



BD PERFORMANCE TRANSMISSION

Ford Installation Instructions

2WD Transmissions		
1064402	1990-1994	E4OD
1064422	1995-1997	E4OD
1064442	1999-2003	4R100
1064442PTO	1999-2003 (w/ Power Take Off)	4R100
1064342	1999-2003 V10 Truck & M/H	4R100
1064462	2003-04	5R110
1064482	2005-06	5R110

4WD Transmissions		
1064404	1990-1994	E4OD
1064424	1995-1997	E4OD
1064444	1999-2003	4R100
1064444PTO	1999-2003 (w/ Power Take Off)	4R100
1064344	1999-2003 V10 Truck & M/H	4R100
1064464	2003-04	5R110
1064464-PTO	2003-04 w/PTO	5R110
1064484	2005-06	5R110

Please read the instructions and disclaimer before beginning installation.

BD Engine Brake Inc.

Plant Address: #A10 – 33733 King Road, Abbotsford, BC, Canada V2S 7M9

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ATTENTION: FOR 5R110 WARRANTY'S TO BE VALID, AN ECM PROGRAMMER (i.e. BD XTUNER, SCT, SUPERCHIPS, EDGE EVOLUTION) MUST BE INSTALLED WITH A TRANSMISSION PERFORMANCE PROGRAM.

REMOVAL:

- 1) Disconnect the negative battery cable(s).
- 2) Place the transmission into the Neutral (N) position.
- 3) Raise the vehicle on a hoist.
- 4) Mark the drive shaft and pinion yokes for assembly alignment. On 4WD models, remove the skid plate.
- 5) Remove the transmission oil filter tube nut and filler tube.
- 6) Position a drain pan & disconnect the transmission fluid cooler tubes at the cooler bypass valve.
- 7) Remove the drive shaft. On 4WD models, remove the front drive shaft & transfer case assembly. On SuperDuty/Motorhome models, remove the transmission mounted parking brake assembly.
- 8) **NOTE:** If the vehicle is equipped with a PTO (Power Take-Off) unit, all or part of the PTO will need to be removed.
- 9) Disconnect the shift cable from the transmission and manual lever.
- 10) Disconnect the cable housing from the bracket.
- 11) Disconnect the digital transmission range (TR) sensor connector.
- 12) Remove the transmission heat shield.
- 13) Disconnect the solenoid body connector.
- 14) On 4WD models, remove the four-wheel drive switch connector from the transfer case.
- 15) If equipped, disconnect the turbine shaft speed (TSS) sensor & the output shaft speed (OSS) sensor.
- 16) Remove the inspection cover.

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- 17) Rotate the crankshaft with a pry bar from under the vehicle until the converter bolts are accessible.
- 18) Raise the transmission slightly with a service jack to relieve the load on the cross-member and supports.

CAUTION: Make sure any securing straps or the transmission jack adapter DO NOT TOUCH the cooler bypass valve (CBV). Do not use the CBV as a handle. Damage to the CBV may cause a leak and/or failure to the transmission assembly.

- 19) Remove the exhaust and cross-member.
- 20) Remove the transmission mounting bolts.
- 21) Carefully work the transmission and torque converter assembly rearward off the engine block dowels.
- 22) Lower the transmission and remove the assembly from under the vehicle.
- 23) Carefully slide the torque converter out of the transmission.

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INSTALLATION:

- 1) Pre-clean all the cooler lines and cooler bypass valve.
- 2) If the transmission is being overhauled or exchanged due to failure, then the transmission oil to air cooler will need to be replaced. Also the system should be flushed to remove any debris.
- 3) Inspect the wiring harness & connectors for damage, corrosion, seal integrity, and terminal condition. Repair or replace as required.
- 4) Lubricate the converter drive hub and oil pump seal lip with petroleum jelly.
- 5) Lubricate the converter pilot hub with transmission fluid.
- 6) Align and carefully install the torque converter into the oil pump. Rotate the converter back and forth until it is fully seated in the pump gears. The converter will be fully seated when you hear two loud “clunks”.
- 7) If the vehicle is a 4WD model, install the transfer case assembly.
- 8) If removed, install the output shaft drive sprocket speed sensor and bolt.
- 9) Position the transmission on a jack and secure it with chains.
- 10) Check the condition of the converter drive plate. Replace the plate if it is cracked, distorted or damaged.
- 11) Raise the transmission and align the converter with the drive plate, and the bell housing with the engine block.
- 12) Move the transmission forward. Raise, lower or tilt the transmission to align the bell housing with the engine block dowels.
- 13) Carefully work the transmission forward and over the engine block dowels until the converter hub is seated into the crankshaft.
- 14) Install the bolts attaching the bell housing to the engine.
- 15) Install the torque converter to drive plate bolts using Loctite. On 7.3L diesel models, tighten the bolts to 53-72Nm (39-53 ft. lbs.), then check torque converter rotation.
- 16) Install the exhaust and cross-member.
- 17) Install the inspection cover.
- 18) Connect the solenoid pack electrical connector.
- 19) Connect the digital transmission (TR) sensor.
- 20) Install the transmission heat shield.

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- 21) Reconnect the shift cable, cable housing and bracket.
- 22) If equipped, reconnect the transmission mounted parking brake assembly.
- 23) If equipped, install the four-wheel drive connector.
- 24) Align and connect the drive shaft(s).
- 25) Install the transmission fluid cooler tubes to the cooler bypass valve.
- 26) Install the transmission fluid filler tube and bolt.
- 27) Lower the vehicle.
- 28) Connect the battery ground cable(s).
- 29) Fill the transmission with ATF (for 4R100's use Mercon V, for 5R110's use Mercon SP, for E4OD's, use Dextron 3).

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**BD ENGINE BRAKE, INC.
LIMITED WARRANTY STATEMENT**

BD Engine Brake, Inc. (BD) warrants to the original purchaser that any parts purchased shall be free from defects in material and workmanship. BD limits the liability to the repair or replacement, at BD's option, of any warrantable product returned prepaid with a complete service history and proof of purchase. A valid proof of purchase is a dated bill of sale. Repaired or replaced product will be returned to the customer freight collect. Accepted warranty units, which have been replaced, become the sole property of BD.

A Return Material Authorization (RMA) number, obtained in advance from a BD customer service representative, must accompany product, returned prepaid by the purchaser, for warranty determination. BD will be the final authority on all warranty decisions.

This parts warranty shall terminate at the end of 12 months or 24,000 miles in service with original user, whichever comes first. Labor costs incurred by the removal and replacement of a BD Performance Converter while performing warranty work, will be covered for 12 months at authorized centers with prior approval. Until the product has been approved at the original installing dealer or at one of our distributors, the consumer should cover these costs.

NOT COVERED UNDER THIS WARRANTY

This warranty shall not apply to any unit that has been improperly stored or installed; or to misapplication, improper operation conditions, accidents, or neglect, or which has been improperly repaired or altered or otherwise mistreated by the owner or his agent.

NOTE: The fluid coupling is designed for heavy throttle acceleration and as such the TCC should be UNLOCKED in this situation. If the TCC is locked up under light acceleration, BD recommends the use of no more than 1 psi of boost for every 100 rpm of engine speed.

The nature of this product is PERFORMANCE and is designed to perform at above OEM specifications. This product was designed with this in mind and should NOT be used in RACING and/or HIGH HORSEPOWER applications and will only be considered for warranty on vehicles with a maximum of 400 REAR WHEEL HORSEPOWER. Using this product on vehicles with a higher rating will cause premature failure and therefore BD will not consider such claims. BD reserves the right to void the transmission warranty if a BD torque converter is not used throughout the warranty period of the transmission.

Except as set forth in our parts outline, BD disclaims any implied warranties of merchantability and fitness for a particular purpose. BD also disclaims any liability for incidental or consequential damages including but not limited to, repair labor, rental vehicles, hotel cost or any other inconvenience cost. This warranty is in lieu of all other warranties or guaranties, either expressed or implied, and shall not extend to any consumer or to any person other than the original purchaser residing within the boundaries of the continental U.S. or Canada.



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