



2920 E. Mohawk Ln. Phoenix, AZ 85050

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Black Widow 68RFE Transmission Installation Instructions

- Before installing your new REF transmission, make sure you have access to a professional grade scan tool that can perform and monitor the following; **RELEARN PROCEDURE, LINE PRESSURE, TORQUE CONVERTER CLUTCH STATUS AND CVI VALUES. FAILURE TO PROPERLY DOCUMENT THESE READINGS WILL RESULT IN NO WARRANTY ELIGIBILITY.**
- NLET recommends the use of a Snap on scan tool for installation of your 68RFE and to confirm tuning is properly configured.
- • 2010-2018 Models - Ensure that the vehicle's OEM transmission thermostat valve has been replaced with a bypass. NLET transmissions generate more line pressure, which will lead to higher transmission temperatures. Thermo-bypass is required on all vehicles that are equipped with an OEM transmission thermostat. If equipped, 2010-2012 trucks will have a thermostat near the fuel filter housing above the starter.
- Transfer your alignment dowels from your old transmission to the new transmission. Failure to do so WILL result in damage to your new transmission and will not be covered under warranty.
- Fill the torque converter with at least 2 quarts of fluid (preferably 4). Using a transmission specific funnel aids in this process and makes less of a mess if the funnel protrudes down past the converter hub (fill slowly). Lubricate torque converter o ring with assembly lube or ATF.
- Transmission fluid recommendation is ATF+4
- Prior to installing the torque converter, make sure to apply a coating of assembly lube to the snout of the input shaft. Make sure that the torque converter is completely seated in the oil pump, and that once the transmission is installed that there is at least 1/4" free play between the torque converter and flexplate.
- Hot flush transmission coolers, or have them replaced. Please note that transmission coolers must be hot flushed. If a hot flush machine is not available, IMAGE PROOF and INVOICE of all transmission cooling components and front cooler must be provided with warranty registration. FAILURE TO INCLUDE THIS INFORMATION WILL VOID ANY WARRANTY ELIGIBILITY.
- Do not use the spacer in between crank bolts and flexplate, unless otherwise noted.
- Flexplate to crank bolt torque 110 foot pounds + Red thread locking compound.
- Converter to flexplate bolts torque 35 foot pounds + Red thread locking compound.
- Set parking brake/ chock wheels.



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- **Before you start your engine**, connect your scan tool and clear any active transmission codes.
 - Fill the transmission with 10 quarts of fluid, start the engine and put the vehicle shift lever in neutral.
 - Dry fill capacity is 17-25 quarts depending on cooler configuration and pan depth.
 - Transmission **MUST** be filled with the engine running in neutral.
 - Fill in neutral slowly with the engine running. Once remaining transmission fluid is filled, cycle through the gears, place shifter in neutral and check fluid level.
 - **BEFORE NEXT STEP, LET VEHICLE RUN IN NEUTRAL FOR 10 MINUTES. FLUID LEVEL WILL SETTLE IN THE 68RFE AND ALWAYS DROPS. WHAT WAS ONCE A FULL DIPSTICK DOES NOT REGISTER ON THE DIPSTICK AFTER RUNNING FOR 10 MINUTES.**
 - **CHECK FLUID LEVEL BEFORE PERFORMING NEXT STEP.**
 - Perform relearn procedure with scan tool.
 - Check fluid level after relearn has been performed.
 - Have a scan tool setup to complete the transmission monitor test.
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IF INSTALLING A 2019+ 68RFE, FOLLOW THESE ADDITIONAL INSTRUCTIONS*
2019+ PI CURVE INPUT



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In addition to the installation steps listed above, 2019 and up trucks require a different relearn procedure and code input for the torque converter clutch solenoid. This procedure requires a dealer level diagnostic tool. The solenoid has an engraved 2D barcode that when scanned will produce a PI curve code. This code is unique to the solenoid's flow rating. If these codes are not entered, premature torque converter / transmission failure will occur. Below are the codes that pertain to your variable force solenoid.

FAILURE TO ENTER THE PI CODE CAN LEAD TO TRANSMISSION FAILURE THAT WILL NOT BE COVERED UNDER WARRANTY

CODE: _____

2019+ UD PULSE AIRCHECK DISABLE

In 2019, FCA implemented an air bleed/pulse to the drive function of their 68RFE transmissions. Under stock line pressure, the underdrive balance spring has enough opposing force to keep the pack from applying. However, with 225 PSI line pressure the pulse momentarily applies and binds while in overdrive. Ensure your transmission tuning is set up to have this pulse turned off, or immediate transmission failure will ensue.

*THE AFOREMENTIONED ASPECTS MUST NOT BE OVERLOOKED WHEN INSTALLING A 2019+ 68RFE TRANSMISSION. *



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68RFE Test Drive Monitor Test

When test driving your 68RFE transmission, there are a few monitors we need to check to ensure the tuning is configured properly. All of the requested parameters can be monitored with a professional grade scan tool.

PRESSURE READINGS AT IDLE

Please record your line pressures at idle during the following conditions;

Line Pressure

Reverse at idle with foot on brake _____ PSI

Neutral at idle with foot on brake _____ PSI

Drive at idle with foot on brake _____ PSI

PRESSURE READINGS WHILE DRIVING

For these readings, we will need to have the accelerator pedal depressed to 2.0V of throttle position. – This is just under half throttle. Throttle position can be monitored via the OBD port. Since the transmission is in relearn, please exercise this test for the shortest duration possible. Please record your line pressures during the following conditions;

Line Pressure

1st gear at 2.0V Throttle position _____ PSI

2nd gear at 2.0V Throttle position _____ PSI

3rd gear at 2.0V Throttle position _____ PSI

4th gear at 2.0V Throttle position _____ PSI

5th gear at 2.0V Throttle position _____ PSI

6th gear at 2.0V Throttle position _____ PSI

TORQUE CONVERTER LOCKUP SCHEDULE



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For this section, please monitor the torque converter clutch lockup schedule. This command has an assigned PID and can be monitored on a 2010+ truck with a professional grade scan tool. For 2007.5-2009 trucks, we will need to monitor the TCC slip and Turbine RPM. When driving down the road, when TCC slip is zero or negative and turbine speed matches engine rpm, this indicates the torque converter is in lockup. Please check which is the earliest gear you have full converter clutch applied to.

- ☐ 1st Gear
- ☐ 2nd Gear
- ☐ 3rd Gear

- ☐ 4th Gear
- ☐ 5th Gear
- ☐ 6th Gear

RELEARN PROCEDURE

After your test drive monitor test is completed, the transmission must be driven in a non-aggressive manner for the **first 500 miles. Do not tow, run the vehicle in tow- haul mode or drive with throttle percentages over 50% until the relearn procedure is completed.** To properly complete the relearn procedure, the vehicle must be driven in stop and go conditions, where the transmission is cycling through its gearshifts. Highway miles are not applicable for relearn. At least one transmission oil cool down cycle is required for the relearn procedure to complete.

Any time you install or reflash your truck to modify the engine tuning you will also be inadvertently reflashing the transmission tuning as well. Therefore, the above drive learn procedure must be completed again anytime you upgrade, reinstall or switch tunes. Failure to do this will cause immediate transmission damage! Simply changing power levels via CSP 5 switch is not considered a full reflash, however you should drive at least 30 miles before using full engine power.

FAILURE TO PERFORM THE TRANSMISSION RE-LEARN PROCEDURE WILL RESULT IN PREMATURE TRANSMISSION FAILURE. THIS WILL NOT BE COVERED UNDER WARRANTY.



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OPERATIONAL INFORMATION

Due to the increase in line pressure and clutch surface area versus the stock configuration, you may notice your new transmission runs warmer than previously. In stop and go situations where you are not towing, it is normal to see temperatures up to 200 degrees. If towing, the temps may run even higher. We recommend manually shifting the transmission when towing in stop and go traffic. In stop and go scenarios, simply putting the transmission in neutral when stopped will help keep temperatures down.

You may notice that your truck has set DTC codes P2701, 2702, 2703 or 2704 stored. This is nothing to worry about. They refer to inadequate CVI volumes. In a stock transmission this would be an issue but with a modified performance 68RFE, these codes are generated for other reasons. These codes can appear due to the fact that you are now applying the clutches 29% faster due to the 225psi of line pressure. In a performance transmission with additional clutches, you will apply even faster and this may cause one or more CVI values to get down to 0. Once at 0 these codes will appear. When the application is quicker than the factory was looking for it to be, these codes are set. These codes do not affect performance in any way and can be disregarded.