

# Killer B Motorsport

## FA20DIT Header Installation Guide

**We recommend the use of a rust penetrant to help remove exhaust nuts and bolts.  
TRY TO ALLOW 24 HOURS TO SOAK.**

### **Tools Needed:**

Anti-seize  
Rust penetrating spray  
Screwdrivers- phillips and flathead  
3/8" drive & 1/4" drive assorted sockets, socket wrenches and extensions  
Metric wrenches  
Assorted pliers  
3/8" drive Torque wrench (High quality torque wrench is recommended for consistent and repeatable fastening)

### **Parts Needed:**

FA20DIT Cylinder head to Header/manifold gaskets(x2): Subaru Part #14038AA050  
Header to Turbo gasket(x1): Subaru Part #44616AA210  
Turbo to J-Pipe gasket(x1): Subaru Part #44616AA220  
J-Pipe to I-Pipe gasket \*IF APPLICABLE to your application\* (x1): Subaru Part # 44011AG000  
**NOTE: There are 4 threaded studs on the turbine inlet and 4 more on the turbine outlet- If any of these break or strip upon removal, we can supply you with hardened replacements.**

### REMOVE CURRENT EXHAUST MANIFOLD/TURBOCHARGER ASSEMBLY

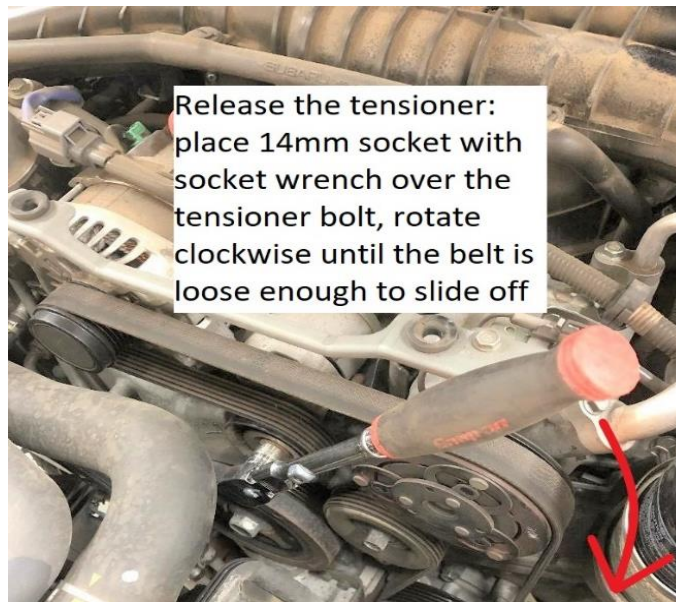
Raise the hood and remove engine cover.



LOOSEN the 3 M6 fasteners (10mm head) in the water pump pulley, do not attempt to remove the pulley until the accessory drive belt has been removed.



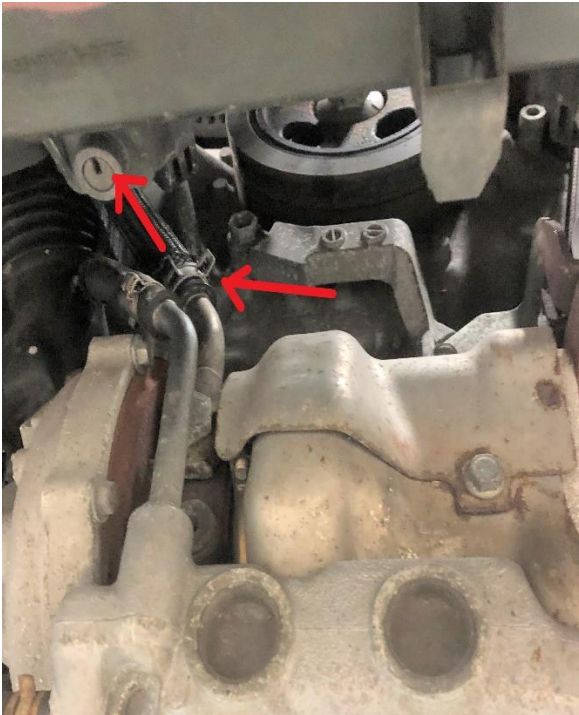
Use a piece of paper and pen to illustrate the accessory belt routing or refer to the factory service manual. Remove the accessory drive belt using a 14mm wrench or socket wrench [Some models may use a 15mm]: Install wrench or socket wrench near the 1:00 or 2:00 position and then rotate clockwise take the tension off the belt.



Remove the 3 M6(10mm head) bolts from the water pump pulley.  
Loosen and remove the vertical M10 bolt (14mm head) securing the turbocharger stay (bracket):

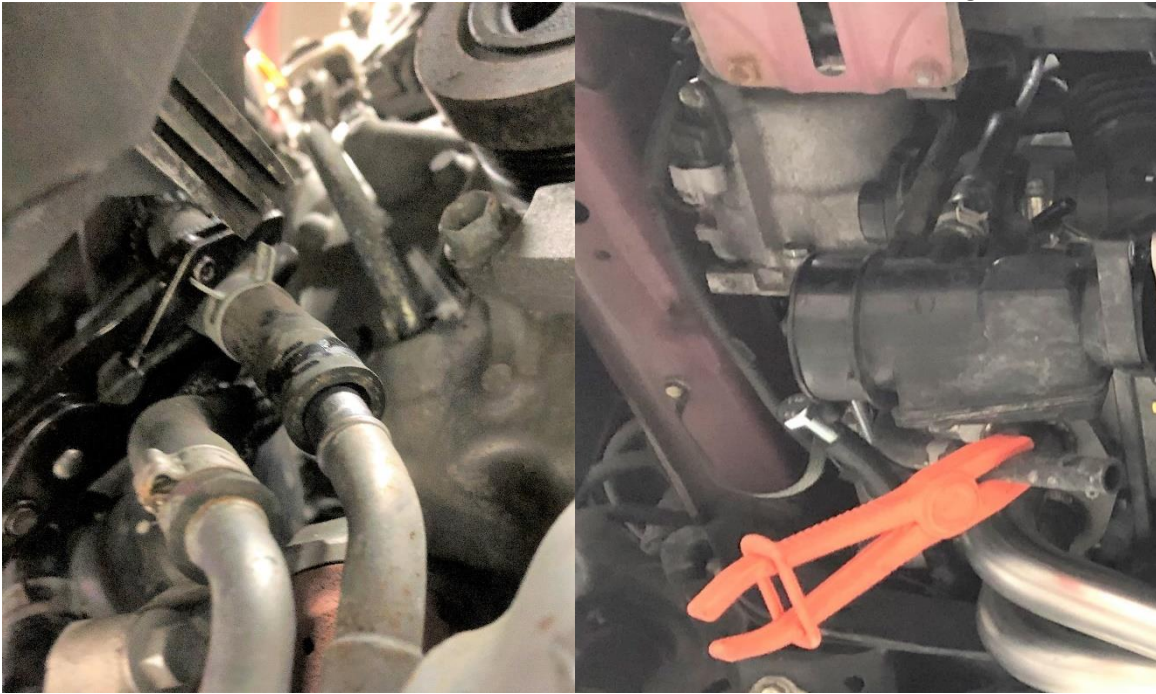


Raise vehicle and remove the belly pan, disconnect the front and rear oxygen sensors.  
Pinch off the coolant supply and drain hose for the turbocharger.  
Coolant feed: Coolant return:

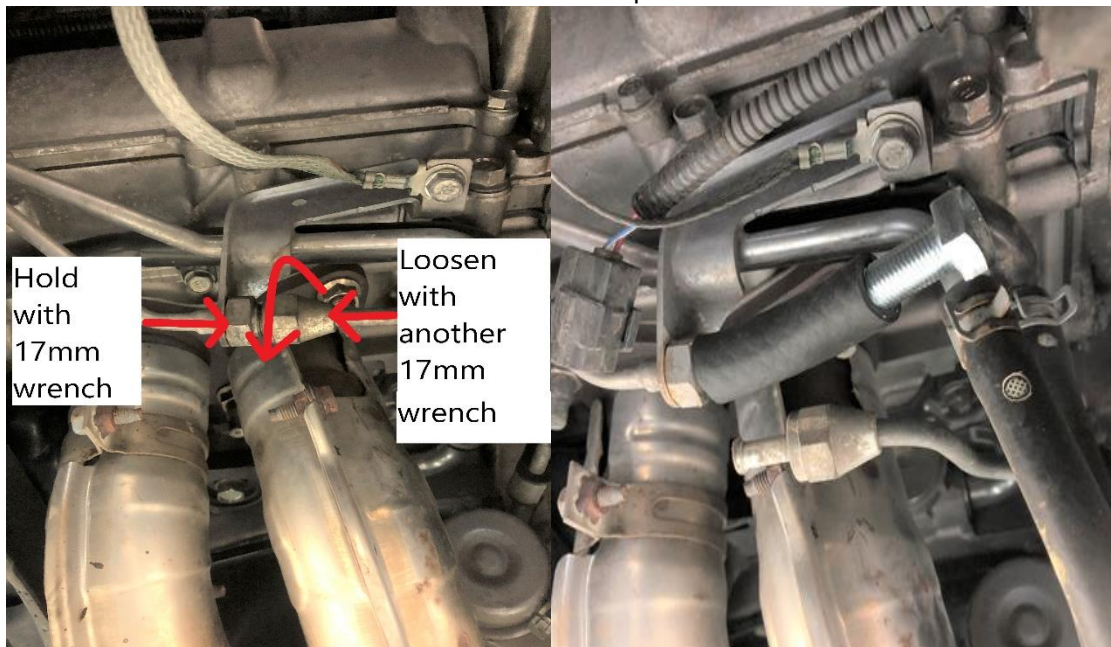




Remove the coolant feed and coolant drain lines from the turbocharger.



Loosen and disconnect the oil supply, oil drain and vent hose/lines. Cap the oil feed with a rubber cap so it does not drip.



Loosen and remove the 2 M6(10mm head) bolts securing the turbo inlet to the turbo.



Loosen and remove the 2 M8 bolts securing the charge pipe to the compressor outlet flange:

Rear bolt:

Front bolt:



Loosen the air duct that attaches to the turbocharger inlet. Remove and set aside:





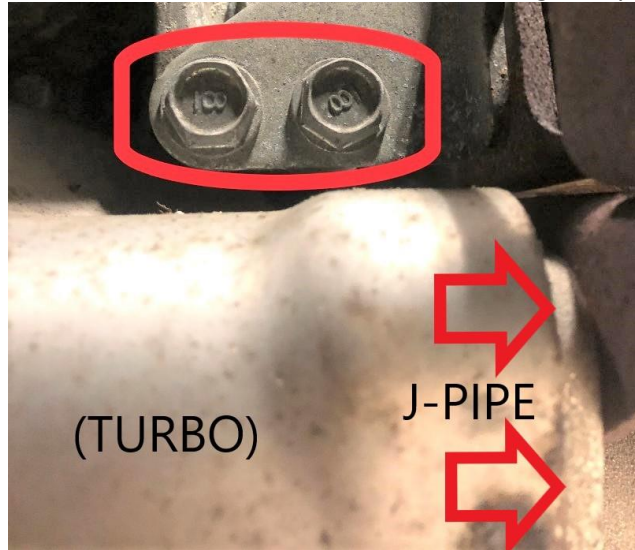
Disconnect the electrical connector on wastegate duty solenoid (boost control solenoid). This photo shows the location of the connector, which is behind the lower section of the Jpipe.



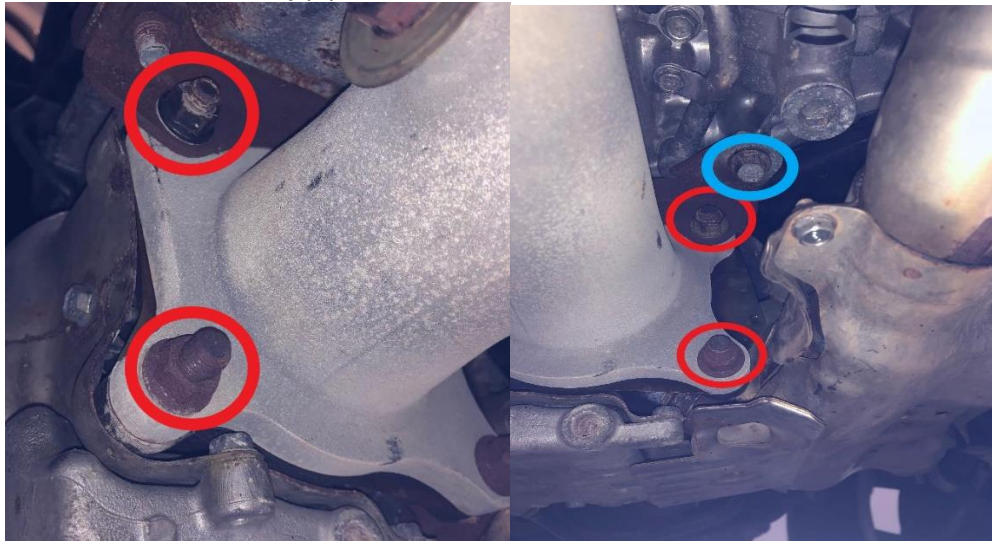
Loosen and remove the water pump pulley cover (shield). You already loosened the 14mm bolt from the other side of this shield. This 12mm bolt is the final bolt holding the water pump pulley shield in place.



Unfasten the J-pipe from its front (4) nuts and rear (2) nuts/bolts:  
Remove J-pipe and set aside, inspect and clean flanges if necessary. Discard gaskets.  
Loosen with 12mm socket and remove the turbocharger stay (bracket).



Once the following 4 nuts (red outline) and 1 bolt (blue outline) have been removed, the bracket (stay) and j-pipe can be removed from the vehicle.



Loosen and remove 4 of 6 nuts that secure the exhaust manifold to the cylinder heads.  
(Leave 2 of them installed loosely)  
Have a helper support the manifold/turbocharger assembly while you remove the 2 remaining nuts securing the manifold/turbo assembly to the engine.  
Slowly lower the assembly, watching for any electrical connectors or hoses. Discard gaskets.

#### SEPARATE THE TURBOCHARGER FROM THE EXHAUST MANIFOLD

Remove the factory turbocharger's heat shields.  
Loosen and remove the (4) 14mm nuts securing the turbocharger to the exhaust manifold, discard gasket.

### INSTALL TURBO ON KILLER B MOTORSPORT HEADER

Apply anti-seize to all 8 threaded exhaust studs on the turbocharger. Install a new turbine inlet gasket in the correct orientation. Install the Killer B Motorsport Header on the turbocharger and hand thread on the 4 nuts. Snug the 4 nuts with a socket wrench until the manifold and turbocharger come together consistently and snugly. Using a torque wrench, tighten the 4 nuts to 31.3 ft-lb (42.5 Nm), in an X-pattern.

Install new cylinder head to exhaust manifold gaskets. Apply anti seize to the (6) cylinder head exhaust studs.

With your helper, guide the KBM header/turbo assembly up toward the engine. Install all 6 nuts SNUGLY by hand.

WE RECOMMEND YOU DO NOT TORQUE THE HEADER TO THE CYLINDER HEADS UNTIL YOU HAVE REINSTALLED BOTH TURBO STAYS, THE WATER PUMP PULLEY COVER AND THEIR RESPECTIVE NUTS/BOLTS. THIS REDUCES THE CHANCE FOR MISALIGNMENT/ CROSSTHREADING/ STRIPPING OF RELATED ENGINE/TURBO COMPONENTS OR FASTENERS.

Once the stays and brackets are loosely installed with hardware, torque the 6 nuts on the header to 31.3 ft-lbs (42.5Nm)

IMPORTANT- After torquing all 6 of the header mounting nuts, repeat the torque procedure on all 6 nuts again in the same pattern (middle first, then outside). For the FA engines, the middle nut tends to lose some torque after the outer nuts are torqued. You should not need to perform a triple check.

Reconnect oil lines, coolant lines, remove the two fluid squeeze clamps to unblock coolant flow.

**\*\*Remember to use anti-seize on threads\*\***

Reinstall the charge pipe to the compressor outlet and torque bolts to 11.8 ft-lbs (16 Nm)

Reinstall the turbo inlet on the compressor inlet [duct#1] and torque bolts to 4.7 ft-lbs (6.4 NM)

Reinstall the lower intake (S) [duct #2], tighten both worm clamps.

Reconnect the wastegate duty solenoid connector (boost control solenoid).

Reconnect boost reference hose to the wastegate duty solenoid.

DO NOT TORQUE EXHAUST COMPONENTS UNTIL ALL NECESSARY STAYS AND SHIELDS HAVE BEEN INSTALLED.

Install new gasket on the turbine outlet (j-pipe inlet).

(APPLY ANTI-SEIZE IF YOU HAVENT YET DONE SO)

Install j-pipe on turbocharger and install the turbo stay (bracket) over the top 2 studs. Start threading the (4) 14mm nuts on by hand. Using a socket and extension, threads the nuts all the way in until the j-pipe is snugly clamped to the turbocharger.

Install the vertical bolt that threads into the upper oil pan, through the turbocharger stay. Torque to 24.3 ft-lbs (33Nm) (See above picture with blue circled bolt)

Install the water pump pulley cover, torque M8 bolt to 14 ft-lbs (19 Nm).

Install the last turbocharger stay over the top of the turbine housing two M8 bolts: 14 ft-lbs (19 Nm) and one M10 bolt: 24.3 ft-lbs (33 Nm).

Install the M10 bolt vertically into the upper oil pan M10 bolt: 24.3 ft-lbs (33 Nm). (Refer to page 3, first photo)

Torque the 4 J-pipe to turbo bolts to 31.3 ft-lbs (42.5 Nm).

Install new J-pipe outlet gasket

Reinstall and tighten the 2 J-pipe exit bolts, which connect to the I-pipe inlet, IF APPLICABLE.

Reinstall front and rear oxygen sensors with anti-seize and reconnect electrical connectors.



DOUBLE CHECK TORQUE ON ALL CLAMPS, SHIELDS, HARDWARE AND COMPONENTS BEFORE STARTING ENGINE OR DRIVING VEHICLE.

MAKE ADJUSTMENTS TO OIL LEVEL BEFORE STARTING ENGINE.

TOP OFF COOLANT, OR REFILL AND BLEED SYSTEM FOLLOWING OEM SERVICE PROCEDURES.

LOOK UNDER VEHICLE AND LISTEN FOR FLUID LEAKS BEFORE STARTING ENGINE.

START ENGINE AND LISTEN CLOSELY FOR EXHAUST LEAKS OR NOISES IN GENERAL.

RECHECK FOR FLUID LEAKS.

DEPENDING ON YOUR MOD LIST, ECU RECALIBRATION MAY BE REQUIRED.