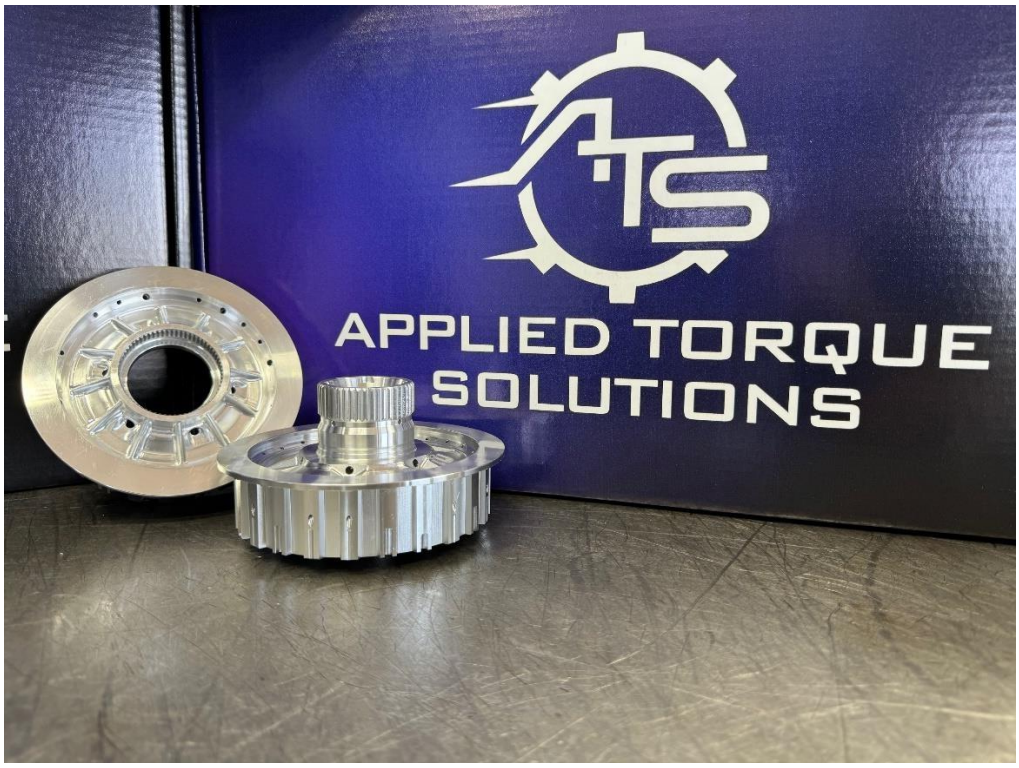


Tools needed:

T40 socket

T50 socket

Flat head screw driver

Straight Pick

90 degree pick

Foot press or regular press with adapters for piston removal

Inch lb torque wrench

Ft lb torque wrench

Snap ring pliers

Staking tool

RWD only: 34mm 12pt socket

Note: This instructional packet is material for guidance. Transmission disassembly and assembly should be performed by a trained individual.

AWD only:



Remove the transmission rear oil seal

Remove the output shaft snap ring and washer.

RWD only:



Using a suitable punch, remove the staking from the driveshaft flange nut, and loosen the nut using a 34 mm 12 point socket.

Finish removing the driveshaft flange nut.

Remove the driveshaft flange.

Remove the transmission rear seal.

Remove the transmission output shaft washer.

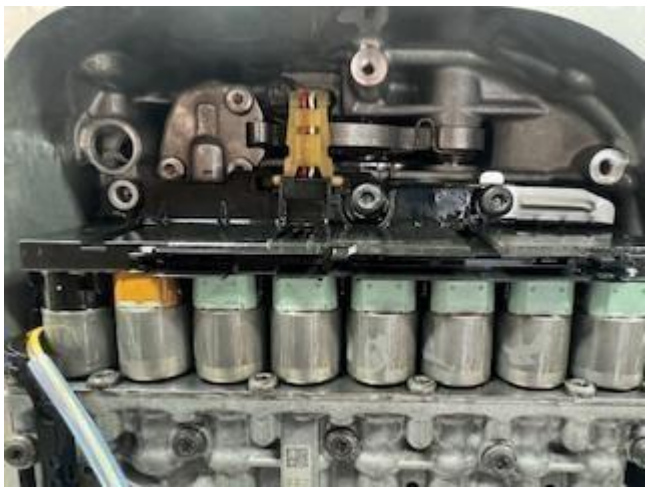
Disassembly:

Remove the oil pan retaining bolts.

Carefully detach the oil pan and gasket.



If equipped, disconnect the Hydraulic Impulse Storage (HIS) accumulator wire harness connector. Remove the three screws and the accumulator. T40 bolts



Remove the valve body assembly end retainer bolts. T40 bolts




Pull the wire harness connector lock to release the internal harness end and carefully pull the wire harness insulator straight out from the transmission case

.



Remove the output speed sensor bolt and pull the sensor loose from the case



Remove the T40 valve body assembly retaining bolts only.

Carefully lift the valve body assembly from the transmission.



Pull the fluid ports from the transmission or valve body assembly.



Remove the input shaft O-ring using a small pick or equivalent.



From the front of the transmission, remove the oil pump housing bolts.




Carefully pry the oil pump housing away from the case with a small flat blade screwdriver or equivalent through the case opening, and remove the pump. Pump pictured with the B piston & return spring on it.

The transmission must be in the upright position to remove the assembly to avoid damage to the drums.

Remove the input/output shaft and P4 annulus drum assembly from the case.




Position the input/output shaft and P4 annulus drum assembly on suitable stand or table.



Remove the P1 annulus/B clutch hub assembly from the P4 annulus drum.



Using a suitable tool, release the snap ring. Pay attention to the orientation of the snap ring. It is directional and is notched for the tabs.



Remove the P1 planetary carrier.




Remove P1/P2 sun gear, Bearing shim will come with gear.



Remove the input shaft with P2 planetary carrier from the drum assembly. Be careful not to damage the P2 carrier magnetic pick up for the input sensor. Clean and replaced sealing rings.



Remove the P2 annulus/P3 sun gear from the drum assembly.



Remove the D clutch drum from the P4 annulus drum



Using a suitable tool release and remove the snap ring. Pay attention to orientation, snap ring is directional with locating tabs



Remove the P3 planetary carrier



Remove the P4 sun gear/C/E clutch retainer (1) from the D clutch drum



Remove the snap ring from the P4 sun gear/C/E clutch retainer



Remove the P3 annulus from the P4 sun gear/C/E clutch retainer



Remove the snap ring from the P4 sun gear/C/E clutch retainer



Remove the E clutch from the P4 sun gear/C/E clutch retainer





Remove the C clutch from the P4 sun gear/C/E clutch retainer and lower bearing




Remove the P4 planetary carrier/output shaft from the P4 annulus drum

A clutch and pump disassembly:

Remove the snap ring.



Remove the clutches and plates.



Remove the hub



Position the oil pump housing assembly in a suitable arbor press.

Press on the fingers of the A-piston retaining ring to remove tension, and remove the two halves of the split retainer ring.

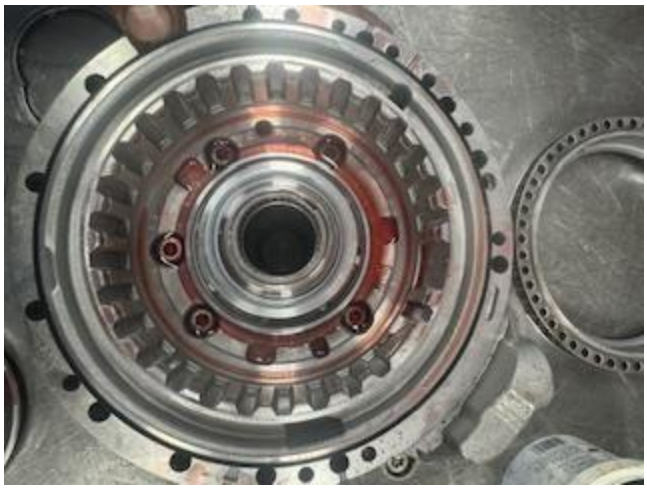


Remove the belleville spring and plate.





Remove the clutch A piston and seal from the oil pump assembly.



Remove the bolts from the oil pump.



Separate the two halves of the oil pump, by pushing on the hub




Carefully pry up on the oil pump, separating it from the housing

A clutch and pump assembly:

Carefully seat the oil pump into the housing, make sure the pump is seated properly.

Install the two oil pump housing halves together.



Install the oil pump housing Torx bolts

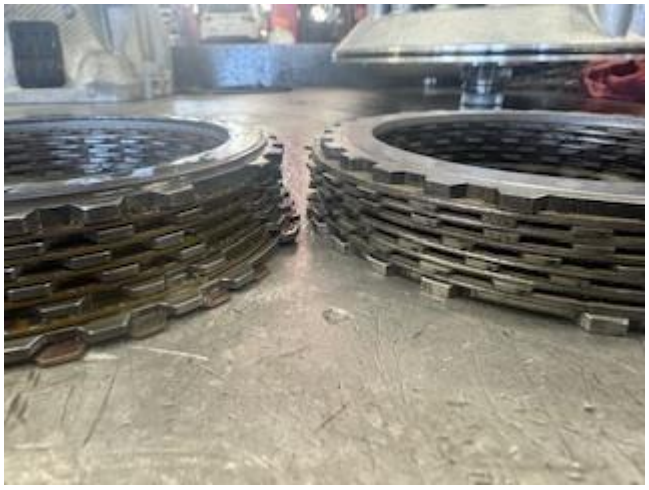
Tighten the bolts to 5 Nm (44 in. lbs). plus 45°.

Install the belleville spring

Position the oil pump housing assembly in a suitable arbor press.

Press on the fingers of the piston retaining ring to remove tension, and install the two halves of the split retainer ring.

Install the hub



Install the thicker steel the 6 fibers and 5 remaining thinner steels

Install the stepped pressure plate

Install the snap ring.

Measure the clutch A clearance. .050 - .070 recommended

Install the B clutch piston onto the pump

C clutch Disassembly:



Place clutch C in a suitable press.

Compress the C piston enough to remove the snap ring





Remove the clutch C piston and retainer

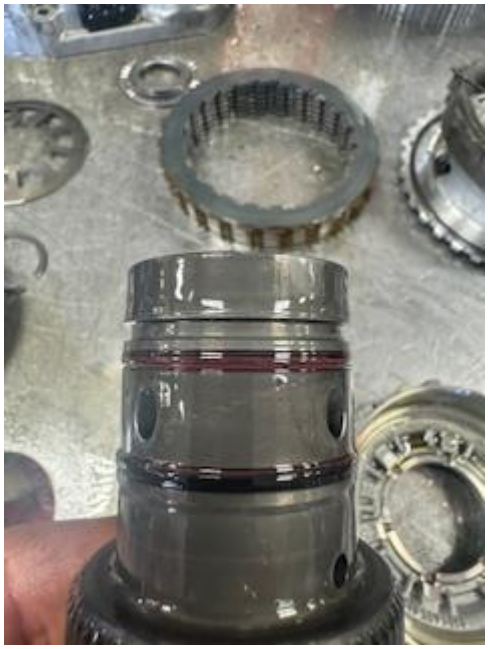


Remove the belleville spring



Separate the clutch C clutch shaft from the clutch hub

C clutch Assembly:




Clean and replace the clutch C collar seals.

Install clutch C hub into the clutch C collar

Stage 0 45/50/51 C Clutch Configuration:



Install the pressure plate (the thickest plate) and the 9 fibers and 8 thinner steels (new configuration left)

Install the apply steel on top

Install OE wave plate from original clutch assembly (not provided in it)

Install the belleville spring

Install the clutch C piston

Install the clutch C retainer

Place the clutch C in a suitable press.

Compress C piston enough to install the snap ring.

Measure the clutch C clearance. .050 - .080 recommended

Stage 1 45/50/51 C Clutch Configuration:



Install the pressure plate (the thickest plate) and the 10 fibers and 10 thinner steals

Install the belleville spring

Install the clutch C piston

Install the clutch C retainer

Place the clutch C in a suitable press.

Compress C piston enough to install the snap ring.

Measure the clutch C clearance. .050 - .080 recommended

Stage 1 7X C Clutch Configuration



Install the pressure plate (the thickest plate) and the 9 fibers and 9 thinner steels

Install the clutch C piston

Install the clutch C retainer

Place the clutch C in a suitable press.

Compress C piston enough to install the snap ring.

Measure the clutch C clearance. .050 - .080 recommended

Stage 2 45/50/51 C Clutch Configuration



Install the pressure plate (one of the thicker plates) and the 11 fibers and 10 thinner steels and the apply steel on top (pressure plate and apply plate are the only two thicker steels and are the same size)

Install the clutch C piston

Install the clutch C retainer

Place the clutch C in a suitable press.

Compress C piston enough to install the snap ring.

Measure the clutch C clearance. .050 - .080 recommended

Stage 2 7X C Clutch Configuration



Install the pressure plate (the thicker plate) and the 10 fibers and 9 thinner steels and the last thicker plate

Install the belleville spring

Install the clutch C piston

Install the clutch C retainer

Place the clutch C in a suitable press.

Compress C piston enough to install the snap ring.

Measure the clutch C clearance. .050 - .080 recommended

E clutch Disassembly:



Place clutch E in a suitable press



Compress the E piston enough to remove the snap ring





Remove the clutch E piston and support and clean and replace seals



Remove the belleville spring from the clutch E hub



Remove the clutch E seal and O-ring from the clutch E hub and replace **E clutch Assembly:**

Install the clutch E seals on the clutch E hub

Install the belleville spring into the clutch E hub

Stage 0 45/50/51 E Clutch Configuration:



Install the pressure plate (the thickest plate) and the 9 fibers and 8 thinner steels (new configuration on the left)

Install the apply steel on top

Install OE wave plate from original clutch assembly (not provided in it)

Install the clutch E piston

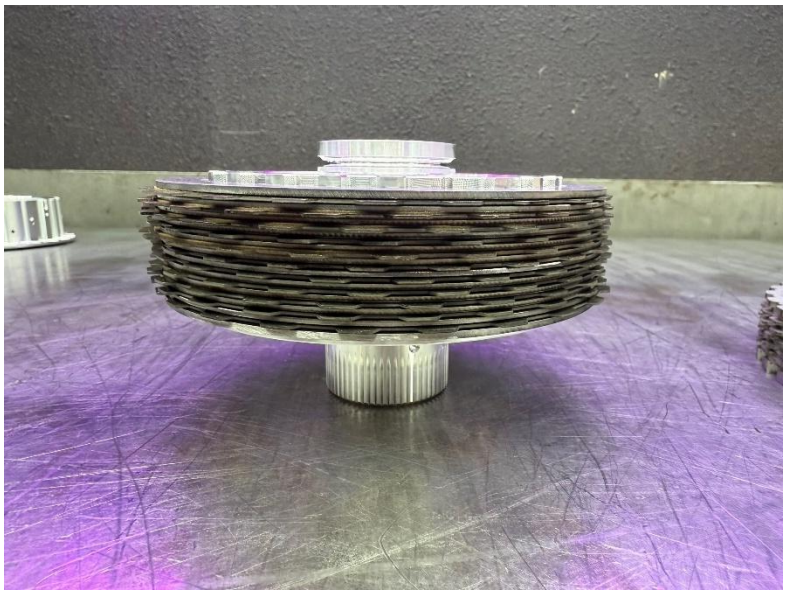
Install the clutch E retainer

Place the clutch E in a suitable press.

Compress E piston enough to install the snap ring.

Measure the clutch E clearance. .050 - .080 recommended

Stage 1 45/50/51 E Clutch Configuration:



Comes stacked with steels and fibers in the correct configuration

Thicker apply steel then 11 fibers and 10 thinner steels with thicker apply steel at the top

Install the clutch E piston

Install the clutch E retainer

Place the clutch E in a suitable press.

Compress E piston enough to install the snap ring.

Measure the clutch E clearance. .050 - .080 recommended

Stage 1 and Stage 2 7X E Clutch configuration



Install a steel plate and then the 9 fibers and 9 other steels

Install the clutch E piston

Install the clutch E retainer

Place the clutch E in a suitable press.

Compress E piston enough to install the snap ring.

Measure the clutch E clearance. .050 - .080 recommended

Stage 2 45/50/51 E Clutch Configuration



Install the pressure plate (the thickest plate) and the 11 fibers and 10 thinner steels

Install the apply steel on top (the thicker steel plate)

Install wave plate

Install the clutch E piston

Install the clutch E retainer

Place the clutch E in a suitable press.

Compress E piston enough to install the snap ring.

Measure the clutch E clearance. .040 - .075 recommended

D clutch disassembly:



Remove the selective snap ring

Remove the clutch D frictions and steels



Place clutch D in a suitable arbor press

Compress the oil baffle enough the clear the locking tabs

Rotate the oil baffle slightly until the tabs on the hub are clear of the baffle



Remove the oil baffle and belleville spring and piston and clean and replaced seals





Replace piston and baffle seals

D clutch Assembly:

Install the piston onto the carrier.

Install the belleville spring

Place the oil baffle onto the hub of the clutch D carrier and align the locking tabs.

Using a press compress the oil baffle enough the clear the locking tabs

Compress the oil baffle enough to clear the lock tabs, and rotate the baffle to the locked position.

Stage 0 and Stage 1 D Clutch Configuration:



Install the thickest steel first

Install the 5 frictions and 4 thinner steels into the carrier (new configuration on the right)

Install the stepped pressure plate

Install the snap ring

Measure the clutch D clearance. .050 - .070 recommended

Stage 2 D Clutch configuration:



Install the thicker steel first

Install the 6 frictions and 5 thinner steels into the carrier

Install the stepped pressure plate

Install the snap ring provided in the kit

Measure the clutch D clearance. .050 - .070 recommended

Assembly:



Install the lower bearing into the P4 sun gear/C/E clutch retainer



Install the C clutch into the P4 sun gear/C/E clutch retainer



Install the needle bearing onto the E clutch and the E clutch into the P4 sun gear/C/E clutch retainer



Install the snap ring into the P4 sun gear/C/E clutch retainer



Install the P3 annulus into the P4 sun gear/C/E clutch retainer and install the upper retained snap ring.



Install the P4 sun gear/C/E clutch retainer into the D clutch drum



Install the needle bearing onto the planetary carrier and install the P3 planetary carrier in the D clutch drum



Install the snap ring, make sure tabs are in proper location and snap ring is fully seated




Flip the D clutch drum over and install the P4 planetary carrier\output shaft on top of the D clutch drum



Install the P4 annulus drum on top of the assembled P4 planetary carrier\output shaft and D clutch drum and carefully flip assembly over without separating D clutch drum and P4 planetary carrier\output shaft



The P4 annulus drum should move up and down freely if the annulus is properly installed on the P4 planetary carrier\output shaft gears



Install the P2 annulus\P3 sun gear onto the drum assembly



Install the needle bearing and washer





Install the input shaft with P2 planetary carrier into the drum assembly and install needle bearing.



Install P1/P2 sun gear



Install the P1 planetary carrier



Gently lift up on the P4 annulus drum and Install the snap ring



Install the P1 annulus\B clutch hub assembly onto the P4 annulus drum.



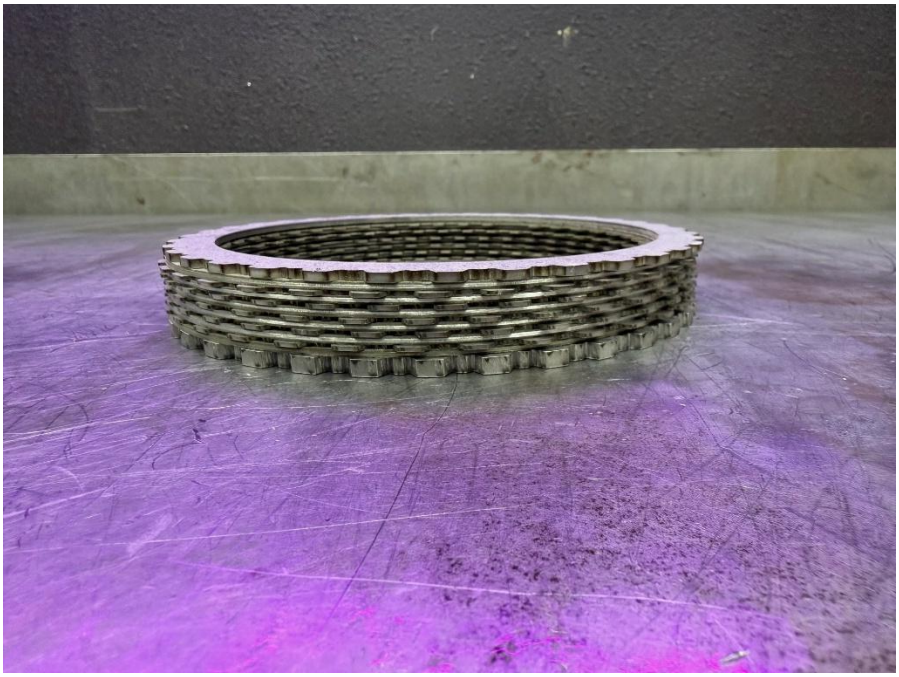
Install the selectable shim to the P1 annulus/B clutch hub.



The transmission must be in a vertical position when installing the main stack, so damage to the drums does not occur.



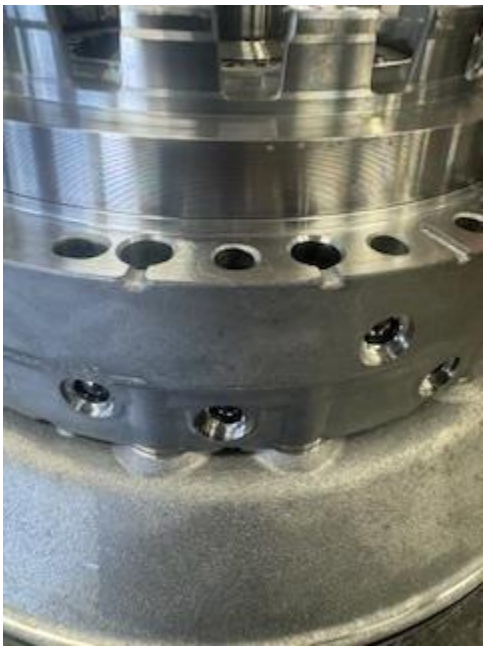
Install the input/output shaft and P4 annulus drum assembly into the case.



Install the B clutch pack, the pressure plate (the thickest plate) goes at the bottom (farthest from the pump). Then the 6 fibers and 5 thinner steels and last is the apply plate (thicker steel)



Install B clutch return spring, there two locating tabs, they go down, and the case is notched for the tabs



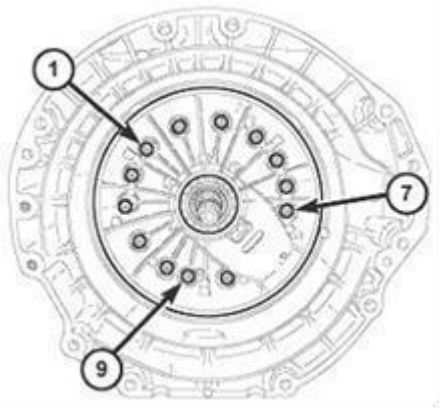
Install the pump with B piston into the case

Firmly press the oil pump in place before drawing it in with bolts.



Once pump is seated **small** gap may be noticed between pump and case, this is the pump and B piston touching the return spring. This is normal

For OE pump bolts:



In order to seat the oil pump cover properly, pre tighten bolts to 6 Nm (53 in. lb.)

Working in a clockwise pattern, tighten to 10 Nm (89 in. lb.).

Working in a clockwise pattern, tighten an additional 90°.

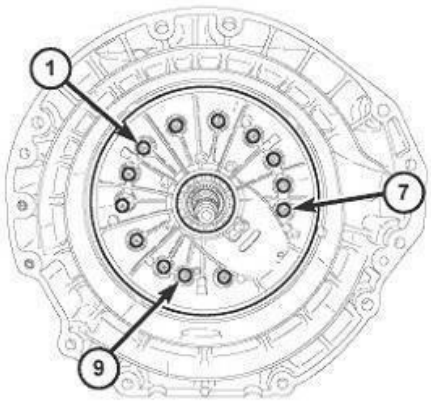
For ATS upgraded Pump bolts:

Firmly press the oil pump in place by hand before drawing it in with bolts.

To seat the oil pump cover, pre tighten bolts one, seven and nine to 6 N·m (53 in. lb.)

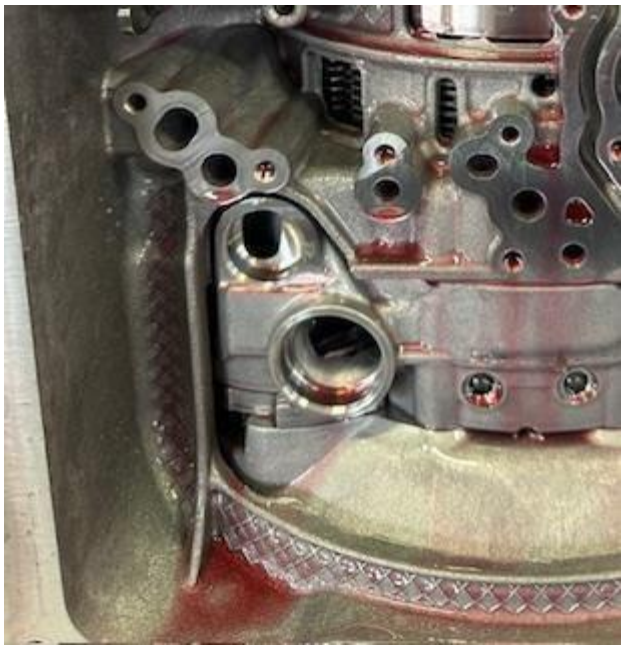
Tighten bolts to 10 N·m (89 in. lb.) starting at number one working clockwise

Tighten bolts to 17 N·m (150 in. lb.) starting at number one working clockwise





Install input shaft o-ring



Install **BOTH** fluid ports in either the pump or the valve body before valve body install

Install the valve body assembly retaining bolts and hand tighten.

Install the electrical harness insulator into the transmission case

When installing the Output Speed Sensor into the case, take care to position the guide pin at the end, make sure sensor is evenly and fully seated into case before bolting down

Latch the wire harness connector insulator lock by pushing in.

Install the valve body assembly end retainer bolts and hand tighten.

Tighten the valve body assembly retaining bolts to 8 Nm (71 in. lbs.)

Install the Hydraulic accumulator and three bolts

Connect the Hydraulic accumulator wire harness connector

Install the oil pan

RWD only:

Install the transmission output shaft

washer Install the transmission rear seal.

Install the driveshaft flange

Install the driveshaft flange nut and washer using a 34 mm 12 point socket. Tighten to 60 Nm (44 Ft. lbs.) Stake the nut.

AWD only:

Install output shaft snap ring and washer.

Install the transmission rear oil seal