has what appears to be a BROWN dust shield, Figure 1, this is the wheel speed sensor encoder because metallic particles have been impregnated into this dust shield.
The other side of the bearing has a BLACK dust shield also seen in Figure 1 and does not contain these metal fragments. If this side of the bearing is installed towards the inside of the knuckle there will be no wheel speed signal as there is nothing to excite the sensor.
Make certain the bearing is carefully installed with the BROWN side facing the inside of the knuckle where a 0.020" to 0.050" (0.5mm - 1.2mm) air gap is maintained.

BROWN DUST SHIELD IS IMPREGNATED WITH METALLIC PARTICLES AND MUST FACE TOWARD THE INSIDE OF THE STEERING KNUCKLE





BLACK DUST SHIELD DOES NOT HAVE METALLIC PARTICLES AND MUST FACE TOWARDS THE OUTSIDE OF THE STEERING KNUCKLE

ALTO - 112

Precision - IBC

Lubergard - BC