

Stinger Performance

Ford 2.3 Turbo Return Line Instructions

CAUTION:

DO NOT TWIST OR KINK THE LINE IN ANY WAY DURING
INSTALLATION. THIS WILL CAUSE THE VEHICLE TO SMOKE!!

- 1) Remove items from package. There should be the oil line, the turbo flange w/gasket, and a 45 degree elbow.
- 2) Apply Teflon tape to the pipe threads on the 45 degree elbow that threads into the block, but not the AN fitting threads. **Ensure the tape does NOT cover the hole in the fitting or the last few threads of the fitting!**
- 3) Remove the stock return line, and the brass elbow on the block that the stock return line threaded into. Clean any old gasket material from the outlet of the turbo.
- 4) Install the 45 degree elbow in the return port of the block. Tighten it until it is tight, and the AN portion of the fitting is sticking just slightly forward of straight out (slightly forward meaning straight out from the engine but then pushed towards the front of the engine slightly).
- 5) Install the flange with the new gasket on the turbo. Once you are finished it should look like the one pictured below.



NOTE: THE SEQUENCE OF THE FOLLOWING STEPS IS CRITICAL. FAILURE TO FOLLOW IN THE SEQUENCE BELOW CAN CAUSE THE LINE TO TWIST AND BECOME A RESTRICTION, RUINING THE LINE.

- 6) Install the line to the block side first, as shown below. Thread the line on to where it is finger tight, then back it off a quarter of a turn so you can still turn it easily.



- 7) Now bend the line so that it connects to the fitting at the turbo. It is usually best to let the nut drop down(as it is in the picture above), and get the taper of the fitting on the line to match up with the turbo, and then tighten the nut. Once again, only tighten it finger tight.

NOTE: At this point you may still have some difficulty getting the line to line up with the fitting at the turbo. These lines do not flex as much as the stock line, therefore the "clocking" or position of the turbo's bearing housing in relation to the turbine housing is critical. If you find that it takes excessive forcing to make the line fit, chances are the turbo needs to be reclocked.

To do this, disconnect the wastegate actuator rod, compressor hoses, water lines, and oil feed lines. Loosen the 6 bolts that hold the bearing housing to the turbine housing, and knock the bearing/center housing out of the turbine housing using a hammer, making sure not to damage anything. If the turbo is rather new or has been apart recently, you can simply loosen the bolts and rotate the center section in the exhaust housing without actually removing the center section. Install the center section back in, rotating it while looking for the best fit with the oil line. Once you have it positioned where the oil line lines up perfectly, reinstall the items removed. You may also have to reclock the compressor housing as well so that the preload on the wastegate arm remains the same. You want to have to pull the wastegate arm about $\frac{1}{4}$ " to connect it to the swing valve.



- 8) At this point, you are ready to tighten down the lines. **DO NOT SIMPLY TIGHTEN THE LINE DOWN. DOING SO WILL CAUSE IT TO TWIST, THEN KINK, AND IT WILL BECOME A RESTRICTION, RUINING THE LINE.** Tighten the line at the engine block side while holding the line in place with a wrench on the smaller brass nut near the swivel to keep the line from twisting as it is tightened. You don't have to make it super tight, just snug.
- 9) Now tighten the turbo side of the line, while holding the crimp collar of the 90 degree fitting to keep it from stretching the line. Once again, you don't have to make it super tight.
- 10) Whatever you do, don't force the line into a position that causes it to kink the braid as this will ruin the line. This means if it seems like the line isn't lining up properly, stop and take a look at what's going on and what you need to adjust to fix it before you ruin the line. The vertical height of the line can be adjusted by how far the fitting screws into the engine block (can be adjusted by how much Teflon tape is used), the length of the line is adjusted by the position of the block fitting. The closer to straight out from the block the fitting points, the shorter the effective line length becomes. Of course the more the fitting points towards where the line connects to the turbo, the longer it makes the line. The end result should look as follows:

