General Policy
All core returns must be,

- like for like, no mixed models
- drained of all fluids ($50 Charge)
- be returned in the original packaging
- Part Disassembled
- No junkyard cores (core must have been removed from vehicle)
- No fire damage
- Free of excessive Rust or Water Damage

Returned cores that fail to follow the above conditions will be disallowed and scrapped or returned at the customer's expense. Freight and removal damage are not covered. BD Diesel reserves the right to adjudicate cores as it sees fit and may deviate from its policy.

BD FUEL INJECTION CORE ACCEPTANCE POLICY

Model	Deduction	No Credit
P7100 Injection Pump	• AFC Housing Damaged (25% Deduction) • Governor Housing Damaged Front or Back (25% Deduction)	• Contaminated/Bio Diesel • Damaged Camshaft on 911/913 pumps. • Main Body Damaged
Bosch VE Pump	• AFC Housing Damaged (25% Deduction) • Cold Advanced Housing Damaged (50% Deduction) • Governor housing damaged front or back (25% deduction) • Main Body Damaged (50% Deduction)	• Contaminated/Bio Diesel • Seized Head (Does not turn)
CP3		• Contaminated/Bio Diesel • Seized (Does not turn) • Catastrophic Shaft Failure (Frost Plugs Damaged or Missing) • Front Cover Damaged
VP44	• Damaged Electronics (50% Deduction)	• Contaminated/Bio Diesel • Seized Head (Does not turn)
Common Rail Injectors	• Solenoid melted or destroyed, stretched terminals (25% Deduction) • 5.9/6.7 Broken Solenoid Terminal Divider (No Deduction)	• Contaminated/Bio Diesel • Damaged Body
Mechanical Injectors		• Contaminated/Bio Diesel • Damaged Body

BD TURBOCHARGER CORE ACCEPTANCE POLICY

Turbo Model/ Application	Deduction	No Credit
Cummins ISX VGT Air or Electronic Actuated	• Damaged Electronics (50% Deduction) • Missing Clamps (25% Deduction) • Missing Parts or Actuators (50% Deduction) • Turbine Wheel Separation (50% Deduction)	• Knock Off Models (Not Genuine) • Part Disassembled
Caterpillar (Ball Bearing) Models		• Knock Off Models (Not Genuine) • Wheel Separation
Caterpillar (Standard Turbocharger) 704604-9007, 704604-9011		• Knock Off Models (Not Genuine) • Turbo with 3 support Webs

Detroit Diesel VGT	• Damaged Electronics (50% Deduction)	• Knock Off Models (Not Genuine) • Wheel Separation
Ford 6.4 Powerstroke	• Missing Parts or Actuators (50% Deduction)	• Knock Off Models (Not Genuine) • Part disassembled • Wheel Separation
Ford 6.7 Powerstroke	• Missing Parts or Actuators (50% Deduction)	• Wheel Separation
GM 6.6 L5P	• L5D Version (due to incorrect compressor cover) (25% Deduction) • Missing Parts or Actuators (50% Deduction)	• Knock Off Models (Not Genuine) • Wheel Separation
Dodge Cummins 6.7 HE351VG/HE300VG	• Missing Parts or Actuators (50% Deduction)	• Knock Off Models (Not Genuine)
Standard Turbochargers (All Models, Non VGT)	• Damaged Electronics (50% Deduction) • Missing Clamps (25% Deduction) • Missing Parts or Actuators (50% Deduction)	• Knock Off Models (Not Genuine) • Wheel Separation

The above criteria apply to customer core returns. The following criteria will apply for core purchases.

Deduction	No Credit
• Cracked or Damaged due to freight • Damaged Electronics • Missing Parts or Actuators • Heavily Damaged Wheels and/or Shaft • Missing Clamps • Turbine Wheel Separation • Heavily Modified Turbochargers	• Knock Off Models (Not Genuine)

BD TRANSMISSION/TORQUE CONVERTOR CORE ACCEPTANCE POLICY

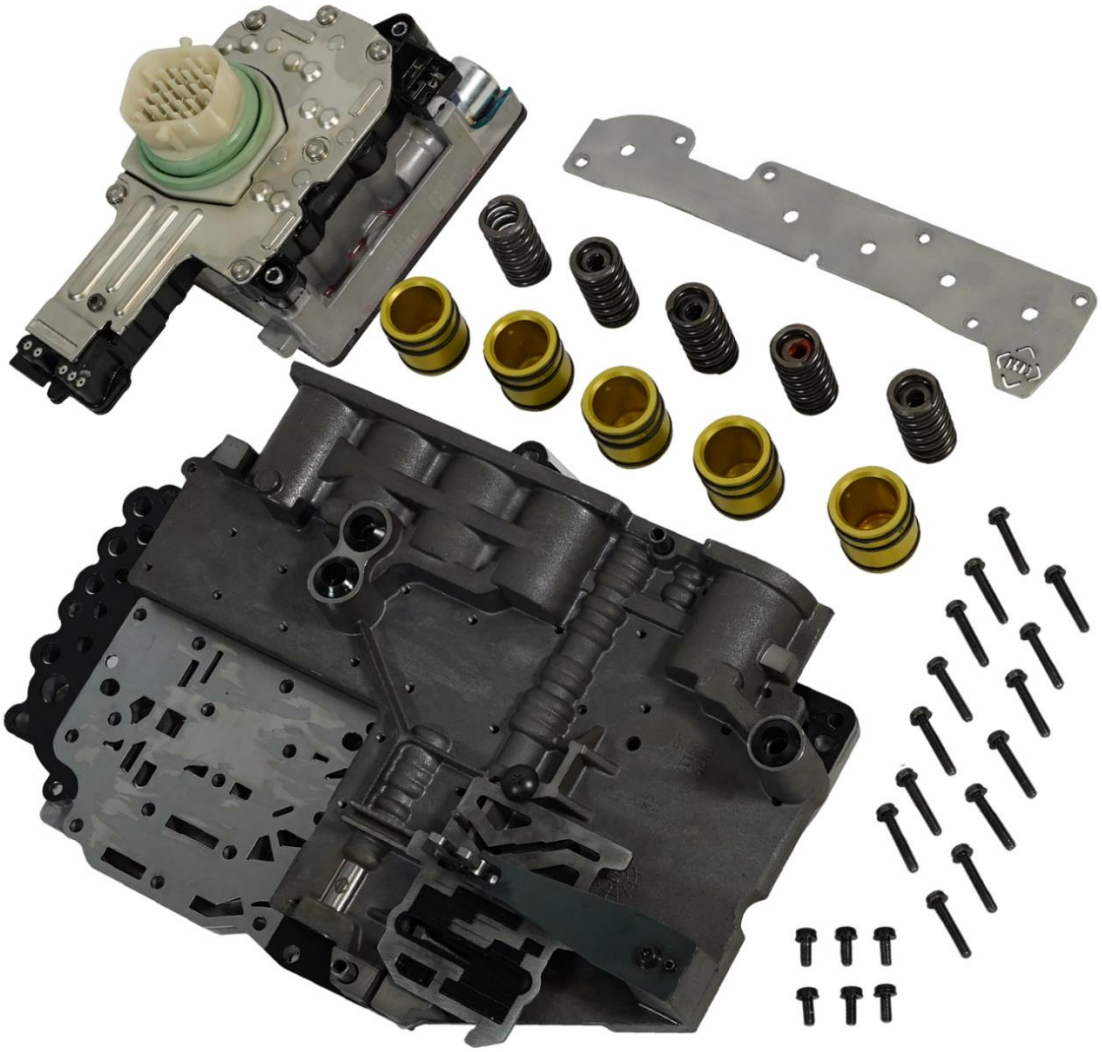
Model	Deduction	No Credit
Transmissions	• Cracked Overdrive housings ($100 Deduction) • 68rfe Cracked Case (25% Deduction) • Part disassembled (50% Deduction) • Missing Transmission Shipping Crate ($200 Deduction) • Missing TC/Transmission bracket ($50 Deduction)	• Cracked Case (Except 68rfe)
Torque Convertors	• Hub and Impeller damaged. (50% Deduction)	• Excessive corrosion • Part disassembled
Valve Bodies	• Missing electronics (25% Deduction)	• Excessive corrosion • Part disassembled

GENERAL CORE ACCEPTANCE POLICY

Model	Deduction	No Credit
EGR Cooler		• Brackets broken

Please note that all cores have a time eligibility restriction. Please see BD Terms & Conditions for further details. https://cdn.bddiesel.com/downloads/bd_terms_general.pdf

DOWNLOAD THE LATEST INSTALL MANUALS AT www.bddiesel.com



68RFE Valve Body Install

1030465	**2008-2010 W/O SOLENOID (WHITE)**
1030467	**2008-2018 W/ SOLENOID**
1030468	**2011-2018 W/O SOLENOID (GREY)**

Note: In 2011 there was a mid-year change to solenoid pack fitment and valve bodies were built with either a grey or white solenoid pack. Prior to ordering the valve body you need to confirm which solenoid pack is currently installed on the transmission.

PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLATION
DOES NOT FIT 2019+ (BLUE CONNECTOR)

AFTERMARKET TUNERS OR TCMS

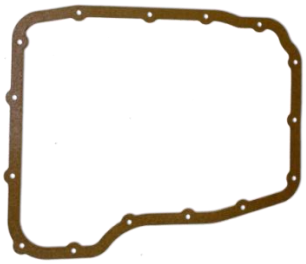
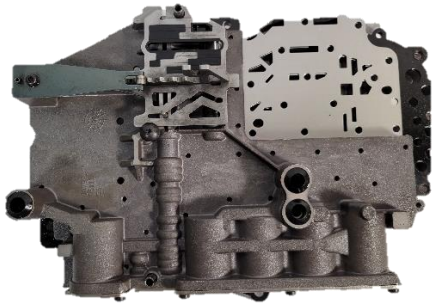
Note that end users have the option of using this valve body on its own, with an aftermarket pressure controller, or with TCM tuning. However, it is NOT recommended that TCM tuning that increases mainline pressure be used in combination with a pressure controller as this may cause shift issues and set a P0868 fault code.

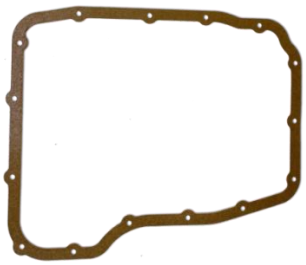
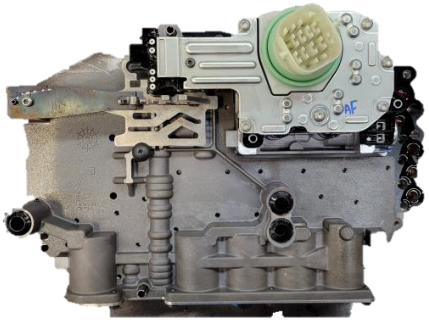
SUMMARY OF UPGRADES

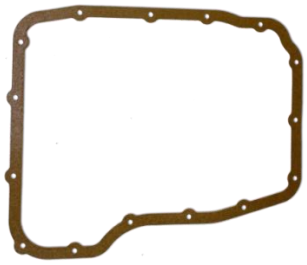
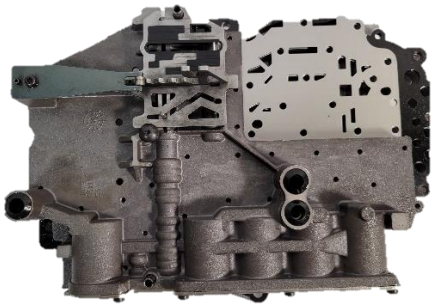
This performance valve body includes a number of upgrades including hard anodized aluminum accumulator pistons with dual seals, a thicker accumulator plate, a separator plate with bonded gasket, replacement clutch feed seals, and steel insert for solenoid switch valve with oversized end plugs.

KIT CONTENTS

Please check to make sure that you have all the parts listed in this kit.

Kit Contents for 1030465	
16001523	**1300465-6**
	
Gasket	**Valve Body w/o Solenoid**
Qty: 1	**Qty: 1**

Kit Contents for 1030467	
16001523	**1300465-1**
	
Gasket	**Valve Body w/ Solenoid**
Qty: 1	**Qty: 1**

Kit Contents for 1030468	
16001523	**1300465-5**
	
Gasket	**Valve Body w/o Solenoid**
Qty: 1	**Qty: 1**

Tools Required

- **Drain Pan**
- **Transmission Funnel**
- **8mm Socket**
- **T25 Torx Socket**
- **Torque Wrench (in/lbs)**
- **Brake Clean or Parts Cleaner**
- **Scraper**

Upgrade Options

1030240	Torque Converter
1061525	6.7L HD Transmission Pan
1041220	6.7L Cummins Flex Plate
1061529	Adapter Tool – 68 RFE
1030369	Transmission Pressure Controller

Important

The 68RFE transmission has a unique TCM control strategy and it is imperative the instruction for the “Quick learn” are followed closely. Not following these directions correctly will result in a void warranty and will lead to premature failure. Do not use the vehicle for heavy towing or hauling until 300 miles of stop and go driving has elapsed to allow the computer to relearn the new valve body.

Valve Body Installation

1. Ensure all kit components are accounted for before installation.

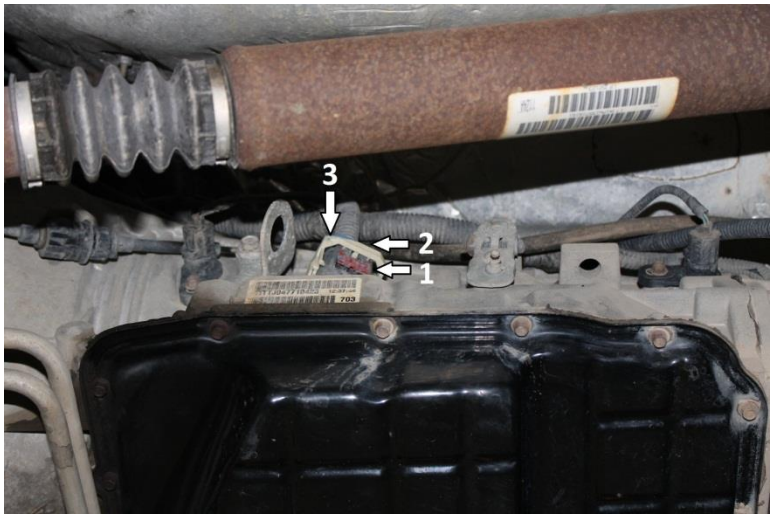
2. Disconnect vehicle batteries and secure cables away from batteries.

3. Lift transmission dip stick approx. 6 inches to avoid interference later on.

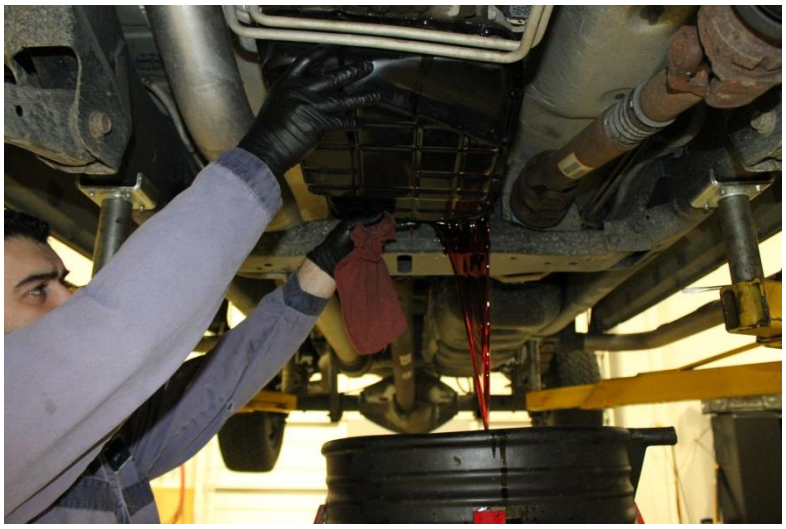
4. Raise vehicle on vehicle lift. If using a jack, use safety stands and chock wheels.

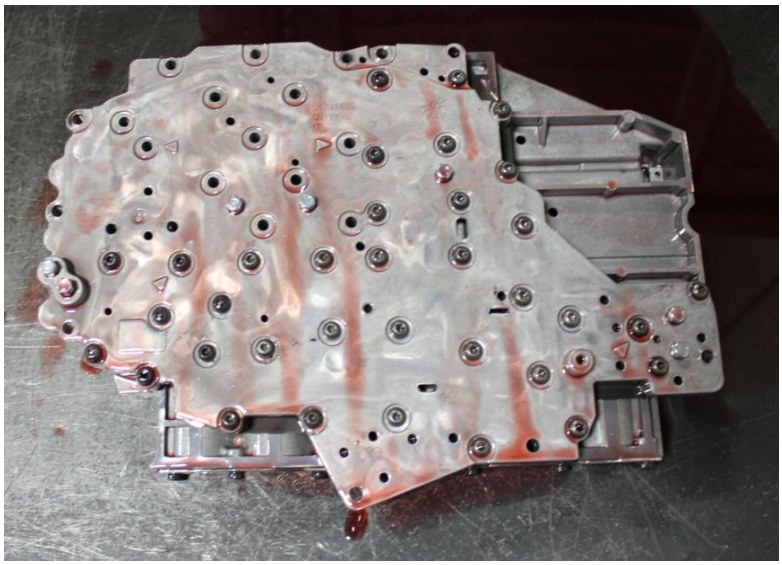
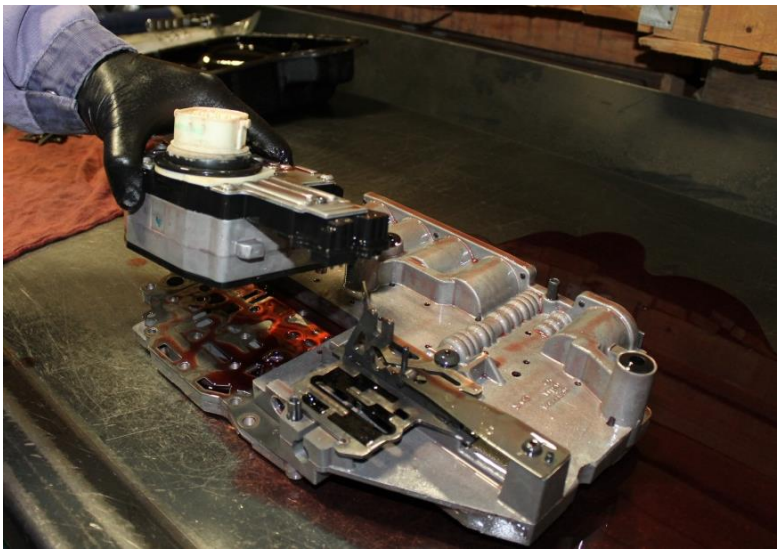
5. Remove shifter cable from transmission for better access to the main electrical connector.

6. To remove connector, push red tab (1) downwards. Then, press the black tab (2) which will allow the white handle (3) to be rotated downwards, releasing the connector from the transmission.

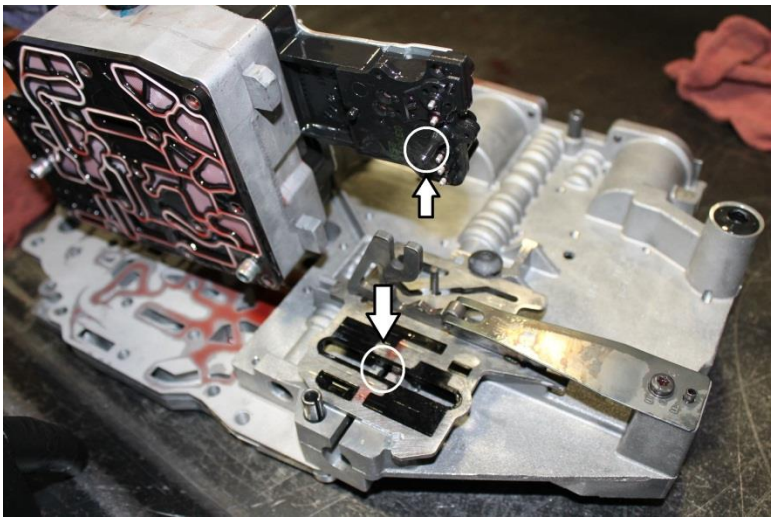


7. Position drain pan below the transmission.

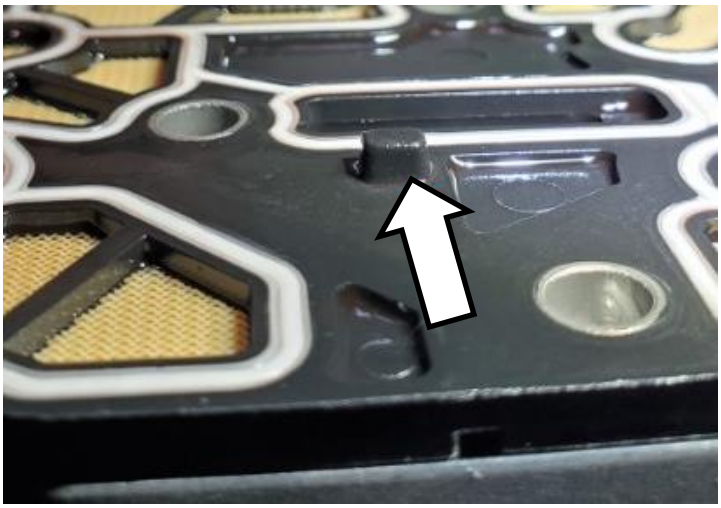
8. Remove 14 of the 15 transmission pan bolts (8mm). Loosen the remaining bolt but leave in place to keep the pan from falling. The transmission cooler lines may need to be moved to access some of the bolts, gently pry them out of the way.	
9. Tap pan with a mallet to break the silicone gasket seal. Allow fluid to drain. Remove last screw and drain remainder of fluid.	
10. Remove transmission filter by removing the one T25 Torx screw.	

11. Remove the six 8mm bolts securing the valve body to the transmission. Drain valve body of fluid. To remove valve body from transmission, wiggle it while pulling downwards to work the electrical connector through the case.	
12. Place the valve body on a clean work surface.	
13. For kits 1030465/1030468 (w/o solenoid), remove fifteen T25 Torx screws securing the solenoid pack to the valve body, remove solenoid pack and place it to the side. Note: All bolts are the same length.	

14. For kits 1030465/1030468, install the previously removed solenoid pack onto new valve body. Be sure to properly align the pin on the solenoid pack with the slot on the valve body. Due to the alignment dowels, the valve body may need to be wiggled down into position. Install solenoid pack attaching screws. Install remaining Torx screws to fasten the solenoid pack to the valve body.



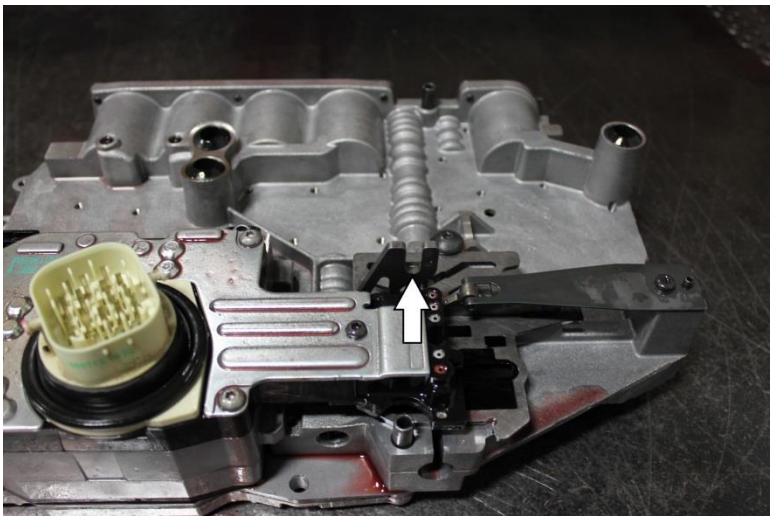
IMPORTANT! – On rare occasions, the solenoid pack gasket comes with a small nub on one side which will need to be removed using a file or blade before installation as the new plate blocks off the opening as it is not present on most applications.



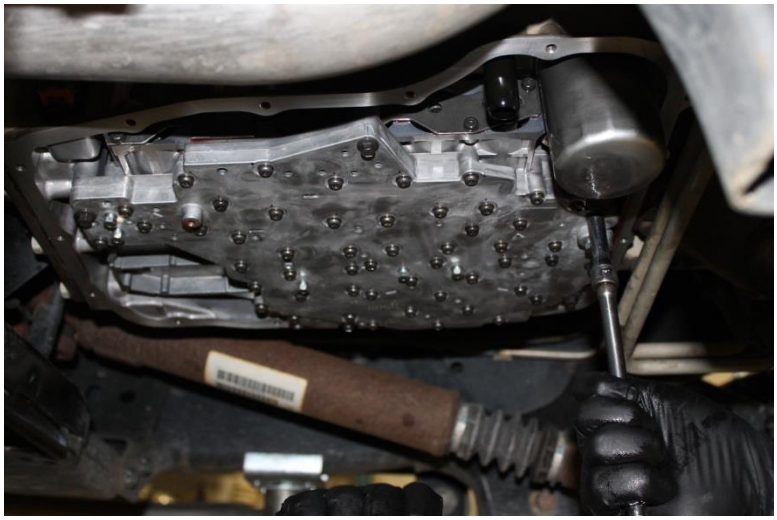
15. Wipe clean the bore on the transmission case around the electrical connector. Scrape all old silicone gasket material (if any) from the oil pan mating surfaces.

16. Check that the shift lever on the valve body lines up with the shift lever on the transmission and lift the valve body back into the transmission. Start the 8mm screws by hand, do not tighten yet. Work the shift lever on the outside of the transmission case by hand to ensure that the lever is making contact with the valve body correctly.

IMPORTANT: Use great care when reinstalling the valve body, the gasket that mates with the front of the case must line up correctly. Do not fold or pinch during installation.



17. Torque the valve body attaching bolts to 105 in/lbs.



18. If desired, install new filter(s). Otherwise, reinstall the filter/pickup assembly. Torque to 50 in/lbs.

19. Place the supplied gasket on the transmission pan. Hold pan below transmission and install attaching screws. Torque the pan screws to 105 in/lbs.

20. Re-attach the transmission main electrical connector. Reattach shifter cable to shift lever.

21. Lower vehicle.

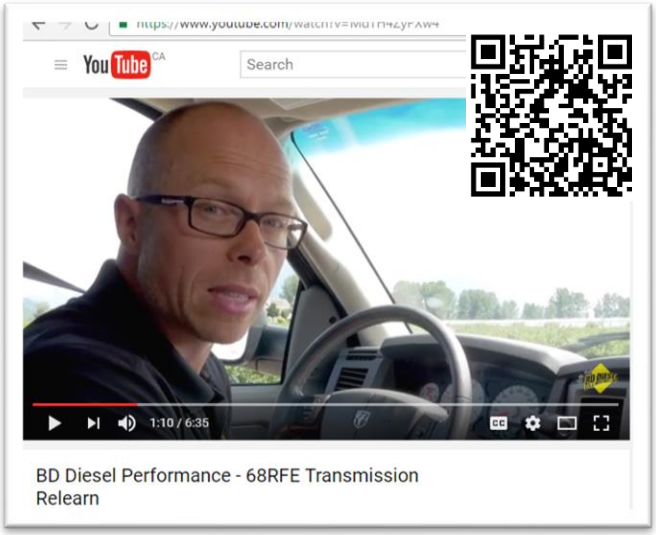
22. Reconnect vehicle batteries.

23. Fill transmission fluid until COLD line is met. Start and run vehicle. Move shifter through different gears twice to fill valve body. Check for leaks. Check fluid level again. Top up as required.

24. Note. If you would like to verify the increases in line pressure, use adapter kit (BD 1061529) in conjunction with a 300psi gauge. Pressures at wide open throttle should be between 240 – 260 PSI with a mechanical gauge.	ADAPTER KIT BD# 1061529  Use this kit with a 300 psi gauge.

Transmission Quick Learn

Check out the following video on YouTube for detailed relearn procedure information.



Quick Learn and Drive Learn Video
https://www.youtube.com/watch?v=MdTH4ZyPXw4

CRITICAL STEP!

Connect a Chrysler or equivalent aftermarket scan tool to the vehicle.
Clear any existing transmission fault codes.

Select the QUICK LEARN from the special function menu. If your scan tool does not have the QUICK LEARN function **STOP**. Do not drive vehicle. You will not be able to complete installation.

Follow the instruction on the scan tool. The transmission will engage the various clutches to determine base CVI values and will clear its adaptive learning history.

On newer model years look for and perform the EMCC reset/relearn. This will reset the learn of the torque converter.

Road Test and Pressure Checks

Before leaving for the road test, verify transmission pressures. If transmission pressures idle pressure are not as expected, **DO NOT TEST DRIVE VEHICLE.** Re-check fluid level, check for fault codes or unplugged sensors. Call BD tech support for assistance.

Mainline Pressures (68 RFE)	
At Idle	**Wide Open Throttle**
60-120 psi	250 psi

Line pressure varies depending on load, operating state of the transmission etc.
At idle in PARK with foot off the brake, 60psi is expected.
Applying the brake or shifting into gear will yield approximately 120psi.

Do not allow the vehicle to shift at full throttle when obtaining the WOT line pressure check as it will not yet fully relearned. Instead, use the factory tap shifter buttons to prevent shifting above 4th gear. Lightly accelerate until in fourth and in lockup. Then accelerate to WOT in this gear to get a pressure reading.

Drive Learn Procedure

Accelerate with the minimum throttle required when leaving the shop and get onto a quiet stretch of road.

Slowly accelerate the vehicle from first gear up to fourth gear.

Repeat this process a few times until the shift quality becomes consistent.
Increase throttle slightly and repeat the procedure.

As shift quality improves, allow truck to shift into 5th and 6th gears also. Generally, if gears 1-4 are correctly learned, 5th and 6th gears will shift nicely as the use the same clutches as 2nd and 3rd.

Complete a series of **N** to **D** and **N** to **R** shifts and verify shift quality is acceptable.
See detailed transmission drive learn information below to target specific shifts and for more detailed information.

Final Check and Gauge Removal

After drive learn and pressure checks are complete, bring the truck back into the shop.

Verify the fluid level now that it is hot and top up if required.

Returning the Vehicle to the Customer

When returning the vehicle to the customer they must be informed the truck is not to be used for heavy towing or hauling until 300 miles of stop and go driving has been completed so that the TCM has time to adjust shift timing correctly.

Detailed Relearn Information

You must perform a transmission quick learn, in order for the TCM to recalibrate to the new CVI indexes. This can be accomplished with an OE level scan tool.

The quick learn/drive learn procedure must be performed should any of the following repairs are applied on the vehicle.

1) Transmission Replacement
2) Transmission Control Module Replacement (TCM)
3) Solenoid Pack Replacement
4) Clutch Plate and/or Seal Replacement
5) Valve Body Replacement or Recondition
6) Torque Convertor Replacement
7) Battery Disconnect or Replacement
8) Power Upgrade or Flash Programmer Installation and/or Updates.

A relearn may be caused due to:

1) Faulty electrical connection
2) Sensor failure

68RFE Transmission Learn Procedure

Once the transmission is installed and full of fluid a scan tool must be connected. The first step is to locate the TCM or ECM Reset and complete the test. Next locate the Clutch Fill Volume Index (CVI) values in the data section of the Transmission Control Module (TCM). This data is in the Powertrain Control Module (PCM) on 2010-12 models. Record these values on the data sheet provided. Next a Quick Learn will need to be performed. This test will be located in the MISC section of the TCM or PCM. After the Quick Learn has completed, the CVI values will need to be recorded again.
Now you are ready for the initial test drive. It is imperative on this test drive not to accelerate aggressively. Bring the vehicle up to normal operating temperature. Try to locate a long level stretch of road with very little to no traffic. To initiate the first part of the drive learn bring the vehicle to a complete stop, place the transmission into reverse gear for 2-3 seconds and then back into drive. While watching throttle percentage accelerate holding a 15 degree throttle angle through the 1-2, 2-3 and 3-4 upshifts and bring the vehicle back to a stop. Now repeat the acceleration and upshift procedure at least 2-4 times before the next reverse or park gear selection. This complete procedure needs to be repeated until the CVI values stabilize (stop changing during shifts). When the CVI values have stabilized the drive learn can process is now ready for some heavier throttle upshifts. The vehicle should be accelerated from a stop at a 30 degree throttle angle through all gears to verify quick clean shifts**. If any stumble, chatter, clunking is felt repeat the initial drive learn test again to re-stabilize the CVI values.** When upshifts are feeling quick and crisp the vehicle can be accelerated at a higher and higher throttle percentage through all gears until 50-60 percent throttle is reached. **If at any time the transmission upshifts become irregular initial drive learn procedure will need to be applied.**

After the drive learn is complete and the transmission is shifting correctly a final recording of the CVI values should be entered on to data sheet provided. As well any particularly objectionable shifts can be fine-tuned by following the applicable procedure below.

At this time vehicle can be released to customer to complete break in period.

NOTE: It is not necessary to perform the complete Drive Learn procedure every time the TCM is Quick Learned. Perform only the portions which target the objectionable shift.

LEARN A SMOOTH 1ST NEUTRAL TO DRIVE SHIFT

Perform this procedure only if the complaint is for a delayed or harsh shift the first time the transmission is put into gear after the vehicle is allowed to set with the engine not running for at least 10 minutes. Use the following steps to have the TCM learn the 1st N-D UD CVI.

NOTE: The transmission oil temperature must be between 80 - 110°F (27 - 43°C).
Start the engine only when the engine and ignition have been off for at least ten (10) minutes.

With the vehicle at a stop and the service brake applied, record the 1st N-D UD CVI while performing a Neutral to Drive shift. The 1st N-D UD CVI accounts for air entrapment in the UD clutch that may occur after the engine has been off for a period of time.
Repeat 1 and 2 until the recorded 1st N-D UD CVI value stabilizes.

NOTE: It is important that this procedure be performed when the transmission temperature is between 80 - 110°F (27 - 43°C). If this procedure takes too long to complete fully for the allowed transmission oil temperature, the vehicle may be returned to the customer with an explanation that the shift will improve daily during normal vehicle usage. The TCM also learns at higher oil temperatures, but these values (line pressure correction values) are not available for viewing on the scan tool.

LEARN A SMOOTH NEUTRAL TO DRIVE GARAGE SHIFT

Perform this procedure if the complaint is for a delayed or harsh shift when the transmission is put into gear after the vehicle has had its first shift. Use the following steps to have the TCM learn the Norm N-D UD CVI.

NOTE: The transmission oil temperature must be between 80 - 110°F (27 - 43°C) to learn the UD CVI. Additional learning occurs at temperatures as low as 0°F and as high as 200°F. This procedure may be performed at any temperature that experiences poor shift quality. Although the UD CVI may not change, shift quality should improve.

Start the vehicle engine and shift to drive.
Move the vehicle forward to a speed of at least 16 km/h (10 MPH) and come to a stop. This ensures no air is present in the UD hydraulic circuit.

Perform repeated N-D shifts at a stop while pausing in Neutral for at least 2-3 seconds and monitor Norm N-D UD CVI volume until the value stabilizes. The value will change during the N-D shift. This is normal since the UD value is different for the N-D shift then the normal value shown which is used for 4-3 coastdown and kickdowns. Perform repeated shifts in this temperature range until the Norm N-D UD CVI value stabilizes and the N-D shifts become smooth.

LEARN THE 1ST 3-4 SHIFT AFTER A RESTART OR SHIFT TO REVERSE

Use the following steps to have the TCM learn the 1st 3-4 shift OD CVI.

NOTE: The transmission oil temperature must be above 80°F (27°C).

With the vehicle engine running, select reverse gear for over 2 seconds.
Shift the transmission to Drive and accelerate the vehicle from a stop at a steady 15 degree throttle opening and perform a 3-4 shift while noting the 1st 3-4 OD CVI.

Shift the transmission to Drive and accelerate the vehicle from a stop at a steady 15 degree throttle opening and perform a 3-4 shift while noting the 1st 3-4 OD CVI.

Repeat 1 and 2 until the 1st 3-4 upshift becomes smooth and the 1st 3-4 OD CVI stabilizes.

LEARN A SMOOTH 3-4 AND 4-5 UPSHIFT

NOTE: The transmission oil temperature must be above 110°F (43°C).

Use the following steps to have the TCM learn the OD and 4C CVI's.
Accelerate the vehicle from a stop at a steady 15 degree throttle opening and perform multiple 1-2, 2-3, 3-4 and 4-5 upshifts. The 2nd 3-4 shift following a restart or shift to reverse will be shown during the shift as a value between the 1st 3-4 OD CVI and the normal OD CVI. Updates to the normal OD CVI will occur after the 2nd shift into 4rd gear, following a restart or shift to reverse.

Repeat 1 until the 3-4 and 4-5 shifts become smooth and the OD and 4C CVI become stable.

LEARN A SMOOTH 5-4 COASTDOWN AND PART THROTTLE 5-4 KICKDOWN

NOTE: The transmission oil temperature must be above 110°F (43°C).

Use the following steps to have the TCM learn the UD shift volume.
At a vehicle speed between 64-97 km/h (40-60 MPH), perform repeated 5-4 kickdown shifts.
Repeat 1 until the UD volume becomes somewhat stable and the shift becomes smooth.

LEARN A SMOOTH 1-2 UPSHIFT AND 3-2 KICKDOWN

Use the following steps to have the TCM learn the 2C shift volume.

NOTE: The transmission oil temperature must be above 110°F (43°C).

With a vehicle speed below 48 km/h (30 MPH) and the transmission in 3rd gear, perform multiple 3-2 kickdowns.

Repeat 1 until the 3-2 kickdowns become smooth and the 2C CVI becomes stable.

LEARN A SMOOTH MANUAL 2-1 PULLDOWN SHIFT AS WELL AS A NEUTRAL TO REVERSE SHIFT

NOTE: The transmission oil temperature must be above 110°F (43°C).

Use the following steps to have the TCM learn the LR volume.

With the vehicle speed around 40-48 km/h (25-30 MPH) in Manual 2nd, perform manual pulldowns to Low or 1st gear at closed throttle.
Repeat 1 until the LR CVI becomes stable and the manual 2-1 becomes smooth.

LEARN A SMOOTH NEUTRAL TO REVERSE SHIFT

NOTE: The transmission oil temperature must be above 110°F (43°C).

With the vehicle at a stop, perform Neutral to Reverse shifts until the shift is smooth. An unlearned Neutral to Reverse shift may be harsh or exhibit a double bump.

If any of the shifts are still not smooth after the clutch volume stabilizes, an internal transmission problem may be present.

LEARN A SMOOTH 5-6 UPSHIFT

NOTE: The transmission oil temperature must be above 110°F (43°C).

Use the following steps to have the TCM learn the Alt 2C CVI.

Accelerate the vehicle through 88 km/h (55mph) at a steady 10-15 degree throttle opening and perform multiple 5-6 upshifts.

Repeat 1 until the 5-6 shift become smooth and the Alt 2C CVI become stable. There is a separate 2C volume used and learned for 5-6 shifts, 2CA. It is independent of the 2C CVI learned on 3-2 kickdowns.

Solenoid Pack Field Replacement

If you must replace your valve body solenoid pack, beware that BD Diesel valve bodies (with included solenoid packs) use a different solenoid pack than stock valve bodies for 2011-2018 vehicles.

If your BD valve body came with a solenoid pack, you must use the 2008-2010 universal solenoid pack (Chrysler part number **68353383AB**) identified by the **white** connector, and not the “correct” solenoid pack for your vehicle.

If your BD valve body did not come with a solenoid pack, use the “correct” solenoid pack for your vehicle.

Your valve body may have come with a grey solenoid pack connector that has been painted white. These solenoid packs have been modified by BD to be functionally equivalent to the white solenoid packs.

Troubleshooting

Truck sets a P0869 Low Line Pressure fault code

Code present at idle

- Indicates a pressure module issue or connection issue.
- If using a pressure enhancer (ie: BD part number **1600368**), clear code and retest to confirm if it is a pressure enhancer issue. With the module removed, the truck should run stock pressures.

Code present at WOT

- Possible connector issue or module issue.
- If no problems found with connector, attach mechanical gauge and compare pressure on scan tool to mechanical gauge at WOT. If pressure is below 230psi it is likely there is an issue with the transmission cooler causing reduced flow. If replacing the cooler does not remedy this, call BD.

Truck sets a P0871 Transmission Fluid Pressure fault code

Code present after solenoid pack replacement

- BD Diesel valve bodies use a different solenoid pack than stock valve bodies for 2011-2018 vehicles. You must use the 2008-2010 universal solenoid pack (Chrysler part number **68353383AB**) identified by the **white** connector, and not the “correct” solenoid pack for your vehicle if your valve body came with a solenoid pack.

Transmission Cooler Check

Disconnect cooler line and verify cooler flow rate. At idle it should be a minimum of 1.5GPM. You can use a clean bucket to drain into for this test. If it does not meet the requirement you will need to replace your cooler and check valve assembly.