



## Z32/VG Heater Pipes with AN Turbo Cooling Ports

Revised 11/8/2022

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**Note: This kit is intended to be installed while the engine is out of the car.**

### *Parts List*

**PN: BDE-8500** with ARP bolts

or

**PN: BDE-8501** with Allen bolts

(Qty)	Description
(1)	High Pressure Adapter
(1)	Low Pressure Adapter
(1)	High Pressure Heater Pipe
(1)	Low Pressure Heater Pipe
(4)	o-ring
(4)	-6 ORB to -6 AN Adapter
(4)	-6 ORB to -4 AN Adapter
(4)	-6 ORB Plug
(4)	M6 x 20mm SS Bolt (see PN for bolt type)
(2)	M6 x 80mm SS Bolt (see PN for bolt type)
(6)	M6 SS Flat Washer

### *Tools needed for disassembly*

- 10mm wrench and/or socket for stock heater hose clamps
- Pliers for stock turbo cooling hose clamps
- Gasket scraper

### *Tools needed for installation*

- 5mm Allen wrench (for Allen bolts)
- 8mm wrench and/or socket (for ARP bolts)
- 11/16" wrench for ORB to AN adapters
- 1/4" Allen wrench for -6 ORB plug
- Grease or oil

## ***Stock Heater Pipe Disassembly***

1. Remove the rubber turbo cooling hoses and heater hoses from the stock heater pipes.
2. Remove the two bolts holding the stock heater pipe to the USDM passenger side cylinder head and tap the pipe to break it free from its gasket surface. Remove the pipe and discard.
3. Remove the two bolts holding the stock heater pipe to the thermostat housing pipe (USDM driver side) and tap the pipe to break it free from its gasket surface. Remove the pipe and discard.
4. Using a gasket scraper or razor blade, clean all residual RTV silicone off of the cylinder head and thermostat housing pipe's gasket surfaces. You may need to use some sand paper to thoroughly clean these.

## ***Assembly of Heater Pipes***

1. Lubricate the threads of all bolts with grease or oil.
2. Place the o-rings into the four pockets on both machined aluminum adapters.
3. Position the high pressure adapter on the passenger (USDM) cylinder head with the exit flange facing up and install two M6 x 20mm bolts with washers to attach it to the cylinder head.
4. Place the high pressure pipe onto the exit flange of the high pressure adapter and attach it with two M6 x 20mm bolts and washers (see figure 1).
5. Assemble the low pressure pipe and adapter by installing the two M6 x 80mm long bolts with washers through the bolt holes of the low pressure pipe's flange and slide the low pressure adapter onto the bolts so that the ORB ports are towards the engine.
6. Place the low pressure assembly onto the thermostat pipe flange and tighten the bolts (see figure 2).

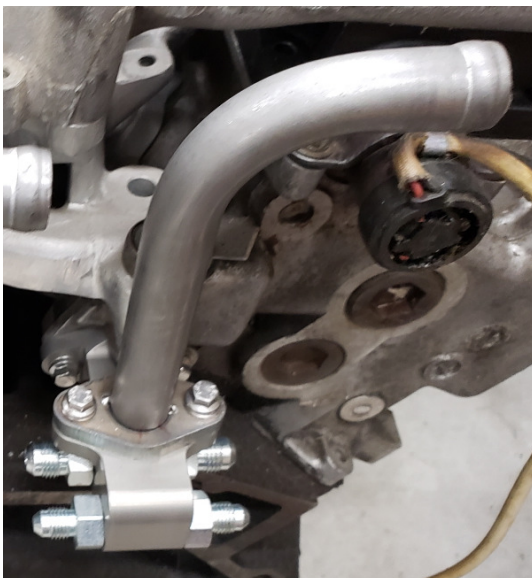


Figure 1 - High pressure heater pipe assembled



Figure 2 - Low pressure heater pipe assembled

## ***Selection and Preparation of ORB Adapters***

- Each turbo and wastegate must be plumbed from the high pressure and low pressure sides of the system to ensure coolant flow. If you plumb the turbo only to the high pressure side (or only to the low pressure side) coolant will not flow and damage from overheating will occur.
- Turbos should be plumbed with -6 AN hose, wastegates should be plumbed with -4 AN hose.
- If you do not have water cooled wastegates, you will use the four -6 ORB plugs to block off the unused ports in the adapters.
- Select the ORB adapters/plugs you will be using for your application and lubricate the threads and o-rings of all with oil.
- Lubricate the threads of all ORB ports in the high and low pressure adapters with oil.

## ***High Pressure ORB Adapters***

Wrenching room is tight with the ORB ports on the high pressure adapter, so it works best to install and tighten one ORB adapter per side at a time.

1. Install one -6 ORB to -6 AN adapter into the front high pressure port on the passenger side and tighten.
2. Repeat step above with the front high pressure port facing the driver side.
3. Attach the -6 AN hoses leading their respective turbo to each high pressure AN adapter and tighten (always lubricate AN hose end threads prior to assembly).
4. If using wastegate cooling, install one -6 ORB to -4 AN adapter into the rear high pressure port on the passenger side and tighten. If not using wastegate cooling, install a -6 ORB plug instead.
5. Repeat step above with the rear high pressure port facing the driver side.
6. Attach the -4 AN hoses leading their respective wastegate to each high pressure AN adapter and tighten (always lubricate AN hose end threads prior to assembly).

## ***Low Pressure ORB Adapters***

For the best wrenching room, install and tighten the lower ORB adapters on each side along with their AN hose before moving on to the upper ports.

## ***AN Hose Plumbing/Routing***

Plumbing AN hose to the turbos and wastegates is DIY due to all the different brands, colors, turbo/wastegate placement, and routing scenarios that are possible.

This BDE kit was designed to use economical straight hose ends at all locations (see figure 3). At a minimum, you will need four -6 AN straight hose ends for turbo cooling and four -4 AN straight hose ends for wastegate cooling; hose ends used at the turbos/wastegates will depend upon how you want them to be routed.

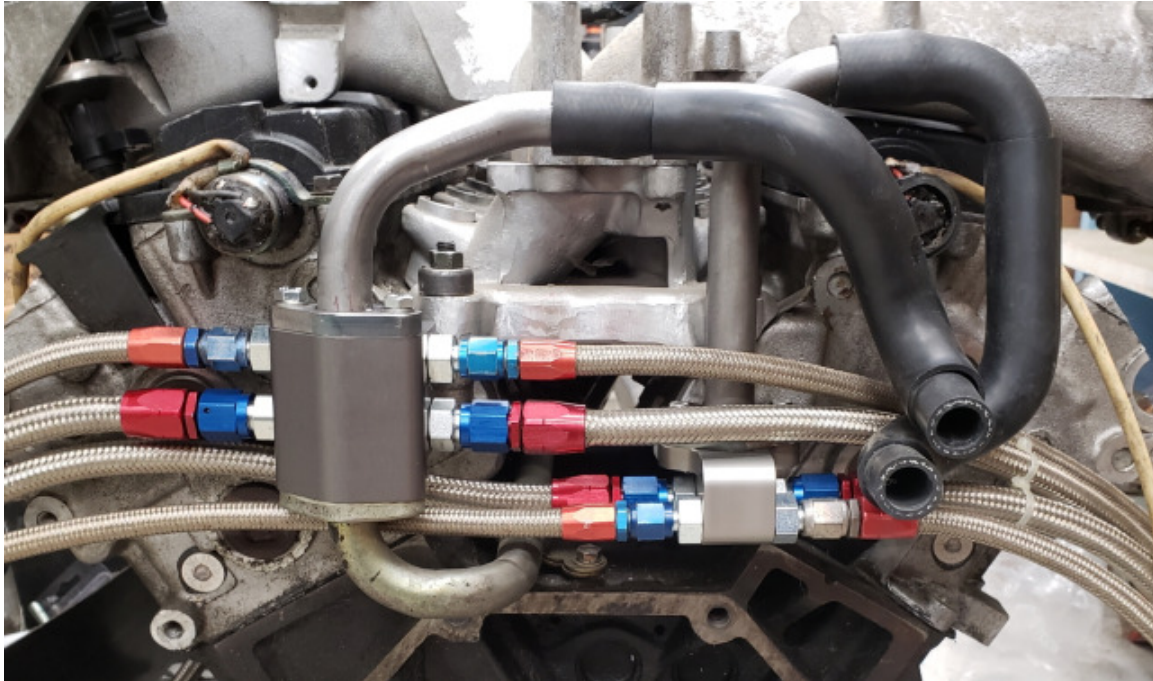


Figure 3 - AN hose routing at engine

Garrett GT/GTX 28/30/35 turbos all have a M14 x 1.5 thread for their coolant inlet/outlets and require a crush washer for sealing. Note: some aftermarket AN adapters can be too long on the M14 side and may need to be shortened if they bottom out before sealing the crush washer to the turbo housings; always fit-check these adapters.

Options for coolant connections to the turbos are straight adapters or 90° banjo type - straight adapters will require angled hose ends for optimum clearance and routing of hoses (see figures 4 and 5).

All Garrett G-Series turbos come with -6 AN straight adapters for coolant installed.

Most water cooled external wastegates come with -4 AN adapters needed for plumbing coolant to them.

Figures 4 and 5 below are only a suggestion on how to route -6 AN hose using straight adapters at the turbos along with angled hose ends to steer the hose clear of the hot turbine housings and exhaust manifolds. Not shown in figures 4 and 5 are Aeroquip 120° hose ends used on the inner turbo coolant ports with straight M14 x 1.5 to -6 AN adapters to route the hose under and around the turbine housing on both turbos.

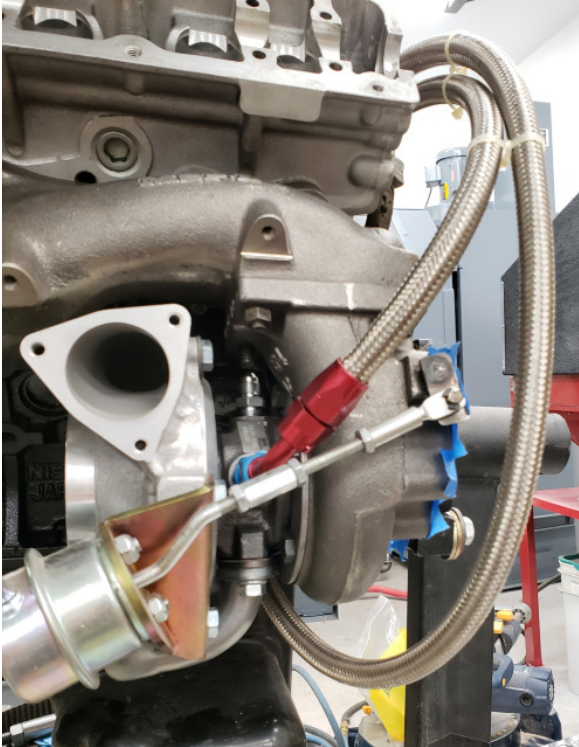


Figure 4 - driver turbo straight AN adapter with 45° hose end

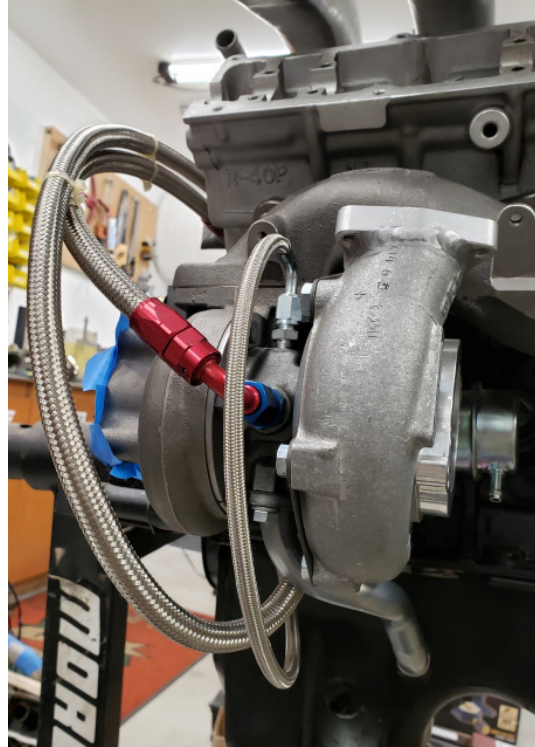


Figure 5 - passenger turbo straight AN adapter with 90° hose end