2007-2009 MINI Cooper S R56

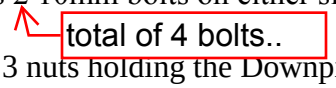
Turbo Oil Line Replacement

First off let me say that this is a fairly involved effort.
You really have to be a committed Mini owner to tackle this yourself at home.
It isn't that it is super hard, but it has its challenges. But if you really want to, make sure you have time to take it in a relaxed fashion because it can be trying.

So one last warning: This is the big issue as I see it: To do this yourself, you have to completely disassemble the heat shields and downpipe, then replace the infeed and outfeed lines, put everything back together, and you have no idea if the 5 hrs of work is all successful, until you start the engine. And hope you have no leaks, (think engine/turbo failure at an inopportune time)since the only thing you can see is the top banjo fitting. This is where the dealer or service center owns the risk.

So with that said, here goes:

Be very aware of pulling this all apart, as it has to go back in this exact order. Read this whole thing, as there are some things you will need along the way. I lifted the front of the car and set on jackstands about 18 in high at nose. Emergency brake is critical. Chock rear wheels.

1. Start by removing the top heat shield. There are 3-10mm bolts at top(near valve cover), then 3 more lower on the front. The 3 lower on the front have some serious clearance issues. They are long bolts and you will be lucky to make ½ turns. What may be very useful is a 10mm ratcheting box end with a long handle. (I didn't, but if I ever do this it will be required.) This was where I spent most of 1 hr on reassembly. You will most likely find that working from the bottom to loose nd remove these will also work just as well as from the top.
    a. Now, to get the left bolt off you will first have to loosen dipstick bracket 10mm bolt so you have clearance to remove the heat shield bolt.
2. You can unplug exhaust gas thermocouple and using a 22mm wrench remove from Downpipe now.
3. Now, carefully extract upper Heat Shield. It is a little effort to slide it out from under lip of top of heat, but it can be done carefully. Pay attention, as you have to do it in reverse to put it back.
4. Now under the car, remove lower oxygen sensor, carefully. Now if you are careful you do not have to unplug the electrical connection. (It seems a little hidden) What you do is carefully rotate wiring until fully unthreaded from pipe. Set it up in frame out of way.
5. Remove v-band from Downpipe to lower Cat. I used 2 pair of large Channel Locks. Is tough but doable. Just open enough to slide it to the rear.
6. Now the lower Heat Shield has 2 10mm bolts on either side. Not too bad with a ¼" drive socket set and short extension.


7. Back to the top, I removed the 3 nuts holding the Downpipe to Turbo.
8. Back to bottom, there are 2 Copper nuts, holding Downpipe to Engine Block.
    a. These nuts bolt a bracket to Block, and there are a pair of intermediary brackets and also nuts going vertical to these brackets from the welded on tabs of Downpipe.
    b. I disassembled all of this, since it seemed you couldn't get downpipe off with out doing it.
9. Now you have Downpipe and Lower Heat Shield all loose. You can kinda pop the heat shield off the alignment screws and let it move around while you figure out how to get the Down Pipe out. It has to be removed first.
10. I used a large bladed screwdriver and a rubber mallet to nudge the downpipe off the very long studs. There is not a lot of room with that heat shield in your way. Take your time and it will slowly move to left.
11. Extract Downpipe down thru to the bottom.
12. Carefully extract Heat Shield to top. (may need some flexing, be careful)
13. Now you have some room to look around and see where you are trying to get to.

14. But, there is one more Heat shield on the block in your way!
15. But first, remove the Turbo support arm bolt in the middle of it, and loosen the top bolt, so it swings free.
16. There are 4-10mm bolts holding this shield to block. (BTW, I found almost all of the bolts with very low torque to remove) Remove shield, and the Oil Lines are fully visible.
17. To remove the Infeed line, you first have to remove the outfeed flexible rubber heat shielded line.
    a. Way MW sells the 2 lines as a kit with grommets(OEM lines) He recommends replacing both. What I see now is that you have to remove outfeed to extract Infeed Pressure line. So, if you have gotten this far, this seems like a no-brainer. Not worth the effort to do this twice. Change them both.
    b. There is a 10mm bolt at top, and a spring clamp at bottom. Wiggle the line carefully, free.
18. Not you can get the offending Pressure Infeed line out. Remove bolts at banjo fitting top and bottom. Make sure to get inner/outer copper crush gaskets at both banjo ends. Feed the line up and out.
    a. I had almost no oil dripping. I am guessing the lightweight oil just drains to pan. (Probably not the best for turbo bearings after a car has sat for a week or so?)
    b. OK, here is my take of the real issue: The OEM Infeed line has a slip fit tubing into the banjo fitting, with an internal o-ring. This allows for some assembly dimensional variances for length and angle. But since the top o-ring is right in the worst heat it gets cooked, then deteriorates, then slowly leaks, possibly to major failure.
    c. At this point, the Flex Line seems like a straight forward solution. Flex Line= no O-rings. The critical issue with the flex line is to ensure it has same internal diameter as hard line. Choking off oil flow will only add to issues with clogging(cokeing) of line and turbo bearing failure. Now that I have the old line off, I will look into Flex Line(but I re-installed OEM hard line, for now)
    d. But, I took one other precaution. I purchased a Thermaflect Sleeve from Heatshield Products. (approx $20)Part no 270100 is a 1" dia x 3' long nomex type sleeve that I slid 18" of over the Infeed Pressure Line. It claims to withstand 1100 deg with 90% reflection of radiant heat. So this covers the full length of tube and both O-rings.
    e. I also had purchased the newer clip on heat shield for the top banjo fitting, so upon completion, I re-installed it. This is a very light weight piece of aluminum, hardly worth the $20 it cost. A wimpy attempt by Mini/BMW to solve the issue.

OK- YOU ARE HALF DONE!(with the easy part!)

1. So carefully install new infeed line(new copper crush gaskets). I do not have the torque settings for any of this, so will try and see if that can be obtained for all the re-install. I really think the banjo fittings are the only critical bolts. Everything else is a snug fit based on location and size of bolt. If you are worried about this, get this figured out first. (I have a good feel for this type thing).
2. Install new Outfeed line.
3. Reverse everything from here.
4. Somewhere in someones previous notes, I read to get a new Gasket for Turbo to Downpipe connection. You really need this. Order it with your Oil Pipes. You do not want to have to go thru all of this, again for the $10-20 sheetmetal gasket.
5. Fitting all this back into the small area is time consuming and can be frustrating. Don't forget everything you did, this is a lot of steps.
6. Getting the Downpipe back on is work. Take your time.
7. Fitting the matched set of brackets on to Downpipe and to Block is complex. Leave everything very loose, even at turbo, till it all comes together. I made the mistake of tightening top at turbo, prior to getting this bracket issue all figured out, and had to start this over. (30 mins of lost time).
8. When installing lower thermocouple, add the twists back in prior to start of threading.
9. The biggest time consuming issue I had was the reinstallation of the 3 bolts at the overlap of the upper and lower heat shields, which are hidden from adult sized fingers. Flexing these shields to remove them,

just knocks the alignment out enough to make this very frustrating to get back together. And the bolts are so long, as to take forever to thread back home. (Get the long handled ratcheting box-end) Working slowly, I probably spent 45 minutes playing with this and skinning up my knuckles. Again, you will have to go from top and bottom to accomplish this. I tried to have my kids help with this issue, but they just didn't have enough experience to help with it. If you are working from bottom, it can be helpful to have someone shift upper shield while you are under car, trying to thread bolts.

Well, that is it. I spent 3hrs removal and 3 hrs replacement, with no experience doing it prior. I could see it going to 2hrs on both side easily enough.

So, $75 to WMW for Tube Set, $20 for Thermaflect Sleeve, $20 for Exhaust Gasket(local dealer).

The Dealer estimate was $1200.


New Lines

Leaking Infeed

Loosen left bolt, rotate bracket to get to right bolt

The offending bolts

The brackets

Outfeed Tube, Brace bolt (loosen), Inner Heat Shield (remove)

The GOAL exposed.

Don’t forget how this all goes back.

Back together with Sleeve and extra shield

Final view.